

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">To help the user, the Survo system provides a special inquiry system
By entering various keywords, information on Survo operations and
other relevant facts will be displayed in the Help window.

```

To make an inquiry, a keyword followed by a question mark (like EDITOR? PRINT? PLOT?) is typed on any empty line in the edit field and activated either by the mouse (double-click) or by the ESC key. All pertinent information will then be displayed. After return to normal editing mode, the previous situation in the edit field will be restored. However, in inquiries about Survo operations it is typical that a general pattern of the operation in question will be printed on the inquiry line. If the keyword is not found, a list of related keywords having the same forepart will be listed and any of them may be selected.

An inquiry may be started also by pressing the F1 (HELP) key. Then information on the last operation activated may be obtained directly. Still another way to start an inquiry is to activate a word in the edit field by the keys F2 F1 or by a double-click of the rightmost mouse button.

In the Help Window, the system often suggests related or more specific information which may be selected by keystrokes or by the mouse. It is then possible to discover various functions of Survo.

After any branch to a new topic, it is possible to return back to previous displays step by step by pressing BACKSPACE (or clicking Prev). At any stage during an inquiry, new keywords may be suggested first by pressing '?' and then entering the keyword. An alternative way to select other keywords in the Help Window is to move the cursor by arrow keys (or mouse) and activate by by ESC (or mouse).

Each display presented by the inquiry system may also be copied in the edit field by pressing '+' . The newest options are often highlighted.

Other ways for getting information from the inquiry system of Survo are provided by the survo commands /HSEARCH and /HLIST.

```

  <A HREF="q01_10.html">X = Examples in the Help system</A>
  <A HREF="q01_02.html">E = more information on Survo</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The Survo Editor is the basic tool for all operations in Survo.
  <A HREF="q01_05.html">A = General information on Survo</A>
  <A HREF="q01_06.html">B = Edit field</A>
  <A HREF="q02_01.html">C = Keys, mouse and their functions</A>
  <A HREF="q02a_01.html">D = Survo operations</A>
  <A HREF="q03_01.html">E = Control operations</A>
  <A HREF="q09_01.html">F = Text processing</A>
  <A HREF="q0a_01.html">G = Operations for tables</A>
  <A HREF="qf1_01.html">H = File management (Survo data files)</A>
  <A HREF="q21_01.html">I = Statistical data analysis</A>
  <A HREF="qm1_01.html">J = Mathematical operations</A>
  <A HREF="q11_01.html">K = Plotting</A>
  <A HREF="qc1_01.html">L = Numerical conversions</A>
  <A HREF="q01_11.html">X = Links and cross references</A>
  <A HREF="q01_13.html">Y = Detecting errors in command and specification words</A>
  <A HREF="q0n1_01.html">N = New functions (since writing of the Survo book 1992)</A>
  <A HREF="qs1_01.html">S = SURVO MM, special features</A>
  <A HREF="qm_1_01.html">M = SURVO MM:n erityispiirteet </A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q01_02.html">E = more information on the Survo Editor</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">      (Description still missing)
      Press BACKSPACE!
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Survo is an integrated system for statistical analysis, computing,
data base management, graphics, desktop publishing, etc.
Through its unique <B>editorial interface</B>, Survo forms a general
environment for many kinds of applications.
Technically, Survo is a collection of C programs (modules) with a common
interface established by the Survo Editor, a general text editor.
During a Survo session the editor calls Survo modules automatically
according to the user's activations. The user has no need to know
how the programs are linked together. He/she sees Survo as one
integrated environment.
Currently Survo includes over 100 C programs (.EXE files) and
hundreds of other system files. All these files are located in one
directory &lt;Survo&gt; and in its subdirectories.
Typically &lt;Survo&gt;=C:\PROGRA~1\SURVO.

The originator and main author of Survo is prof. Seppo Mustonen, PhD.
E-mail: seppo.mustonen@survo.fi

  <A HREF="q01_02.html">E = more information on the Survo Editor</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">When EDITOR is in use, all information (text, data, results and
operations) is represented in an edit field which consists, for
example, of 100 columns and 1000 rows (lines). On the left side of
the field the line numbers and a control column (originally filled
with asterisks *) are displayed.
The edit field is always partially visible on the CRT which is like
a window to the field. The user can scroll text on the screen to any
direction by the arrow keys and by the PREV and NEXT keys.

The size of the field may be altered by a REDIM operation.
the contents of the field is saved in an edit file by a SAVE oper-
ation and the edit file is reloaded to the field by a LOAD operation.
Also several fields or parts of them as well those of any text files
can be combined by a SHOW operation.

Selected lines of the edit field are printed on the paper by a PRINT
operation. PRINT has also an extended form permitting printing of
parts of several edit files in any order as an entire document
which is automatically divided into pages, etc.
See <A HREF="q03_05.html">REDIM</A>,SAVE,LOAD,SHOW,PRINT.
<A HREF="q07_07.html">C = information on control column</A>
<A HREF="q0b_10.html">P = system parameters of Survo</A>
<A HREF="q04_12.html">S = Shadows (colors and display effects)</A>
<A HREF="q113_06.html">D = Display-off mode</A>
<A HREF="q01_07.html">A = Automatic saving of the current edit field</A>
<A HREF="q01_02.html">E = more information on Survo</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">By setting a line of the form
autosave=n (where n is an integer)

```

in the system file SURVO.APU (text file usually in the system directory)
the current edit field will be saved in the SURVO.EDT file in the
temporary directory of Survo (defined by 'tempdisk' in SURVO.APU).
once in every n minutes.

Then, if by accident the contents of the edit field is lost, the
last spare copy will be found by the (sucro) command

/AUTOLOAD

or it can be scanned by

/AUTOSHOW

To omit temporary savings, set

autosave=0

in SURVO.APU or delete the 'autosave' line altogether.

```
<A HREF="q01_02.html">E = more information on EDITOR</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Making hypertext applications in Survo
```

The inquiry (help) system is a hypertext. One can activate any word
in the edit field by the key combination F2 F1. If the word is a valid
keyword, the inquiry system will display information related to it.
While reading help text, one can also move the cursor, indicate another
keyword and activate an inquiry for it by ESC (or F2 F1), etc.
All the help texts are stored in edit files on the path defined by
the system parameter qpath in the SURVO.APU file.
This path (and the help texts) can be changed by the QPATH command.

Thus it is possible to create and maintain several hypertexts related
to any topic by the same method as we are doing in the inquiry system
of Survo.

To see how the edit files are organized in order to support help
texts and menus, study the edit files of the help system, please.
The Survo help system resides on the path <Survo>\Q .

```
<A HREF="qkv0_04.html">H = Creating HTML applications in Survo</A>
<A HREF="q09_01.html">T = More information on text processing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">This option is not available anymore!
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Examples in the Help system of SURVO MM: (Not available in the
The Help system contains also examples about Survo usage. In older
versions the user had to load them into the current edit field in order
to see how they work.
```

Now it is possible to activate examples directly from the Help system.
When a 'button' [EXAMPLE] appears in the Help window, a demo related
to the current subject will be activated by double-clicking this button.
In fact, another copy of SURVO MM will then carry out this task by using
the sucro automatically. When the example is terminated, the user must
exit this second Survo and then he/she will be back in the original
Survo session.

This option highly improves learning Survo usage.

As a long-term goal we are going to extend the help system to cover
"all" activities with illustrative EXAMPLE's, but this requires
a lot of work. However, already now there are plenty of demo sucros
related to the examples of the Survo book (1992); most of them
will be connected to the Help system in the nearest future.
Currently EXAMPLE's can be found in about 40 places and they can be
found systematically, for example, by activating
/HSEARCH [EXAMPLE]

Various EXAMPLE's:

COUNT? 4 examples of various forms of the COUNT command

FORM? Example on page 36 of the Survo book

PLOT?:1,X,G New GROUPING specification in bar charts

MOUSE2? Use of the mouse when positioning texts in screen graphics

CORRESP? (Old) example related to correspondence analysis

```

<A HREF="q01_02.html">E = more information on Survo</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Links and cross references in Survo

```

Survo offers many means for navigation within Survo applications as well as for linking to other programs and to the web. In fact any word or sequence of words typed in the edit field may be used as a link to the Web.

```

<A HREF="q03_16.html">1 = Menus for job control and lists of references</A>
<A HREF="qkv0_01.html">2 = Desktop operations (by Kimmo Vehkalahti)</A>
<A HREF="q01_01.html">3 = Inquiry system (HELP)</A>
<A HREF="q04_03.html">4 = Navigation in the edit field</A>
<A HREF="q0b_29.html">5 = Soft keys or buttons</A>
<A HREF="q01_12.html">6 = Links to other programs and to the web</A>
<A HREF="q02b_02.html">7 = F1 codes (links) for getting information from the Web (WEB?)</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Links to other programs and to the web

```

Files made by other programs as well as websites can be opened while working in Survo simply by activating (path)names of files and website addresses appearing within the text in the edit field.

For example, the website of Survo is opened by activating `www.su` by the double-click or by the ESC key.

Similarly, when activating a filename of a PDF file, say `D:\PAPERS\DOC1.PDF`, Survo calls the START command of the Windows command interpreter to open this file by the program (typically Adobe Acrobat) associated to this filetype (see in Windows 'Folder options' -> 'File types').

Typical filetypes of Survo like edit files (.EDT), data files (.SVO), matrix files (.MAT), etc. can be browsed by activating their pathnames typed in the edit field using suitable 'show' commands.

Please note that if an edit line containing a link word starts by a valid Survo command word, the command is always activated in the first place.

Associations described above are defined in a Survo system file OPEN.SYS. More details (for advanced users) on the next page!

System file OPEN.SYS

This text file defines the Survo associations for immediate access to files maintained by the web browser, other programs, or Survo itself.

`LOADP <Survo>\U\SYS\OPEN.SYS`

`0 www. /OPEN`

`0 http:// /OPEN` / Only beginning of the file is displayed here.

`0 *.html /OPEN` / /OPEN is a surco which simply activates

`0 *.htm /OPEN` / the START command.

`1 *.pdf /OPEN`

`1 *.edt SHOW`

`1 *.txt SHOW`

`1 *.svo FILE SHOW`

`1 *.mat /MATSHOW`

etc.

For example, the line

`0 www. /OPEN`

tells that any string in the edit field starting by "www.", say `www.s` will be opened by the command `/OPEN www.survo.fi`. The '0' item says that interpretation of the keyword "www." is case-sensitive.

(To be continued on the next page)

Thus in this case Survo activates the command interpreter by `>START www.survo.fi` which according to standard Windows associations calls the default web browser to show the page in the given address.

Other examples:

`1 *.pdf /OPEN`

opens a PDF file with the extension .pdf by using a program which is associated to these files in Windows. '1' in front of the line tells that the keyword "*.pdf" is not case-sensitive.

`1 *.svo FILE SHOW`

creates and activates the Survo command

`FILE SHOW <Survo_data_file_with_the_extension_.SVO>`;

For example, if `G:\STUDY1\SAMPLE1.SVO` is activated, Survo tries to open a Survo data file (extension .SVO) by the command

`FILE SHOW G:\STUDY1\SAMPLE1.SVO`

The user can extend and modify OPEN.SYS by any means intended for text files.

`L = Links and cross references in Survo`

`</PRE></P><HR>`

`<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo`

`</BODY>`

`</HTML>`

`<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"`

`"http://www.w3.org/TR/html4/loose.dtd">`


```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Detecting errors in command and specification words

```

When a command is activated and it does not correspond to any known Survo operation, an error message is displayed.

If the command word is close enough to some real Survo commands, the error message includes a list of possible alternatives thus guiding the user to detect a typo etc.

The alternative commands are found by computing the Levenshtein (edit) distance d between the given command and each possible real command and listing the command words having the shortest distance.

The list of alternatives is shown when $d \leq 3$ and there are less than 6 words in the list.

In Survo, Levenshtein distance is slightly modified by permitting interchange of two consecutive letters in the edit operations (see [STRDIST](http://www.survo.fi/q0c_08.html)

Specification words:

By default, specification words are not checked.

Checking them is turned on by the command

SYSTEM spec_check=1 (or by the soft buttons SYSTEM > SPEC).

When a Survo operation is activated and checking is on, all pertinent specification words (like HOME in HOME=200,300) are compared to a list of all specification words usable in that operation.

If a specification word does not correspond to any allowed word and Levenshtein distance to the closest one is less than 3 and there are not more than 5 such words, an error message (containing a list of alternative words) is displayed and the operation is interrupted.

Since the user may have his/her own specifications which are not relevant in the current operation but resemble some actual specifications, this procedure may sometimes lead to false alarms. Therefore it is advisable to turn spec_check on only after encountering difficulties in activation. Checking may then discover typos etc.

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;("
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Keys, mouse and their functions

  <A HREF="q02f_01.html">F = Function keys (template)</A>
  <A HREF="q02_03.html">G = Function keys (list with explanations)</A>
  <A HREF="q0d_01.html">P = Key codes after pressing F2:PREFIX</A>
  <A HREF="q02_02.html">K = Other keys and key combinations</A>

  <A HREF="q0c_10.html">M = Using the mouse in SURVO MM</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;("web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;("
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Various special keys and key combinations:

```

ESC activates the operation on the current line.
 ENTER moves the cursor to the start of the next line.
 END moves the cursor to the end of the line.
 CTRL-END erases the line from the current position to the right.
 If shadow characters occur, the shadows are erased first.
 (RIGHT) moves the cursor one step to the right.
 (LEFT) moves the cursor one step to the left.
 (UP) moves the cursor one step upwards.
 (DOWN) moves the cursor one step downwards.

HOME moves cursor primarily to the first column, then to the first
 line and finally to the first position in the edit field.

TAB moves the cursor to the next tab position which is defined
 by the T characters on the first edit line having a 'T' in
 its control column. If no T line is found, columns 11,21,31,41,...
 are the default tab positions. After TAB is pressed, numbers to
 be typed will be correctly aligned to form straight columns.

```

  <A HREF="q0d_01.html">P = Key codes after pressing PREFIX</A>
  <A HREF="q02_03.html">F = Function keys</A>
  <A HREF="q01_02.html">E = more information on the Survo Editor</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Function keys:
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+ +-----+ +-----+ +-----+
| F1 | | F2 | | F3 | | F4 | | F5 | | F6 | | F7 | | F8 | | F9 | | F10 |
|   | |   | |   | |   | |   | |   | |   | |   | |   |
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+ +-----+ +-----+ +-----+
HELP  PREFIX TOUCH  DISK  FORM  MERGE REF  EXIT  INSERT DELETE

<A HREF="q02b_01.html">1 = F1:HELP(PREFIX)</A>      <A HREF="q02_06.html">2 = F2:PREFIX
<A HREF="q02_07.html">3 = F3:TOUCH</A>      <A HREF="q02_08.html">4 = F4:DISK
<A HREF="q02_09.html">5 = F5:FORM</A>      <A HREF="q02_10.html">6 = F6:MERGE
<A HREF="q02_11.html">7 = F7:REF</A>      <A HREF="q02_12.html">8 = F8:EXIT</A>
<A HREF="q02_13.html">9 = F9:INSERT</A>      <A HREF="q02_13.html">0 = F10:DELETE
<A HREF="q02_04.html">A = Tasks of function keys when ALT is pressed at the same time</A>
<A HREF="q02_22.html">F = Function keys F11 and F12 (Survo keys)</A>
<A HREF="q02_01.html">K = Keys in general</A>

```

Information can also be obtained by F1? F2? etc.

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Function keys when ALT is pressed at the same time:
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+ +-----+ +-----+ +-----+
| F1 | | F2 | | F3 | | F4 | | F5 | | F6 | | F7 | | F8 | | F9 | | F10 |
|   | |   | |   | |   | |   | |   | |   | |   | |   |
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+ +-----+ +-----+ +-----+
SOFT  WORDS  COPY  BLOCK  SEARCH  FILE  CODE  -  LINE  LINE
BUTTONS                                ACT                                INS  DEL

```

```

<A HREF="q02_14.html">1 = ALT-F1:SOFT BUTTONS</A>   <A HREF="q02_15.html">2 = ALT-F2:SOFT BUTTONS</A>
<A HREF="q02_16.html">3 = ALT-F3:COPY LINE</A>       <A HREF="q02_17.html">4 = ALT-F4:COPY LINE</A>
<A HREF="q02_18.html">5 = ALT-F5:SEARCH</A>          <A HREF="q02_19.html">6 = ALT-F6:SEARCH</A>
<A HREF="q02_20.html">7 = ALT-F7:CODE</A>            <A HREF="q02_05.html">8 = ALT-F8:CODE</A>
<A HREF="q02_21.html">9 = ALT-F9:LINE INS</A>        <A HREF="q02_21.html">0 = ALT-F10:LINE INS</A>
<A HREF="q02_03.html">A = Tasks of function keys without ALT</A>
<A HREF="q02_22.html">F = Function keys F11 and F12 (Sucro keys)</A>
<A HREF="q02_01.html">K = Keys in general</A>

```

Information can also be obtained by AF1? AF2? etc.

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
    <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
    <META NAME="Generator" CONTENT="SURVO MM">
    <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
    <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
    <META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
    <META NAME="Classification" CONTENT="help system">
    <META NAME="Keywords" CONTENT="Survo, help, hypertext">
  </HEAD>
  <BODY>
    <H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&#160;
    <P><PRE CLASS="HelpText">This key has not yet (any) function in Survo!
  </PRE></P><HR>
  <DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
    <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
    <META NAME="Generator" CONTENT="SURVO MM">
    <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
    <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
    <META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
    <META NAME="Classification" CONTENT="help system">
    <META NAME="Keywords" CONTENT="Survo, help, hypertext">
  </HEAD>
  <BODY>
    <H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&#160;
    <P><PRE CLASS="HelpText">F2:PREFIX
    PREFIX is a prefix key which alters the functions of other keys
    temporarily. See <A HREF="q0d_01.html">PREFIX</A>.
    <A HREF="q0d_01.html">P = Key codes after pressing F2:PREFIX</A>
  </PRE></P><HR>
  <DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

```

"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">F3:TOUCH
  TOUCH enters the touch mode
  <A HREF="qmt_01.html">T = Information on the touch mode</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">F4:DISK
  DISK selects the data disk/path. See also <A HREF="q03_07.html">DISK</A>?
  <A HREF="q03_07.html">D = DISK</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>

```

```

<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">F5:FORM
  FORM selects various display attributes, colors etc.
  <A HREF="q04_12.html">S = Information on display attributes</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">F6:MERGE
  MERGE splits the current line into two lines from the position of the
  cursor (provided that the next line is empty)
  or if the current line to the right from the cursor is empty,
  the next line will be connected to the current line.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">F7:REF
  REF defines the current cursor position as a reference point.
  If REF is pressed another time while the cursor is indicating
  another point, the display corresponding to the reference point
  will be restored.
  If REF is pressed another time when the cursor is in the reference
  point, the current reference point is released and another may
  be selected.
  The reference point is explicitly released by PREFIX D .
  A new reference point is explicitly set by ctrl-F7 which
  is a shortcut for PREFIX D REF.

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">F8:EXIT
EXIT terminates the Survo session.
If Survo is in the display-off mode (set by PREFIX L o), EXIT
only restores the normal display.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">F9:INSERT
INSERT selects/deselects the insert mode.

F10:DELETE
DELETE deletes the current character.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ALT-F1:SOFT BUTTONS
makes the soft buttons (below the main window of SURVO MM) visible.
F2 ALT-F1 makes them invisible.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ALT-F2:WORDS
WORDS initiates the definition of a sequence of words (sentence)
either to be moved to another place or deleted.
Prompts for alternative actions will appear on the bottom line.
The sequence of words is defined by indicating the first letter
of the first word by WORDS and the last letter of the last word
by WORDS again.
Thereafter the sequence is deleted by CTRL-END or moved to another
place indicated by the cursor by WORDS. In the latter case the
cursor should usually point to a space between two words.
To preserve the sequence in its original position, enter insert
mode before pressing WORDS. In any case, the sequence is saved
in a special file and it can be copied to any place later
by pressing WORDS in that place 4 times.
(continued on next page)

```

WORDS (continued)

```

The text chapters are also automatically adjusted if a model
for a suitable TRIM operation is given by a line of the form
autotrim=TRIM3 72
in the SURVO.APU file (See <A HREF="q0b_10.html">APU</A>?).
(See also <A HREF="q02_17.html">BLOCK</A>?)
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--

```


Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ALT-F3: COPY LINE
COPY LINE copies a line to the current cursor position.
(Prompt 'Line to be copied?' appears on the bottom line.)
```

When copying lines in a large edit field (long line numbers)
a line to be copied can be temporarily marked by pressing F2 -
and then it can be copied to any other line by giving character -
as a line label.

(As suggested by Reijo Sund) several lines (lines L1-L2) may be copied
entering in the prompt:

Line to be copied? L1,L2

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ALT-F4: BLOCK
BLOCK initiates a sequence of key strokes for defining a rectangular
block in the current edit field. Prompts for alternative actions
will appear on the bottom line. A block is defined by indicating
its two opposite corners (by BLOCK) and it can then be copied
to various places (by BLOCK) and/or it can be erased (by CTRL-END).
To interrupt these actions after BLOCK has pressed, press DELETE.
If the insert mode is not on, the blocks will overwrite existing
parts of the edit field.
If the insert mode is on, new lines will be automatically inserted
below the current line and the block is copied to these lines.
(See also <A HREF="q06_06.html">WORDS</A>?)
When a block defined by the BLOCK (alt-F4) key has been moved or
erased at least once, it is also saved in a temporary file
&lt;Survo&gt;\TMP\SURVO.BLO .
The latest block (although not anymore highlighted in the edit field)
can then be copied to the current edit field simply by pressing
```

the BLOCK key four times.

These tasks can also be performed by the mouse (See MOUSE6?)

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ALT-F5:SEARCH
SEARCH initiates a search in the edit field. The user is
prompted to enter the characters of the search string one after
another and the first occurrence of the string is shown
immediately in each stage. The process is interrupted until the
given string is not found anymore or by pressing ENTER.
During the search, other cases are found by pressing ESC.
(See also <A HREF="q05_13.html">FIND</A>?)
F2 | works similarly but limits the search for words starting
from the first column in the edit field.
F2 ALT-F5:
works as ALT-F5 but the search goes backwards in the edit field.
(See also -FIND?)

A search can be started from a ready-typed keyword touched
by the cursor. Then after ALT-F5 or F2 ALT-F5 press ALT-F5 again.
A search can also be started from the keyword used in the previous
search by pressing F5 after ALT-F5 or F2 ALT-F5.
HOME takes to the beginning/end of the edit field, depending on
the direction of the search.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```

</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ALT-F6:FILE ACT
  FILE_ACT initiates activation of fields in Survo data files.

PREFIX ALT-F6: {pre}{file act}
  activates a 'new' data file to be selected by the user.

  <A HREF="qf1_01.html">F = FILE operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ALT-F7:CODE
  CODE types characters not readily available on the keyboard.
  At first prompt 'CODE?' is displayed and the decimal value
  of the character is entered. CODE holds this character until
  it is changed by pressing PREFIX and then CODE.
  If no code value is given, CODE will be the current character
  indicated by the cursor. Another way to type special characters
  is provided by the key combination PREFIX P. (See <A HREF="q0d_01.html">PREFIX</A>)
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ALT-F9:LINE INS
  ALT-INSERT inserts an empty new line.
  ALT-F10:LINE DEL

```

```

ALT-DELETE deletes the current line.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Function keys F11 and F12 are available as shortcut keys for
activation of important sucros selected by the user.
The functions (names of sucros) are given by 'sucro_key' lines
in the SURVO.APU file as follows:
          alternative key
sucro_key1=&lt;sucro for F11&gt;      Ctrl-A
sucro_key2=&lt;sucro for F12&gt;      Ctrl-B
sucro_key3=&lt;sucro for shift-F11&gt;
sucro_key4=&lt;sucro for shift-F12&gt;      Ctrl-D
sucro_key5=&lt;sucro for ctrl-F11&gt;     Ctrl-E
sucro_key6=&lt;sucro for ctrl-F12&gt;     Ctrl-F
sucro_key7=&lt;sucro for alt-F11&gt;      Ctrl-G
sucro_key8=&lt;sucro for alt-F12&gt;

For example, one possible selection could be:
sucro_key1=V          / Show the current menu of Survo jobs
sucro_key2=SURVO-START / Show the main menu of Survo
sucro_key3=SURVO-SETUP / Show the menu of system parameters setting
The easiest way to see the current list of sucro keys and to maintain it
is to use the /SURVO-SETUP sucro (which also should have a place
in that list; see the preceding example).
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>

```

<H1>&
 <P><PRE CLASS="HelpText">Survo operations and commands can be typed on any line in the edit
 Each operation consists of an operator designator (word) and of a list of
 parameters. In more complicated operations, extra specifications of the form
 <specification designator>=<list of parameters> may appear in the field.

For example,

```
11 *PRINT 21,100    / Print lines 21-100.
12 *LOAD PART1      / Load edit file PART1 to edit field.
13 *SORT A,B,K       / Sort lines A-B according to a mask on image line K.
14 *PLOT MALES       / Plot data MALES as a bar chart.
15 */DATE            / Type the current date.
16 *                 (Text after an isolated '/' is a comment.)
```

are typical operations. The last one (/DATE) is not an original Survo command but a user-defined sucro command made by using the macro language of Survo. '/' in front of the command word always refers to a sucro. It is strongly recommendable to type command words like PRINT, LOAD, SAVE in upper case letters (not Print, print).

A command or operation is activated either by a double-click of the mouse or by moving the cursor to the command line and by pressing key ESC.

Please note that a double-click of the RIGHTmost mouse button leads to the help system (showing information about the word indicated by the mouse).

Continuous activation:

To carry out a series of consecutive operations (run mode), press first F2:PREFIX and then ESC. Such a series must not contain sucro commands.

In Survo operations, lines of the edit field are referred to by their indices (1,2,3,...) or by their labels. A label is a single character (like A,X,a,x) placed in the control column. Also END (END+3, END-5) are possible line labels, END indicating the last non-empty line in the field. Similarly CUR refers to the current line indicated by the cursor.

Thus CUR, CUR+5, A, A-5 are permitted line labels.

Example:

```
PRINT CUR+1,END / Print lines below the current line.
```

To specify columns in Survo operations, the column indices are not used in general. The columns are indicated by various masks (images, patterns) on image lines. For instance, image line in numerical sort (see SORT) has the structure " 12345 " where the location of the mask 12345 corresponds to the sort key column.

In statistical operations, the data sets to be analyzed may be located either in the edit field or in special data files and they are referred to by their names given usually by a DATA definition.

(See DATA,FILE)

```
<A HREF="qtu6_01.html">S = Using ready-made sucros</A>
<A HREF="q02a_03.html">U = User-defined operations</A>
<A HREF="q03_01.html">C = Information on control operations</A>
<A HREF="q23_01.html">D = Data in statistical operations</A>
<A HREF="q07_06.html">X = Extra specifications in Survo operations</A>
<A HREF="q07_09.html">B = Border and fence lines</A>
<A HREF="q07_08.html">H = Hidden commands</A>
<A HREF="q02a_05.html">L = Working with large data sets</A>
<A HREF="q01_02.html">E = More information on EDITOR</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">A command or operation is activated either by a double-click of the mouse
by moving the cursor to the command line and by pressing key ESC.

```

Please note that a double-click of the RIGHTmost mouse button leads to the help system (showing information about the word indicated by the mouse).

Continuous activation:

To carry out a series of consecutive operations (run mode), press first F2:PREFIX and then ESC. Such a series must not contain sucro commands.

In Survo operations, lines of the edit field are referred to by their indices (1,2,3,...) or by their labels. A label is a single character (like A,X,a,x) placed in the control column. Also END (END+3, END-5) are possible line labels, END indicating the last non-empty line in the field. Similarly CUR refers to the current line indicated by the cursor.

Thus CUR, CUR+5, A, A-5 are permitted line labels.

Example:

PRINT CUR+1,END / Print lines below the current line.

To specify columns in Survo operations, the column indices are not used in general. The columns are indicated by various masks (images, patterns) on image lines. For instance, image line in numerical sort (see SORT) has the structure " 12345 " where the location of the mask 12345 corresponds to the sort key column.

In statistical operations, the data sets to be analyzed may be located either in the edit field or in special data files and they are referred to by their names given usually by a DATA definition.

(See DATA,FILE)

```

<A HREF="qtu6_01.html">S = Using ready-made sucros</A>
<A HREF="q02a_03.html">U = User-defined operations</A>
<A HREF="q03_01.html">C = Information on control operations</A>
<A HREF="q23_01.html">D = Data in statistical operations</A>
<A HREF="q07_06.html">X = Extra specifications in Survo operations</A>
<A HREF="q07_09.html">B = Border and fence lines</A>
<A HREF="q07_08.html">H = Hidden commands</A>
<A HREF="q02a_05.html">L = Working with large data sets</A>
<A HREF="q01_02.html">E = More information on EDITOR</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The user can extend Survo by new operations. There are three main
alternatives:

```

1. The new operation is programmed in C. Information can be found in the report S.Mustonen: Programming SURVO 84 in C .
Information about programming SURVO MM program modules can be obtained from S.Mustonen on request.

2. The new function is constructed as a sucro by using existing operations as building blocks.

3. Matrix chains

```

<A HREF="qtu1_01.html">S = Sucros</A>
<A HREF="qmr1_01.html">M = Matrix chains (MATRUN)</A>
<A HREF="q01_02.html">E = more information on the Survo Editor</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The ESC key is the traditional key for activating commands and oper
in Survo.
In SURVO MM it is also possible to activate commands simply by
a double-click of the mouse (leftmost button).

```

A command or operation is activated either by a double-click of the mouse or by moving the cursor to the command line and by pressing key ESC.

Please note that a double-click of the RIGHTmost mouse button leads to the help system (showing information about the word indicated by the mouse).

Continuous activation:

To carry out a series of consecutive operations (run mode), press first F2:PREFIX and then ESC. Such a series must not contain sucro commands.

In Survo operations, lines of the edit field are referred to by their indices (1,2,3,...) or by their labels. A label is a single character (like A,X,a,x) placed in the control column. Also END (END+3, END-5) are possible line labels, END indicating the last non-empty line in the field. Similarly CUR refers to the current line indicated by the cursor.

Thus CUR, CUR+5, A, A-5 are permitted line labels.

Example:

PRINT CUR+1,END / Print lines below the current line.

To specify columns in Survo operations, the column indices are not used in general. The columns are indicated by various masks (images, patterns) on image lines. For instance, image line in numerical sort (see SORT) has the structure " 12345 " where the location of the mask 12345 corresponds to the sort key column.

In statistical operations, the data sets to be analyzed may be located either in the edit field or in special data files and they are referred to by their names given usually by a DATA definition.

(See DATA,FILE)

```
<A HREF="qtu6_01.html">S = Using ready-made sucros</A>
<A HREF="q02a_03.html">U = User-defined operations</A>
<A HREF="q03_01.html">C = Information on control operations</A>
<A HREF="q23_01.html">D = Data in statistical operations</A>
<A HREF="q07_06.html">X = Extra specifications in Survo operations</A>
<A HREF="q07_09.html">B = Border and fence lines</A>
<A HREF="q07_08.html">H = Hidden commands</A>
<A HREF="q02a_05.html">L = Working with large data sets</A>
<A HREF="q01_02.html">E = More information on EDITOR</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Working with large data sets
```

In normal usage Survo is fairly verbose by telling on the screen various details about current events when commands and operations are activated. By default it also saves results of many operations as text in a special output file (text file) given by 'eout' in SURVO.APU (default is <Survo>\TMP\RESULTS). When working with large data sets (especially in simulation experiments) these subsidiary effects may be very time-consuming. Then, to spare time, certain special settings are recommended.

Saving results to a text file is disabled by the command
OUTPUT - (See [q0e_02.html](http://www.survo.fi/q0e_02.html)>OUTPUT?).

Unessential display of intermediate results in many operations is removed
by using a specification PRIND=0 and/or setting prind=0 in SURVO.APU.

In certain operations RESULTS=0 also eliminates unnecessary output.

See an example on the next page!

```
.....
Example: Correlations with different output options
Creating a sample of 10000 observations
from a 200-dimensional multivariate normal distribution:
p=200 r=0.7
MAT R=IDN(p,p,1-r)+CON(p,p,r)
MNSIMUL R,*,TEST,10000,0
```

```
.....
TIME COUNT START      / Calculations on a 366 MHz Pentium
CORR TEST / PRIND=1    / In all cases results saved in CORR.M and MSN.M
TIME COUNT END  39.870 / Temporary display of correlations took 20 sec.
```

```
.....
OUTPUT - / Activate this before CORR!
TIME COUNT START
CORR TEST / PRIND=1
TIME COUNT END  10.270 / Listing of case numbers took almost 4 sec.
```

```
.....
OUTPUT - / Activate this before CORR!
TIME COUNT START
CORR TEST / PRIND=0
TIME COUNT END  6.370 / Time when unessential displays are removed
```

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
```

```
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
```

F1 is a prefix key which alters the functions of other keys.

F1 pressed twice is the HELP key and enters the inquiry system of Survo.

```
<A HREF="http://www.survo.fi/q01_01.html">H = More information about the help system</A>
<A HREF="http://www.survo.fi/q02b_02.html">W = F1 codes for getting information from the Web</A>
<A HREF="http://www.survo.fi/q02b_03.html">F = Other F1 codes</A>
<A HREF="http://www.survo.fi/q02_01.html">K = Key codes</A>
```

```
</PRE></P><HR>
```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">
Getting information from the Web by F1 key combinations

```

F1 G calls Google by the current keyword(s).
 F1 S calls Google by the current keyword(s) and "Survo".
 F1 W calls Wikipedia by the current keyword(s).
 F1 D calls the Free Online Dictionary by the current keyword(s).

Before pressing the above F1 key combinations the cursor must
 touch the keyword in the edit field, or
 touch the space between a combination of two keywords.
 A sequence of several keywords can also be painted by the rightmost
 mouse button.

The default settings for key codes above can be changed by
 SURVO.APU lines of the following form

```

F1-code  SURVO.APU
F1 g      google=<A HREF="http://www.google.com/search?q=">http://www.google.com/search?q=
F1 W      wiki=<A HREF="http://en.wikipedia.org/wiki/">http://en.wikipedia.org/wiki/</A>
W1 D      dict=<A HREF="http://www.thefreedictionary.com/">http://www.thefreedictionary.com/</A>

```

User-defined F1 codes for Web links

Ten various F1 Web settings can be set by lines
 web0, web1, web2,..., web9 corresponding to codes
 F1 0, F1 1, F1 2,..., F1 9

For example, activating the command

```
SYSTEM web1=<A HREF="http://www.youtube.com/results?search_query=">http://www.youtube.com/
```

gives access to YouTube pages in the current Survo session.
 Then by touching the word Sibelius in the edit field and by F1 1
 we get hundreds of links to videos where music of Sibelius is played.
 The same YouTube setting will be created permanently by the command

```
SYS  web1=<A HREF="http://www.youtube.com/results?search_query=">http://www.youtube.com/
```

User-defined F1 codes for Web links (continued)

These settings can be defined even more accurately by giving, for example,

```
web7=<A HREF="http://www.google.com/search?q=||survo||+||%22">http://www.google.com/search
where || works as a delimiter for the following items:
<A HREF="http://www.google.fi/search?q=">http://www.google.fi/search?q=
```

address of the f
survo additional keyword
+ separator of keywords
%22 "quotation mark"

"quotation mark" is a string of characters surrounding the sequence of keywords. %22 is the inherent notation for it in Google. The defaults are: no additional keyword, separator is '+', no "quotation mark".

```
<A HREF="q02b_01.html">1 = More about F1 codes</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
F1 codes:
```

F1 F1: Enter the Help system of Survo

F1 O:

When the cursor touches a pathname of a file, this file is opened by a program associated in Windows to that file type.

F1 L:

lists the characters used in the control column of the current edit field in alphabetic order. The characters will appear on a new line inserted below the current edit line.

This facility helps in finding free characters for row labels.

F1 V:

When the cursor indicates a word which is a name of a variable in the current active Survo data file, F1 V displays the extended form of the name on the message line until ENTER is pressed or at most for 10 seconds.

F1 codes (continued);

F1 #:

creates a fence structure for a command when the cursor is in the first position of the command line and the command starts from that position.

See FENCE?

F1 J:

is a generalization of F2 J.

It continues a phrase typed as first words on an edit line.

F1 <arrow_key>:

moves the cursor in the current edit field to

the last column in use (F1 RIGHT), the first column (F1 LEFT),

the last line (F1 DOWN), the first line (F1 UP).

F1 codes (continued);

F1 A starts the Survopoint display mode and

F1 a interrupts that mode

This mode enables displaying variable lines either systematically or randomly on selected places in the main window of Survo.

1 = More about F1 codes

2 = More about Survopoint display mode

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">

HELP | F1 | F2 | PREFIX (Lower alternative
SOFTKEYS | | | WORDS is valid when ALT
is pressed at the
same time.)

TOUCH | F3 | F4 | DISK
COPY LINE | | | BLOCK

FORMAT | F5 | F6 | MERGE
SEARCH | | | FILE ACT

REF | F7 | F8 | EXIT
CODE | | | -

INSERT | F9 | F10 | DELETE (This list may be
LINE INS | | | LINE DEL displayed simply
by activating F.)

K = More information on keys G = Fur

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Control operations:
  <A HREF="q03_04.html">1 = Dimensions of the edit field and window (REDIM, INIT, RESIZE)</A>
  <A HREF="q03_07.html">2 = Selecting the path for data (CD, DISK key, DISK)</A>
  <A HREF="q07_01.html">3 = Selecting variables and observations (VARS,MASK,SELECT,IND,C)</A>
  <A HREF="q0e_01.html">4 = Output control</A>
  <A HREF="q03_14.html">5 = Operating system (OS) commands</A>
  <A HREF="q0b1_02.html">6 = Time measurement (TIME)</A>
  <A HREF="q0c_01.html">7 = Code conversions (CODES)</A>
  <A HREF="q04_03.html">8 = Moving the cursor to another line (GOTO, - lines)</A>
  <A HREF="q06_05.html">9 = WAIT</A>
  <A HREF="q0c_09.html">W = Window management</A>
  <A HREF="q0b_10.html">S = Changing the Survo system parameters (SURVO.APU file)</A>
  <A HREF="qtu1_01.html">T = Tutorial mode and sucros (TUTOR, TUTLOAD, TUTSAVE)</A>
  <A HREF="q0f_01.html">Q = Selecting inquiry files (QPATH)</A>
  <A HREF="qkv0_01.html">J = Desktop functions (by Kimmo Vehkalahti)</A>
  <A HREF="q03_16.html">M = Creating menus for job control</A>
  <A HREF="q0s1_01.html">V = Playback of sound files (PLAY SOUND)</A>
  <A HREF="q03_02.html">O = Other control operations</A>

  <A HREF="q01_02.html">E = more information on the Survo Editor</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Control operations (continued):

```

```

<A HREF="q0f_02.html">D = Screen colors (COLOR)</A>
<A HREF="q0f_04.html">L = Listing directory entries (DIR)</A>
<A HREF="q04_14.html">H = Checking existence of a file (CHECK)</A>
<A HREF="q0c_07.html">I = Modifications of edit columns and lines (COLX)</A>
<A HREF="q0c_08.html">S = Levenshtein distance between two strings (STRDIST)</A>
<A HREF="q03_18.html">C = Displaying an edit line below the Survo window (LOWLINE)</A>
<A HREF="q03_19.html">P = Survopoint display mode</A>

<A HREF="q01_02.html">E = more information on the Survo Editor</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q03_01.html">C = more information on control operation</A>
<A HREF="qf1_01.html">D = more information on file management</A>
<A HREF="q01_02.html">E = more information on the Survo Editor</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q03_05.html">1 = REDIM</A>
<A HREF="q03_06.html">2 = INIT</A>
<A HREF="q03_17.html">3 = RESIZE</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

```

"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">REDIM &lt;# of lines&gt;,&lt;# of columns&gt;
redimensions the edit field, provided that the new dimensions are not
too small for the present contents of the field. Max. # of columns is
10006.

REDIM &lt;# of lines&gt;,&lt;# of columns&gt;,&lt;# of shadow lines&gt;
redimensions the field and changes the maximum number of shadow
lines (lines with special display attributes). Default is 20.
SURVO MM: When typing text the number of shadow lines is increased
automatically according to the needs of the user.
  <A HREF="q03_01.html">C = more information on control operations</A>
  <A HREF="qf1_01.html">D = more information on file management</A>
  <A HREF="q01_02.html">E = more information on the Survo Editor</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">INIT &lt;# of lines&gt;,&lt;# of columns&gt;,&lt;# of shadow lines&gt;
initializes the Survo system parameters, clears the edit field,
redimensions the field, and (optionally) changes the maximum number of shadow
lines. Default is 20.
  <A HREF="q03_01.html">C = more information on control operations</A>
  <A HREF="qf1_01.html">D = more information on file management</A>
  <A HREF="q01_02.html">E = more information on the Survo Editor</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The current data path is shown at the end of the header line of
the Survo main window. Thus all files on this path can be referred to
simply by their names without a path designation.

```

The data path can be changed by the CD command and it may be changed automatically during the Survo session when the user makes selections from various menus, etc.

When the data path is on the system path of Survo, the part of the system path is designated simply as <Survo>. It is strongly recommended that the user creates for his/her tasks own data paths which are not on the <Survo> path. The <Survo> path is used by the Survo programs, other system files, and demo files. Thus notation <Survo> can be used only in certain basic and technical commands of Survo.

```

<A HREF="q03_08.html">1 = CD (and DISK) command and other ways of changing the data path
<A HREF="q03_10.html">2 = Commands accepting &lt;Survo&gt; notation for the system path</A>
<A HREF="q03_09.html">3 = F4:DISK key</A>

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--

```

```

    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">CD &lt;path designation&gt;
selects the data path. By default all operations of Survo use this path.
The current choice is displayed on the header line of the edit field.
If the given path does not exist, an error message is displayed.
The OS default disk and directory are changed accordingly. This helps
giving OS commands from Survo, as no pathnames need to be specified.
If no path is given, the default data path, given by the system parameter

```


'edisk', is used. (See also SYSTEM?).

DISK <path designation>

also selects the data path, but does not change the OS path. This was the original setting in Survo: the OS default path was the same as the system path (e.g. C:\E) all the time. Since v.5.00, and the desktop operations

(see DESKTOP?), this has been changed to allow easier reference to OS commands without specifying the pathnames, for example. To keep using of the system coherent, only either one of DISK and CD can be used. Now CD is used instead of DISK in all sucro tools of the system, so its usage is strongly recommended. DISK is considered obsolete, but it may be needed in some special applications.

C = more information on control operations

D = more information on file management

E = more information on the Survo Editor

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System;(web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System;(web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Another way to select the data path is to press the F4:DISK key as needed. A special list of alternatives can be defined by setting system parameters 'last_disk' and 'paths'. 'Z' as 'last_disk' implies that the selection given by 'paths' should be used when DISK is pressed. For example, 'paths=C:\MYDATA\C:\E\D\,D:\DAT2\,A:'. The DISK key can be disabled by setting 'last_disk=Z:' with no 'paths' at all.

Without 'last_disk=Z:' the DISK key gives the standard alternatives, say, A:, B:, C:\E\D\, D: in turn on the header line. (In this particular case the paths are changed by DISK, not by CD as above.)

There are plenty of other ways to change paths. For example, the desktop operations DD, INDEX and TREE do that. By organizing jobs to dynamic menus using the V-sucro, paths are changed automatically by one keystroke. See: /V ?

C = more information on control operations

D = more information on file management

E = more information on the Survo Editor

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

```

-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Survo commands accepting &lt;Survo&gt; notation for the system p

```

SAVE, LOAD, SAVEP, LOADP, SHOW, TUTSAVE, TUTLOAD, CODES SAVE, CODES LOAD, UPDATE, CHECK, desktop operations (see DESKTOP?), and OS commands (when activated from Survo).

Commands for data management and statistical methods, etc. do not accept <Survo> notation because data files and other files of the user should be kept in directories outside the <Survo> path.

Examples:

LOAD <Survo>\U\START
loads the START edit field of Survo

>COPY <Survo>\U\SYS\PS.DEV A:
copies the Survo PostScript driver to the (floppy) disk A:

```

<A HREF="q03_01.html">C = more information on control operations</A>
<A HREF="qf1_01.html">D = more information on file management</A>
<A HREF="q01_02.html">E = more information on the Survo Editor</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Many statistical operations in Survo assume that the user has
selected the variables and indicated their tasks in the analysis by
activating the fields in the data file (for example, by key FILE_ACT)
or by writing either a VARS or a MASK specification in the current
edit field.

```

If both VARS and MASK is given, the selection provided by VARS is used.

```

<A HREF="q03_12.html">1 = VARS specification</A>

```

```

<A HREF="q03_13.html">2 = MASK operation and specification</A>

<A HREF="qf4_04.html">M = Setting masks by FILE MASK</A>
<A HREF="q07_02.html">O = Selecting observations</A>
<A HREF="q03_01.html">C = More information on control operations</A>
<A HREF="q21_01.html">S = More information on statistical operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">VARS=&lt;list of variables>
is a specification which selects the variables into statistical analysis.
Another way to do that is to use a MASK specification, but VARS always
overrides MASK and permanent activation status in the data file.
For example,
VARS=Height,Weight,Test1
selects the variables Height,Weight and Test1 which all are activated
by 'A' in the current data file; other variables will be passive.
VARS=ALL means that all variables are to be selected.
VARS=ALL,-Name,-Test1 means that all variables except Name and Test1 are
to be selected.
The task of each variable can be given in parentheses in the VARS list.
For example, in the LINREG operation
VARS=Height(X),Weight(X),Test1(Y),Residual(R)
selects the variables and indicates their roles in the analysis as well.

The influence of VARS is only temporary and does not change the
activation status in the data file.
(See also <A HREF="q03_13.html">MASK</A>?)
<A NAME="VV"></A> <A HREF="q03_11.html">V = More information on selection of variables
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>

```

```

<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MASK without parameters is an operation which leads to the activation
procedure for the fields of any Survo data file. (Another way to
start the selection and activation procedure is to press key FILE_ACT, but
this does not update any MASK line in the edit field.)

```

After return from MASK procedure to normal edit mode the current line will contain a MASK specification of the form
 MASK=--XX-A-YX-R---AA- (for example)
 indicating the activated fields in the current data file.
 If a MASK specification appears in the current subfield, when a statistical operation like CORR,LINREG,TAB etc. is activated, it determines the roles of the variables in the analysis.
 However, a possible VARS specification always overrides MASK in statistical operations (See [VARS](http://www.survo.fi/q03_12.html)).

By activation of a MASK line with a given mask string (MASK=--XX-A-- , for example) the selection of the fields determined by that string will be shown for a selected file and this selection may be adjusted. After return to edit mode again the MASK line will show the latest selection.

Since a data file can contain several optional mask columns (default number is 7), any of them can be used to indicate the selected variables by giving its number #1,#2,#3,,, as MASK=#7.
 A partial selection according to a mask column is also possible. For example, MASK=#7(XY) selects the fields indicated by X or Y in mask column 7.
 Activation of a MASK line of this type will lead to a file activation display of that mask column for additional changes.

```

<A HREF="qf4_04.html">M = Setting masks by FILE MASK</A>
<A HREF="q03_11.html">V = More information on selection of variables</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">OS (operating system) commands are activated from the Survo Editor
putting '&gt;' in front of the command.

```

For example,
 >DIR A:
 lists the files of the A disk and
 >COPY A:*.TXT C:\DATA

copies all .TXT files from A: to directory DATA on C:

Survo does not use any environment variables of OS but some other programs called from Survo may need them.

Environment variables of OS are set by PUTENV command.

Example:

PUTENV R_PROFILE=D:\R\SURVO.R

```
<A HREF="q03_15.html">A = Calling other programs from Survo</A>
<A HREF="q03_01.html">C = more information on control operations</A>
<A HREF="qf1_01.html">D = more information on file management</A>
<A HREF="q01_02.html">E = more information on the Survo Editor</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Calling other programs from Survo
```

Other programs may be started during a Survo session by a command of the form

> <pathname_of_program_file>

Due to ' > ' in front of the command the Survo session may be continued normally and in a similar way several other programs may be put into action simultaneously.

For example, another Survo session is called by

> <Survo>\U\S.EXE

This command may have a parameter, a name of a Survo that starts the other Survo session.

The command

><pathname_of_program_file>

(only one ' > ' in front of the command) does the same thing but the Survo session will be frozen until the other program has been terminated.

```
<A HREF="q03_01.html">C = more information on control operations</A>
<A HREF="qf1_01.html">D = more information on file management</A>
<A HREF="q01_02.html">E = more information on the Survo Editor</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
```

```

-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Creating menus for job control

```

In order to facilitate moving between various applications the user can create own menus (Lists of jobs) referring to various edit fields, sucros, and other menus.

These services are provided by a sucro /V which is called simply by the soft button MENU or by the F11 or ctrl-A key. More information about this option is obtained by activating /V and pressing ‘?’.

Still another option is available for creating menus for applications in the form of Lists of References. Information of this technique is given by activating the command /REF-HELP. This option is meant chiefly for temporary links to various tasks in Survo.

```

<A HREF="q03_01.html">C = more information on control operations</A>
<A HREF="qf1_01.html">D = more information on file management</A>
<A HREF="q01_02.html">E = more information on the Survo Editor</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">RESIZE &lt;# of lines>&lt;# of columns>&lt;
changes the dimensions of the SURVO MM main window.
RESIZE without parameters gives the standard dimensions of earlier Survos
(SURVO 84C and SURVO 98) and is the same as
RESIZE 23,72
Please note that the parameters refer to numbers of visible lines and columns.
The minimal setting is
RESIZE 1,72 / i.e. only one line of 72 characters.
The maximal reasonable setting depends on the font size in use.
For example, 100 lines and 250 columns may be a possible setting and
useful when scanning large tables in the edit field etc.

```

RESIZE 30,80

may be a proper choice in standard text editing tasks.

/WINMAX resizes the main window to its maximum size using the current font.

/LMAX works as /WINMAX but increases only the number of visible lines.

Setting of the font size etc. is described in WIN?

```
<A HREF="q03_01.html">C = more information on control operations</A>
<A HREF="qf1_01.html">D = more information on file management</A>
<A HREF="q01_02.html">E = more information on the Survo Editor</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LOWLINE &lt;edit_line>
displays text of &lt;edit_line>; on the line below the current
Survo window. LOWLINE without a parameter removes the text from that
'lowline'.
LOWLINE is useful, for example, when scrolling a long table in the
edit field. Then the header line for the columns can be kept visible.
```

LOWLINE corresponds to the {message} command in sucros.

```
<A HREF="q03_01.html">C = more information on control operations</A>
<A HREF="qf1_01.html">D = more information on file management</A>
<A HREF="q01_02.html">E = more information on the Survo Editor</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
```

<H1>&
 <P><PRE CLASS="HelpText">Survopoint display mode:
 To enliven the display in the main window of Survo, variable text
 may be shown on selected "Survopoint" lines.
 The contents of Survopoint lines are varying either systematically
 or randomly according to information given in the current edit field,
 typically outside the current window.
 Example:

```
11 *
12 ~ (The contents of this line will be alternating)    ~a
13 *
14 a 20 3 S
15 * This is the first alternative.
16 * Here is the second alternative.
17 * The third alternative is here.
```

Please load this text into the edit field and remove leading characters
 so that control characters are those shown above.
 If you then press keys F1 and A, the text on line having '~' in its
 control column will be changing systematically between the three
 alternatives. The key combination F1 a interrupts this display mode.

In the previous example, the only Survopoint line was
 12 ~ (The contents of this line will be alternating) ~a
 The marking ~a at the end of the line tells that the rule how this
 line alternates is given on a line having 'a' in its control column.
 The 'a' line was

```
14 a 20 3 S
```

and there 20 gives the time interval between changes, 3 is the number
 of alternatives, and 'S' indicates that the line is changed
 systematically.

Actually in the Survopoint display mode no line is moved in the edit
 field. Since the line to be displayed is always referred to by a pointer
 variable, merely pointers are updated and so this mode consumes very
 little computer power.

In one edit field, 26 alternating lines may exist simultaneously.
 Each of them is indicated (by default) by a '~' in the control column
 and a marking ~x at the end of the line where x is one of the lowercase
 characters from 'a' to 'z'.

Various options for the rule of alternating are
 Systematic:

<time> <# of alternatives> S

Uniformly random:

<time> <# of alternatives> U

Random by given probabilities:

<time> <# of alternatives> p1 p2 p3 ...

where p1+p2+p3+...=1

The <time> parameter is an integer telling that the change takes place
 just once in <time> consecutive refreshments of the Survo main window.

The refresh rate (in this display mode only) is given by the system
 parameter Survopoint_disp in SURVO.APU and it is 50 ms by default.

The default control character '~' for Survopoint lines can be changed
 by the system parameter Survopoint.

A mishmash collection of several simultaneous Survopoint lines is found
 by activating

```
LOAD &lt;Survo&gt;\U\D\SPOINT
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```



```

"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SAVE &lt;edit file&gt;
saves the contents of the current edit field in file &lt;edit file&gt;.EDT
on the data disk. Also all display attributes of the text (like
underlining) are saved.
This is the normal procedure in saving edit fields.
Information about various edit file formats: See <A HREF="qs1_04.html">SAVEMM</A>?
To load a field saved by SAVE use LOAD &lt;edit file&gt;.
To save an edit field in a standard text file, use COPY or SAVEP.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LOAD &lt;edit file&gt;
loads an edit file &lt;edit file&gt;.EDT (saved by SAVE) from the data disk.
The former contents of the edit field is cleared.
To load parts of an edit file without spoiling the edit lines above the
current line, use SHOW.

General information about Survo by pressing F1 (HELP)

LOAD &lt;edit file&gt;,L1,L2,C
loads &lt;edit file&gt; and displays it by showing L1 as the first visible
line, putting the cursor on line L2 and to column C. Default for C is 1,
for L2 it is L1 and for L1 it is 1.
This extended form of the LOAD operation is especially useful in
automatic sequences of operations when moving from an edit field to
another.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>

```

```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Moving the cursor to another line (Navigation in the edit field)

```

Normally the cursor is moved from the current line to another by using the arrow keys and PgDn, PgUp, ENTER, HOME, REF keys, etc. In large edit fields there is a need to reach certain lines immediately. This can be done, for example, by the following means:

```

  <A HREF="q04_04.html">1 = GOTO command</A>
  <A HREF="q04_16.html">2 = Search facilities</A>
  <A HREF="q04_05.html">3 = Jumping by activating lines starting with '-'</A>
  <A HREF="q02_11.html">4 = Reference points</A>

  <A HREF="q03_01.html">C = More information on control operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">GOTO L1,L2,C
changes the display of the current edit field and the position of the
cursor by showing L1 as the first visible line, putting the cursor on
line L2 and on column C. Default values are the current ones.
GOTO is especially useful in automatic sequences of editing operations
when jumping from one work scheme to another.

```

GOTO L1,L2,C1,C2

moves the cursor by showing the edit field with L1 as the first visible line, C1 as the first visible column and the cursor on line L2

and on column C2.

```
<A HREF="q03_01.html">C = More information on control operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"><STRONG>Jumping by activating lines starting with '-' </STRONG>
By activating a line of the form
  <B> - Supercalifragilisticexpialidocious thing</B>
i.e. an isolated '-' followed by certain words, the editor tries to
find those words primarily below the current line and secondarily
from the beginning of the edit field. If no such words are found,
nothing happens. Otherwise the cursor is moved to the new line
containing those words.
If the new line is similar to the original one, activation of it
leads back to that original line provided that there are no other
similar strings in other parts of the edit field.
```

This is the fastest way, for example, to accomplish links between an index of the form

- Introduction
- Chapter 1
- Chapter 2
- ...

and corresponding titles in a document written in the edit field.

```
<A HREF="q03_01.html">C = More information on control operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">SHOW <file name>,<first line to be shown (optional)>
shows portions of edit files and text files in a temporary window
below the current line (SHOW line). The text may be scrolled in that
window and selected lines may be copied in the edit field from
the line below the SHOW line onwards, provided that those lines are
empty.

SHOW without any parameters displays the contents of the current out-
put file set by the OUTPUT operation.

SHOW * displays the current edit field itself. (See also SHOWKEYS

SHOW <file name>,<first line>,<n

works as SHOW above but shows at least n lines. Maximum number of
lines shown depends on the size of the current Survo main window.

If n is not given, the number of lines of the SHOW window is given
by the system parameter show_lines in the SURVO.APU file.

This parameter can be set for the current session by the command
SYSTEM show_lines=n

The default setting is show_lines=0 and then SHOW without the n
parameter shows as many lines as there is place in the current
main window below the SHOW command line.

By default, 100000 first lines of a text files can be shown by SHOW.

This limit is extended when necessary by giving

max_show_lines=<integer>;

in the SURVO.APU file.

If the file to be shown is an edit file, the first line can also be
given by a symbolic label (appearing in the control column).

Examples:

SHOW CHAPTER2,A

SHOW CHAPTER2,A+2

The first line can also be specified by a text appearing on that line
and this applies also to text files.

For example,

SHOW <Survo>\U\SYS\PS.DEV,"PostScript_file"

displays lines of the Survo PostScript driver (it is a text file) from
the first line containing text

PostScript file

The string is given in double quotes and spaces are replaced by ' _ 's.

SHOW <edit or text file name> / SHOWLOAD=L1,L2
loads lines from L1 to L2 from the file directly to the current edit
field. The output starts from the edit line below the command line.

If there are not enough empty lines available, SHOW prompts the user
to accept insertion of them. By giving a specification INSERT=1
empty lines are automatically inserted.

The line labels can be numerical, symbolic (in edit files), or
indicated by texts given in double quotes.

Example:

SHOW CHAPTER1 / SHOWLOAD=A-1,"continued_in_the_next_paragraph."

Code conversion from Windows text files to Survo mode is carried out by
the specification WINCONV=1.

</PRE></P><HR>

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">.....
Key codes in SHOW:
ENTER=Exit N or PgDn=Next page P or PgUp=Previous page
(right arrow)=Scroll to the right stepwise
(left arrow)=Scroll to the left stepwise
END=Scroll to the right (one screen width)
HOME=Scroll to the left (one screen width) / To the start of the file
E=To the end of the file (Interrupt by '.')
L=Load selected lines to the edit field (Interrupt by '.')
C=Append selected lines to another text file.
S=Search a string or by number of line (#3000) (Interrupt by '.')

In text files:
D=Edit the first line in the window
d=Edit the bottom line in the window
In editing, parts of text may be overwritten.
Neither lines nor characters can be inserted or deleted.
W=Convert Windows characters into Survo characters (ISO1- > IBM8)
See also <A HREF="q04_09.html">LOADW</A>? SAVEW?

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SAVEP &lt;text file&gt;
saves the edit lines below the current line in &lt;text file&gt;. The former

```

contents of <text file> will be destroyed. The various display attributes (underlining) are not saved. To save parts of the edit field to the end of <text file> use COPY.

If the text file will be used in another Windows program, use the SAVEW command instead of SAVEP. SAVEW has the same options and it makes the code conversions automatically.

If the text file will be used in Linux or Unix programs, use the SAVEU command instead of SAVEP.

SAVEP L1,L2,<text file>
saves edit lines L1-L2 in <text file>.

To load text saved by SAVEP use LOADP or SHOW.

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LOADP <text file>
loads all the contents of <text file> in the edit field from the
next line onwards. See also <A HREF="q04_06.html">SHOW</A>.
```

If the text file is created by another Windows program, LOADW command is to be used instead of LOADP. LOADW has the same options and it makes the code conversions automatically.

If the text file is created by a Linux program, LOADU command is to be used instead of LOADP.

LOADP, LOADW, LOADU commands may overwrite current text in the edit field.

For automatic insertion of empty lines in order to avoid overwriting the new SHOWLOAD mode of the SHOW command should be used. SHOWLOAD?

LOADP <text file>;L
loads all the contents of <text file> in the edit field from line L onwards.
LOADP <text file>;J1,J2,L
loads lines J1-J2 of <text file> in the edit field from line L onwards.

In all forms of LOADP specification USE can be employed for indicating edit lines which are permitted for writing. For example, USE=*&+ allows edit lines with '*' or '+' in the control column to be overwritten but lines with other control characters are skipped.

Similarly, (if USE is not given) SKIP can be used for assigning edit lines which must be skipped when lines from the text file are written. For example, SKIP=-& implies lines with '-' or '&' in the control column to be left intact.

If both USE and SKIP are missing, all edit lines are writable.

USE and SKIP are helpful when text and tables are loaded to fill a ready-made PRINT list which has control lines between the text lines.

If too long lines (with respect to current edit line length) occur, the process will be interrupted and the first line exceeding the maximal length is displayed with an error message.

In such cases a SPLIT specification may be used. SPLIT=1 divides long lines into suitable parts. SPLIT=- also puts a '-' after 'hyphenated words'.

SPLIT=SP,< width>

divides long lines when possible by not breaking contiguous strings (words) using line width < width>. By default < width> is the current width of the Survo main window.

LOADW CLIPBOARD / SPLIT=SP

loads the current text in the Windows clipboard.

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)&nbsp;help&nbsp;system">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">DEF &lt;name_of_a_chapter&gt;;L1,L2
```

is a definition to be written in the edit field (not to be activated).

DEF defines a chapter on lines L1-L2 which can be referred to in

PRINT and LIST operations.

```
<A HREF="q08_01.html">P = PRINT</A>
```

```
<A HREF="qk1_01.html">L = LIST</A>
```

```
<A HREF="q09_01.html">T = More information on text editing</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q04_12.html">1 = Shadow characters and lines</A>
  <A HREF="q04_13.html">2 = SHADOW command</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The text in the edit field can be displayed in various colors by adding
<B>shadow</B> characters to selected characters on <B>shadow</B> lines.
A shadow line is created for the current edit line either by the PREFIX S
key or by the FORM key.
The FORM key gives the shadow values 0,<STRONG>1</STRONG>,2,3,<B>4</B>,5,<EM>6</EM>
shadow value is displayed as the last character of the header line.
All characters typed will then have the selected shadow (color).
These shadow values usually have special tasks when the text is to be
printed (See <A HREF="q08_01.html">PRINT</A>? - effects of display attributes).
More alternatives can be created by using PREFIX S. This key reveals
the shadow line of the current edit line and the user can type and
edit characters of the shadow line. When PREFIX S is pressed again,
the shadow line disappears but its influence on the current line
will be in effect. Keysucro /S (activated by PREFIX M S) is
a handy tool for typing shadow characters.
The current number of shadow lines in use can be seen by activating /DIM .
A chart of all shadow colors is found by LOAD &lt;Survo>\U\D\CRT

  <A HREF="q04_13.html">S = SHADOW command (changing display attributes)</A>
  <A HREF="q01_06.html">F = More information on the edit field</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">

```



```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">SHADOW &lt;shadow_character&gt;,&lt;color_code&gt;
changes the effect of &lt;shadow_character&gt; given as decimal code.
```

```
For example,
```

```
SHADOW 50,119
```

```
changes the effect of the shadow character 2 ( 2(ascii:10)=50 )
```

```
to produce color code 119 (white on white) thus making the line labels
in the edit field invisible.
```

```
SHADOW 50,120
```

```
returns the standard color (gray on white) for shadows 2.
```

```
<A NAME="SHADOW3"></A>
```

```
SHADOW ERASE,L1,L2
```

```
erases shadow characters of edit lines L1-L2.
```

```
SHADOW BLOCK,&lt;char&gt;
```

```
‘paints’ the block defined by the BLOCK key by using the shadow
character &lt;char&gt;.
```

```
SHADOW REPLACE &lt;char1&gt;,&lt;char2&gt;,L1,L2
```

```
replaces shadow character &lt;char1&gt; by another &lt;char2&gt; on lines L1-L2.
```

```
Notations like char(32) (=space) are also allowed. For example,
```

```
SHADOW REPLACE 4,char(32),11,1000
```

```
erases shadow characters ‘4’ (underlining in PRINT) on lines 11-1000.
```

```
<A NAME="SHADOW4"></A>
```

```
SHADOW SET L1,L2,L
```

```
fills shadow lines of edit lines L1-L2 by non-space characters on the
line L thus performing the same task for shadow characters as the SET
command does for normal characters.
```

```
SHADOW SET L1,L2,L,1
```

```
does the same job but uses also space characters on the the line L
```

```
thus making possible to remove any previous shadows of lines L1-L2.
```

```
So if L is an empty line, all shadow charaters of lines L1-L2 are removed.
```

```
<A HREF="q01_06.html">F = More information on the edit field</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">CHECK &lt;pathname_of_a_file&gt;
checks the existence of a file and types an appropriate comment (OK
or NOT FOUND) after the command. Examples:
```

```
CHECK &lt;Survo&gt;\U\S.EXE OK
CHECK A:XXX.EDT NOT FOUND!
```

CHECK is especially useful in sucros.

```
<A HREF="q03_01.html">C = More information on control operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="qkv1_01.html">1 = INDEX command (by Kimmo Vel
<A HREF="q08d_02.html">2 = 'index' control code in PRINT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Searching for various words, strings, etc. in Survo:

<A HREF="q02_18.html">1 = SEARCH key (alt-F5)</A>
<A HREF="qkv2_01.html">2 = SEARCH operation (by Kimmo Vehkalahti)</A>
<A HREF="q05_13.html">3 = Finding items in the edit field (FIND, REPLACE, VFIND, etc.)</A>
<A HREF="q05_18.html">4 = Completing words etc. by F2 J</A>
<A HREF="q04_05.html">5 = Searching for titles in the edit field ('-' lines)</A>
```

```

<A HREF="qk1_01.html">6 = LIST REPLACE</A>
<A HREF="qf3_02.html">7 = FILE SHOW (using alt-F5 in FILE SHOW)</A>
<A HREF="q05_24.html">8 = Searching a predetermined string to be written in current position</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">CLEAR L1,L2
clears lines L1-L2 to the right from the current position of the cursor.

CLEAR L1,L2,K
clears selected columns on the lines L1-L2 according to the non-space
positions of the image line K.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SCRATCH (no parameters)
clears all the lines below the current line (SCRATCH included).
<A HREF="q09_01.html">T = More information on text editing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--

```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q02_16.html">1 = COPY key</A>
  <A HREF="q05_04.html">2 = COPY operation (copying lines in the edit field or to the output file)</A>
  <A HREF="qf6_06.html">3 = FILE COPY operation (copying Survo data files)</A>
  <A HREF="qf6a_01.html">4 = PCOPY operation (splitting large files and combining files)</A>
  <A HREF="q05_25.html">5 = Copying 'words' in the edit field</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">COPY L1,L2,L
copies lines L1-L2 to a new place in the edit field so that line L1
will be copied on line L.
COPY L1,L2 TO CLIPBOARD
copies lines L1-L2 to the (Windows) clipboard.
COPY (without parameters)
copies a text block painted by the BLOCK (alt-F4) key to the clipboard
and if no painted block exists
COPY (without parameters)
copies the edit lines below the COPY command until the first empty line
to the clipboard.

COPY L1,L2 TO &lt;text file&gt;
copies lines L1-L2 to &lt;text file&gt;. If TO &lt;text file&gt; is omitted, the output
file selected by command OUTPUT &lt;file&gt; is used. (See <A HREF="q0e_02.html">OUTPUT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
```

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SET L1,L2,K
copies the non-space characters of the image line K to each of the lines
L1-L2. See also <A HREF="q05_12.html">PUTEND</A>?
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">COUNT L1,L2,K
writes numbers 1,2,3,... on lines L1-L2 in format indicated by an image
line K of the form " 123.1 ".
```

COUNT L1,L2,K,C

works similarly, but writes numbers C,C+1,C+2,...

COUNT L1,L2,K,C,D

works similarly, but writes numbers C,C+D,C+2D,...

COUNT L1,L2,K,C,D,E

with E>0 writes numbers C,C+D,...,C+(E-1)D,C,C+D,...,C+(E-1)D,...

with E<0 writes numbers C,C,...,C,C+D,C+D,...,C+D,C+2D,C+2D,...,C+2D,...

where each of values C,C+D,C+2D is repeated -E times.

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```

<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q02_13.html">1 = INSERT key</A>
  <A HREF="q02_21.html">2 = LINE INS key</A>
  <A HREF="q05_08.html">3 = INSERT operation</A>
  <A HREF="q05_21.html">4 = LINEINS operation for systematic insertion of given line(s)</A>
  <A HREF="q05_22.html">5 = INSERTL operation (insertion of several empty lines)</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
</HTML>
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">INSERT L1,L2
inserts an empty column on lines L1-L2 in the position indicated by the
cursor.

INSERT L1,L2,C
inserts C empty columns on lines L1-L2 in the position indicated by the
cursor.
In both forms of INSERT:
If L1 and L2 are omitted, the next chapter up to an empty line will be
processed.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
</HTML>
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```

</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q02_13.html">1 = DELETE key</A>
  <A HREF="q02_21.html">2 = LINE DEL key</A>
  <A HREF="q05_10.html">3 = DELETE operation (for columns)</A>
  <A HREF="q05_20.html">4 = LINEDEL operation (for lines)</A>
  <A HREF="q05_23.html">5 = DELETTEL operation for deleting lines.</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```

```

  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">DELETE L1,L2
deletes the column indicated by the cursor on lines L1-L2.

```

DELETE L1,L2,C

deletes C columns from the point indicated by the cursor on lines L1-L2.

In both forms of DELETE:

If L1 and L2 are omitted, the next chapter up to an empty line will be processed.

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FORM L1,L2,K
  image line K: *      XXXX 123.12 XXXXXX 12345 etc.
rewrites a table on lines L1-L2 and consisting of alpha and numeric
columns according to the formats given on image line K.

```

FORM L1,L2,K,<L or R>

works as FORM L1,L2,K but fills the incomplete lines by '-'s
starting the existing items either from the left (L) or
from the right (R).

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from
</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">PUTEND L1,L2,<string>

puts the characters of <string> at the end of each of the lines L1-L2.

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">FIND <string>

searches for occurrences of <string> in the current edit field

starting below the current (FIND) line. When <string> is found, the

cursor is pointing at the first character of <string>. The search may be
continued stepwise according to instructions given on the screen.

At the end, the number of cases found will be displayed.

Then, if '#' is pressed, this number is stored in the survo memory.

If <string> contains spaces and/or commas, it must be given
in quotation marks as in FIND "SURVO 84C" .

Another alternative is to press the key SEARCH (alt-F5). Then the user is
prompted to enter the search string and the first occurrence of the string
found so far will be shown immediately. The process is interrupted
by ENTER .

The search can be restricted to an area between selected lines by LINES=L1,L2 .

Also strings with shadows can be searched for. Example: FIND SURVO


```

<A HREF="q05_15.html">R = REPLACE (find &lt;string&gt; and replace with another)</A>
<A HREF="q05_14.html">B = Searching for strings backwards in the edit field</A>
<A HREF="q05_17.html">V = Searching for strings in vertical position (VFIND)</A>
<A HREF="q05_16.html">C = Case-insensitive searches</A>
<A HREF="q05_19.html">H = Heuristic searches by Levenshtein distance</A>
<A HREF="q04_16.html">S = Other means for searching</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">-FIND &lt;string&gt;
works as FIND but the search goes backwards in the edit field.
Similarly
-REPLACE &lt;old_string&gt;,&lt;new_string&gt;
works as REPLACE but backwards.

```

Also the SEARCH key (alt-F5) has a backwards alternative F2 alt-F5.

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">REPLACE &lt;old_string&gt;,&lt;new_string&gt;
replaces the occurrences of &lt;old_string&gt; by &lt;new_string&gt; selectively
starting from the line below the current (REPLACE) line.
The search can be restricted to an area between selected lines by LINES=L1,L2 .

```

If either of the strings contains spaces/or commas, put them both in quotation marks as in REPLACE "SURVO 84","SURVO 84C"

Also strings with shadows can be replaced as in
REPLACE "SURVO","SURVO 84C"

Always when a new occurrence of <old_string> has been found, it is replaced by <new_string> by pressing R and the search continues. If N is pressed, no replacement happens, but the search continues. Instructions for various decisions are displayed during the process. At the end the number of cases found will be displayed.

REPLACE <old_string>,<new_string>,<C or N>; does the replacement without any prompts or interrupts. If N is used as an extra parameter, the number of replacements will also be put in the tutstack. For example, REPLACE SURVO,SURVO,N counts the number of words SURVO below the current line and puts it in the tutstack.

```
<A HREF="q04_16.html">S = More information on search facilities</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">By default, searches by FIND, REPLACE, and alt-F5 (SEARCH) ke
case-sensitive, i.e. 'Survo' and 'SURVO' are not identical in searches.
```

There are two alternatives to make these searches case-insensitive:

1. If the command line in FIND and REPLACE or the starting edit line in alt-F5 has '#' in the control column, the search is always case-insensitive.
2. By setting the system parameter search_caps=1 in the SURVO.APU file these searches become case-insensitive when the Caps Lock in the keyboard is on. Otherwise searches are case-sensitive.

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
```

```

<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">VFIND &lt;string&gt;
finds first occurrence of &lt;string&gt; in the edit field
in vertical position. Example:
VFIND 123
tries to find      1
                   2
                   3
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">F2 J:
initiates a search for an incomplete word just before the cursor
and completes it by the first matching word found in the current
edit field.
Example: Assume that the user has written...
Ouagadougou is the capital of Burkina Faso.
The population of Ou_
By pressing PREFIX J the system will complete the word as
The population of Ou<B>agadougou</B>
and the user can continue typing.
F1 J:
works as F2 J but makes possible to search for phrases starting by
two or more words typed as first words on the edit line.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META
<META NAME="Classification" CONTENT="help system">

```

```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FIND &lt;word&gt;~
finds a word that best resembles the given word. (Example: FIND Survo~)
The search is started from the edit line below the current line.
Exact matches are not recognized since those are found by FIND &lt;word&gt;;
(without a tilde '~' after the word).
The best word is found by scanning all the words (separated by blanks)
and selecting the one having the smallest Levenshtein (edit) distance
to the given word.
After the search the cursor is pointing at the best word. The search
henceforth may be continued by pressing the 'N' key. It is interrupted
by ENTER. At any stage the value of Levenshtein distance is
displayed in the form d=&lt;distance&gt;. If d exceeds the length of &lt;word&gt;;
the original starting position of the FIND command is resumed.
FIND &lt;word&gt;~~
works similarly but comparison of words is case-insensitive.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LINEDEL offers various ways for systematic removal of lines in the
current edit field. LINEDEL does not save the edit field after
the removal; it must be done by the user if needed.

LINEDEL L1,L2 / deletes lines L1-L2.
LINEDEL L1,L2,EMPTY / deletes empty lines from lines L1-L2.
LINEDEL L1,L2,EMPTY,k / works similarly but when n consecutive empty lines
are encountered, min(n,k) of them will be preserved.
For example, if k=1, just one empty line will left
in sequences of empty lines.
LINEDEL L1,L2,&lt;string&gt;;
deletes lines having any of characters in &lt;string&gt;;
in the control column from lines L1-L2.
LINEDEL L1,L2,"&lt;string&gt;" / (&lt;string&gt; may contain shadow characters)
deletes lines containing &lt;string&gt; from lines L1-L2.
LINEDEL L1,L2,"&lt;word1&gt;",&lt;word2&gt;","...
deletes lines containing all the words &lt;word1&gt;,&lt;word2&gt;,...
LINEDEL L1,L2,STEP,s
deletes lines L1,L1+s,L1+2s,L1+3s,... from lines L1-L2.
LINEDEL / without parameters
deletes empty lines below the command line to the first non-empty line.

```

In all forms of LINEDEL (except in the second one "EMPTY") the deleted lines can be saved in a selected (new) edit file by giving the

specification DEL_SAVE=<name_of_edit_file>.

This option enables making smart selections of edit lines.

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">LINEINS offers various ways for systematic insertion of lines in the current edit field. LINEINS does not save the edit field after it has been activated; it must be done by the user when needed.

LINEINS L1,L2,k,L3 ;

inserts line L3 to lines L1+k,L1+2*k,...,L2.

LINEINS L1,L2,TEXT,L0,L3

inserts line L3 after each line containing text given as line L0.

LINEINS L1,L2,TEXT-1,L0,L3

inserts line L3 before each line containing text gives as line L0.

LINEINS L1,L2,TEXT+k,L0,L3

inserts line L3 k lines after each line containing text given as line L0.

LINEINS L1,L2,TEXT-k,L0,L3

inserts line L3 k lines before each line containing text given as line L0.

LINEINS L1,L2,CONTROL,<char>,L3

inserts line L3 after each line having <char> in the control column.

Here are the same options like CONTROL+k available as in the TEXT option.

In all forms of LINEINS, L3 can be replaced by a parameter of the form L3:L4.

Then the inserted lines will be L3,L3+1,...,L4,L3,L3+1,...,L4,L3,L3+1, etc.

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

```

<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">INSERTL k
inserts k empty lines after the current line.
INSERTL L,k
inserts k empty lines after the edit line L.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">DELETTEL1,L2
deletes lines L1-L2 from the current edit field.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">F2 M J (Sucro /J)
starts a search for a string of characters (word, phrase, web address,
etc.) which should be inserted in the current position of the current
edit field.
The search takes place in a temporarily opened edit field (KEYWORDS
by default) where a list of keywords is displayed in the form

BOOKS <A HREF="http://www.survo.fi/books">http://www.survo.fi/books</A>
INDEX INDEX / EDT=LOAD SORT=-TIME GROUPING=EDT ONLY=1 TYPES=0
MARY <STRONG>super</STRONG>califragi<B>listic</B>expi<EM>ali</EM><B>docious</B>
PI 3.141592653589793
COURIER [Courier(10)][line_spacing(10)][left_margin(5)]
PUZZ <A HREF="http://www.survo.fi/puzzles">http://www.survo.fi/puzzles</A>
...

```

The user is prompted to start typing a keyword. When the cursor points at the sought keyword and ENTER is pressed, the string located to the right of the keyword will be caught, the original display of the edit field is restored and the string is typed to the current position.

F2 M J (Sucro /J) continued

The edit file for the keywords can be renamed by a line of the form
keywords=<name>
in SURVO.APU. This edit file must be located in the default data path
of Survo.

Sucro /J employs the function the SEARCH (alt-F5) key.

Thus during the search only keys of consecutive letters of the search
key are to be pressed until the correct line is encountered and
ENTER is pressed.

If the keyword does not exist, the original edit field is restored.

The edit file of keywords can be edited and extended by new keywords
by normal means of Survo.

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">Copying 'words' in the edit field
```

Copies of various items in the edit field can be made in various ways.

Traditional means are the COPY command, the key alt-F4 for rectangular
blocks, and the key alt-F2 for text.

For 'words' (contiguous strings separated by blanks) the best method
from version 3.37 onwards is based on two mouse-clicks:

1. Click the word to be copied by the rightmost button,
2. Select the place where to copy the word by the leftmost button.

Immediately after the first copy, more copies can be made by the
leftmost mouse button.

If the mouse is pointing at a blank space between existing 'words',
the copy is inserted between these words.

If the mouse is pointing at a 'word' (a non-blank character)
this 'word' is replaced by the copy.

3. The copying process is terminated by the DEL key.

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">Adjustment of the line length by TRIM commands:
```

```
    <A HREF="q06_02.html">1 = TRIM commands for fixed pitch fonts</A>
```

```
    <A HREF="q08c_02.html">2 = /TRIMP sucro for variable pitch fonts</A>
```

```
See also <A HREF="q06_07.html">WORDS2</A>?
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">http://www.survo.fi/</A></DIV>
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">TRIM L1,L2,C (alternative form T L1,L2,C)
```

```
makes up the lines L1-L2 using the line width C. The words will not  
be splitted (use T3 or TRIM3 for that purpose).
```

```
When new lines are needed, they will be automatically inserted and,  
on the other hand, unnecessary lines will be deleted.
```

```
After TRIM only one space if left between the 'words' and the right  
edge is not necessarily aligned. To achieve this, use TRIM2 (=T2)  
after TRIM.
```

```
The lines after an empty line and lines starting by a space will be  
preserved as new lines.
```

```
See also
```

```
WORDS (command) to get a constant number of 'words' / line.
```

```
TRIM2 L1,L2,C (alternative form T2 L1,L2,C)
```

```
makes the right edge of the lines L1-L2 straight in the column position  
C. The lines will be not broken or connected. Only extra spaces are  
inserted when necessary to achieve equal line length C.
```


If the line is short for more than 6 characters, nothing will be changed.

TRIM3 L1,L2,C (alternative form T3 L1,L2,C)

works like TRIM, but splits the words when needed according to the rules of the Finnish language. TRIM3 operates rather satisfactorily also in other languages.

All TRIM operations may also be written without line labels L1,L2, i.e. in the form TRIM3 C or T3 C etc.

Then the next chapter up to the first empty line in the edit field will be processed.

The line width C has default value 72 and may be omitted.

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">C+ L1,L2,K
```

where K is label of an image line of the form " XXXX XXX XX 123.12 "
computes the sum of the XXX columns to the column indicated by a numeric mask (like 123.12) for the lines L1-L2.

```
C* L1,L2,K
```

works as C+, but the product of XXX columns is computed.

```
C- L1,L2,K
```

where K is label of an image line of the form " XXXX YYY 123.12 "
subtracts the YYY column from the XXXX column.

```
C/ L1,L2,K
```

where K is label of an image line of the form " XXXX YYY 123.12 "
divides the XXXX column by the YYY column.

```
C% L1,L2,K
```

where K is label of an image line of the form " XXXX YYY 123.12 "
computes the ratio of the XXX and YYY columns in percentages.

```
C+log L1,L2,K
```

computes the sum of the logarithms of the XXXX columns.

Other functions available are: sqrt,exp,sin,cos,tan,arctan,int and abs.

The same functions may be included in C-,C*,C/ and C% as well.

```
<A HREF="q0a_01.html">T = More information on table management</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">L+ L1,L2,K,L
where K is label of an image line of the form " 12.123 12.1 1.123 "
computes the sum of lines L1-L2 for the columns indicated by the numeric
masks on the image line K and writes the sums on the line L according to
the same images.
L* L1,L2,K,L
works as L+, but computes products.
L- L1,L2,K,L
computes the difference of lines L1 and L2 to line L.
L/ L1,L2,K,L
computes the ratio of lines L1 and L2 to line L.
L% L1,L2,K,L
computes the ratio of lines L1 and L2 in percentages to line L.
L+log L1,L2,K,L
computes the sums of the logarithms of lines L1-L2.
Other functions available are: sqrt,exp,sin,cos,tan,arctan,int and abs.
The same functions may be included in L-,L*,L/ and L% as well.
```

```
<A HREF="q0a_01.html">T = More information on table management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
```

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">WAIT &lt;time in seconds>&gt;
gives a pause. WAIT is useful in automatic sequences of operations.
<A HREF="q03_01.html">C = More information on control operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
```

For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Select
  <A HREF="q02_15.html">1 = WORDS key (alt-F2)</A>
  <A HREF="q06_07.html">2 = WORDS command</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
```

```
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">WORDS L1,L2,&lt;n&gt;
splits the text on edit lines L1-L2 so that each line consists of
&lt;n&gt; words. On the last line the number of words may be less than &lt;n&gt;.
```

WORDS L1,L2

counts the number of words etc. on lines L1,L2 so that the results will be displayed on the command line in the form
WORDS L1,L2 // #words=xx #chars=xx (#letters,#digits,#punct,#special)
where #punct is the number of punctuation characters (.,: etc.).
A system file CHARTYPE.BIN classifies characters to above categories.

In the latter form a more extensive summary of the text by words can be made by entering a SAVE=<text_file_name> specification. Then a new text file contains the words and their lengths as lines. The summary may be extended by giving CHARS=xyz... where xyz... is a list of characters to be counted for each word. The first line of the text file gives labels of the variables in the form
word len x y z . . .

The characters may be filtered by FILTER=<file.BIN>.
For example, FILTER=LOWCASE.BIN maps upper case letters to lower case and preserves non-letter charaters while FILTER=LETTERS.BIN does the same thing but replaces non-letter characters by a space.

See also CHARS?
</PRE></P><HR>

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">CHARS L1,L2,xyz
counts the number of characters xyz (a sequence of any printable
characters except , and space) on edit lines L1-L2.
Example:
CHARS CUR+1,CUR+1,IV / # of characters IV is 38.
I II III IV V VI VII VIII IX X XI XII XIII XIV XV XVI XVII XVIII XIX XX

See also <A HREF="q06_06.html">WORDS</A>?
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Selecting variables and observations in Survo data sets:
<A HREF="q03_11.html">1 = Selecting variables (VARS,MASK)</A>
<A HREF="q07_02.html">2 = Selecting observations (SELECT,IND,CASES)</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Observations (cases) to be processed in statistical analyses etc.
are selected by using specifications IND, CASES and SELECT.
If no such specifications are given, all observations are active.
Otherwise an observation must satisfy IND, CASES and SELECT
conditions in this order.

```

```

    <A HREF="q07_04.html">I = IND specification</A>
    <A HREF="q07_05.html">C = CASES specification</A>
    <A HREF="q07_03.html">S = SELECT specification</A>
    <A HREF="q07_03.html#SELECT2">T = SELECT specification with negations and expressions in
    <A HREF="q03_11.html">V = Selecting variables</A>
    <A HREF="q23_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
</HTML>
<!--

```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>
-->

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>

```

```

<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SELECT=&lt;Boolean expression&gt;
selects observations satisfying the alternative conditions given by
&lt;Boolean expression&gt;=A+B+C+... (read A or B or C or ...)
where each of the conditions A,B,C,... (say A) is written as
A=A1*A2*A3*... (read A1 and A2 and A3 and ...) .
Each condition A1,A2,A3,... must be given as a specification of the
form

```

A1=<variable>;<lower_limit>;<upper_limit> (as in IND)
or

A1=<string_variable>;<case1>;<case2>;... (as in CASES)
Any words can be used in place of A1,A2,A3,...,B1,B2,B3,...

Please note that SELECT will be considered only after the observation
has passed potential IND and CASES conditions.

(Example on the next page)

Example:

IND=Income,18000,40000 CASES=Service:5,6,7,8,9

SELECT=North*Over10000+South*Over20000

North=Province:OUL,LAP South=Province:UUS,KYM,TUR

Over10000=Popul,10000,500000 Over20000=Popul,20000,500000

selects cases where

18000<=Income<=40000 and Service=5,6,7,8 or 9

and

either Province is OUL or LAP and Popul>=10000

or Province is UUS or KYM or TUR and Popul>=20000

(New form of SELECT on next page!)

The SELECT specification can also be written with negations (a '!' in front of a Boolean expression) and with parentheses.

Example:

SELECT=(A+B)*(C+!D) equals to SELECT=A*C+A*!D+B*C+B*!D

where A,B,C,D must be given as elementary conditions of IND or CASES type.

For example, A=Quality:1,3,7 B=Length,12,20 .

In complicated expressions, space is saved by using short names for elementary conditions since Survo transforms expressions first to the original form without parentheses.

S = More information on selection of observations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">IND=<variable>;<lower_limit>;<upper_limit>;

optional optional

default=1 default=lower limit

is a specification which limits the observations in connection with various statistical operations. Only observations where

lower limit <= value of variable <= upper limit

will be processed.

As <variable> also ORDER, i.e. the index of observation is permitted.

Example: IND=Weight,50,55

For numerical missing values conditions like IND=<variable>,MISSING and IND=<variable>,!MISSING (not missing) are available.

These extensions will be gradually introduced in versions 1.32+ .

S = More information on selection of observations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
    <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
    <META NAME="Generator" CONTENT="SURVO MM">
    <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
    <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
    <META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
    <META NAME="Classification" CONTENT="help system">
    <META NAME="Keywords" CONTENT="Survo, help, hypertext">
  </HEAD>
  <BODY>
    <H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
    <P><PRE CLASS="HelpText">CASES=&lt;string_variable&gt;;&lt;value_1&gt;;&lt;value_2&gt;;...
    is a specification which limits the observations in connection with
    several statistical operations. Only observations where &lt;string_
    variable&gt; has one of the given values will be processed.
    Example: CASES=Color:Red,Yellow,Green
  
```

Using strings containing spaces in CASES:

When space characters appear in values they must be replaced by some other character, say '_', and this character should be indicated by a CASES_SPACE specification.

Example: CASES_SPACE=_ CASES=ID:A_B,B_A

Wild characters in CASES:

By default no wild characters (of type '?' or '*') cannot be used, but they may be entered by specifications CASES_WILD?=<char> and CASES_WILD*=<char>. Example: CASES_WILD=? CASES_WILD*=*

Options CASE_SPACE, CASE_WILD?, CASE_WILD* are not necessarily available in all Survo operations. They are gradually introduced in versions 1.32+.

```

    <A HREF="q07_02.html">S = More information on selection of observations</A>
  </PRE></P><HR>
  <DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/q07_02.html">
  </BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
    <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
    <META NAME="Generator" CONTENT="SURVO MM">
    <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
    <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
    <META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
    <META NAME="Classification" CONTENT="help system">
    <META NAME="Keywords" CONTENT="Survo, help, hypertext">
  </HEAD>
  <BODY>
    <H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
    <P><PRE CLASS="HelpText">Specifications and subfields
  
```

In many operations activated by ESC or a double-click of the mouse, additional information may be entered by means of extra specifications

having the form

<keyword>=<list_of_parameters>;

and written in the same edit field within the current text.

For example, in PLOT operation specifications HOME=200,0 and SIZE=300,300 specify the home and the size of the graph.

If some extra specification is not given by the user, certain default values will be used depending on the current operation and other extra specifications.

The order of the extra specifications is immaterial. However, if the same <keyword> appears with = several times in the current edit field, the order of selection will be:

- 1) the first one on the current line
- 2) the first one in the edit field (current subfield).

To avoid confusions with neighbouring operations and their specifications, special border lines of the form *..... (asterisk in the control column followed by at least 10 dots) may be used to separate different operations and computational schemes. The search for the extra specifications is always limited to the current subfield (ie. to the lines between the nearest border lines from the current position).

The first subfield in the edit field can be used as a common source for extra specifications by writing *GLOBAL* on some line in it. Then the effective specifications will be selected in the following precedence order:

- 1) current line
- 2) current subfield
- 3) *GLOBAL* subfield (must be the first subfield)
- 4) default value of the specification

GLOBAL subfield is useful especially when several related actions (like PLOT operations with a similar structure) are defined in one edit field.

SPECS specification is a new option from ver. 3.26 (SPECS?)

Long specifications may be written on several consecutive lines by using & as a terminator for intermediate lines.

For example,

XSCALE=0,0.001,0.002,0.003,&
0.005,0.007,1

is equivalent to

XSCALE=0,0.001,0.002,0.003,0.005,0.007,1

The maximum length of text in those specifications is 999 characters.

Symbolic or brief notations for specifications (*specifications)

To avoid repetition of long specification texts in related plotting schemes etc., symbolic notations with an "*" as the leading character can be used as shown in the following example:

```
.....
*one_cycle=[BLACK][line_width(1)],-pi:-pi,0,pi:pi pi=3.141592653589793
*from-1to1=[BLACK][line_width(1)],-1(0.5)1
*red_thick=[RED][line_width(5)]
GPLOT Y(X)=SIN(X)
XSCALE=*one_cycle YSCALE=*from-1to1
LINETYPE=*red_thick
```

It is typical to place *specifications in the *GLOBAL* subfield so that any of them are easily available in various subfields.

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">


```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The control column is the leftmost column (0) in the edit field.
It is usually filled with asterisks (*).
The normal way to reach the control column is to move the cursor to the
first column (by RETURN or arrow keys) and then press the left arrow
continuously.
The control column has following tasks:

Line labels consisting of one character (A,B,X,a,b,x) are typed in the
control column. Line labels can be used as line numbers in operations
referring to lines (PRINT X,Y). Since line labels are connected to the
lines (and do not alter when lines are inserted, deleted or moved) they
should in many applications be preferred to line numbers.
List of control characters in use in the current edit field is obtained by F1 L

In the PRINT operation characters (/) in the control column determine
paging of the printout (see <A HREF="q08_01.html">PRINT</A>).

‘?’ in the control column hides the text and commands written on the
line in question (a useful feature in tutors and teaching programs).
‘!’ in the control column prohibits writing of text on the current line.
The line is then protected from inadvertent typing but can be deleted.
‘_’ in the control column prohibits writing and deleting of text on the
line in question.
’ in the control column has a special task in editorial computing.
Values of expressions on such a line will be displayed in ‘accurate’
exponential form (1.123456789012345e+123).

  <A HREF="q03_01.html">C = Control operations</A>
  <A HREF="q01_06.html">F = More information on the edit field</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>

```

```
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Survo operations are normally located in the first positions of the
line. Using the special character _ (code 254) in front of the operation
it is possible to insert the operation after any text on the line.
For example, a SORT operation may be typed as follows:
```

To sort lines A-B activate this line! _ SORT A,B,M

To conceal the operation, it can be moved beyond the end of the current visible line.

When the operation is activated, the activated words will be shown in reversed video on the current line.

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
```

```
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Border and fence lines
```

In the edit field commands and their specifications are separated by border lines of the form

*..... (asterisk and at least 10 dots).

If the the dots cover the visible line, the border line is displayed as a continuous double line.

Without precaution, results of Survo operations may overlap other operations or important text in the edit field. Such nuisances are avoided by using fence lines of form

*##### (# and at least 10 dots) and activating commands with a '#' in front of the command word.

```
<A HREF="q07_06.html">B = More information about border lines</A>
<A HREF="q07_10.html">F = More information about fence lines</A>
```

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```

<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>

```

```

<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Without precaution, results of Survo operations may overlap other
operations or important text in the edit field. Such nuisances
are avoided by using fence lines of form
##### (# and at least 10 dots) and activating commands with
a '#' in front of the command word.
If the #'s cover the visible line, the fence line is displayed
as a continuous single line.

```

A simple and safe way of creating a fence structure for a command is to press F1 # when the cursor is in the first position of the command line and the command starts from that position.

By default, the current edit field is saved as #SURVO.EDT in the current data path when a #command is activated. Then the status before activation is restored afterwards simply by activating LOAD #SURVO. This precaution is removed by setting the system parameter fence_save=0. If the fence structure is incorrect (fence line missing), an error message is displayed. This setting is removed by setting fence_warning=0. Results obtained by #commands can be removed from lines L1-L2 by DELETED L1,L2,FENCE

Example:

```

*#MINSTAT DECA,CUR+1 / VARS=Height,Weight
#####
*Important text follows....
*

```

```

*When the #MINSTAT command above is activated, the results will be
*inserted between the command line and the following fence line:
*

```

```

*#MINSTAT DECA,CUR+1 / VARS=Height,Weight
*Basic statistics of data DECA N=48
*Variable  mean   stddev    N minimum  maximum
* Height  186.9583  5.090493   48 173.0000 198.0000
* Weight   85.56250  6.847600   48 68.00000 105.0000
#####
*Important text follows....

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```

```

<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SPECS specification
The specifications locating on the current command line, say cur, have
the highest priority. From SURVO MM ver.3.26 this line can be 'extended'
by giving a SPECS specification on the command line. It has the
form SPECS=A,B and this implies that specifications on edit lines A-B
are scanned for specifications immediately after specifications on
the command line. SPECS can also be given in the form SPECS=A
implying that lines either lines A - cur-1 (when A<cur) or
cur+1 - A (when A>cur) are extensions of the command line cur.
```

The SPECS specification gives more possibilities for making applications with multiple activations with common and individual specifications according to the needs of the application.

Due to the modular structure of SURVO MM, this new SPECS option will be not be working in all Survo operations.
A list of operations working currently with SPECS is on the next page.

Operations working currently with SPECS:

All plotting operations (PLOT,GPLOT,GHISTO),
CORR, STAT, MINSTAT, LINREG, REGDIAG, ESTIMATE, MAT

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
```

```
<!--
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
```

```
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
```

```
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PRINT L1,L2
prints the lines L1-L2 of the current edit field on a PostScript printer.
There are alternative forms of PRINT for redirecting the output either
to a PostScript file or to any (non-PostScript) Windows printer.
Line numbers and the control column are not printed.
Lines are usually printed as they appear in the edit field and various
display modes (shadow characters) correspond to certain printing
modes of the printer.
Lines with a '-' in the control are not printed, but are providing various
control information for printing. For example, a line of the form
11 - chapter A in FILE3
specifies a chapter A from the edit file FILE3 to be printed.
Control lines of various type enable printing of multipage
reports with page numbers and headers.
Also pictures made with the PLOT operation can be automatically
included.
See also pages 337-359 (Bookmark PRINT) in
<A HREF="http://www.survo.fi/books/1992/Survo_Book_1992_with_comments.pdf">http://www.su
<A HREF="q0b_31.html">1 = Alternative forms of PRINT</A>
```

```

<A HREF="q0p1_01.html">2 = PostScript printers</A>
<A HREF="q08_02.html">3 = Control information in the PRINT operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM
<P><PRE CLASS="HelpText">Control information in the PRINT operation:
  <A HREF="q08_03.html">A = - chapter</A>
  <A HREF="q08_05.html">B = - text</A>
  <A HREF="q08_06.html">C = - picture</A>
  <A HREF="q08_07.html">D = - header_lines</A>
  <A HREF="q08a_02.html">E = - include</A>
  <A HREF="q08a_03.html">F = - define</A>
  <A HREF="q08a_04.html">G = - shadow</A>
  <A HREF="q08a_06.html">H = - control</A>
  <A HREF="q08a_05.html">I = - codes</A>
  <A HREF="q08_08.html">J = page changes</A>
  <A HREF="q08_09.html">K = effects of display attributes (shadows)</A>
  <A HREF="q08_11.html">M = device drivers</A>
  <A HREF="q0b_31.html">N = directing the output to a file or to another printer</A>
  <A HREF="q08_10.html">O = - dos</A>
  <A HREF="q08d_01.html">P = footnotes</A>
  <A HREF="q08d_02.html">Q = - index</A>
  <A HREF="q08d_03.html">R = - ascii_text</A>
  <A HREF="q08d_04.html">S = miscellaneous control words</A>
  <A HREF="q08_15.html">W = control words in brackets ([line_spacing(x)], [page_length[x], etc.)</A>
  <A HREF="q08_01.html">X = General information on PRINT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>

```

<BODY>

<H1>&

<P><PRE CLASS="HelpText">A control line (with a '-' in the control column) in the print list and having the form

- chapter <name_of_chapter> IN <name_of_edit_file>
specifies a chapter from another edit file to be included in the set
of lines to be printed.

Each chapter given in the print list has to be defined by a DEF
specification of the form

DEF <name_of_chapter>,<first line>,<last line>;
in the edit file in question.

P = More information on PRINT

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText"> P = More information on PRINT

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">A control line (with a '-' in the control column) in the print list and having the form

- text <name_of_text_file>;L1,L2

specifies lines L1 to L2 from an ASCII file to be included in the set
of lines to be printed. If L1 and L2 are omitted the entire file will
be printed. If L2 is omitted only, lines from L1 up to the end of file
are printed.

```

    <A HREF="q08_02.html">P = More information on PRINT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">A control line (with a '-' in the control column) in the print list
and having the form
  - picture &lt;name_of_picture_file>;&lt;x>;&lt;y>;
specifies a picture to be copied to the current page in the report
to be printed. The coordinates of the left-lower corner of the
picture will be &lt;x>;&lt;y>. If &lt;y>=*, the current line on the current
page will be the bottom line for the picture.

```

The picture files are created before the PRINT operation by a PLOT operation.

This option is currently valid for the PostScript printers only.

On the PostScript printers there are still more options.

```

    <A HREF="q0p2_04.html">S = picture options on the PostScript printers</A>
    <A HREF="q08_02.html">P = More information on PRINT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">A control line (with a '-' in the control column) in the print list
and having the form
  - header_lines &lt;first>;&lt;last>;
specifies the header lines to be printed on each page. &lt;first> and

```

<last> refer to lines in the current edit field. The place and format for the line number can be specified on any of these lines in the form ####. The page numbers to be printed will be 1,2,3... unless otherwise stated by a control line of the form

- [page_number(51)]

(i.e. 51 is the first page number).

Odd and even pages can be given different headers by

- header_lines <odd_first>,<odd_last>,<even_first>,<even_last>;

Roman numerals (i, ii, iii, iv, etc.) can be printed as page numbers by entering masks of the form @@@@ on the header lines.

(A routine for Roman numerals has been made by Martti Nikunen.)

P = More information on PRINT

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">The page will be automatically changed according to the selected page length.

The user may, however, control page changes by inserting characters

/, (and) in the control column. '/' always starts a new page.

'(' starts and ')' finishes a table or a chapter which should be printed on the same page as a whole.

When PRINT is working, all printable lines are displayed in a temporary window below the PRINT line. To monitor the page changes, the user can press the '+' key. The process is then interrupted each time when a page ends. To continue, any key can be pressed.

By redirecting the output to a file or to NUL, page changes can be checked without waste of paper.

P = More information on PRINT

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>


```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Various display attributes (shadow characters) in the edit field are
usually interpreted as follows (the actual interpretation depends on
the shadow definitions):

display attribute   interpretation (on PostScript)
<STRONG>1 bold</STRONG>           bold
2 subscript          subscript
3 superscript        superscript
<B>4 underscore</B>           underline
5 blink              dotting
<EM>6 overscore</EM>          italics
<B>7 reverse</B>             reverse
<A HREF="q08_02.html">P = More information on PRINT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">(This option is not available in SURVO MM!)
A control line (with '-' in the control column) in the PRINT list and
having the form
- dos &lt;OS command>;
executes a OS command.
Example: - DOS REM Change paper in the printer
- DOS PAUSE
<A HREF="q08_02.html">P = More information on PRINT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>

```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Survo device drivers in printing/plotting are ASCII files
normally located in the &lt;Survo&gt;\U\SYS directory.
In the driver, various codes and keywords in brackets are defined
for the output control.

```

Drivers for various devices:

```

<A HREF="q0p1_04.html">1 = PostScript printers</A>
<A HREF="q112_01.html">2 = Screen</A>
<A HREF="q08a_07.html">3 = List of various drivers</A>

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Character fonts in Survo:

<A HREF="q0b_30.html">1 = Fonts in Survo windows</A>
<A HREF="q112_04.html">2 = Fonts in Survo screen graphics (GPLOT)</A>
<A HREF="q0p1_05.html">3 = Fonts in PostScript graphics and printing</A>
<A HREF="q09_01.html">T = Text editing</A>

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```

</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Printouts and previews by Adobe Acrobat

```

For these tasks the entire Adobe Acrobat package is needed.
Mere Acrobat Reader is not sufficient.

At first the document is printed to a PostScript file, say PRINT.PS, by command
PRINT <first_line>,<last_line> TO PRINT.PS
and then the preview and the printout is obtained by the command
/PS-PDF PRINT.PS
Sucro PS-PDF converts (by Adobe Acrobat Distiller program) the PS file
PRINT.PS to a PDF file PRINT.PDF and calls thereafter Adobe Acrobat
to show PRINT.PDF on the screen. Printing on any Windows printer
takes place from the File menu of Adobe Acrobat.

A smart way to organize the whole task is to set the commands in order
/PS-PDF PRINT.PS / Activate this after PRINT!
PRINT <first_line>,<last_line> TO PRINT.PS

```

<A HREF="q08_01.html">P = More information about PRINT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">When something has been printed to a PostScript file, the most
profitable tool for producing previews and making printouts (without a
PostScript printer) is the /GS-PDF sucro.

```

At first the document is printed to a PostScript file, say PRINT.PS, by
PRINT <first_line>,<last_line> TO PRINT.PS
and then the preview and the printout is obtained by the command
/GS-PDF PRINT.PS

/GS-PDF <name>.PS <name>.PDF
converts a PS file to a corresponding PDF file by using the Ghostscript
program and shows the PDF file by the Adobe Acrobat Reader program.
Then the printout on paper is produced by Acrobat Reader on any
Windows printer.

The freeware programs Ghostscript and Acrobat Reader do not belong to
SURVO MM. They must be downloaded from the net.
(Next page: Getting Ghostscript)

Getting Ghostscript program

The latest version of Ghostscript (either a 32-bit or a 64-bit version) can be loaded as a self-extracting EXE file from the net. When installing it please use default settings.

When /GS-PDF is activated for the first time Survo locates it and saves the location of Gswin32.exe or Gswin64.exe as a text file <Survo>\U\SYS\GSPATH.SYS Thereafter Ghostscript is found according to information in GSPATH.SYS.

```
<A HREF="q08_01.html">P = More information about PRINT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">Control words in brackets given on control lines of PRINT lists:
```

[line_spacing(x)]

selects a line spacing of x Points (x/72 inches). Default is 12.

[page_length(x)]

selects a page length of x Points. Default is 780 (suitable for A4 paper).

[left_margin(x)]

sets the left margin to x picas (x/12 inches). Default is 18.

[margin(x)]

sets the left margin to x dmm (10 dmm = 1 mm).

[COPIES(x)]

sets the number of copies of each page to x. Default is 1.

[LANDSCAPE]

rotates the A4 page 90 degrees and the next lines will be printed from the top of the rotated page using the current left margin. The page length is not changed automatically, but it can be reselected separately by [page_length(528)], for example.

[PORTRAIT]

restores the original orientation of the page and the next lines will be printed from the top line onwards.

Control words in PRINT lists (continued):

[STORE(x)]

saves the current printing position as a point with a label x. This x can be any word. Example: [STORE(start)].

[JUMP(x)]

restores the printing position saved by [STORE(x)].

[POINT(x,y)]

takes a new printing position with coordinates x,y given in dmm units. The origin is the bottom left corner of the page. The left margin is not changed, but it can be redefined when necessary with [margin(x)] where x is given in dmm, too.

[COUNT_OFF]

breaks counting of lines and thus prevents an automatic page change.

[COUNT_ON]

continues line counting from the situation before the last [COUNT_OFF].

Control words [COUNT_ON] and [COUNT_OFF] are useful in printing text in several columns, for example.

[PRINT_OFF]

Lines after this control code are skipped in printing until code

[PRINT_ON] is encountered and printing continues.

Control words in PRINT lists (continued):

[GRAY(x)]

sets value 0x1 (from black to white) for the grayness of the background of the text when using the default shadow 5.

[FOREBACK(x,y)]

defines both the grayness of text (x) and its background (y).

This option is used by selecting a shadow character, say I, by

- shadow I: [FOREBACK(1,0)] [NORMAL]

In this case I is the same as the default shadow 7 [REVERSE].

[FONT_SCALING(x,y)]

rescales the current font by multiplying the width by x and the height by y.

```
<A HREF="q08_01.html">P = More information about PRINT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/q08_01.html">P = More information about PRINT</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q08_02.html">P = More information on PRINT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/q08_02.html">P = More information on PRINT</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">A control line (with a '-' in the control column) in the print list
and having the form
- include &lt;text_file&gt;
specifies lines of a text file to be included as control lines.
The default directory for &lt;text_file&gt; is the current data directory
and secondarily, &lt;Survo&gt;\U\SYS on the system disk.
There is no default extension in the file name, but .DEV is recommended
for proper device drivers.
```

<text_file> usually contains define and shadow lines which describe the features of the current printer for the PRINT program. Such a text file can be considered a device driver, since all the information about the printer has to be supplied by means of a series of - define, - shadow, and other control lines.

The system file SURVO.APU defines the default device driver for printing as print_dev=PS.DEV (for example) and then the lines of the text file (device driver) PS.DEV are processed by the PRINT operation as control lines before processing of lines in the print list. Thus the task of the driver file is to teach the PRINT program all the control words and codes of the current printer. The default device driver is replaced by another by using a control line of the form

```
- include &lt;text_file.DEV&gt;
```

as the first line (L1) in the print list of PRINT L1,L2.

The features described in device drivers are usually activated by control lines of the form

```
- [word1][word2][word3]
```

where strings in brackets are control words and macros defined by - define lines in the print list or in include files (drivers). For example,

```
- [Times(12)][line_spacing(14)]
```

selects (according to PS.DEV) the 12 point Times-Roman font ([Times(12)]) and line spacing of 14 points ([line_spacing(14)]).

The user can make new device drivers for various printers by using any existing Survo printer driver as a model or the user may modify and enlarge the existing ones. For example, all the control words can be translated to another language.

Please, note also that by referring to additional include files (for logos, etc.) in the print list, the user can easily enter various enhancements without the need to rewrite them completely.

```
<A HREF="q08_02.html">P = More information on PRINT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">A control line (with a '-' in the control column) in the print list
or in an include file (driver) and having the form
- define [new_word] [word1][word2]...
defines a new control word [new_word] as a combination (concatenation)
of previously defined words [word1][word2]...
The only predefined 'words' are the characters and character codes
in hexadecimal form in brackets. Thus [a/b] corresponds to decimal
code 16*a+b. All other words must be composed from characters and
from words already defined. Observe that any word can be redefined
later and all words depending on this word will be interpreted there-
after according to this new definition.
For example:
- define [SP] [2/0]
- define [three_spaces] [SP][SP][SP]
- define [AA] A[three_spaces]A
Any control word thus defined can be used on a control line (having
a '-' in the control column). For example line
- [AA][SP][AA]
will produce same output as a normal edit line
*A A A A

```

The maximum amount of text in control word definitions of PRINT is by default limited to 60000 bytes.

This value can be altered by giving a line

```
printdef=&lt;size&gt;
```

in the control file SURVO.APU.

```
<A HREF="q08_02.html">P = More information on PRINT</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">A control line (with a '-' in the control column) in the print list
```

```
or in an include file (driver) and having the form
```

```
- shadow &lt;shadow_character&gt;: [pre_code] [post_code]
```

```
where [pre_code] and (optional) [post_code] are defined earlier
```

```
defines the function of the &lt;shadow_character&gt; of the shadow line in the PRINT operation.
```

Thus when printing a character, say A, having <shadow_character> on the shadow line, the following sequence will be printed:

```
[pre_code]A[post_code]
```

For example, the subscripts may be printed by defining '2' (which is the standard attribute for subscripts) as a shadow character as

- shadow 2: [INDEX][half_line_down] [MAIN][half_line_up]

provided that the control words appearing in the definition are properly specified earlier.

```
<A HREF="q08_02.html">P = More information on PRINT</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A></SMALL></DIV>
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">A control line (with a '-' in the control column) in the print list or in an include file (driver) and having the form
```

```
- codes &lt;character_code_conversion_file&gt;
```

```
specifies the character conversion code for the PRINT operation.
```

```
See also <A HREF="q0c_01.html">CODES</A><B>?</B>
```

```
If no - codes control line appear in the print list or in the include files, no conversion takes place.
```

```
<A HREF="q08_02.html">P = More information on PRINT</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A></SMALL></DIV>
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">A control line (with a '-' in the control column) in the print list or in an include file (driver) and having the form
```

```
- control &lt;control_character&gt;; [code]
```

```
where [code] is defined earlier, causes [code] be printed always when a line having &lt;control_character&gt; in the control column of the edit field is encountered. After [code] the line itself will be printed.
```


For example,

- control W: -----[CR]
overwrites the 50 first characters of the current line with '-'s.

```
<A HREF="q08_02.html">P = More information on PRINT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Current Survo device drivers for PRINT/PLOT operations:
```

PS.DEV	PostScript
EPSON.DEV	Epson printers (PRINT only)
DESKJET.DEV	HP DeskJet (PRINT only)
LASERJET.DEV	HP LaserJet (PRINT only)

For PostScript printing (PS.DEV), supplementary drivers are
GCHAR.DV2 for graphic characters (box graphics),
MATH.DV2 for mathematical symbols.
PSFONTS.DV2 for various extra fonts (Bookman, NewCenturySchlbk, etc.)

```
<A HREF="q08_02.html">P = More information on PRINT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Text fonts in printing and plotting

<A HREF="q0p1_05.html">1 = PostScript fonts in PRINT and PLOT</A>
```

```

<A HREF="q0p2_01.html">2 = Adjusting lines according to selected fonts in TRIM</A>
<A HREF="q112_04.html">3 = Fonts in screen graphics (GPLOT)</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">/TRIMP L1,L2,&lt;line_width&gt;,&lt;font_type&gt;
trims lines L1-L2 according to &lt;font_type&gt; for desired &lt;line_width&gt;.
Allowed font types are Times, Swiss, AvantGarde, Bookman, NewCentury,
Palatino and ZapfChancery (Only initials required).
Font size in points is given after the type in parentheses.
&lt;line_width&gt; is given in picas (1 pica = 1/12 inches).
Examples: /TRIMP CUR+1,END,42,Bookman(10)
/TRIMP 60,Times / default size is 12 points

```

The corresponding line width is selected in PRINT operation by the control word [trim(W)] where W has the same value as <line_width> above.

```

<A HREF="q08c_01.html">1 = Text fonts in printing and plotting</A>
<A HREF="q06_01.html">2 = More on TRIM commands</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Footnotes can be written and placed to the end of the current page
automatically as follows:
Indicate in the text the place that refers to the footnote by the
character '*' with 'F' as the shadow character. In the final printing,

```

this character will be replaced by the index of the footnote.
This line must be followed an empty line and the lines containing the footnote text. The footnote text is terminated by an empty line.

Example:

This is text having references* to two footnotes.*

This is the first footnote text.

This is the second footnote text
taking two lines.

The text continues...

The control of the page changes is automatic. PRINT takes into account the lengths of the footnotes.

The reference numbers for footnotes are 1,2,3,... unless otherwise stated by [footnote_number(n)] where n will be the number of the next footnote. By using [footnote_number(1)] on header lines, counting will be reset for each page.

The typeface etc. for footnotes is controlled by control words [NOTE_START] and [NOTE_END]. See the proper device driver for default settings.

```
<A HREF="q08_02.html">P = More information on PRINT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">An automatic index with page numbers for selected keywords and phrases
is initiated by the control line
  - index &lt;name_of_text_file>; .
The keywords must be indicated in the text either by putting a '*' as
a shadow character to any place within a word or by indicating
the start of a (longer) keyphrase by the shadow '[' and the end
of it by the shadow ']'.
The keysucro S simplifies typing of such shadow characters.
The resulting text file containing the key words and their page numbers
can be edited later. For example, it can be converted to a Survo
data file (by FILE SAVE), sorted (by FILE SORT) and edited (by FILE SHOW).

  <A HREF="q08_02.html">P = More information on PRINT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">The text in the PRINT list (without control characters and page headers) can be saved in an ASCII text file by giving a control line

- ascii_text <name_of_text_file> .

In this way, texts made in Survo can be transferred to other systems.

P = More information on PRINT

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Miscellaneous control lines in PRINT (for PostScript printing)

A = - replace

B = - def_space

C = - silent

D = - list

P = More information on PRINT

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">A control line (with a '-' in the control column) in the print list
and having the form
- list &lt;LST_file&gt;
specifies chapters defined in &lt;LST_file&gt; to be printed (as by - chapter).

  <A HREF="qk1_04.html">L = LST files</A>
  <A HREF="q08_02.html">P = More information on PRINT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> - replace &lt;string1&gt; &lt;string2&gt;;
as a control line in the PRINT list replaces each occurrence of
&lt;string1&gt; in the text to be printed by &lt;string2&gt;. Only the latest
- replace line is valid.
This feature is useful in giving varying chapter names or numbers
on header lines typically in the form
- replace ?????? 3.1

  <A HREF="q08d_04.html">M = More information on miscellaneous control lines in PRINT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> - def_space &lt;character&gt;
replaces &lt;character&gt; by a space character on all - define and - shadow
lines. Example:
- def_space _

<A HREF="q08d_04.html">M = More information on miscellaneous control lines in PRINT</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> - silent
as a control line in the PRINT list cancels all temporary displays
during the PRINT operation.

<A NAME="MM"></A>
<A HREF="q08d_04.html">M = More information on miscellaneous control lines in PRINT</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The editor of Survo provides several means for word processing.

```

When typing text in the edit field the typewriter keys operate as in a standard typewriter.

In text editing various control keys have their natural functions.

For example, characters and lines are inserted and deleted by simple key

strokes. The cursor is moved by the arrow keys. (See [KEYS](#))

[1](#) = Clearing the edit field (CLEAR,SCRATCH,DELETE,ERASE)

[2](#) = Searching and replacing (FIND,REPLACE,VFIND)

[3](#) = Formatting (TRIM,FORM,PUTEND)

[4](#) = Moving parts of the edit field|(MOVE,COPY,INSERT,CHANGE,U

[5](#) = Printing (PRINT) || REVERSE

[6](#) = Loading edit files and text files to the edit field (LOAD,LOADP,SH

[7](#) = Saving the edit field in an edit file (SAVE) in a text file (SAVEP)

[8](#) = Code conversion (CONVERT)

[C](#) = Control operations

[H](#) = Hypertext applications

[T](#) = Text file processing

[F](#) = Character fonts

[L](#) = Lukunopeuden ja luettavuuden mittaaminen (LUE) (in Finnish)

[E](#) = More information on EDITOR

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo>

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Clearing the edit field:

[1](#) = CLEAR

[2](#) = SCRATCH

[3](#) = DELETE

[4](#) = ERASE

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo>

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Formatting:
  <A HREF="q06_01.html">1 = TRIM commands for adjustment of text lines</A>
  <A HREF="q05_11.html">2 = FORM command for formatting of tables</A>
  <A HREF="q05_12.html">3 = PUTEND command for inserting a constant string at the end of lines
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Moving parts of the edit field:
  <A HREF="q0b_02.html">0 = SORT</A>
  <A HREF="q0b_04.html">1 = MOVE</A>
  <A HREF="q02_17.html">2 = BLOCK (alt-F4)key</A>
  <A HREF="q05_03.html">3 = COPY</A>
  <A HREF="q05_07.html">4 = INSERT</A>
  <A HREF="q0b_03.html">5 = CHANGE</A>
  <A HREF="q09_07.html">6 = UPDATE</A>
  <A HREF="q09_11.html">7 = TEXTCOLS</A>
  <A HREF="q0b_05.html">8 = REVERSE</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Loading edit files and text files to the edit field:
  <A HREF="q04_02.html">1 = LOAD</A>
  <A HREF="q04_06.html">2 = SHOW</A>

```



```

    <A HREF="q04_09.html">3 = LOADP</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Saving the edit field:
  <A HREF="q04_01.html">1 = SAVE</A>
  <A HREF="q04_08.html">2 = SAVEP</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">UPDATE L1,L2,&lt;key_width&gt;,&lt;edit_file&gt;
replaces lines in a given &lt;edit_file&gt; by lines L1-L2 given in the
current edit field. The proper lines to be replaced are matched by
&lt;key_width&gt; first characters on each line. The order of the lines
in &lt;edit_file&gt; can be different from that in the current edit field.

A typical example of UPDATE is in the edit field &lt;Survo&gt;\U\SYS\CURRENCY.EDT .
There the UPDATE scheme will replace lines in file &lt;Survo&gt;\U\SYS\MEASURES.EDT
by updated values of international money exchange rates.

  <A HREF="q09_01.html">T = More information on text editing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">OIO
(Finnish Spelling Checker)
(vain SURVO 84C:ss )
Pelkk OIO ilman parametereja oikolukee komentorivin alla olevan
tekstin toimituskent n loppuun asti.
Oikoluvun aikana kuvaruudussa n kyy ty n eteneminen riveitt in.
Virheellisten ja tuntemattomien sanojen kohdalla toiminta keskeytyy.
K ytt j voi t ll in korjata sanan. Sana voidaan my s ohittaa
ENTER-napilla tai tallettaa napilla + k ytt j n omien sanojen luetteloon,
joka on tekstiedosto SANAT.TXT hakemistossa .\SYS .

OIO-komennon toiminta perustuu Kimmo Koskenniemen (Helsingin yliopisto)
laatimaan algoritmiin ja C-kieliseen ohjelmaan, johon on lis tty
Survolle ominainen k ytt j liit nt ja uusien sanojen hakemiston
hallinta. Koskenniemen ohjelman nykyinen sanavarasto on noin 7000
perusmuotoista sanaa ja ohjelma tunnistaa niiden kaikki taivutusmuodot.

  <A HREF="q09_01.html">T = More information on text editing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Text file processing in Survo:

  <A HREF="q04_06.html">1 = Browsing and loading parts of text files (SHOW)</A>
  <A HREF="q04_08.html">2 = Saving edit lines as a text file (SAVEP)</A>
  <A HREF="q04_09.html">3 = Loading text files into the edit field (LOADP)</A>
  <A HREF="qf6_01.html">4 = Saving text files in Survo data files (FILE SAVE)</A>
  <A HREF="qf7_01.html">5 = Loading Survo data files into text files (FILE LOAD &lt;data&gt; TO
  <A HREF="qk1_01.html">6 = LIST operations</A>
  <A HREF="q09_10.html">7 = TXT operations for text files</A>

```

8 = Searching for data tables in text files (DATAFIND by K.Vehkalahti)
9 = Transposing a data set in a text file (TRANSPOSE)

T = More information on text editing

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi
</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">TXT operations for text files

1 = TXTCONV for character and string conversions

2 = TXTRIM for adjusting the line length of a text file

3 = TXTCOUNT for counting frequencies of various characters/line

4 = TXTEDTOUT for saving an edit field with shadows etc. in a text file

5 = TXTEDTIN for loading an edit field saved by TXTEDTOUT

6 = TXTDEL for deleting lines between two lines given in the edit field

7 = TXTSHORT for shortening long fields

T = More information on text editing

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi
</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">TEXTCOLS L1,L2,<W>,<L>,<C>,<text>

transforms a text column on lines L1-L2 and having the width <W>

to text blocks each of them having <C> columns and <L> lines.

Optional <text> is inserted as an extra line between the blocks.

Example on the next page:

TEXTCOLS CUR+1,CUR+16,5,4,3,/_New_page

1111

1111

1111

1111

2222

2222

2222

2222

3333

3333

3333

3333

4444

4444

4444

4444

This line and lines below it remain intact.

T = More information on text editing

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">

LUE-komennolla voidaan mitata tekstin (neen) lukemiseen tarvittava aika
ja laskea tekstin luettavuutta kuvaava indeksi.

Tutkittava teksti on joko toimituskent ss LUE-komennon alapuolella
tai erillisess tekstitiedostossa.

Tekstin ollessa toimituskent ss komento on pelkk LUE
ja tekstitiedoston tapauksessa LUE <tiedoston_nimi> .

Tulokset n ytet n tekstin l pik ynnin j lkeen v liaikaisesti ruudussa
ja lukuaika tulee my s komentoriville.

Lis ksi tulokset menev t tulostiedostoon.

Jos tulokset halutaan saada toimituskentt n, annetaan
viimeisen parametrina ensimmäinen tulostusrivi,
siis esim. LUE LUENTO1.TXT,11

TEKSTIN LUKUAIKA:

LUE:n antama arvio tekstin lukemiseen tarvittavasta lukuajasta
perustuu S.Mustosen laatimaan dynaamiseen regressiomalliin.

Mallissa lukuaika arvioidaan tekstissä esiintyvien lauseiden, sanojen ja tavujen lukumäärän avulla.

Arvioinnin voi sopeuttaa oman lukunopeuden mukaisesti antamalla tsmennnyksen MITTAUS=<lukijan_nimi>; (Huom. nimessä ei välilyöntejä).
Tilin kuvaputkelle saadaan lukemista koskevat ohjeet ja ohjelma mittaa todellisen lukunopeuden yhden tai muutaman lauseen erissä kunnes käyttäjä (lukija) keskeyttää mittauksen napilla ESC.

Mittauksen aikana kuvaputken alaosassa näytetään paitsi odotettu lukuaika ja havaittu lukuaika, myös regressiomallin senhetkiset kertoimet. Näin kerroimet muuttuvat lähtien arvoistaan vähitellen nykyisen lukijan lukutapaa vastaaviksi.
Kertoimien pitäisi jatkuvissa tilanteissa olla positiivisia. Negatiivisia kertoimia voi esiintyä, jos lukija ei pysty käyttämään johdonmukaisesti vaan vaihtaa lukunopeutta tai -tyyliä.

Mittauksen jälkeen saadaan koko tekstin lukuaika uuden lukutavan mukaisesti. Uuden lukijan tiedot tallentuvat automaattisesti aputiedostoon <Survo>\U\SYS\LUKIJA.TXT ja muiden tekstien lukemiseen tarvittava aika voidaan tmsä lukea mitata niiden mukaisesti käyttämällä tsmennyst LUKIJA=<lukijan_nimi>.

Lukunopeuden mittauksessa virkkeittäin tai virkepareittain kerätty tiedot saa myös talletetuksi tekstitiedostoon antamalla tsmennnyksen MITTADATA=<tiedoston_nimi>;. Muuntamalla tms tiedosto Survon havaintotiedostoksi on mahdollista jatkuen tutkia tarkemmin lukunopeuden riippuvuutta mitatuista tekstin ominaisuuksista.

TEKSTIN LUETTAVUUS:

LUE:n antama luettavuusarvio perustuu O.A. Wiion tutkimuksiin. Tekstin teoreettista vaikeusastetta mitataan vertaamalla sitä 300 lehtiartikkelin kielen tilastollisiin ominaisuuksiin. Lehtityypit ovat: lastenlehdet, sanomalehdet ja tiedelehdet. Tuloksena saatava vaikeusindeksi vaihtelee tyypillisesti nolasta sataan. Se lasketaan lineaarisen regressiomallin antamana ennusteena.

T = Tietoja tekstinkäsitteistä

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">TRANSPOSE <text_file>;<new_text_file>;

transposes a text file of m 'columns' and n lines into

a new text file with n 'columns' and m lines.
 It thus interchanges 'rows' and 'columns'.
 The separators between 'columns' in <code>text_file</code> and <code>new_text_file</code>,
 respectively are given by the specification
 DELIMITER=char1,char2
 By default char1=char2=TAB (char(9)).
 Examples: DELIMITER=TAB,SP (SP=space) is the same as
 DELIMITER=char(9),char(32)

```
<A HREF="q09_01.html">T = More information on text editing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM
<P><PRE CLASS="HelpText">Operations for tables in the edit field:
  <A HREF="q05_05.html">1 = SET   filling columns with with constant values/text</A>
  <A HREF="q05_06.html">2 = COUNT filling columns with counts 1,2,3... etc.</A>
  <A HREF="q06_03.html">3 = C+,C-,C*,C/   column arithmetics</A>
  <A HREF="q06_04.html">4 = L+,L-,L*,L/   row arithmetics</A>
  <A HREF="q05_11.html">5 = FORM   formatting</A>
  <A HREF="q0b_02.html">6 = SORT   sorting</A>
  <A HREF="q0a_03.html">7 = TRANSP transposing</A>
  <A HREF="q0a_05.html">8 = INTERP interpolation</A>
  <A HREF="q11_05.html">9 = General column arithmetics (VAR)</A>

  <A HREF="q22_02.html">T = TAB operations for multidimensional tables</A>
  <A HREF="qm2_01.html">M = MAT operations for matrices</A>
  <A HREF="qmt_01.html">A = TOUCH mode for arithmetics</A>
  <A HREF="q21_01.html">S = Statistical operations</A>
  <A HREF="q01_02.html">E = More information on the Survo Editor</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
```

```

<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Exchanging rows and columns
  <A HREF="q0a_03.html">1 = Transpose a table in the edit field (TRANSP)</A>
  <A HREF="q09_13.html">2 = Transpose a data set in a text file (TRANSPPOSE)</A>

```

MAT C=A' / transposes matrix file A.

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TRANSP L1,L2,L
transposes a table (i.e. exchanges rows and columns) on the edit lines
L1-L2 and writes the transposed table from the line L onwards.
The original table must be a rectangular array and it can contain
columns of both numbers and words.

  <A HREF="q0a_01.html">T = More information on operations for tables</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  <A HREF="q0a_01.html">T = More information on operations for tables</A>
</PRE></P><HR>

```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">INTERP L1,L2,L3,L4,K
where K is a label of a mask line of the form
  XXXXX  XXXX  YY.YYY  XX  YYY.YY
interpolates columns denoted by Y masks by linear regression analysis
using X columns as regressors. If there are no X columns or only one
X column appears, the Y columns are interpolated by polynomial regres-
sion. In this case the degree m of the polynomial is given by the
specification DEGREE=m. Default is DEGREE=1.
The source data with complete X and Y values is given on lines L1-L2.
The interpolated (and extrapolated) Y values will be computed on
lines L3-L4 using given X values on the same lines.
In polynomial regression without X columns, L-L1+1 where L is the
current line number, is the basic regressor. In this case it is typical
that L3=L2+1.
Examples on the next page!

57 *INTERP A,B,C,D,E
58 E  XX  XX   YYY.Y  YYY.YY
59 A 10  5   15.5  25
60 *  0  3    3.5   3
61 *  7  4   11.5  18
62 B  2 -5   -2.5  -1
63 C  7  4   <B> 11.5  18.00</B>
64 *  3  3   <B>  6.5   9.00</B>
65 D 11  3   <B> 14.5  25.00</B>
66 *.....
67 *INTERP CUR+2,CUR+4,CUR+5,CUR+7,CUR+1 / DEGREE=2
68 *   YYY
69 *    1
70 *    4
71 *    9
72 *   <B> 16</B>
73 *   <B> 25</B>
74 *   <B> 36</B>

  <A HREF="q0a_01.html">T = More information on operations for tables</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--

```


Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q0b1_02.html">1 = TIME operation</A>
  <A HREF="qt1_01.html">2 = Time series analysis and plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TIME
gives the date and time in the form
TIME Sun Dec 29 17:51:17 1985
on the current (TIME) line. TIME is useful in time measurement for long
sequences of Survo operations activated by PREFIX ESC.
```

SUCRO /TDIFF (without parameters) gives the difference of two preceding
TIME results in seconds.

TIME COUNT START (without parameters) resets a clock to 0.000 seconds.
TIME COUNT END (without parameters) gives the time elapsed since the
last activation of TIME COUNT START.

For measuring execution times of various Survo operations
in series of activations (e.g. in sucros) the following form
of TIME COUNT is useful.

TIME COUNT FILE <pathname_of_a_text_file>;
opens a new text file for saving execution times.
When an operation has been activated and completed, the time elapsed
is saved in the text file as a new line in the form
<name_of_command> <execution_time_in_seconds>;
Example: MNSIMUL 4.840
--- 2.010
CORR 1.230

Times between activations (typing text and commands, moving the cursor, etc.) are indicated in the file by '--- commands'.

Before studying and analyzing the contents of the text file it must be closed by the command

TIME COUNT FILE CLOSE

```
<A NAME="CC"></A> <A HREF="q03_01.html">C = More information on control operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
```

```
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q03_01.html">C = More information on control operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
```

```
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SORT L1,L2,K
sorts the lines L1-L2 in alphabetic order according to a sort key
defined by a mask of the form XXXXX on the image line K.
If the mask is of the form 11111, sorting will be numeric in ascending
order.
```

-SORT L1,L2,K

sorts the lines L1-L2 in descending order in case of a numeric mask on the image line K.

SORT L1,L2,K

sorts the lines L1-L2 in alphabetic order according to a sort key specified on the image line K and consisting of several fields of the form BBB AACC. Here AA is the primary key, BBB the secondary

key etc.

In alphabetic sorting the order of various characters is determined by the file SORTCODE.BIN. This file can be edited by using the CODES LOAD (and CODES SAVE) operation (see [CODES](http://www.survo.fi/q0c_01.html)). It can also be replaced by another .BIN file by entering a specification FILTER=<name_of_file>. The default path for .BIN files is <U\>SYS . For example, FILTER=SortLow.BIN defines the order AaBbCc...~ where 'A' and 'a' are considered distinct and 'A' precedes 'a'.

SORT L1,L2,K,S (as well as other modes of SORT) with an extra parameter 'S' observe also shadow lines and move them accordingly with the sorted lines.

For sorting of data files, see [FSORT](http://www.survo.fi/qf4_02.html).

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">CHANGE XY (X and Y line labels)
exchanges two chapters in the edit field. The first chapter starts
from the first line labelled with X and ends on the next X line.
The second chapter is defined by the Y lines in a similar way.

CHANGE L1,L2,K
where K is label of an image line of the form " XXXX YYYYYYYY "
interchanges the XXXX and YYYY columns on the lines L1-L2.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
```

<H1>&
<P><PRE CLASS="HelpText">MOVE xyz (x,y,z stand for any distinct special characters)
copies a rectangular array indicated by x in the left upper corner
and y in the right lower corner to a place indicated by z so that
x will be copied on z.
A usually simpler method for moving blocks of rectangular shape is
to press key BLOCK and follow instructions given on the bottom line.

MOVE L1,L2,C1,C2 FROM <text or edit file> TO L,C
copies a rectangular array from a text or edit file to the current edit
field. The array to be copied consists of lines L1-L2 and columns C1-C2.
C1 and C2 are optional (default entire lines). The left upper corner
of the array will be copied to line L and column C in the edit field
(C being optional with default value 1).

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO MM Help System (web edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>
<BODY>
<H1>&
<P><PRE CLASS="HelpText">REVERSE L1,L2
changes the words on each line (L1-L2) in opposite order.
REVERSE L1,L2,1
changes lines L1-L2 in opposite order.
REVERSE L1,L2,2
changes the characters on each line (L1-L2) in opposite order.
REVERSE L1,L2,2,k
changes characters on each line L1-L2 in chunks of k bytes in opposite order.

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO MM Help System (web edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>
<BODY>

```

<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ERASE &lt;string&gt;
erases all characters occurring in &lt;string&gt; from the edit field.
For example, ERASE +-.0123456789 erases all numbers.
ERASE L1,L2,&lt;string&gt;
works similarly but erases characters on the lines L1-L2 only.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Changing Survo system parameters
  <A HREF="q0b_08.html">1 = SYSTEM command for temporary changes</A>
  <A HREF="q0b_09.html">2 = SYS  command for permanent changes</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SYSTEM &lt;parameter&gt;=&lt;value&gt;
changes the value of certain system parameters. Accepted parameters
are, for example, scale_check, accuracy, results.
The effects of SYSTEM are valid in the current session only.
For permanent changes the SYS command must be used.
Example: SYSTEM accuracy=16

```

Also macros denoted by M<character>=<text> can be changed and more such macros defined. Examples: SYSTEM M8=PRINT CUR+1,END
SYSTEM M9=/MY_APPL! / '!' means that /MY_APPL is written and activated.
Settings by the SYSTEM command are not permanent. They are valid during the current Survo session only.

For permanent changes, use the /SURVO-SETUP sucro, for example.

SYSTEM <parameter>;

shows the current value of <parameter>.

CLEAR SYSTEM <pathname_of_SURVO.APU>;,<parameter>;

shows the value of system <parameter> in SURVO.APU.

Certain tutorials change some system parameters. To ensure restoring values of those parameters after the tutorial, two special forms of the SYSTEM command are available.

SYSTEM SAVE

saves system parameters

videomode, accuracy, help_window, gplot_layout, eout

and the size of the main window (# of lines and columns)

in a text file SUR_SYS.SYS on the path of temporary Survo files.

SYSTEM RESTORE

restores the setting saved by SYSTEM SAVE.

C = More information on control operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Survo system parameters are changed permanently by SYS command

SYS <word>=<value>;

sets a new line <word>=<value>; in the SURVO.APU file. If the <word>;

line already exists, it's value is replaced by the new one.

SYSDEL <word>;

deletes the <word>=<value>; line from SURVO.APU.

After SYS and SYSDEL the new contents of SURVO.APU is valid

when Survo is started again or a SETUP SURVO.APU command is given.

For temporary changes (valid in the current Survo session only) the SYSTEM command should be used.

C = More information on control operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The default values of the Survo system parameters are given in the
system file SURVO.APU which is a standard text file and saved in the
current Survo system directory.

```

In normal use of Survo, it is not necessary to know the details related to this system file and alter its contents.
The simplest way for studying current settings of system parameters and for changing them is to call `sucro /SURVO-SETUP`.

The whole set of system parameters may be changed during the Survo session by the `SETUP` command
`SETUP <system_file>`;
which also erases the current contents of the edit field.
Certain system parameters can also be changed temporarily by the `SYSTEM <parameter>=<value>` command. This command does not alter anything in the edit field.

```

<A HREF="q0b_11.html">P = System parameters</A>
<A HREF="q0b_28.html">W = New system parameters in SURVO MM</A>
<A HREF="q0b_07.html">S = Changing system parameters (SYSTEM and SYS commands)</A>
<A HREF="q03_01.html">C = More information on control operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">System parameters in SURVO.APU:

<A HREF="q0b_12.html">1 = ep4, llength, lname ('fixed' parameters for edit field control)</A>
<A HREF="q0b_13.html">2 = ed1, ed2, ed3      (size of the edit field)</A>
<A HREF="q0b_14.html">3 = er3, ec3      (size of the Survo main window)</A>
<A HREF="q0b_15.html">4 = speclist, specmax  (space for extra specifications)</A>
<A HREF="q0b_16.html">5 = edisk, tempdisk, ... (paths for data and temporary files)</A>
<A HREF="q0b_17.html">6 = qpath, sucropath, measures (various paths)</A>
<A HREF="q0b_18.html">7 = eout      (output file for results of Survo operations)</A>
<A HREF="q0b_19.html">8 = printer, ...  (printers and drivers)</A>
<A HREF="q0b_20.html">9 = scale_check, accuracy, results (control of statistical operations)</A>
<A HREF="q0b_21.html">A = insert_type, ...  (control of insert mode)</A>

```

```

<A HREF="q111_05.html">B = videomode      (logical size of graphics windows)</A>
<A HREF="q0b_22.html">C = autosave, autotrim (automatic saving, automatic text trimming)</A>
<A HREF="q0b_23.html">D = Macros</A>
<A HREF="q0b_24.html">E = Shadow characters</A>
<A HREF="q0b_25.html">F = alarm            (setting alarm)</A>
<A HREF="q0b_26.html">G = start_sucro      (sucro starting the Survo session)</A>
<A HREF="q0b_27.html">H = crt_palette     (colors in screen graphics)</A>

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">'Fixed' parameters for edit field control:

```

Max. number of columns on a line:

Parameter 'ep4' has several related tasks. When the user activates Survo operations, the system has to interpret edit lines consisting of several words separated by spaces and commas. Also when reading tables written in the edit field, the system must 'see' the number of columns etc. In many cases 'ep4' is the maximum number of such words or numbers on one edit line. In certain statistical analyses it will be the maximum number of variables. Example: ep4=300 .

Max. lengths of lines and names:

Parameter 'llength' (=1000) corresponds to the maximum line length in edit fields. It cannot be changed by the user; the entire system must be recompiled if this parameter is changed. Parameter 'lname' (=256) has also a fixed value in the same sense. It is the maximum allowed length of a pathname in Survo functions.

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">

```



```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Size of the edit field:

```

The size of the edit field is controlled by parameters 'ed1', 'ed2' and 'ed3'. 'ed1' is the field width (control character included), 'ed2' is the number of edit lines and 'ed3' is the maximum number of shadow lines. These values seldom have practical meaning since each edit field loaded from disk resets their values (as the START field when Survo is entered). The REDIM or INIT command is used to select new values for 'ed1', 'ed2' and 'ed3' for the current edit field.

Example: ed1=101 ed2=100 ed3=20 .

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Window size:
The size of the visible part of the edit field (the window size) is
determined by parameters 'er3' and 'ec3'. 'er3' is # of lines and 'ec3' #
of columns. Example: er3=23 ec3=72 (traditional values)
During a Survo session the window size can be changed by
RESIZE &lt;er3>;&lt;ec3>,.

```

The physical size (fonts) and location of the Survo Main window is changed most conveniently by soft buttons SYSTEM -> WINDOW.

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>

```

```
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Space for extra specifications:
Parameters 'speclist' and 'specmax' limit the amount of extra
specifications. When a Survo operation is activated, all specification
text (consisting of specifications in the current subfield and in the
potential *GLOBAL* subfield) are collected to a list having a length of
'speclist' characters at most and consisting of 'specmax' items at most.
Example: speclist=1000000 specmax=10000
```

In SURVO MM values of parameters speclist and specmax are defined automatically.

Using very large edit fields (say over 20000 lines) in SURVO MM may slow down certain activities depending on specifications. To increase the speed in such situations automatic detection of proper speclist and specmax values may be overridden by setting the 1st control character (in front of the 1st edit line) to ' ' (space). Then values given in SURVO.APU (or altered by SYSTEM commands) will be valid. Also extra border lines in suitable places speeds up operations when the first control character is ' '.

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Paths for data and temporary files:

Parameter 'edisk' is the default data disk path. 'last_disk' is the last
available diskdrive in current installation. Example: edisk=C:\E\D\
last_disk=F: . Default for edisk is edisk=&lt;Survo_path&gt;\D\ .
Parameter 'paths' defines a sequence of predetermined Survo data
paths (see PATHS?). It is valid only when last_disk=Z:. Example:
paths=C:\E\D\,D:.,D:\DATA\,E:
'tempdisk' defines the path for temporary files created during a
Survo session. If 'tempdisk' is not given, subdirectory TMP of Survo
is used for temporary files. Example: tempdisk=D:\TEMP\
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Inquiry system:
Parameter 'qpath' (for example, qpath=&lt;Survo&gt;\Q\EDQ) selects the path of
the default inquiry system (&lt;Survo&gt;\Q\EDQ) and the common forepart (EDQ) for
the files which belong to this inquiry system. The same Survo
installation may keep several inquiry systems one of which is active at
a time. QPATH is a Survo command for reselecting the inquiry system
during the session. Default for qpath is &lt;Survo_path&gt;\Q\EDQ .

Path for sucros:
Parameter 'sucropath' tells the path where the user's own sucros are
saved. Example: sucropath=D:\SUCROS\

Path for measurement units:
Parameter 'measures' gives the pathname for the edit file containing the
alphabetic list of measures used in numerical conversions. Default is
&lt;Survo&gt;\U\SYS\MEASURES.EDT (see <A HREF="qc1_01.html">CONV</A>?).
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Output file:
The name of the output file/device is given by parameter 'eout'. It is
changed during a Survo session by the OUTPUT command.
Example: eout=F:RESULTS Default is &lt;Survo&gt;\U\TMP\RESULTS .
Setting in SURVO.APU
eout=
no output file is in use (it is disabled).
During a Survo session the output file is changed by the command
OUTPUT &lt;pathname&gt;
and disabled by
OUTPUT -
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

```

"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Printer: See also <A HREF="q0b_31.html">PRINTER</A>?
Parameter 'printer' gives the printer port or name for the default printer.
Examples: printer=LPT1: printer="HP LaserJet 4M Plus"
Parameter 'print_dev' specifies the default device driver in the
PRINT operation. Example: print_dev=PS.DEV .
Parameter 'plot_mode' tells the default device in PLOT operations.
The DEVICE specification always dominates this setting. Example:
plot_mode=PostScript .
Parameter 'printdef' gives the maximum amount of bytes for
definitions of control words in the PRINT operation. Default is 60000.

```

Drivers for plotting:

The device drivers for PLOT operations are selected by parameters

ps_dev for PostScript (ps_dev=PS.DEV)

crt_dev for the screen (crt_dev=CRT16.DEV)

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Control parameters in statistical operations:
Parameters 'scale_check', 'accuracy' and 'results' are related to
control of statistical operations. Use keywords SCALES?, ACCURACY? and
RESULTS? to acquire more information.
Example: scale_check=2 accuracy=7 results=70 .
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

```

"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Insert mode:
Parameter 'insert_type' determines the function of the
INSERT key in text editing. Value 1 implies that INSERT merely
selects/deselects the insert mode. Value 0 implies that each INSERT
stroke adds one space at the current cursor position.
  When typing text between existing lines, an automatic line insertion
mode is adopted (i.e. a new line is inserted when the current becomes
full) when parameter 'insert_lines' is 1. If it is 0, lines are not
inserted automatically. This setting can also be adjusted during the Survo
session. To toggle the insert line mode on, press PREFIX A . To put it
off, press PREFIX a .
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Automatic saving of the edit field:
By setting autosave=n, the current edit field will be saved in the
SURVO.EDT file in the Survo directory of temporary files once in every n
minutes. Then, if by accident the contents of the edit field is lost,
the last spare copy will be found by the (sucro) command /AUTOLOAD or it
can be scanned by /AUTOSHOW . To omit temporary savings, set autosave=0.

Automatic trimming:
'autotrim' gives a TRIM command which is to be used for automatic
formatting when text chapters are moved by the WORDS (alt-F2) key.
Example: autotrim=TRIM3 72 .
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Macros:
Simple macros for typing commonly used commands and other
texts are defined by system parameters M1,M2,...,M9.
Macros are defined in the SURVO.APU file as lines of the form
M#=&lt;macro_text&gt;.

```

Each macro is activated by pressing the F2:PREFIX key and then # of the macro. Macros of this type are for typing of text only. No special characters are allowed.

Key sucros offer much more general possibilities (see SUCROS?)

Examples: M1=SCRATCH

M7=3.141592653589793 .

'!' at the end of macro means activating it as a command.

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Shadow characters:
The shadows list gives the attribute bytes (in decimal code) for various
Survo display modes. The colors corresponding to possible values (0-255)
can be displayed by the Survo command COLOR ALL. The 10 selected
attribute values in the shadows list correspond to the shadow characters
&lt;space&gt;, 1, 2, 3, 4, 5, 6, 7, 8, 9
according to the table below.

```

The colors (and background colors) in the second column are those corresponding to shadows=112,116,120,113,23,240,114,159,30,246 .

shadow display	printer	value in shadows list	
		normal	bright
space black (white)	normal	112	240
1 red (white)	bold	116	252
2 grey (white)	subscript	120	248
3 blue (white)	superscript	113	241
4 white (blue)	underline	23	23
5 bright white or yellow	dotting	240	224
6 green (white)	italics	114	242
7 white (light blue)	reversed	159	159
8 yellow (blue)	-	30	30
9 beige (white)	-	246	246

When selecting colors for display modes their characteristic differences should be observed. Survo uses them in many special functions (inquiries, touch mode etc.) and relies on the descriptions given above. The easiest way to maintain display colors is to activate /SURVO-SETUP .

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">alarm (system parameter in SURVO.APU):

Parameter 'alarm' gives the time in the form 09:15:30 for an alarm. When

the clock of the computer reaches this time point, the user is alarmed

by a beep and by a message

ALARM!!! Press #

The message stays until the user presses the # key. Survo alarms only when it is updating the clock on the top line of the edit field. Thus, an alarm may be delayed when a long Survo function is operating. Example: alarm=09:15 .

An alarm can be set temporarily (valid during current Survo session only) by
SYSTEM alarm=hh:mm:ss

To set a permanent alarm, insert a line of type

alarm=hh:mm:ss

in the SURVO.APU file.

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Start sucro:
Parameter start_sucro=&lt;pathname of a sucro&gt; specifies a sucro which
initiates the Survo session on the current installation. Example:
start_sucro= SURVO-START selects the menu-based start for Survo.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Colors in screen graphics:
'crt_palette' gives the default color palette in screen graphics.
If this parameter is missing, the original Survo palette is selected.
Other alternatives are crt_palette=&lt;file&gt; where
&lt;file&gt; is a palette file name with default extension .PAL and path
&lt;Survo&gt;\U\SYS .
Example: crt_palette=VGAGRAY.PAL (gives shades of gray on the VGA
screen).
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```



```

<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">New SURVO MM system parameters in SURVO.APU:

    <A HREF="q111_05.html">1 = videomode   (Logical dimensions of a graph)</A>
    <A HREF="q111_07.html">2 = gplot_layout (Locations and sizes of Survo graphics windows)</A>
    <A HREF="q0b_29.html">3 = soft_keys   (Soft keys below the SURVO MM main window)</A>
    <A HREF="q0b_30.html">4 = edit_font, help_font, os_font (Sizes and fonts of SURVO MM windows)</A>
    <A HREF="q0b_31.html">5 = printer   (Default PostScript printer)</A>
    <A HREF="q0b_32.html">6 = cursor   (Size of the cursor)</A>
    <A HREF="q0b_33.html">7 = help_window (using a separate window for help texts)</A>
    <A HREF="q0b_34.html">8 = trim_width,trim_tolerance (for TRIM commands)</A>
    <A HREF="q0b_35.html">9 = close_graphs (closing Survo graphics windows on exit)</A>
    <A HREF="q0b_36.html">A = sucro_speed (default speed in tutorials)</A>
    <A HREF="q0b_37.html">B = language   (working language)</A>
    <A HREF="qs1_09.html">C = session_tmp (control of subdirectories for temporary files)</A>

    <A HREF="q0b_10.html">S = General information on Survo system parameters</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Soft keys:
'soft_keys' (in SURVO.APU)
defines the edit field and the list of default soft keys (buttons)
appearing below the SURVO MM main window.
Typical setting is
soft_keys=SUR_SOFT,A,SUR-SOFT,A
where the two first parameters refer to the Finnish version and two
last to the English version of soft buttons.
The edit fields (SUR_SOFT,SUR-SOFT) are in the SURVO MM main program
directory (&lt;Survo&gt;\U) and the various lists of soft buttons (as A above)
are defined in these edit fields. More information is found by studying
SUR_SOFT.EDT (or SUR-SOFT.EDT).
During the Survo session, rows of visible soft buttons can be changed by
SOFTKEYS &lt;edit_field&gt;,&lt;name_of_list&gt;
command. This command is typically activated by sucros controlling
soft button applications.
In certain applications the soft buttons may become invisible.
To refresh the original setting defined by 'soft_keys' in SURVO.APU,
press the alt-F1 key or activate SOFTKEYS (without parameters).
(F2 alt-F1 makes the soft buttons invisible).

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">System parameters (in SURVO.APU) for Survo windows and fonts:

```

window=18,0,0 / in Windows XP (and possibly 2000,NT)
 gives the font size (here 18) and the position (here 0,0) of the main
 window of the Survo editor. According to the Windows convention, the
 position coordinates refer to the top-left corner of the window.

edit_font=8,12,0,0 / in Windows 9X
 gives the font size (here 8x12) and the position (here 0,0) of the main
 window of the Survo editor.
 help_font=8,12,0,400 / in Windows 9X
 gives the size and position of the HELP window in a similar way.
 os_font=8,12,0,420 / in Windows 9X
 gives the properties of the window of OS commands in a similar way.

In Windows XP,2000,NT font sizes and locations of these windows are
 changed most easily by soft buttons SYSTEM -> WINDOW.

Properties of Survo graphics windows are controlled by the GLOT /LAYOUT
 command (See GLAYOUT?).

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The default PostScript printer is selected in SURVO.APU by

```

printer="<Windows name of a PostScript printer>"
Example: printer="HP LaserJet 4M Plus"

Names of valid printers are in the list of Windows printers available
in the current installation (Start->Settings->Printers),
or you can list them to the edit field e.g. by the command
INDEX /PRINTERS,END+2

PRINT L1,L2 uses the default PostScript printer.
PRINT L1,L2 TO "<Windows name of a PostScript printer>"
redirects the output to another PostScript printer.
PRINT L1,L2 TO <file>
merely creates a PostScript file. This file can be printed also by any
(non-PostScript) Windows printer by means of various Windows programs
like Ghostscript or Adobe Acrobat (Distiller).

```
<A HREF="q08_14.html">G = Printouts and previews by Ghostscript and Acrobat Reader</A>
<A HREF="q08_13.html">A = Printouts and previews by Adobe Acrobat</A>
<A HREF="q08_01.html">P = PRINT operation</A>
<A HREF="q0b_28.html">S = New system parameters</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">cursor=30,80 sets the size of the cursor in the Survo main window.
The parameters are percentages of the maximum height and the first
one (30) refers to the size in ovrtype mode and the latter (80)
in insert mode.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```

</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">help_window=1 (in SURVO.APU)
tells that help texts will be shown in a separate window defined by
'help_font' in SURVO.APU.
help_window=0
implies the setting of earlier Survo systems where help texts appear
in the main Survo window.
help_window=1 is default.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">trim_width=&lt;integer&gt; (in SURVO.APU)
tells the default line width for TRIM commands.
Default is trim_width=72 (traditional width of the Survo main window).

trim_tolerance=&lt;integer&gt; (in SURVO.APU)
gives the shortest permitted length of the start of a hyphenated word
at the end of the line when using the TRIM3 command.
Default is 2. Other suitable values are 3,4,...
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">close_graphs=1 (in SURVO.APU)
means that all open graphics windows (created by GPLOT commands)
will be closed on exit from Survo.

```

close_graphs=0 leave them open.

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">sucro_speed=<integer> (in SURVO.APU)

sets the default waiting time in tutorials made as sucros.

Default is sucro_speed=10.

During a tutorial, pressing of '+' decreases sucro_speed by 1, i.e.

makes it to run faster. Pressing of '-' increases sucro_speed by 1.

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">language=<1 or 2> (in SURVO.APU)

selects the working language in Survo.

language=1 selects Finnish.

language=2 selects English.

The working language can be changed during a Survo session by soft

buttons SYSTEM -> LANGUAGE.

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Bytewise operations for (binary) files

  <A HREF="q0c_02.html">1 = CODES LOAD</A>
  <A HREF="q0c_03.html">2 = CODES SAVE</A>
  <A HREF="q0c_04.html">3 = CODES REMOVE</A>
  <A HREF="q0c_05.html">4 = CODES COPY</A>

  <A HREF="q03_01.html">C = More information on control operations</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">http://www.survo.fi/
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
  <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
  <META NAME="Generator" CONTENT="SURVO MM">
  <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
  <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
  <META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
  <META NAME="Classification" CONTENT="help system">
  <META NAME="Keywords" CONTENT="Survo, help, hypertext">
  </HEAD>
  <BODY>
  <H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
  <P><PRE CLASS="HelpText">CODES LOAD &lt;binary_file> / BYTES=&lt;N>;
loads &lt;N>; first characters of &lt;binary_file>; to the edit field
and lists them on consecutive lines below the current line.
Default value for &lt;N>; is BYTES=256.
The list of the characters has the following form:
CODES LOAD SORTCODE.BIN_
  0  0
  1  1
  2  2
  3  3
  .. ..
  97 65 a A
  98 66 b B
  99 67 c C
  .. ..
  where the second column gives the decimal code of the corresponding
  character in the file. (For example, in SORTCODE.BIN, which is used
  in alphabetic sorting, 97 is mapped to 65 (i.e. 'a' is like 'A').
  Columns 3 and 4 are for explanations only.

  <A HREF="q0c_01.html">C = More information on CODES operations</A>
```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">CODES SAVE &lt;binary_file&gt;
saves a list of codes (of the previous type) to a file.

```

Sort, conversion and input/output operations of Survo use binary files of this type for character manipulation.
See SORT, CONVERT, PRINT etc.
Files of more than <N> bytes can be edited by CODES LOAD/SAVE operations of the form
CODES <LOAD or SAVE>;n
where n is the record number 1,2,3,... for records of size <N>.
For example CODES LOAD PITCH.BIN,1 is same as CODES LOAD PITCH.BIN

When editing large binary files with CODES LOAD/SAVE commands finding a particular string of characters is simplified by using the VFIND command.

```

<A HREF="q0c_01.html">C = More information on CODES operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">CODES REMOVE &lt;input_file&gt;;&lt;output_file&gt;;C1,C2
makes a copy of &lt;input_file&gt; to &lt;output_file&gt; so that bytes from C1
to C2 are removed. For example, CODES REMOVE K1.TXT,K2.TXT,0,127
produces K2.TXT as a copy of K1.TXT but without the 128 first bytes

```

of K1.TXT.

CODES LOAD can be used for inspecting `<input_file>`; and for the decision about what are the bytes to be removed.

CODES REMOVE `<input_file>`,`<output_file>`,STEP,`<integer>`;
removes every `<integer>`; byte.
For example, CODES REMOVE K1.TXT,K2.TXT,STEP,2 removes bytes 1,3,5,...

```
<A HREF="q0c_01.html">C = More information on CODES operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">CODES COPY <input_file>,<output_file>;C1,C2
makes a partial copy of <input_file> from bytes C1 to C2.
```

```
<A HREF="q0c_01.html">C = More information on CODES operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">CONVERT L1,L2,<conversion_file>,<column>;
converts all the characters on lines L1-L2 in the current edit field
according to the <column>; (1,2,...) of <conversion_file>.
Default value for <column>; is 1. Each column consists of 256 bytes.
A <conversion_file>; can be defined by the user and saved by the
CODES SAVE operation (see <A HREF="q0c_01.html">CODES</A>).
```

```
<A HREF="q09_01.html">T = More information on text editing</A>
```



```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>

```

```

<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">COLX
COLX performs various modifications in the edit field.
COLX col1,col2 exchanges columns col1 and col2 for the
lines below the command (COLX) line.
Default is col1=0, col2=last column; i.e. the control
column and the last column are exchanged.

```

COLX Ri,Cj (where i and j are integers)
modifies the visible part of the edit field in such a way
that i lines and j columns are displayed. Typically
i<=23 and j<=80.

COLX Scol1,col2 copies characters in column col2 to
shadow characters of column col1.

COLX Li,col,j copies characters of line i to characters
in column col starting from line j.

Changing and hiding shadow effects (colors) in the edit field

COLX s<shadow_code>,<new_code>;
displays characters with <shadow_code> with another shadow code <new_code>.
The codes are given in decimal form, i.e. shadow '1' (red) is code 49
obtained by conversion 1(ascii:10)=49.
For example, COLX s49,32 (red->blank) hides effects of shadows '1'.

COLX s,<BIN_file>;
converts all shadow codes according to a 256 byte binary file.
Default path for the file is <Survo>\U\SYS and extension is .BIN.
Binary files are maintained by CODES SAVE and CODES LOAD commands.
For example, COLX s,SHADKILL hides all shadow effects, i.e. maps
all shadow codes to blank (32).
COLX s
restores original setting.

COLX w
displays the current size of the main window in the form
COLX w 30 80 (window size)
where 30 is # of lines and 80 is # of columns. (See also RESIZE?).

COLX W<integer>;
gives the coefficient for waiting times in sucros. Default is COLX W10.
In tutorials (sucros) this coefficient can be changed temporarily by

'+' and '-' keys. '+' decreases and '-' increases its value.

COLX APU <word>=<value>;
sets a new line <word>=<value>; in the SURVO.APU file. If the <word>;
line already exists, it's value is replaced by the new one.

COLX APUDEL <word>;
deletes the <word>=<value>; line from SURVO.APU.

After COLX APU and COLX APUDEL the new contents of SURVO.APU is valid
when Survo is started again or a SETUP SURVO.APU command is given.

Alternatively, SYS is the same as COLX APU and SYSDEL is the same
as COLX APUDEL.

```
<A HREF="q03_01.html">C = More information on control operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">STRDIST L1,L2
computes Levenshtein distance
between strings given on edit lines L1,L2.
See e.g. <A HREF="http://www.merriam-park.com/ld.htm">www.merriam-park.com/ld.htm</A>
```

Levenshtein (edit) distance is a measure of the similarity between two
strings s and t. The distance is the number of deletions, insertions, or
substitutions required to transform s into t.

Levenshtein distance is named after the Russian scientist Vladimir
Levenshtein, who devised the algorithm in 1965.

The Levenshtein distance algorithm has been used in
Spell checking, Speech recognition, DNA analysis, Plagiarism detection,
etc.

In Survo, Levenshtein distance is used for detecting typos in command and
specification words (see ERROR?) and in heuristic searches by
the FIND command (see HFIND?).

The standard measure is slightly modified by permitting an interchange of
two consecutive characters as one of the edit operations.

Example:

STRDIST CUR+1,CUR+2 / Levenshtein distance is 2 (1)
HEIGHTS
HEIGHTS

Thus the original distance is 2 (2 substitutions) and the modified
one is 1 (1 interchange).

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
```

```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SURVO MM Commands for window management:

```

WIN SCREEN

writes the size of the screen in pixels on the next edit line.

WIN MIN

minimizes the SURVO MM main window (useful in graphical sucro applications).

WIN NORMAL

restores the normal size of the main window.

WIN MAX

maximizes the SURVO MM main window.

WIN POS x,y

moves the top-left corner of the SURVO MM main window to position (x,y).

/WINMAX resizes the main window to its maximum size using the current font.

It does the job by combining various WIN commands on this and following page. (/WINMAX is made by Kimmo Vehkalahti.)

/LMAX works as /WINMAX but increases only the number of visible lines.

SURVO MM Commands for window management: (continued)

WIN FONT GET

writes the width and height of the SURVO MM main window font.

WIN GET

writes the position and size of the SURVO MM main window.

WINDOW <font_size>,<x>,<y>;

selects a new font size and position for the main Survo window (see also LNKFILE?).

FONT <font_size>;

selects a new font for the SURVO MM main window.

S = System parameters for Survo windows and fonts

G = Control of Survo graphics windows

C = More on control commands

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Using the mouse in SURVO MM:

```

SURVO MM can be operated without a mouse just as earlier versions of Survo.
In certain tasks, however, the mouse offers alternative means.

```

<A HREF="q0c_11.html">1 = Moving the cursor and activating commands</A>
<A HREF="q0c_12.html">2 = Help system</A>
<A HREF="q0c_13.html">3 = Screen graphics</A>
<A HREF="q0c_14.html">4 = Soft buttons of SURVO MM</A>
<A HREF="q0c_17.html">5 = Defining blocks, copying them in the edit field and to the clipboard</A>
<A HREF="q0c_16.html">6 = Vertical and horizontal scrolling by the mouse wheel</A>

<A HREF="q02_01.html">K = Keys and their functions</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Mouse: Moving the cursor and activating commands:

```

Traditionally in Survo the cursor is moved in the edit field window
by the arrow keys, etc. and commands touched by the cursor are activated
by the ESC key,

In SURVO MM it is usually faster to move the cursor by the mouse by
clicking the sought position. A double-click (by the left button)
activates a Survo command if such a one is indicated by the mouse.

A double-click by the right button starts the help system of Survo
and information will be shown about the keyword indicated by the
mouse. Please note that, in principle, any word in the edit field
is a potential link to the help system.

```

<A HREF="q0c_10.html">M = More information on the mouse</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>

```

```

</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Mouse: Help system

```

Navigation in the help window of SURVO MM is easiest by clicking keywords and items in the lists by the mouse.

This facility is available if the system parameter help_window is set to 1 in SURVO.APU which is the default setting.

The top line of the help window contains the mouse buttons

```

<B>|Prev| |Next| |Load| |Exit|

```

for moving backwards in the help text |Prev|,
for moving forwards in the help text |Next|,
for loading the text in the current help window to the edit field |Load|,
for exit from the help system |Exit|.

The help window can be left open and any words within the text can be used as links to subsequent inquiries by clicking them.

In the lists consisting of lines of the type

```

<A HREF="q11_01.html">P = More information on plotting</A>

```

clicking any position in front of '=' activates the same inquiry as pressing the key in front of '=' ('P' in this case).

```

  <A HREF="q0c_10.html">M = More information on the mouse</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Mouse: Screen graphics

```

Each graphics window created by GPLOT (see GPLOT?), represent enhanced metafile and such a window can be easily minimized, maximized, moved, and resized by typical means of Windows by the mouse. By using a MOUSE specification (see MOUSE2?) in GPLOT scheme logical coordinates of the point in the graph clicked by the mouse may be saved in a text file. This a valuable feature, for example, in making sucros which are operating solely with graphic windows (while the edit field window is minimized). (See also WIN?).

```
<A HREF="q113_09.html">G = Obtaining logical coordinates of a point in a graph</A>
<A HREF="q0c_10.html">M = More information on the mouse</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">Mouse: Soft buttons of SURVO MM
```

Below the edit field window, usually one or more lines of soft buttons are displayed. By touching them by the mouse the function of the soft button is question is shown on the bottom line as plain text. Soft buttons can be activated by the mouse (by a single or double click depending on the task of the button). Such activations lead typically to various operation sequences of Survo (made as sucros) or to new set of soft buttons (enabling hierarchical menus, for example). Sets of soft buttons are defined in special edit fields as a typical Survo application for any purposes. In this way active users can create more user-friendly, mouse-controlled solutions for themselves and/or other users.

```
<A HREF="q0b_29.html">S = SOFTKEYS command for mastering soft buttons</A>
<A HREF="q0c_10.html">M = More information on the mouse</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  <A HREF="q0c_10.html">M = More information on the mouse</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Vertical and horizontal scrolling by the mouse wheel (ver. 3.33+)
The contents of the edit field can be scrolled by the scroll wheel.
The direction (|=vertical or _=horizontal) is changed by pressing
the SHIFT key and the current direction is shown (by | or _)
after text "SURVO MM" on the header line of the current edit field.

```

A reasonably fast scrolling speed is achieved by continuous rolling of the wheel.

Alternative, traditional means in Survo for scrolling are arrow keys, alt+arrow keys, PgDn, PgUp.

```

  <A HREF="q0c_10.html">M = More information on the mouse</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>

```

<H1>&
<P><PRE CLASS="HelpText">The traditional way of defining text blocks and copying them has been
provided by the alt-F4 (BLOCK) key (see AF4?).

The same tasks can be carried out by the rightmost mouse button (RMB).
Simply start definition of a block by clicking its upper-left corner
by RMB. Then click the opposite corner (lower-right) by RMB.
Thereafter the block area will be seen as painted.

To put the block to the clipboard, click any point inside the block by RMB
or
to make copies of the block in the current edit field, point a new
(empty) place by the mouse and click by RMB.

This procedure may be interrupted at any stage by the DEL key or
by clicking the prompt line (below the last visible edit line).

Another option for the rightmost mouse button is

C = Copying single 'words' by mouse buttons

M = More information on the mouse

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from
</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Survo is normally started from a shortcut icon "SURVO MM" (or
"Survo Editor") located on the desktop.

Each shortcut is controlled by Windows using a corresponding LNK file.

In Windows XP (and obviously also in NT and 2000) the properties
of the Survo main window (i.e. font size and location) are changed
most conveniently by the WINDOW command (for the current session)
or by "SYS window=..." command (for a permanent change).

These commands do not change the original LNK file.

However, if same properties are edited by clicking the Survo icon
(and selecting properties), the LNK file will be updated by Windows
and this leads to a situation where the above Survo commands have
no effect.

It means that Windows has also created a subkey

HKEY_CURRENT_USER\Console\<path>S

where <path> is the path of Survo on the disk.

Then the problem is resolved by deleting this key from the registry
by the REGEDIT program, for example.

Warning! Be careful when editing the Windows registry since improper
actions may lead to harmful consequences.


```

<A HREF="q0c_09.html">1 = WIN commands</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">After the key PREFIX (F2) has been pressed, a small rectangle is displayed
in the left upper corner of the screen and the next key will have the
following function:

```

PREFIX PREFIX:

Move the cursor to the end of the visible line.

PREFIX ESC:

Activation to run mode. (Operations on consecutive lines will be performed until '.' is pressed or an invalid operation is met.)

PREFIX (DOWN):

Move the cursor to the last line of the current page or if it is already there, to the last non-empty line of the edit field.

PREFIX ENTER:

The current column is defined as the return position when ENTER is pressed. This feature simplifies typing of columns.

PREFIX T:

Prefix for various functions in tutorial mode:

PREFIX T S opens a tutorial file for saving of key strokes,

PREFIX T E closes a tutorial file,

PREFIX T R starts a tutorial (alternative for TUTOR operation).

PREFIX S:

Displays the shadow line of the current line below the current line.

The shadow line can then be edited as a normal edit line.

To restore the original display after editing, press

PREFIX S again.

Please note that the standard display effects which are controlled by the FORM key correspond to values 1-7 on the shadow line.

The maximum number of shadow lines is 20 for each edit field, unless otherwise stated by REDIM.

PREFIX P:

Picks the character indicated by the cursor to be used as the extra character which can be typed by the CODE key.

This is a useful method in typing and copying special characters which already appear in the edit field.

PREFIX INSERT:

initiates use of automatic insert mode. Thereafter mere INSERT selects/deselects insert mode.

PREFIX DELETE:

cancels use of automatic insert mode. Thereafter mere INSERT

always inserts one space in the current cursor position.
PREFIX INS_LINE (F2 alt-F9)
 inserts the last line deleted by **DEL_LINE**.
PREFIX <key>;
 where <key>=1,2,...,9 writes macros M1,M2,...M9 defined in SURVO.APU
 in the form M1=SCRATCH, M2=LOAD INDEX, etc.
 Macros above only write text in the edit field. To make them self-
 activating, put '!' to the end of the text.
 For example, M9=/MY_APPL! means that whenever keys **PREFIX 9** are pressed,
 sucro MY_APPL will be immediately activated.
 Please note that macros are temporarily created and altered by
 commands of type **SYSTEM M9=/MY_APPL!**
PREFIX -:
 saves the number of the current edit line so that it can be copied
 by the keys **COPY** (alt-F3) '-' **ENTER** or displayed in the edit field
 by activating -=_

The following key combinations are useful especially when making
 sucros in the tutorial mode. The corresponding statement of the
 sucro language is given in braces.

PREFIX W: {next word}
 seeks the next word on the current line.
PREFIX C <character>; {find <character>}
 seeks the next occurrence of <character> on the current line.
PREFIX R: {stack cursor}
 saves the current line and column of the cursor as two last items
 in the sucro memory.
PREFIX =: {print W1}
 prints the first item of the sucro memory in the edit field.
PREFIX @ i: (i=1,2,...,9) {print Wi}
 prints the ith word of the sucro memory in the edit field as it were
 a result of a Survo operation (shadow line unaffected etc.).
PREFIX # i: (i=1,2,...,9) {write Wi}
 writes the ith item of the sucro memory in the edit field as it were
 typed by the user (insert mode and shadow mode observed).

PREFIX x: {stack char}
 appends the current character indicated by the cursor to the sucro memory.
PREFIX w: {stack word}
 appends the current 'word' indicated by the cursor to the sucro memory.
PREFIX 0: {del stack}
 clears the sucro memory.
PREFIX I: {pre}I
 cancels the insert mode.

PREFIX y: {get key}
 appends the next key pressed by the user to the sucro memory.
 In case of a special key, word SK is appended and the function
 of the key executed.
 This code can be used for making keyboard sucros that alter the
 functions of ordinary typewriter keys in special applications. The
 functions of the function and other special keys cannot be altered.

PREFIX M <char>;
 activates a key sucro with one-letter name <char>;TUT .
PREFIX N <char>;
 activates a key sucro with name #<char>;TUT (Example: #S.TUT)
PREFIX !<name> ENTER:
 activates sucro <name> without echoing the call.
PREFIX D: {pre}D
 deletes the current reference point (set by REF).

PREFIX J: {pre}J
 initiates a search for an incomplete word just before the cursor

and completes it by the first matching word found in the current edit field.

Example: Assume that the user has written...

Ouagadougou is the capital of Burkina Faso.

The population of Ou_

By pressing PREFIX J the system will complete the word as

The population of Ouagadougou

and the user can continue typing.

PREFIX d: {save datapath}

puts the current Survo data path in the sucro memory.

PREFIX g: {save systemdisk}

puts the Survo system disk designation (C:) in the sucro memory.

PREFIX l <any_key>:

puts the key label of <any_key> (name of key) in the sucro memory.

PREFIX X: {save line}

puts the current edit line to the right from the cursor in the sucro memory. Trailing spaces are omitted.

PREFIX B: {line start}

moves the cursor to the beginning of the current edit line.

PREFIX A: {pre}A

enables (when the insert mode is on) automatic insertion of space for new lines.

PREFIX a: {pre}a

cancels automatic insertion of lines in insert mode.

PREFIX b: {init}

initializes the display parameters of the edit field.

PREFIX u <char>: {message shadow <char>}

selects the shadow character for the prompt line (default 1=red).

PREFIX L o: {disp off}

disables the screen. Text is written normally in the edit field but not shown on the screen.

PREFIX L O: {disp on}

restores the normal screen display

PREFIX L 0: {disp reset}

restores the normal screen display (i.e. same as PREFIX L O)

PREFIX L l: {labels off}

hides the line numbers and labels.

PREFIX L L: {labels on}

displays again the line numbers and labels.

PREFIX L W: {waitrec on}

initiates recording of waiting times between consecutive key strokes when working in tutorial mode (defining sucros).

PREFIX L w: {waitrec off}

cancels recording of waiting times.

PREFIX F: {pre}F

enables typing and pasting long lines (exceeding the Survo window width).

For example, wide tables can be correctly pasted in the edit field.

PREFIX f: {pre}f

cancels the PREFIX F typing/pasting mode.

PREFIX L K: {pre}L K

appends the number of empty lines at the end of edit field to tutstack.

PREFIX alt-F6: {pre}{file act}

activates a 'new' data file to be selected by the user.

(Note: alt-F6 activates the current data file.)

PREFIX F4: {pre}{disk}

writes the system path of Survo in the edit field.

PREFIX |: works as the search key alt-F5 but limits the search for the words starting from the first column in the edit field.

K = More information on keys

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Output control in Survo
  <A HREF="q0e_02.html">1 = Selecting output file/device (OUTPUT)</A>
  <A HREF="q0e_06.html">2 = Results in matrix files</A>
  <A HREF="q0e_04.html">3 = Numerical accuracy of the results</A>
  <A HREF="q0e_05.html">4 = Output level (RESULTS specification)</A>
  <A HREF="q02a_05.html">5 = Sparing time when working with large data sets</A>

  <A HREF="q03_01.html">C = More information on control operations</A>
  <A HREF="q21_01.html">S = More information on statistical operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The results of statistical analysis in Survo can always be saved
in an text file or printed on the printer. The current output file
or device is selected by an OUTPUT operation of the form
OUTPUT &lt;device or file>;
For example:
OUTPUT D:RESULT.TXT / select file RESULT.TXT on disk D:
OUTPUT - / no output device/file

The default OUTPUT file/device is set by 'eout' in the system file
SURVO.APU.
Activation of OUTPUT without parameters merely displays the current
output file/device.

Only one output file/device can be selected at a time.

```

When using an output file the results are accumulated and the user may later scan the file by a `SHOW <file spc>` operation and load parts of the results to the edit field for editing and final printout.

The current contents of the output file is cleared by command `/DELRES`.

[C](q0e_01.html) = More information on output control

[More information on Survo from](http://www.survo.fi)

!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText"> [C](q0e_01.html) = More information on output control

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo.fi>

</BODY>

</HTML>

!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">The numerical accuracy of the results given by various Survo modules may be controlled by the system parameter 'accuracy'. It can have any integer value 4,5,...,16 which roughly indicates the number of significant digits in printouts. Observe that 'accuracy' has no influence to the precision of floating point calculations which are always performed with double precision (i.e. with about 15 significant digits). The 'accuracy' parameter is given in the SURVO.APU system file and the default value is accuracy=7.

[A](qm1_09.html) = Accuracy of results in editorial computing

[C](q0e_01.html) = More information on output control

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo.fi>

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">The scope of results given by statistical operations can be selected by the RESULTS=<output_level> specification where <output_level> is an integer from 0 to 100. Level 0 implies minimal output and 100 maximal. The default value of the output level is set in the system file SURVO.APU as results=70.

The effect of the RESULTS specification is determined in each operation separately (see description of the operation in question).

In some operations also other forms of RESULTS may be available.

C = More information on output control

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">The output file which stores results in text form is not always sufficient for numerical results obtained in statistical analyses, for example. To preserve complete numerical accuracy and to provide immediate access to the matrix interpreter (MAT and MATRUN operations), the statistical operations will save their output matrices in matrix files, too.

Such output matrices are always saved on the current data path using standard names with extension .M (instead of .MAT which is the default extension for MAT files). They are, however, normal matrix files which can be processed by MAT operations.

The default names used for output matrices are described below and the user can change them easily by the OS command REN. For example, >REN A:*.M *.MAT changes on disk A: all matrix result files (with extension .M) to matrix files with extension (.MAT).

To see the current .M files, activate, for example

DD *.M

Typical matrix files for statistical results:

CORR.M Correlation matrix (by operation CORR, for example)
MSN.M Matrix of 3 columns (by CORR):
 column 1: means of variables
 column 2: standard deviations of variables
 column 3: number of observations

REG.M Column vector of regression coefficients (LINREG,REGDIAG)
REGS.M Regression coefficients and their std.errors (LINREG,REGDIAG)
REG_CORR.M Correlations of regression coefficients (LINREG,REGDIAG)
LG.M Scalar results of regression analysis (LINREG)
RG.M Scalar results of regression analysis (REGDIAG)

EST_PAR.M parameter estimates and their standard errors (ESTIMATE)
EST_CORR.M correlations of parameter estimates (ESTIMATE)
EST.M scalar results (ESTIMATE)

STAT.M certain results of STAT
STAT.M results of MINSTAT

Matrix files (continued)

PCOMP.M Principal component loadings (/PCOMPR, /PCOMPCOV)
PCOMPV.M Variances of components (/PCOMPR, /PCOMPCOV)
PCOEFF.M Coefficients of pcomp scores (/PCOMPR, /PCOMPCOV)
PCOCENT.M Variances of components (%) (/PCOMPR, /PCOMPCOV)
PCOEFF.M Coefficients for principal component scores (/PCOMPR, /PCOMPCOV)

FACT.M Factor matrix (FACTA)
PFACT.M Factor matrix (MATRUN PFACT)
AFACT.M Rotated factor matrix (ROTATE)
TFACT.M Rotation matrix (ROTATE)
RFACT.M Factor correlation matrix (ROTATE)
SFACT.M Factor structure matrix (ROTATE)
FCOEFF.M Factor score coefficients (/FCOEFF, /FTCOEFF)

L.M Transformation matrix (/TRAN-SYMMETR, /TRAN-LEASTSQR)
E.M Residual matrix (/TRAN-SYMMETR, /TRAN-LEASTSQR)

Matrix files (continued)

XTAB.M Design matrix (TABFIT)
PCOV.M Covariance estimates of parameters (TABFIT, GENREG)
GENREG.M Parameter estimates (GENREG)

DISCRL.M Discriminant coefficients (/DISCRI)
DISCRXR.M Correlations between variables and discriminators (/DISCRI)

LCAN.M Vector of canonical correlations (CANON, /CANCORR)
XCAN.M Correlations of canonical variables with X variables (CANON)
YCAN.M Correlations of canonical variables with Y variables (CANON)
XCOEFF.M Coefficients for the first set of canonical variables (CANON)
YCOEFF.M Coefficients for the second set of canonical variables (CANON)

Matrix files (continued)

CR_COORD.M Column coordinates (CORRESP)
CR_SUPPC.M Supplementary column coordinates (CORRESP)
CR_V.M V from SVD (CORRESP)
CR_EIGEN.M D^2 from SVD (CORRESP)
CR_CONTR.M Columnwise absolute contributions (CORRESP)
CR_CORR2.M Columnwise squared correlations (CORRESP)
CR_MDIST.M Mass (1st column) and chi^2 distance (2nd column) (CORRESP)

SIMPLEX.M Solution vector (SIMPLEX)
SLACK.M Values of the slack variables (SIMPLEX)
TSIMPLEX.M Simplex Output Table (SIMPLEX)

CSCAL.M Scale values (/CSCAL)
CSEIGEN.M Eigenvalues (/CSCAL)
CSCENT.M Eigenvalues in percentages (/CSCAL)
CSDIST.M Reproduced distances (/CSCAL)

Matrix files (continued)

LSCAL.M Estimated configuration matrix (LSCAL)
LSDIST.M Reproduced distances (LSCAL)

T2COEFF.M Coefficients of the linear discriminant function (/T2)

CHI2FM.M Original table with margins (/CHI2)
CHI2E.M Expected frequencies (/CHI2)
CHI2C.M Contributions to Chi-square (/CHI2)
CHI2.M Chi-square value (/CHI2)
CHI2DF.M Degrees of freedom (/CHI2)

RCOV.M Residual covariance matrix (RELIAB by K.Vehkalahti)
RCORR.M Residual correlation matrix (RELIAB)
WEIGHT2.M Second order scales (RELIAB)

Matrix files (continued)

OR.M Odds Ratios and confidence intervals (/LOGREG by K.Vehkalahti)

COV.M Covariance matrix from CORR.M and MSN.M (/COV)

L1.M Optimal transformation matrix (TRAN1)

MNCOEFF.M Coefficient matrix (MNSIMUL)
MNMEAN.M Vector of means (MNSIMUL)

TAILFREQ.M Relative frequencies of values exceeding threshold values (STATMSF)

COVVAR.M Optimally permuted covariance matrix (MULTVAR)

Matrix files (continued)

CORR.M Correlation matrix (CORRMV)
MSN.M Matrix of 3 columns (see [CORR](http://www.surveo.com/q21_03.html) above) (CORRMV)
PAIRFREQ.M Frequencies of observations for each pair of observations (CORRMV)

BURT.M Burt's table (BURT by K.Vehkalahti)
CLASS.M Vector of the number of classes per classifier (BURT)

SMOOTH.M Smoothened values (LOWESS by J.Puranen)

[M](http://www.surveo.com/qmr2_01.html) = More information on multivariate statistical operations
[L](http://www.surveo.com/qv4_01.html) = Linear combinations of variables (LINCO)
[S](http://www.surveo.com/q21_01.html) = More information on statistical operations
[C](http://www.surveo.com/q0e_01.html) = More information on output control

More information on Survo from <http://www.surveo.com>

DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  Freeware version Survo Editor
```

Survo Editor covers about a half of SURVO MM functions.
The capacity of data files in Survo Editor is reduced.
There are no limitations for files with one, two, or three variables.
For number of variables $m=4,5,\dots,15$ the largest permitted number of observations (cases) is $7500/m$.
Thus when m is 15, the maximum amount of cases is 500.
Data files with more than 15 variables cannot be used in Survo Editor.
(In the complete SURVO MM version there are practically no such bounds at all.)

Survo Editor has no other restrictions in dimensions.
For example, sizes of the edit field and matrix files are not limited.

Survo Editor includes e.g. the following functions:

Management of the edit field (kernel of user interface in Survo),
Editorial computing and computing in touch mode,
Matrix interpreter,
Programming and usage of Survo macros (sucros),
Using Survo as a frontend for the R package and LaTeX,
Making Web pages,
Screen graphics (GPLOT) and saving graphs in EMF files,
Following operations for general data management:
FILE CREATE, FILE SHOW, FILE MAKE,
FILE SAVE, FILE COPY, FILE LOAD, FILE SORT,
SHOW, SAVEP, LOADP, LOADM, VAR, CLASSIFY, SER
PRINT (for HTML and LaTeX, and one page PostScript output),
Statistical operations:
Basic statistics (STAT, MINSTAT),
Comparing samples by statistical tests (COMPARE),
Histograms and fitting one-dimensional distributions (GHISTO),
Creating multiway tables (TAB),
(Continued on the next page)

Means, standard deviations, and correlations (CORR),
Multiple linear regression analysis (LINREG),
Non-linear regression analysis and ML estimation (ESTIMATE),
Factor analysis (FACTA),
Rotation of factor analysis (ROTATE),
Reliabilities of measurement scales (RELIAB),
Simulating multivariate normal distribution (MNSIMUL).
Game of Life (LIFEGAME)
Geometric constructions and their statistical accuracy (GEOM)

Survo Editor can be used for analysis of statistical data both in

teaching and research applications. It includes almost all mathematical operations of SURVO MM such as the matrix interpreter, editorial and touch mode computing, and combinatorics (COMB).

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  Freeware-versio Survo Editor
```

Survo Editor sisältää yli puolet SURVO MM:n toiminnoista.

Survo Editor -version kapasiteettia on rajoitettu vain havaintoaineistojen koon suhteen.

Yhden, kahden tai kolmen muuttujan tapauksessa ei ole mitään rajoituksia.

Muuttujamäärä $m=4,5,\dots,15$ suurin sallittu havaintomäärä on 7500/m eli siis esim. 15 muuttujalla havaintoja voi olla 500.

Yli 15 muuttujan aineistoa ei voi käsitellä.

(Varsinaisessa SURVO MM:ssä ei ole mitään ylim. rajoituksia.)

Muita dimensiorajoituksia ei Survo Editor -versioon liity.

Siis esim. toimituskenttien kokoa tai matriisitiedostojen suuruutta ei ole mitenkään rajoitettu.

Survo Editor sisältää mm. seuraavat ominaisuudet:

toimituskenttien hallinta (Survon editoriaalisen käyttöliittymän ydin),
editoriaalinen laskenta ja kosketuslaskenta,
matriisitulkki

Survon makrojen (sukrojen) laadinta ja käyttö,
yhteiskäyttö mm. R-ohjelmiston ja LaTeXin kanssa,
verkkosivujen teko,
grafiikka (GPLOT) Windowsin kuvaikkunoihin ja kuvien talletus
EMF-tiedostoina,

aineistojen hallinnasta mm. seuraavat operaatiot:

FILE CREATE, FILE SHOW, FILE MAKE,
FILE SAVE, FILE COPY, FILE LOAD, FILE SORT,
SHOW, SAVEP, LOADP, LOADM, VAR, CLASSIFY, SER
PRINT (HTML ja LaTeX sekä PostScript yhden sivun laajuudessa),
tilastollisista toiminnoista mm.

perustunnusluvut (STAT, MINSTAT),
otosten vertailut erilaisilla testeillä (COMPARE),
histogrammit ja jakaumien sovittaminen aineistoon (GHISTO),

(jatkuu seuraavalla sivulla)

havaintoaineistojen taulukointi (TAB),
keskiarvot, hajonnat ja korrelaatiokertoimet (CORR),
usean muuttujan lineaarinen regressioanalyysi (LINREG),
ep lineaarinen regressioanalyysi ja suurimman uskottavuuden estimointi (ESTIMATE),
faktorianalyysi (FACTA),
faktorianalyysin rotaatiot (ROTATE),
mitta-asteikkojen reliabiliteetit (RELIAB),
moniulotteisen normaalijakauman simulointi (MNSIMUL).
Eloveli "Game of Life" (LIFEGAME /ELOPELI)
Geometriset konstruktio ja niiden tilastollinen tarkkuus (GEOM)

Survo Editor soveltuu tilastoaineistojen monenlaiseen käsittelyyn niin
opetuksessa kuin tutkimuksessakin.

Se sisältää myös kaikki SURVO MM:n matemaattiset toiminnot:
matriisitulkinnat, editoriaalisen laskennan, kosketuslaskennan,
kombinatoriikan (COMB) ja symbolisen derivoinnin (DER).

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">QPATH &lt;qpath&gt;
selects the path of another inquiry system.
In Survo several inquiry systems may be maintained and used paral-
lelly provided that different paths are provided for them. The path for
the default inquiry system is given in the system file SURVO.APU as
qpath=&lt;default path&gt; (qpath=C:\E\Q\EDQ for example). The three last
characters (EDQ in the example) refer to a common forepart of all file
names of the inquiry system and they are all standard edit files.
The root file consisting of the keywords and their references to
inquiry file has the name EDQ.EDT (or corresponding).
To see the structure of various inquiry files, examine them, please.

The QPATH operation can be used to change the inquiry system temporarily.

  <A HREF="q03_01.html">C = More information on control operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Setting colors in Survo:

  <A HREF="q113_02.html">1 = COLORS specification in GPLOT</A>
  <A HREF="q19_03.html">2 = SHADING specification in PLOT and GPLOT</A>
  <A HREF="q13_06.html">3 = PEN specification in PLOT and GPLOT</A>
  <A HREF="q13_07.html">4 = LINETYPE specification in PLOT and GPLOT</A>
  <A HREF="q112_02.html">5 = PALETTE specification in GPLOT</A>
  <A HREF="q113_04.html">6 = COLORCH specification in PLOT and GPLOT</A>
  <A HREF="q0p1_08.html">7 = Setting colors in PostScript plotting/printing</A>

  <A HREF="q0f_03.html">8 = Displaying shadow colors in the edit field</A>
  <A HREF="q04_12.html">9 = Shadow characters and colors in the edit field</A>
  <A HREF="q02_09.html">A = F5 key</A>
  <A HREF="q0f_06.html">B = /COLORMAT for variably shaded background pictures</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
```

```
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
```

```
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">COLOR ALL
displays all possible display modes (color combinations) in the Survo
main window. This is a help function for selecting colors for different
shadow values.
```

COLOR #16-31

(for example) displays the color combinations for values 16-31.
Values 0,1,2,...,255 are permitted.

```
  <A HREF="q04_13.html">S = SHADOW command for changing shadow codes</A>
  <A HREF="q03_01.html">C = More information on control operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
```

```

</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">DIR &lt;pathname&gt;
works like the OS command &gt;DIR but gives the list of files
in the edit field below the current edit line.

```

The DIR command is implemented as a part of a more general desktop operation INDEX. Most of the specifications of INDEX may be used to modify the output of DIR in various ways.

```

  <A HREF="qkv1_01.html">I = Information on INDEX operation</A>
  <A HREF="q03_01.html">C = More information on control operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LIFEGAME command starts "Game of Life" invented by John C.
in 1970 and made popular by Martin Gardner in Scientific American.
The game is played in Survo on a rectangular finite board of cells.
By various specifications the original rules and the appearance of
the game may be modified.
Original rules: At any time some of the cells will be alive or dead.
The user determines the borders of the game board and living cells at
the beginning as follows (use /BOX for drawing border lines):

```

LIFEGAME / Activate this line!

```

+-----+
|               |
|      ***      |
|      ***      |
|               |

```

```

      ***
      |
      |
      |
+-----+

```

Game of Life in Survo (continued)

Let's study a cell * surrounded by 8 others:

```

123
8*4
765

```

If cell * is alive and it is surrounded by 4 or more living cells, it will die by 'overcrowding'. Likewise if at most 1 of the neighbours are alive, the cell dies by 'exposure'. In other cases the cell stays alive for the next generation.

If the cell is dead (empty), it will be born again if it has exactly 3 living neighbours.

The cells on the borders are assumed to be dead all the time.

The rules for birth and death are given by ON and OFF specifications. Thus the original (default) setting is ON=3 OFF=0145678 .

Game of Life in Survo (continued)

Other specifications:

NMAX gives number of generations to be produced.

WAIT gives time between successive generations to be displayed.

LIFE gives a list of characters to be used for marking living cells. Also shadow characters may be employed for painting successive generations with different colors.

Example: LIFE=***

By studying the 'screen saver' surco /LIFEGAME still more specifications may be detected.

More information is found (in Finnish) by activating /ELOPELI

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">COLORMAT &lt;n>&gt;L
```

with specifications START=c1,m1,y1,k1 END=c2,m2,y2,k,2 (corresponding to CMYK color components) makes a list of <n>> FILL colors where the color changes linearly from the START-color to END-color.

An optional MIDDLE=cm,mm,ym,km specification makes the same thing

in <n> steps changing the color first from START to MIDDLE and then from MIDDLE to END.

COLORMAT is intended merely as a tool for a sucro
/COLORMAT <n>;L
(with the same specifications) which makes 'color mats' according to colors defined by COLORMAT.

Detailed information and applications are found on

http://www.survo.fi/papers/ColorChange

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">

New functions of Survo (since writing of the Survo book 1992)

0 = News about SURVO MM (Use softkey NEWS)

1 = News after June 1996

2 = Frequency tables for large data (Instructions corrected in ver. 5.11)

3 = /LOADCORR sucro for displaying correlation matrices

4 = Plotting bar charts with negative values (types NHBAR and NVBAR)

5 = FILE LOAD using a format with shadow lines

6 = SHOW operation with extended capabilities

7 = CHECK command

8 = VARSTAT operation for collective transformation of variables

9 = /CANCORR sucro for canonical correlations

A = CORRESP for correspondence analysis

B = Display-off mode

E = Overlays in screen graphics

F = New statements in the sucro language

G = Combining Survo PostScript files (EPS JOIN)

Newest information also from www.survo.fi

N = Next page

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

```

<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
News about current SURVO MM is best obtained after exit from
this help system by double-clicking the softkey <B>NEWS</B> on the bottom line
of the SURVO MM main window.

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
New functions of Survo (continued)

<A HREF="qf7_04.html">1 = FILE AGGR operation</A>
<A HREF="qv3_01.html">2 = New random numbers in VAR</A>
<A HREF="q07_03.html#SELECT2">3 = Boolean expressions with negations and parentheses in SUCRO</A>
<A HREF="q0n1_09.html">4 = /ACTIVATE sucro for activating a series of commands with</A>
a given character in the control column
<A HREF="qmm1_01.html">5 = Optional operations and sucros for multivariate analysis</A>
<A HREF="q1a_01.html">6 = STEPDIVISOR specification in HISTO</A>
<A HREF="qmt_01.html">7 = Enhancements in touch mode (Data collecting, 'Worm' mode)</A>
<A HREF="q22_01.html">8 = Cancelling headers and line labels in TAB</A>
<A HREF="q0n1_10.html">9 = Sucro W for working with several edit fields simultaneously</A>
<A HREF="q0n1_11.html">A = Sucro V for moves between various jobs by an automatic menu</A>
<A HREF="qtu6_04.html">B = Key sucros for users' own applications</A>
<A HREF="qu1_03.html">C = Testing two-way frequency tables by simulation (TABTEST)</A>
<A HREF="ql3_06.html">D = Numerical integration in editorial computing</A>
<A HREF="q19_01.html">E = Location of case labels in HBAR charts</A>

<A HREF="q0n1_04.html">N = Next page</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--

```


Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  New functions of Survo (continued)
```

```

  <A HREF="q07_06.html#EXTRA2">1 = Symbolic notations for specifications (*specifications)</A>
  <A HREF="q0b_32.html">2 = Setting the size of the cursor</A>
  <A HREF="q0c_07.html">3 = Changing and hiding shadow effects (colors) in the edit field</A>
  <A HREF="qtu6_03.html">4 = Time control in sucros (teaching programs etc.)</A>
  <A HREF="qtu1_08.html">5 = Recording waiting times in tutorial mode</A>
  <A HREF="qf5_07.html">6 = TXTCONV operation for text file processing and modifications</A>
  <A HREF="qf5_10.html">7 = TXTRIM operation for making line lengths equal in a text file</A>
  <A HREF="qkv0_01.html">8 = Desktop functions (by Kimmo Vehkalahti)</A>
  <A HREF="q02_22.html">9 = Function keys F11,F12 as activation keys for sucros</A>
  <A HREF="q0n1_11.html">A = Calling sucros from the menu maintained by the V sucro.</A>
  <A HREF="qma_01.html">B = External MAT #operations</A>
  <A HREF="qf5_11.html">C = TXTCOUNT operation for counting # of different characters</A>
  <A HREF="q05_13.html">D = FIND and REPLACE operations working also with shadows</A>
  <A HREF="qf7_01.html">E = Shadow and control characters copied in formatted FILE LOAD</A>
  <A HREF="qv2_04.html">F = Removing trailing blanks in string concatenation of VAR</A>
```

```

  <A HREF="q0n1_05.html">N = Next page</A>
```

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  New functions of Survo (continued)
```

```

  <A HREF="ql1_06.html">1 = Function bestval (editorial computing)</A>
  <A HREF="q0n1_12.html">2 = Sucro XYSCALE</A>
  <A HREF="q0b_02.html">3 = Moving shadow characters and lines in SORT (extra parameter S)</A>
  <A HREF="q0e_02.html">4 = Deleting the current output (results) file by /DELRES</A>
  <A HREF="ql1_01.html">5 = Listing library functions (editorial computing) by /FUNC</A>
```

[6](qf6_02.html) = DELIMITER specification in FILE SAVE
[7](qmr3_08.html) = Simultaneous display of attributes in graphical rotation
[8](qk1_01.html) = New LIST operations (MAKE, SAVE)
[9](q29_03.html) = STATL (extension of STAT for large data N>32000)
[A](q0d_01.html) = Self-activating macros
[B](qm1_09.html) = Numerical accuracy and form of results in editorial computing
[C](q04_02.html) = Changed action of LOAD in erroneous usage
[D](q01_09.html) = Screen saving features by disp_wait in SURVO.APU
[E](q111_02.html) = INFILES specification in GPLOT
[N](q0n2_01.html) = News after June 1996
[X](q0n1_01.html) = Back to the top of the list of new functions

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo.fi>
</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">

[N](q0n1_01.html) = Back to the list of new functions

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo.fi>

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">LOADCORR is a macro for displaying correlation matrices with special
effects on significant elements.

For more information, activate
/LOADCORR ?

[N](q0n1_01.html) = Back to the list of new functions

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SHOW operation with extended capabilities

```

The previous restriction to max. 30000 lines in text files has been relieved. Now there is no practical upper limit for the size of the text file.

The text in the window can be scrolled also to the right and to the left. The text can be edited by replacing individual characters by another ones (but lines cannot be added or deleted).

```

<A HREF="q04_06.html">S = More information on SHOW</A>
<A HREF="q0n1_01.html">N = Back to the list of new functions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">/ACTIVATE x
activates all commands below the current line having a given character
(here x) in the control column. This procedure simplifies execution of
series of work schemes.
For example, graphical presentations consisting of many partial graphs
are easy to update by the /ACTIVATE sucro.
This technique is superior to continuous activation (by PREFIX ESC)
because no jumps (by GOTO's) to the next work scheme are needed.

<A HREF="q0n1_01.html">N = Back to the list of new functions</A>

```

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">To see how to work with several edit fields simultaneously, activate
/W ?
```

```
  <A HREF="q0n1_01.html">N = Back to the list of new functions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">To see how to move between various jobs by using an automatic menu,
activate
/V ?
Also sucros may be called from the menu.
```

```
  <A HREF="q0n1_01.html">N = Back to the list of new functions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">/XYSCALE a,b
S.Mustonen 8.3.1996
writes a suitable scale notation below the current line giving
a scale which covers the interval (a,b).
The scale notation appears in the form a0(step)b0 and is thus
readily available for XSCALE and YSCALE plotting specifications.
Sucro /XYSCALE is intended for use as a subroutine in other sucros
for making plotting schemes for scatter diagrams.

  <A HREF="q0n1_01.html">N = Back to the list of new functions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  New functions of Survo (News after June 1996)

  <A HREF="q0n2_04.html">1 = News after August 1998</A>
  <A HREF="qmm1_01.html">2 = Multivariate statistical analysis (MULTI2 modules)</A>
  <A HREF="qk1_01.html">3 = Frequencies of phrases in lists (LIST COUNT)</A>
  <A HREF="qkv0_03.html">4 = Box plots (/BOXPLOT) (by Kimmo Vehkalahti)</A>
  <A HREF="qu3_06.html">5 = Logistic regression analysis by GENREG</A>
  <A HREF="qf5_12.html">6 = Saving/loading edit fields with shadows etc. in text files</A>
  <A HREF="qf7_01.html">7 = DELIMITER specification in FILE LOAD</A>
  <A HREF="q0p2_05.html">8 = Selecting the plotting step in PostScript graphics (PS_UNIT)</A>
  <A HREF="qkv3_07.html">9 = Searching for data tables in text files (DATAFIND by KV)</A>
  <A HREF="q0p3_07.html">A = Converting one-page PRINT files into EPS files</A>
  <A HREF="qmm1_14.html">B = Basic statistics of all active variables (STATMSF)</A>
  <A HREF="qv3_03.html">C = Proportions and percentages by VAR</A>
  <A HREF="q0n2_08.html">D = Default settings for the data path etc.</A>
  <A HREF="qkv0_04.html">E = Creating HTML applications (by KV)</A>
  <A HREF="qk1_05.html">F = Restarting a search by ESC in LIST SHOW</A>
  <A HREF="qtu3_04.html">G = Painting words in sucros {paint on/off}</A>
  <A HREF="q0n2_02.html">N = Next page</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi

```

```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  New functions of Survo (Continued)

  <A HREF="q01_09.html">1 = Saving CPU time in multitask environments</A>
  <A HREF="q08d_05.html">2 = Printing of Survo LISTs</A>
  <A HREF="qv3_04.html">3 = Centering and standardising data by TRANSFORM</A>
  <A HREF="q19_09.html">4 = Suppressing low value denotations in bar and pie charts</A>
  <A HREF="q0d_01.html">5 = Typing and pasting text of long lines (PREFIX F)</A>
  <A HREF="qkv0_05.html">6 = Simultaneous contour ellipses for subgroups of data (by KV)</A>
  <A HREF="q01_09.html">7 = Screen saver sucros</A>
  <A HREF="q0f_05.html">8 = Game of Life (LIFEGAME)</A>
  <A HREF="qv2_05.html">9 = Option SORT in VARSTAT</A>
  <A HREF="q11_07.html">A = Referring to numbers in tables in editorial computing</A>
  <A HREF="q22_01.html">B = Classes of missing values in TAB operation</A>
  <A HREF="qf3_02.html">C = Predefined options in FILE SHOW</A>
  <A HREF="qmr1_03.html">D = New methods for Cluster analysis</A>
  <A HREF="qmc1_01.html">E = Listing of combinations, permutations, etc. (COMB)</A>
  <A HREF="q05_11.html">F = Filling incomplete lines in FORM</A>

  <A HREF="q0n2_03.html">N = Next page</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  New functions of Survo (Continued)

```

```

<A HREF="qkv0_08.html">1 = Plotting bars in different colors (KV)</A>
<A HREF="qkv0_09.html">2 = Logistic regression /LOGREG (KV)</A>
<A HREF="q24_01.html">3 = Modified Newton method (METHOD=M) in ESTIMATE</A>
<A HREF="qm3_04.html">4 = Extended form of /MATSHOW</A>
<A HREF="qm2_04.html">5 = MAT C=A^n</A>
<A HREF="qm2_04.html">6 = MAT C=KRONECKER(A,B)</A>
<A HREF="qf7_01.html">7 = NAMES8 option in FILE LOAD</A>
<A HREF="qm8_01.html">8 = MAT operations CUM, UNCUM, PRODUCT</A>
<A HREF="q0n2_07.html">9 = New MAT #operations</A>
<A HREF="qm1_09.html">A = Results in editorial computing in accurate exponential form</A>
<A HREF="qm3_03.html">B = MAT PERM (new alternatives)</A>
<A HREF="q05_14.html">C = Searching for strings backwards in the edit field</A>
<A HREF="q03_16.html">D = Creating menus for job control</A>
<A HREF="qv3_04.html">E = New options in TRANSFORM</A>
<A HREF="qv2_05.html">F = Options FIRST and LAST in VARSTAT</A>

<A HREF="q0n2_04.html">N = Next page</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">
  New functions of Survo (News after August 1998)

  <A HREF="qip1_01.html">1 = Locally weighted scatter plot smooth LOWESS (by J.Puranen)</A>
  <A HREF="qkv3_09.html">2 = Moving linear regression analysis MOVREG (by KV)</A>
  <A HREF="qkv3_08.html">3 = Burt's contingency tables BURT (by KV)</A>
  <A HREF="qkv0_04.html">4 = New HTML driver HTML40.DEV (by KV)</A>
  <A HREF="qmi1_01.html">5 = Finding integer relations between real numbers (INTREL)</A>
  <A HREF="q24_05.html">6 = Searching for initial values in ESTIMATE (METHOD=G)</A>
  <A HREF="q24_08.html">7 = Abbreviations in model notation in ESTIMATE</A>
  <A HREF="q0n2_09.html">8 = round(x), rounding to nearest integer</A>
  <A HREF="q04_13.html#SHADOW3">9 = New operations with shadow characters (SHADOW)</A>
  <A HREF="qmt_01.html">A = Collecting and printing lines in touch mode</A>
  <A HREF="qf7_04.html">B = Easy aggregation of observations /AGGRE (by KV)</A>
  <A HREF="qf5_09.html">C = Adding extra characters between records in text files</A>
  <A HREF="q0c_01.html">D = BYTES specification in CODES LOAD/SAVE</A>
  <A HREF="qv1_05.html">E = Constants etc. given in matrix files in VAR operation</A>
  <A HREF="q04_03.html">F = Jumping by activating lines starting with '-'</A>

  <A HREF="q0n2_05.html">N = Next page</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>

```

```

</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  New functions of Survo (Continued)

  <A HREF="qm2_04.html#MATCALC2">1 = Using transposes of matrices in MAT commands</A>
  <A HREF="qm7_02.html">2 = General matrix expressions in the matrix interpreter</A>
  <A HREF="qm10_01.html">3 = Functions related to Markov chains (MARKOV)</A>
  <A HREF="q0b1_02.html">4 = Measuring time in (milli)seconds by TIME COUNT START/END</A>
  <A HREF="qm3_05.html#LOADM2">5 = Displaying factor matrices in the style of Lauri Tarkkonen</A>
  <A HREF="qf4_04.html">6 = FILE MASK for direct activation of given variable(s)</A>
  <A HREF="qf5_02.html">7 = Short description of the status of a data file</A>
  <A HREF="qkv3_10.html">8 = Multiple correspondence analysis /MCORRESP (by KV)</A>
  <A HREF="qm1_10.html">9 = Elements of matrices in editorial computing</A>
  <A HREF="qm4_06.html">A = Referring to rows and columns by literal labels in MAT operations</A>
  <A HREF="q0p1_09.html">B = Euro (European monetary unit)</A>
  <A HREF="q0n2_10.html">C = Extensions in the matrix interpreter</A>
  <A HREF="q0b1_02.html">D = Time measurement</A>
  <A HREF="qf2_04.html">E = FILE MAKE for creating frames for simulated data, etc.</A>
  <A HREF="qf6_06.html">F = FILE SELECT for making a partial copy of a data file.</A>

  <A HREF="q0n2_06.html">N = Next page</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  New functions of Survo (Continued)

```


1 = DATE operation, new features (by KV)
2 = Desktop operations, new features (by KV)

This list has not been updated for a long time.

Currently, the (latest) news about SURVO MM are found most easily
by the NEWS button on the last line of the Survo main window.

X = Back to the top of new functions list

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
    <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
    <META NAME="Generator" CONTENT="SURVO MM">
    <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
    <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
    <META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
    <META NAME="Classification" CONTENT="help system">
    <META NAME="Keywords" CONTENT="Survo, help, hypertext">
  </HEAD>
  <BODY>
    <H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
    <P><PRE CLASS="HelpText">MAT #CONVOLUTION
for convolution of series, discrete distributions, etc.
MAT #TRANSFORM
also for recursive transformations
MAT #EIGEN
for eigenvalues and eigenvectors of a non-symmetric n*n matrix

More information by activating
/MAT#
  </PRE></P><HR>
  <DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/
  </BODY>
  </HTML>
  <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">
  <HTML>
    <!--
      Created by using the PRINT operation of SURVO MM
      For more information, see http://www.survo.fi/
    -->
    <HEAD>
      <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
      <META NAME="Generator" CONTENT="SURVO MM">
      <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
      <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Certain standard settings in the SURVO.APU file can be left out and
they are replaced by default settings as follows:

```

edisk (selects the default data path)

Default is edisk=<Survo_path>\D\ (C:\E\D\, for example)

eout (selects the ascii file for the results)

Default is eout=<Survo_path>\TMP\RESULTS

qpath (selects the inquiry system)

Default is qpath=<Survo_path>\Q\

tempdisk (selects the path for temporary files)

Default is tempdisk=<Survo_path>\TMP\ .

A = More information about the system parameters

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">round(x) gives the nearest integer of x in editorial computing,
VAR, MAT, ESTIMATE, and TRANSFORM operations.
Examples: round(-3.6)=-4 x=1937 10*round(x/10)=1940
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>

```

```

<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Extensions of the matrix interpreter (June-August 1999)

```

The code of many matrix operations has been optimized.
 Certain functions are 2-5 times faster than earlier.

MAT QR OF A TO Q,R

makes the QR decomposition by the Householder transformations.

MAT B=SUB(A,Srow,Scol) selects a submatrix of A with rows indicated by vector Srow and columns indicated by Scol.

MAT C=SELECT(A,k) selects those rows of A where the element in the k'th column is not 0.

MAT #MAXDET(C,dim,S)

finds the principal dim*dim submatrix with the maximal determinant from a symmetric matrix C. Indices of rows (and columns) belonging to that submatrix are saved as a column vector S.

This operation can be applied, for example for determination of the basis of the column space of a matrix and for selection of the most representative subset of columns of a matrix.

The algorithms and potential applications are explained in

S. Mustonen: Matrix computations in Survo

(www.helsinki.fi/survo/matrix99.html).

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->

```

<HEAD>

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>

```

<BODY>

```

<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Printing and plotting on PostScript printers
  <A HREF="q0p1_02.html">I = General information</A>
  <A HREF="q0p1_04.html">D = PS.DEV driver</A>
  <A HREF="q0p1_05.html">F = Fonts</A>
  <A HREF="q0p2_01.html">T = Correct alignment of text and tables</A>
  <A HREF="q0p1_07.html">C = Characters in the control column</A>
  <A HREF="q0p3_01.html">O = PostScript code in a print list</A>
  <A HREF="q0p3_02.html">S = Special features</A>
  <A HREF="q0p4_01.html">A = Graphics (PLOT)</A>
  <A HREF="q0p1_08.html">K = Colors in PostScript printing/plotting</A>
  <A HREF="q0p3_07.html">E = Encapsulated PostScript files</A>
  <A HREF="q0p2_05.html">U = Altering the plotting unit (step)</A>
  <A HREF="q0p1_09.html">e = Printing of Euro (monetary unit) symbol</A>

  <A HREF="qm_1_19.html">V = Kirjoittimen valinta</A>
  <A HREF="q0p1_11.html">J = Selecting the PostScript printer</A>
  <A HREF="q08_01.html">P = More information on PRINT operation</A>

```

```

    <A HREF="q11_01.html">G = More information on PLOT operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
    <!--
        Created by using the PRINT operation of SURVO MM
        For more information, see http://www.survo.fi/
    -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Survo supports PostScript printers in all forms of PRINT, PLOT and
HISTO operations. The interface in Survo enables all the features
provided by PostScript language to be employed in applications.
The user has no need to master the PostScript language, since all the
functions and specifications related to printing and plotting have been
converted to common notations used in Survo.
However, in very demanding applications familiarity with PostScript
programming may be useful.
The standard device driver is PS.DEV in the &lt;Survo&gt;\U\SYS directory.

In PLOT and HISTO operations, a DEVICE specification of the form
DEVICE=PS (immediate plotting)
or
DEVICE=PS,&lt;filename.PS&gt; (making a PostScript file)
must be supplied. The default driver is PS.DEV but it can be changed
by giving in SURVO.APU ps_dev=&lt;filename.DEV&gt;.
In PRINT operations, either
- include PS.DEV
should be given as the first line in the print list or
the default driver has to be given in the SURVO.APU file in the
form print_dev=PS.DEV .

Complete documents are usually generated by a large PRINT scheme
containing references to text chapters located in edit files and
text files. Pictures made by PLOT operations and saved as PostScript
files are included in those documents by - picture control lines.
Text and pictures can be rescaled and rotated in the final output.
The entire document produced by PRINT can be saved in a PostScript
file, too (by PRINT L1,L2 TO &lt;file.PS&gt;).

Since PostScript files are device-independent, the user can make drafts
of the documents on small laser printers. After these test printouts the
final document may be produced on a high-quality typesetter on the basis
of the same PostScript file.
    <A HREF="q0p1_01.html">P = More information on PostScript printing/plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q0p1_01.html">P = More information on PostScript pr
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
</HTML>

```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The PS.DEV driver in the &lt;Survo&gt;\U\SYS directory defines al
words available for printing and plotting on PostScript printers.
Thus all control words in brackets (like [LANDSCAPE] for 90 degree
rotation) are defined in the beginning of PS.DEV by using other
control words or directly in PostScript code. At the end of this
driver all the PostScript words and programs needed are listed.

```

You can view this driver by SHOW <Survo>\U\SYS\PS.DEV or print it on paper
(provided that your Survo installation includes the PostScript option)

```

by
11 *PRINT 12,13
12 - [Courier(8)][line_spacing(8)]
13 - text &lt;Survo&gt;\U\SYS\PS.DEV

```

Supplementary PostScript drivers (to be used in connection with PS.DEV)
are
GCHAR.DV2 for graphic characters (drawing boxes around the text),
MATH.DV2 for mathematical symbols,
PSFONTS.DV2 for additional PostScript fonts.

```

<A HREF="q0p1_01.html">P = More information on PostScript printing/plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Certain standard PostScript fonts with all possible font sizes are defined
in PS.DEV and available by control words
[TIMES(x)] Times-Roman, x point text, x can have any positive value.
[TIMESB(x)] Times-Bold [TIMESI(x)] Times-Italic
[TIMESBI(x)] Times-BoldItalic
[SWISS(x)] Helvetica [SWISSB(x)] Helvetica-Bold
[SWISSO(x)] Helvetica-Oblique [SWISSBO(x)] Helvetica-BoldOblique
[COURIER(x)] Courier [COURIERB(x)] Courier-Bold
[COURIERO(x)] Courier-Oblique [COURIERBO(x)] Courier-BoldOblique
[ZAPF(x)] ZapfChancery-MediumItalic
[ZAPFD] ZapfDingbats (size according to last font selection)
[SYMBOL] Symbol (size according to last font selection)
More fonts can be defined similarly (see <A HREF="q0p1_01.html">PS</A>.DEV).
The shadow values 1=Bold and 6=Italic (or Oblique) determine the actual
PostScript font according to the last font type selected.

  <A HREF="q0p1_06.html">F = Additional fonts in PSFONTS.DV2</A>
  <A HREF="q0p2_01.html">T = Adjusting lines according to current font</A>
  <A HREF="q0p1_01.html">P = More information on PostScript printing/plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">http://www.survo.fi/
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Additional PostScript fonts (available in most PS printers) become
available by giving the control line
  - include PSFONTS.DV2
in the PRINT list. This provides following fonts:
[Bookman(x)] Bookman-Light [Bookmand(x)] Bookman-Demi
[Bookmani(x)] Bookman-LightItalic [Bookmandi(x)] Bookman-DemiItalic
[AvantGarde(x)] AvantGarde-Book [AvantGardeBO(x)] AvantGarde-BookOblique
[AvantGardeD(x)] AvantGarde-Demi [AvantGardeDO(x)] AvantGarde-DemiOblique

```

[NewCS(x)] NewCenturySchlbk-Roman [NewCSB(x)] NewCenturySchlbk-Bold
 [NewCSI(x)] NewCenturySchlbk-Italic [NewCSBI(x)] NewCenturySchlbk-BoldItalic
 [Palatino(x)] Palatino-Roman [PalatinoB(x)] Palatino-Bold
 [PalatinoI(x)] Palatino-Italic [PalatinoBI(x)] Palatino-BoldItalic
 [Swiss-Narrow(x)] Helvetica-Narrow [SwissNB(x)] Helvetica-Narrow-Bold
 [SwissNO(x)] Helvetica-Narrow-Oblique
 [SwissNBO(x)] Helvetica-Narrow-BoldOblique
 P = More information on PostScript printing/plotting
 </PRE></P><HR>
 <DIV CLASS="Details"><SMALL>More information on Survo from
 </BODY>
 </HTML>
 <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
 "http://www.w3.org/TR/html4/loose.dtd">
 <HTML>
 <!--
 Created by using the PRINT operation of SURVO MM
 For more information, see http://www.survo.fi/
 -->
 <HEAD>
 <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
 <META NAME="Generator" CONTENT="SURVO MM">
 <TITLE>SURVO MM Help System (web edition)</TITLE>
 <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
 <META NAME="Description" CONTENT="SURVO MM Help System (web edition)</META>
 <META NAME="Classification" CONTENT="help system">
 <META NAME="Keywords" CONTENT="Survo, help, hypertext">
 </HEAD>
 <BODY>
 <H1>&
 <P><PRE CLASS="HelpText">On PostScript printers the characters in the control column have
 following functions in the PRINT operation:
 Char.
 - a control line of control words in brackets [] and/or PostScript code.
 / start of a new page
 (conditional start of a new page. If the chapter or the table
 ending to a line with a ')' in the control column does not fit
 in the current page (by using current line spacing), a new page
 is started.
 T tab line indicating positions of columns (See PSPRO?)
 U suppresses temporarily the effect of a 'T' line and trimming.
 C line is to be centered according to current line width set by
 a - [trim()] control word.
 R text to be moved to the right end of the line
 r as R, but only for odd-numbered pages.
 V extends the line to full width set by - [trim()].

(Continued on the next page)

Characters in the control column (continued)

Char.

< start of first column in multiple column text output
 = start of next column
 > start of last column

 followed by an integer n, outputs n empty lines.
 % followed by number x, moves next line down by extra x dmm.

P = More information on PostScript printing/plotting
 </PRE></P><HR>
 <DIV CLASS="Details"><SMALL>More information on Survo from
 </BODY>
 </HTML>
 <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
 "http://www.w3.org/TR/html4/loose.dtd">
 <HTML>

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The Survo PostScript driver and the PRINT/PLOT operations support
the CMYK (Cyan-Magenta-Yellow-Black) four color model.
The same color options can be used also in screen plotting since
[color\(C,M,Y,K\)] control code is available in GPLOT (from ver. 2.18).
In GPLOT, CMYK codes are converted to the RGB system (see <A HREF="q0p1\_10.html">COLOR

```

The fundamental control code for text and line colors is

[[color\(C,M,Y,K\)](#)] where the parameters are in the interval (0,1)
and give the intensities of the color components. 1 means full color.

Certain basic colors are readily defined by means of this code in
PS.DEV (and in CRT16.DEV for GPLOT). For example, in PS.DEV we have

```
define [GREEN] [color\(1,0,1,0\)]
```

For other predefined colors, see [PS.DEV](#) (or CRT16.DEV in GPLOT)

Example: `HEADER=[Swiss(24)][RED],Sample_of_100_observations`

```
XLABEL=[color\(1,0.5,1,0\)],Green
```

A color chart of various CMYK colors is obtained as a PostScript file
by activating the `sucro` command
`/COLORMAP-PRINT`

Fills in the SHADING specification can be extended to (additional)
colors by using negative SHADING values -1,-2,-3,...

Each of them must be specified by a specification of the form

```
FILL(-i)=C,M,Y,K (obsolete form [FILL-i]=C,M,Y,K)
```

where $i=-1,-2,-3,\dots$ and C,M,Y,K are intensities from 0 to 1.

These negative fill values are also available in FRAMES specifications.

A new better alternative is to use `COLOR(n)` specifications instead of
`FILL(-n)`. (Example on the next page)

Example:

```

.....
DATA DATA1
Color C1 C2 C3 C4
_ 1 1 1 1

PLOT DATA1 / DEVICE=PS,TEST.PS TYPE=%PIE
/GS-PDF TEST.PS
SHADING=1,2,3,4
COLOR(1)=0,0,0,0 COLOR(2)=1,0,0,0 COLOR(3)=0,1,1,0 COLOR(4)=1,1,1,1
SIZE=1000,1000 XDIV=150,700,150 YDIV=150,700,150
FRAMES=F F=100,100,800,800,5 COLOR(5)=0,0.4,0.7,0
.....

```

To provide compatibility with monochromatic PostScript devices,
the SHADING values from 0 to 9 (or from 0 to `<shademax>` given
by `SHADEMAX=<shademax>`;) still give various intensities of gray
from white to black (in PLOT)
provided that no `COLOR(n)` specifications are given.

In plotting families of curves, the `COLOR_CHANGE` specification is

available as in GLOT (see COLORCH?)
The various colors are selected by COLOR(n) specifications,
i=1,2,...

```
<A HREF="q0p1_01.html">P = More information on PostScript printing/plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">The symbol of Euro (European monetary unit) is represented in
the edit field by <B>e</B> (i.e. e with shadow character E).
The Survo PostScript driver PS.DEV outputs this character
as the Euro symbol.
If in certain applications the shadow 'E' has been reserved for other
purposes, it can be replaced by another character, say 'y', by giving
the following control lines in the PRINT list

- [%euro_shadow=y]
- shadow y: [EURO0] [EURO][NORMAL]
```

In exchange of different currencies Euro is represented by EUR.
For example (EUR:FIM)=5.94573
For the Finnish users:
Pehmonapistosta l ytyy uusi e-nappi, jolla voi muuntaa euroja markoiksi
ja markkoja euroiksi hyvin helposti:
Kirjoitetaan esim. 120 mk
ja kohdistimen ollessa mk:n per ss (mk_) n p ytet n hiirell e-nappia.
T ll in jatkoksi ilmestyy 120 mk (20.18 e) eli sama summa euroina.
Vastaavasti muunnetaan esim. 20 e (118.91 mk).

```
<A HREF="q0p1_01.html">P = More information on PostScript printing/plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
```

```

<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The basic color system in Survo is CMYK (C=Cyan, M=Magenta, Y
K=black) with intensities of each color component from 0 to 1.
It is supported in PostScript.
For example, (0,0,0,0) is white and (1,1,1,0) or (0,0,0,1) is black.
(0,0,0,k) with 0<math>k\leq 1</math> is always safer for various shades of gray.
On the screen the RGB (R=Red, G=Green, B=Blue) system is used.
There is no unique correspondence between these two color systems.
More information e.g. from
<A HREF="http://dx.sheridan.com/advisor/cmyk_color.html">http://dx.sheridan.com/advisor/cmyk_

```

Survo provides 3 different conversion rules selected by a RGB specification.

By default (RGB=1), in screen graphics of Survo the CMYK colors are converted to RGB by formulas

```

R=int(255*(1-min(1,C+K))),
G=int(255*(1-min(1,M+K))),
B=int(255*(1-min(1,Y+K))).

```

When Ghostscript is used for conversion of Survo PostScript files to the PDF format, the colors are exactly the same on the screen as the colors in GPLOT graphs created by this default setting (RGB=1).

Surprisingly a complete match has not attained when Adobe Distiller is used for PS -> PDF conversion.

Approximate matching occurs by using either RGB=2 or RGB=3 in GPLOT.

For RGB=2 in GPLOT, the conversion formulas are

```

R=int(255*(1-C)*(1-K)),
G=int(255*(1-M)*(1-K)),
B=int(255*(1-Y)*(1-K))

```

and for RGB=3 (default before ver. 1.28 of SURVO MM) they are

```

R=int(255*(1-(C+K)/s),
G=int(255*(1-(M+K)/s),
B=int(255*(1-(Y+K)/s)
where s=min(1,K+max(C,M,Y)).

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&

```

<P><PRE CLASS="HelpText">
PostScript printer is selected in the file SURVO.APU by the line

printer="Windows name of PostScript printer"
For example, printer="HP LaserJet 4M Plus"

Default setting is printer=LPT1:
which is usually valid for a PostScript printer directly connected
to the computer.

The names of available printers can be listed in the edit field
simply by the command
INDEX /PRINTERS,END+2

Temporarily, the PostScript printer can be selected by giving the
PRINT command in the form

PRINT L1,L2 TO "Windows name of PostScript printer"

```
<A HREF="q0p1_01.html">P = More information on PostScript printing/plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Most of the PostScript fonts have a variable pitch (width) of characters.
This fact must be observed when the right edge of the text or columns of
a table should be adjusted properly.
```

The following options are useful in proportional printing:

```
<A HREF="q0p2_02.html">1 = Correct alignment of the right edge in the text</A>
<A HREF="q0p2_03.html">2 = Correct alignment of columns (of tables)</A>
<A HREF="q0p1_01.html">P = More information on PostScript printing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The right edge of the text on consecutive lines is adjusted to a select
width of W picas (1 inch=12 picas) by the control word - [trim(W)] .
PRINT never changes division of text into lines. This must be done by
the user by TRIM operations before printing.
On variable pitch fonts (Times, Helvetica etc.) the typical form of
TRIM (see <A HREF="q06_01.html">TRIM</A>? for other forms) is
TRIM3 L1,L2,C,&lt;font_type&gt;
where L1-L2 are lines to be adjusted, C is the selected width and 'P'
means proportional trimming. The last parameter &lt;font_type&gt; is one of
the alternatives
P3 Times
P4 Swiss (Helvetica)
P5 Avant Garde          These fonts are defined in PSFONTS.DV2
P6 Bookman
P7 New Century Schoolbook
P8 Palatino
P9 Zapf Chancery

```

The proper C value depends simultaneously on the final printing width W (in picas) and font size S (in points) by the formula $C=12*W/S$. Of course, if a line consists of text in different font sizes, individual editing might be needed. In normal text no extra adjustment is necessary. For example, in case - [Times(10)][trim(50)] (i.e. S=10, W=50) a good value for TRIM is $C=12*50/10=60$.

To change the width, use another - [trim()] and to abandon the right edge alignment, use - [trim(0)]. Any line can be temporarily freed from adjustment by putting 'U' in the control column.

The simplest way to adjust lines in proportional pitch is to use the `sucro /TRIMP`.

```

<A HREF="q08c_02.html">T = /TRIMP sucro for proportional trimming of text lines</A>
<A HREF="q0p2_01.html">P = More information on proportional printing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">When printing tables in proportional pitch the problem is, how to kee
the columns correctly aligned.

```

In the PRINT operation control lines having a 'T' in the control column serve this purpose. A 'T' line must have other 'T's to indicate the columns (tab positions) which should be aligned in the final output. After encountering a 'T' line PRINT will align all subsequent lines according to it. To suppress the effect of the 'T' line for the remaining lines, an empty 'T' line (with no 'T's except in the control column) must be used.

Any 'T' on 'T' line indicates the text to be aligned to the right and parentheses () indicate alignment to the left from ') '.

To change the tabular alignment, a new 'T' line should be included and to suppress tabulating temporarily, 'U' should be used in the control column. For example:

```
11 T T      ( ) ( ) T
12 * January 1000.45 112 good
13 * February 987.87 55 poor
14 U This line will be printed without alignment.
15 * March 1245.09 65 satisfactory
16 T Here is a line (without capital t) terminating alignment.
17 * Lines 12,13 and 15 will be correctly aligned according to 11.
```

The gaps between the columns indicated by 'T's and parentheses on the 'T' line are selected according to the current font size.

The default gap is 60% of the font size in points.

This often leads to gaps which are too wide for numeric tables, for example. In such cases the gap may be changed by entering the 'T' line in the form

```
T *8 T ( ) ( ) T
```

where the number (8) after '*' indicates the new gap in points.

```
<A HREF="q0p2_01.html">P = More information on proportional printing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">On the PostScript printers the - picture control line can have a more
general form
- picture &lt;file.PS>;x,y,kx,ky,z
where the extra (optional) parameters are scaling coefficients kx,ky
and angle of rotation z in degrees. If z is positive, the picture
will first be scaled and then rotated. If z is negative, the picture
will first be rotated and then scaled by angle -z.
Furthermore, x and y can be replaced by relative coordinates of the form *+C
or *-C where C is a constant. The reference level * of y is the base
level of the current line and the reference level * of x is the current
start position of the line (determined by the left margin).
This feature greatly simplifies positioning of (possibly overlapping)
pictures with respect to the current text.
```

```

<A HREF="q08_02.html">P = More information on PRINT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--

```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>
-->

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The default plotting unit (minimum step) is 0.1 mm in Survo PostScript
plotting.
On high resolution printers (600 dpi or more) this is not accurate enough
especially in curve plotting when best possible quality is demanded.
Therefore the plotting unit can be altered by a specification
PS_UNIT=&lt;step&gt; where PS_UNIT=0.1 is the default setting.
For high quality curve plotting PS_UNIT=0.01 is recommended.

Too accurate units should be avoided since the largest permitted size is
SIZE=32767,32767 i.e. about 32.7 cm x 32.7 cm for PS_UNIT=0.01 .

The following example (next page) illustrates the difference.

```

```

*PLOT X(T)=R*COS(T),Y(T)=R*SIN(T)
*R=10 XDIV=0,1,0 YDIV=0,1,0 HEADER= FRAME=0
*T=0,2*pi,pi/120 pi=3.14159
*DEVICE=PS,K1.PS
*SIZE=1500,1500 PLOTTING WITH DEFAULT RESOLUTION
*LINETYPE=[BLACK][line_width(0.48)]
*.....
*PLOT X(T)=R*COS(T),Y(T)=R*SIN(T)
*R=10 XDIV=0,1,0 YDIV=0,1,0 HEADER= FRAME=0
*T=0,2*pi,pi/120 pi=3.14159
*DEVICE=PS,K2.PS
*SIZE=15000,15000
*PS_UNIT=0.01 PLOTTING IN 0.01 mm RESOLUTION
*LINETYPE=[RED][line_width(0.48)]
*.....
*PRINT CUR+1,END TO K.PS / Red curve is smoother than the black one.
* [scaling(35,35)][home(-550,-3000)]
* picture K1.PS
* picture K2.PS
*
*

```

Too accurate units should be avoided since the largest permitted size is
SIZE=32767,32767 i.e. about 32.7 cm x 32.7 cm for PS_UNIT=0.01 .

The following example (next page) illustrates the difference.

```

<A HREF="q0p1_01.html">P = More information on PostScript printing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">In addition to control words in brackets [], control lines
(with a '-' in the control column) can hold genuine PostScript
code.
For example, the following PRINT scheme produces a gray 3 cm x 3 cm
square:
11 *PRINT 12,19
12 - include PS.DEV / not necessary if PS.DEV is default in SURVO.APU
13 *A shaded square:
14 &amp; 7 (empty lines to have space for the square)
15 - /edge 3 2.54 div 72 mul def[LF]
16 - gsave currentpoint newpath moveto edge 0 rlineto 0 edge rlineto[LF]
17 - edge neg 0 rlineto closepath 0.5 setgray fill grestore[LF]
18 *
19 *The story continues...

```

Please, note that lines 15-17 containing pure PostScript code have to be terminated by line feeds defined as [LF] in PS.DEV .

Also the brackets [] appearing in PostScript arrays have to be replaced by control codes [LB] for '[' and [RB] for ']'.

Otherwise PostScript code can be written in print lists in a normal way.

```

<A NAME="P"></A> <A HREF="q0p1_01.html">P = More information on PostScript printing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Certain special features in PostScript printing/plotting
  <A HREF="q0p3_03.html">1 = Orientation of the page (landscape vs. portrait)</A>
  <A HREF="q0p3_05.html">2 = Units in scaling and positioning of texts and graphics</A>
  <A HREF="q0p3_06.html">3 = Accented characters</A>

```

```

<A HREF="q0p1_01.html">P = More information on PostScript printing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The default setting (in PS.DEV) is a standard A4 sheet in upright
(portrait position). By [LANDSCAPE] the page will be rotated 90 degrees
to landscape orientation. Thereafter [PORTRAIT] will restore the original
portrait orientation. If [LANDSCAPE] is used for consecutive pages, it
is the user's responsibility to alter (diminish) the page length (set
by [page_length(x)] where x is given in points.)

In PRINT also control words [HOME(x,y)], [SCALING(kx,ky)], and
[ROTATION(angle)] can be used to achieve an arbitrary location, scaling,
and rotation of the output on the current page. Default settings are
[HOME(0,0)] (physical left-bottom corner of the paper)
[SCALING(1,1)]
[ROTATION(0)]
<A HREF="q0p3_02.html">S = More information on special features in PostScript printing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q0p3_02.html">S = More information on special features in PostScript printing
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>

```


<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System ">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">The units used for scaling and locating text and pictures in
Survo PostScript applications are:

1 point = 1/72 inches

used in font sizes, line spacing and page length.

It is also the basic unit in the user coordinate system.

1 pica = 1/12 inches = 6 points

used in marginal setting (by [left_margin(x)]) and in
printing width (by [trim(x)]).

1 dmm = 0.1 mm

is the unit for all measurements related to Survo

graphics. Also coordinates of pictures when locating them

in PRINT (by - picture control lines) are given in dmm.

S = More information on special features in PostScript printing

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System ">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Original PostScript does not have codes for accented characters (like
,) and other special text characters used in various languages, but it
has predetermined names for them (is adieresis, for example).

Each application system has to encode selected characters. The current

version of PS.DEV does so for all scandinavian characters (, ,š, ~ , ,)

by giving them the same ASCII codes as used in the IBM PC.

The user can extend and alter the set of special characters by editing

PS.DEV. By listing this file, it is very easy to find the current setting

and alter the selection according to one's needs.

S = More information on special features in PostScript printing

</PRE></P><HR>

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Encapsulated PostScript files

```

Plots made by Survo can be exported to other programs in the EPS format. Also EPS files from other systems can be included in Survo publications including them as pictures in PRINT.

```

  <A HREF="q0p3_08.html">1 = Making Encapsulated Postscript files in PLOT</A>
  <A HREF="q0p3_10.html">2 = Converting Survo PostScript files to encapsulated format (EPS)</A>
  <A HREF="q0p3_11.html">3 = Encapsulated PostScript files in PRINT</A>
  <A HREF="q0p3_12.html">4 = Combining Survo PS files (EPS JOIN)</A>
  <A HREF="q0p3_13.html">5 = Inserting page comments in a PS file (needed in GSview program)

  <A HREF="q0p1_01.html">P = More information on PostScript printing/plotting</A>

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
The EPSFILE specification is not available in SURVO MM.
To convert a PostScript file into an Encapsulated PostScript file use
EPS &lt;file.PS&gt;,&lt;file.EPS&gt; after PLOT!

```

A Survo graph made by PLOT can be saved in a file in the EPS format by including the specifications
 DEVICE=PS,<PSfile> EPSFILE=<EPSfile>

in the PLOT scheme.

Then a Survo PostScript file <PSfile> is first generated and then the EPS command of Survo is automatically called to convert <PSfile> into Encapsulated PostScript format as <EPSfile>. Any <PSfile> can be taken in the PRINT list by - picture line and any <EPSfile> by - epsfile line.
(The latter alternative is essential for EPS files imported from other sources.)

```
<A HREF="q0p3_07.html">E = More information on (Encapsulated) PostScript files</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">
  <A HREF="q0p3_07.html">E = More information on (Encapsulated) PostScript files</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">EPS <PSfile>,<EPSfile>;
converts a Survo PostScript file made by PLOT with DEVICE=PS,<PSfile>;
into an Encapsulated PostScript file <EPSfile>. The output file can be
used in several other desktop publishing programs as such.
```

Also PostScript files consisting of one page only and generated by the PRINT operation of Survo can be converted. However, the PRINT list must then include a '- %Survo Graphics END[LF]' line as follows:

```
*PRINT CUR+1,E TO <PSfile>;
```

*<text and graphics to be printed on one page>
- %Survo Graphics END[LF]
E

The EPS file will include comment lines according to the Encapsulated PostScript Files Specification Version 2.0 by Adobe Systems.

The default comments given by the EPS operation can be replaced by using following specifications (default values given):

VERSION_COMMENT=%!PS-Adobe-2.0_EPSF-2.0
TITLE=Survo_PostScript_file
CREATOR=
CREATION_DATE=<current_date>
BOUNDINGBOX=<values_obtained_on_the_basis_of_HOME_and_SIZE>
given in 0.1 mm units and converted automatically
into Points.
DOCUMENT_FONTS=

The BoundingBox comment is automatically generated.

```
<A HREF="q0p3_07.html">E = More information on (Encapsulated) PostScript files</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Encapsulated PostScript files made by other systems can be included
the Survo PostScript printing by inserting a control line of the
form
- epsfile &lt;EPSfile&gt;,x,y
in the PRINT list. The options are the same as for the - picture
lines (see <A HREF="q0p2_04.html">PSPIC</A>?)

For the plots made by Survo itself,
- picture &lt;PSfile&gt;,x,y
given in PLOT by DEVICE=PS,&lt;PSfile&gt; should always be preferred.

<A HREF="q0p3_07.html">E = More information on (Encapsulated) PostScript files</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
```

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">EPS JOIN &lt;target.ps&gt;,A1,A2,A3,...
    A1=&lt;file1.ps&gt;,&lt;x1&gt;,&lt;y1&gt;,&lt;kx1&gt;,&lt;ky1&gt;;
    A2=&lt;file2.ps&gt;,&lt;x2&gt;,&lt;y2&gt;,&lt;kx2&gt;,&lt;ky2&gt;;
    A3=&lt;file3.ps&gt;,&lt;x3&gt;,&lt;y3&gt;,&lt;kx3&gt;,&lt;ky3&gt;;
    ...
combines several Survo PostScript files made by PLOT operations into
one Survo PostScript file &lt;target.ps&gt;. Such target files can be combined
again by EPS JOIN and included in PRINT lists by - picture control
lines.
Files to be combined are referred to by any names (as A1,A2,A3,.. above)
in the EPS JOIN command. Each item must have a corresponding
specification giving the PS file name and relative x and y coordinates
of the left low corner of the graph. Default is &lt;x&gt;=&lt;y&gt;=0.
Also individual scaling coefficients can be given. Default is &lt;kx&gt;=&lt;ky&gt;=1.
The target file is not an EPS file, but it can be converted to such one
by EPS &lt;target.ps&gt;,&lt;EPSfile&gt; .
```

EPS JOIN2 <target.ps>,A1,A2,A3,...
does the same job but also adjusts the bounding box in non-overlapping case.

```
<A HREF="q0p3_07.html">E = More information on (Encapsulated) PostScript files</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
```

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">EPS &lt;PSfile&gt;,&lt;New_PSfile&gt;,PAGES
copies &lt;PSfile&gt; made by PRINT to &lt;New_PSfile&gt; and adds comments
%%Page: &lt;page_number&gt; &lt;page_number&gt;;
in front of each page.
This conversion is useful e.g. when a multipage document made by Survo
is scanned by the GSview program.
```

```
<A HREF="q0p3_07.html">E = More information on (Encapsulated) PostScript files</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
```

```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Special features of PostScript printers in PLOT operations:
Specification DEVICE=PS must be given.
The unit step in plotting is 0.1 mm (1 dmm).
Maximum size: SIZE=1950,2800 (with HOME=70,100) on A4 paper
Defaults: SIZE=1500,1500 HOME=250,100 XDIV=3,10,2 YDIV=3,10,2

To save the graph in a picture file, enter specification
DEVICE=PS,&lt;filename.PS&gt;
The picture file may later be included in any report by
using the - picture option in the PRINT operation (see <A HREF="q08_01.html">PRINT</A>?).

The default device driver in SURVO.APU must be plot_dev=PS.DEV
or corresponding. This can be overridden by INCLUDE=PS.DEV

  <A HREF="q0p4_02.html">C = Control codes for PostScript plotting</A>
  <A HREF="q0p4_03.html">T = Moving and rotating texts in PostScript plots</A>
  <A HREF="q0p1_01.html">P = More information on PostScript printing</A>
  <A HREF="q11_01.html">G = More information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The control codes for various graphical elements in PostScript plotting
are mostly the same as on other devices.
Line width is selected by [line_width(x)] where x is given in points
(1 point = 1/12 inches). Default value is x=0.48 .
Line types are selected by [line_type(x)] where possible values are

```

x=0,1,...,7. The line types are defined in PS.DEV as a vector /ltype.
 The user can add more types and modify existing ones by editing PS.DEV.
 Markings for points (in scatter diagrams, for example) defined by the
 POINT specification are following:
 0=black circle, 1=plus, 2=asterisk, 3=white circle, 4=cross, 5=white
 square, 6=black square, 7=white triangle, 8=black triangle, 9=white
 diamond, 10=black diamond, 21=arrow head, 22=filled arrow head.

```
<A HREF="q0p4_01.html">P = More information on PostScript plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">In addition to the general device-dependent control words, the following
control codes are available for moving and rotating of texts:
(Same specifications are also available in GPLOT, see <A HREF="q111_13.html">TEXTROT</A>?</P>
```

[MOVE(x,y)] moves the start of the text by x in X direction and by y
 in Y direction.
 [ROT(angle)] rotates the text by an angle given in degrees.

The following example illustrates the use of these control words:

```
.....
PLOT Y(X)=10*SIN(X) / DEVICE=PS,TEST.PS
/GS-PDF TEST.PS
HEADER=[MOVE(500,-50)][Timesb(18)],Test_plot
PEN=[MOVE(0,0)][ROT(0)][Swiss(10)]
YSCALE=[ROT(90)],-10(2)10
YSCALE2=[MOVE(0,30)][ROT(-90)],-10(2)10
YSCALEPOS=-50,50
.....
```

See [char_width(x)] on the next page!

When using fonts of proportional pitch (as Times or Swiss), equally
 spaced text can be printed by using [char_width(x)] where x is the
 character width given in Points. [char_width(0)] means resuming the
 normal proportional pitch again.

This facility is useful in plotting Y scale notations in graphs in order
 to get notations correctly aligned.

Typical example: PEN=[Swiss(10)][char_width(0)]
 YSCALE=[char_width(8)],-4(2)2

```
<A HREF="q0p4_01.html">P = More information on PostScript plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)&nbsp;Help&nbsp;System">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">PLAY is a Survo operation for creating of sound files (WAV)
and for playback of them
```

```
<A HREF="q0s1_02.html">1 = PLAY SOUND(S) for playback of WAV files</A>
```

```
<A HREF="q0s1_03.html">2 = PLAY DATA for creating sound files from Survo data</A>
```

```
<A HREF="qtu6_03.html#TUTSOUND">3 = Sound signals in tutorials</A>
```

```
<A HREF="q0s1_04.html">4 = Sound signals for mouse clicks and activations</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">http://www.survo.fi/</A></DIV>
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)&nbsp;Help&nbsp;System">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">PLAY SOUND &lt;pathname of a sound file>
plays back synchronously a given sound file.
```

```
PLAY SOUND &lt;sound file>,&lt;max.time>;
```

```
plays back asynchronously a given sound file using max.time (in millisec.)
```

```
PLAY SOUNDS
```

```
sound_file_1
```

```
sound_file_2
```

```
...
```

```
plays back synchronously a series of sound files.
```

```
Default directory of Survo sound files is &lt;Survo>\U\SND .
```

```
Default type of a sound file is .WAV. In playback Survo is using
the WIN32 API function PlaySound().
```

```
Ready-made sound files (.WAV) in your PC can be found, for example, by
WHERE C:\*.WAV
```

```
Examples:
```

```
PLAY SOUND Fringilla.coelebs
```

```
PLAY SOUNDS
```


Cuculus.canorus
Cuculus.canorus
Fringilla.coelebs

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Creating sound files from Survo data
```

There are two alternatives for making sounds based on Survo data.

1. Sounds from raw data:

Consecutive values of one (mono) or two (stereo) variables in a Survo sound files can be saved as such in a WAV file by PLAY DATA command and played back by PLAY SOUND command.

2. Mapping data values to given sounds:

Consecutive values of selected variables in Survo data files can be replaced by sounds and "played" by
PLAY DATA <data>; / VOICES=<list of given voices>;

Description of these alternatives not yet ready!

Examples (in Finnish) by

/LOAD <Survo>;\U\SND\PLAYDATA

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
```

<H1>&
<P><PRE CLASS="HelpText">When making Flash demos, activations and mouse clicks can be
recorded by inserting a line

act_sounds=SUR_ACT,SUR_ML,SUR_MR

in the SURVO.APU file. The default WAV files listed above are
in the directory <Survo>\U\SND.

After making this modification and restarting Survo, the sounds
are activated by keystrokes F2 L E and deactivated by F2 L e.

When the sounds are activated,

the first sound will heard when a command is activated by ESC or
a double-click.

The second sound relates to the mouse click by the leftmost button.

The third sound relates to the mouse click by the rightmost button.

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Sound files from raw data

PLAY DATA <Survo_data>,<variable>

moves the values of <variable> in <Survo_data> in a sound file
given by a WAV specification.

The default format of the WAV file is 16 bit mono with 11025 Hz
sample rate.

Values of <variable> must be in the interval [-32767,32767].

Example 1:

s(X):=sin(X*ORDER)

FILE MAKE DAT,1,24000,X,2

VAR X=8000*(s(0.2)+s(0.25)+s(0.3)) TO DAT / Pure major triad

PLAY DATA DAT,X / WAV=MAJOR Making file MAJOR.WAV from X in DAT

PLAY SOUND MAJOR / Playback of MAJOR

VAR X=8000*(s(0.2)+s(0.2*6/5)+s(0.3)) TO DAT / Pure minor triad

PLAY DATA DAT,X / WAV=MINOR

PLAY SOUND MINOR / Playback of MINOR

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
```

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
```

```
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Voit muuttaa t m n ikkunan paikkaa ja kokoa seuraavasti:
```

N p yt hiirell t m n ikkunan yl palkin alussa olevaa kuvaketta.
Valitse Ominaisuudet (Properties).
V lilehdelt Fontit (Font) valitset kirjaintyyppin ja -koon, joka samalla
m r ikkunan koon.
V lilehdelt Layout voit s t ikkunan paikan antamalla ikkunan
vasemman yl kulman koordinaatit. Voit my s yl palkista raahata
hiirell t t ennen ikkunan sopivaksi katsomaasi kohtaan kuvaruudulla,
jolloin tuon sijainnin koordinaatit ovat oletusarvoina v lilehdell
Layout.

Kun vahvistat valinnat, merkitse ne pysyviksi.

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
```

```

-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Voit muuttaa t m n HELP-ikkunan paikkaa ja kokoa seuraavasti:

```

Ikkunan koko: (Fonttikoon muutos)
 N p yt hiirell t m n ikkunan yl palkin alussa olevaa Survon kuvaketta.
 Valitse Ominaisuudet -> Fontit
 ja sopiva fonttikoko.

Paikan siirto:
 Tartu hiirell ikkunan yl palkkiin viem ll hiirikohdistin koskettamaan
 tuota palkkia, painamalla hiiren vasemmanpuoleinen painike alas ja
 raahaamalla ikkunaa siten, ett ikkunan vasen yl kulma on haluamallasi
 paikalla kuvaruudussa. Suositus on kuitenkin pit ikkuna kuvaruudun
 vasemmassa yl kulmassa.

Voit toistaa yll mainitut toimenpiteet niin monta kertaa, ett ikkuna
 on toivomallasi paikalla ja sopivan kokoisena.

~1 sulje t t ikkunaa (esim. ENTER-napilla) ennenkuin Survo on
 tehnyt tarvittavat muutokset!

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">You can change the position and the (font)size of this HELP window
as follows:

```

Click the SURVO MM icon in front of the title bar and
 select item 'Properties'.
 From the property sheet 'Font' select the font type and size.
 This also specifies the physical size of the window.
 From the property sheet 'Layout' select the location
 of the window by giving the coordinates of the upper-left corner.
 Before that you can also drag (from the title bar by the mouse)
 the window to your favorite position. Then the coordinates of this

location will appear as default values on the property sheet 'Layout'.

After clicking OK let Windows to
'Modify short cut that started this window'.

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">You can now change the position and the (font)size of this HELP window
as follows:
```

Size of the main window: (Font type and size)
Click the SURVO MM icon in front of the title bar and
select Properties -> Font
and from there the font type and size.

Location of the main window:
Drag (from the title bar by the mouse) the window to your favorite
position.

You may repeat the actions above as many times as you need in order
to find a proper size and location.

Don't close this HELP window (by ENTER, for example) before Survo
has completed your changes!

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
```

```

<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SURVO MM supports graphical operations
<B>PLOT</B> on PostScript printers (PS)
    and
<B>GPLOT</B> in the screen graphics.

```

A PostScript printer is ideal for producing plots of high quality and for making multipage documents with graphical illustrations (see option - picture in PRINT?).

PostScript files made by Survo can also be printed by means of various Windows programs (like GSview and Adobe Acrobat) on any Windows printer.

Plots on the screen are useful when planning graphical illustrations and in interactive graphics.

Since the screen plots can be saved on the disk as enhanced metafiles, also sequences of pictures and overlays of them may be created.

The PLOT operation and the GPLOT operation are almost identical in most applications. When a plotting scheme has to be transferred from the screen to printers or plotters or vice versa, it is usually question of changing PLOT to GPLOT and adjusting some dimension parameters (like SIZE) only.

Often such adjustments can be avoided by using specification MODE=PS in GPLOT plotting schemes.

```

<A HREF="q11_01.html">P = More information on plotting (PLOT)</A>
<A HREF="q0p1_01.html">S = Special properties of PostScript printers (PLOT with DEVICE=PS)
<A HREF="q111_02.html">G = Special properties of screen graphics (GPLOT)</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Special features of screen graphics in Survo plotting:

  <A HREF="q111_03.html">1 = General information</A>
  <A HREF="q111_05.html">2 = Logical size of a graphics window</A>
  <A HREF="q111_07.html">3 = Actual size and position (in pixels) of a graphics window</A>
  <A HREF="q111_08.html">4 = Control commands for graphics windows</A>
  <A HREF="q111_09.html">5 = Maintaining graphics files</A>
  <A HREF="q111_10.html">6 = Additional features in GPLOT</A>
  <A HREF="q111_15.html">7 = Colors in GPLOT</A>
  <A HREF="q113_01.html">S = Other specifications in GPLOT</A>
  <A HREF="q11_01.html">P = More information on plotting in general</A>

```

A tutorial about SURVO MM screen graphics control is started by soft buttons DEMO -> GPLOT.

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Plotting on the screen:

```

Use GPLOT (instead of PLOT) as the operation word. When a GPLOT operation is activated, the plot will be generated in its own window and it is also saved as an enhanced metafile (.EMF).

The number, sizes and locations of simultaneous graphics windows are selected by a GPLOT /LAYOUT command.
For example, if the number of permitted graphics windows is 3, the 4th graph will close window #1, 5th graph will close window #2, etc.

All graphics windows of SURVO MM can be freely moved, resized, minimized, maximized, and deleted by using the mouse.

The Survo device driver defining the various control words to be used in the GPLOT operation is selected by the keyword 'crt_dev' in SURVO.APU (See CRTDEV?)

```

<A HREF="q111_02.html">G = More information on GPLOT</A>
<A HREF="q111_01.html">P = More information on plotting in general</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&

```

```

<P><PRE CLASS="HelpText">
  <A HREF="q111_02.html">G = More information on GPLOT</A>
  <A HREF="q111_01.html">P = More information on plotting in general</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The initial logical size of a graphics window is given by the keyword
'videomode' in the system file SURVO.APU.
videomode=&lt;width&gt;,&lt;height&gt; (for example, videomode=1000,1000)
gives the default size of graphics windows in logical units.
In order to provide compatibility with earlier Survo versions, following
shorthand notations are available:
videomode=EGA is the same as videomode=480,350 .
Similarly VGA corresponds to 600,480, CGA to 320,200, SVGA to 800,600,
and XRES to 1024,768.
To guarantee the best possible compatibility with PostScript graphics
it is worthwhile to use a new alternative videomode=PS
where parameters &lt;width&gt; and &lt;height&gt; are chosen according to the SIZE
specification. Then also certain other attributes of the graph (like
font sizes) are transformed in such way that the picture corresponds
closely to PostScript version of the same plotting scheme.

  <A HREF="q111_02.html">G = More information on GPLOT</A>
  <A HREF="q111_01.html">P = More information on plotting in general</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&

```


<P><PRE CLASS="HelpText">MODE=<width>,<height> or MODE=CGA|EGA|SVGA (in GPLOT operations) gives the size of the graph in logical units. The options are the same as those of 'videomode' in SURVO.APU

The initial logical size of a graphics window is given by the keyword 'videomode' in the system file SURVO.APU.
videomode=<width>,<height> (for example, videomode=1000,1000) gives the default size of graphics windows in logical units.

In order to provide compatibility with earlier Survo versions, following shorthand notations are available:

videomode=EGA is the same as videomode=480,350 .

Similarly VGA corresponds to 600,480, CGA to 320,200, SVGA to 800,600, and XRES to 1024,768.

To guarantee the best possible compatibility with PostScript graphics it is worthwhile to use a new alternative videomode=PS where parameters <width> and <height> are chosen according to the SIZE specification. Then also certain other attributes of the graph (like font sizes) are transformed in such way that the picture corresponds closely to PostScript version of the same plotting scheme.

```
<A HREF="q111_02.html">G = More information on GPLOT</A>
<A HREF="q111_01.html">P = More information on plotting in general</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The number, sizes and locations of graphics windows are controlled
the command
GPLOT /LAYOUT &lt;text file with .SYS extension&gt;.
GPLOT /LAYOUT (without parameter)
lets Windows to position graphics windows automatically. Max. # is 300.
```

The default setting of Survo graphics windows is typically
gplot_layout=SUR_G3.SYS (given in SURVO.APU).
These SYS files are located in the subdirectory of SURVO MM containing
GPLOT modules (in <Survo>\U\G).

The contents of SUR_G3 is

```
3 1024 768      / # of windows and size of the reference screen
700 0 300 225   / locations and sizes of windows in pixels
700 250 300 225
700 500 300 225
```

Certain predefined settings can be selected most easily by soft buttons
SYSTEM -> GRAPH.

Specifications WHOME=<x>,<y> and WSIZE=<>window_width>,<>window_height> always override the current setting permitting a temporary positioning

of a graphic window irrespective of the current /LAYOUT setting.
 <x> and <y> give the coordinates of the top-left corner of the window
 in the coordinate system where (0,0) is the top-left corner of the screen.
 (This is a Windows OS convention).
 In these specifications, notations WX and WY are permitted giving the
 width and height of the entire screen.

.....
 For example,
 GPLOT Y(X)=X / WHOME=WX/2,0 WSIZE=WX/2,WY/2
 plots the graph in a window which is in the top right corner of the screen
 and takes one quarter of the total size of the screen.

.....
 Specifications HOME=<x_home>,<y_home> and SIZE=<plot_size>,<plot_width>
 give the actual location and size of the graph in logical coordinates.
 HOME=0,0 now refers to the bottom-left corner of the of the current
 graphics window. (This is a normal convention in all reasonable systems.)

```
<A HREF="q111_02.html">G = More information on GPLOT</A>
<A HREF="q111_01.html">P = More information on plotting in general</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Control commands for Survo graphics windows:
```

Each graphics window of SURVO MM can be freely moved, resized, minimized
 maximized, and deleted by the mouse.
 Modifications can be done also by special GPLOT control commands.
 These are useful tools especially when making graphical applications
 of Survo as sucros.

GPLOT /DEL ALL

closes all existing SURVO MM graphics windows.

GPLOT /DEL <integer>;

closes the window having the given number in its title bar.

GPLOT /SHOW MIN <integer>;

minimizes the given Survo graphics window.

GPLOT /SHOW NORMAL <integer>;

restores the window to its earlier size and position (after /SHOW MIN)

GPLOT /SHOW MAX <integer>;

maximizes the given Survo graphics window. In sucros use WIN MIN to
 to overlap the main window (edit field) by the picture.

Control commands for Survo graphics windows: (continued)

GPLOT /NEXT <integer>;

selects the next graphics window to be the one with the order <integer>;

in the current layout.

GPLOT /PREV

selects the previous graphics window for the next graph. This command (with IN- and OUTFILE specifications) provides a simple way for making overlay graphics (in sucros).

GPLOT /FIX <integer>

selects a fixed graphics window with order <integer> for all subsequent graphs.

This command is helpful in the same way as GPLOT /PREV.

GPLOT /DEL ALL and **GPLOT /NEXT <integer>** commands cancel the /FIX setting.

GPLOT /WHICH

tells the number of the next graphics window to be used by typing that number after the command. Again useful feature in sucros and in connection with GPLOT /FIX <integer>, for example.

GPLOT /FIRST <integer>

limits rotation of graphics windows. For example, if # of windows (according the current layout) is 8 and GPLOT /FIRST 5 is activated, the windows of subsequent GPLOT's will be rotating according to sequence 5,6,7,8,5,6,7,8,5,6,7,8,... thus leaving windows 1,2,3,4 intact.

```
<A HREF="q111_02.html">G = More information on GPLOT</A>
<A HREF="q111_01.html">P = More information on plotting in general</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Maintaining metafiles (plots generated by GPLOT):
```

To save the graph in an enhanced metafile, enter specification
OUTFILE=<name_of_metafile>; (default extension .EMF)

To plot over another plot saved earlier by the OUTFILE option, enter
specification **INFILE=<name_of_metafile>**;

Pictures can be accumulated by using the same metafile in
INFILE and OUTFILE specifications.

To display metafiles generated by Survo, use the GPLOT FILE operation.

```
<A HREF="q111_02.html">G = More information on GPLOT</A>
<A HREF="q111_01.html">P = More information on plotting in general</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```

```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Additional features in GPLOT:

  <A HREF="q112_02.html">A = PALETTE specification</A>
  <A HREF="q111_11.html">F = Display of metafiles (GPLOT FILE operation)</A>
  <A HREF="q112_04.html">T = Text fonts</A>
  <A HREF="q113_01.html">S = Other specifications (in GPLOT only)</A>
  <A HREF="q112_01.html">D = Device drivers for GPLOT</A>
  <A HREF="q111_12.html">M = INFILES (multiple infiles) specification</A>
  <A HREF="q111_14.html">R = Moving and rotating texts</A>
  <A HREF="q111_02.html">G = More information on GPLOT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">GPLOT FILE &lt;metafile&gt;
displays a metafile which have been saved earlier by the OUTFILE
option of the GPLOT operation.

  <A HREF="q11_01.html">P = More information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">INFILES=&lt;file1&gt;,&lt;file2&gt;,...
(specification in GPLOT) works as INFILE but takes several ready-made
plots as a background for the current graph.
Example: GPLOT Y(X)=sin(X) / INFILES=F1,F2

```

```

<A NAME="PP"></A>
<A HREF="q11_01.html">P = More information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Moving and rotating texts in Survo graphics
The same control words [MOVE(x,y)] and [ROT(angle)] are available
in both screen and PostScript graphics.

```

```

<A HREF="q111_14.html">1 = Screen graphics</A>
<A HREF="q0p4_01.html">2 = PostScript graphics</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>

```

```
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Moving and rotating texts in GPLOT
(Same features are available also in PS plotting, see <A HREF="q0p4_01.html">PSPLOT</A>?)
```

[MOVE(x,y)] moves the start of the text by x in X direction and by
in Y direction.

[ROT(angle)] rotates the text by an angle given in degrees.

The following example illustrates the use of these control words:

```
.....
GPLOT Y(X)=X
HEADER=[MOVE(10,-100)],See_what_happens_when_resizing_by_the_mouse!
X=[RED][line_width(5)],-10(10)10
PEN=[MOVE(0,0)][ROT(0)][BLACK][ARIAL(50)]
TEXTS=T1,T2,T3
T1=[ROT(0)],rot(0);_horizontal,100,10
T2=[ROT(90)],rot(90);_90_vertical,30,70
T3=[ROT(45)],rot(45);_in_45_degrees,260,300
MODE=1000,1000 WSIZE=500,500 WHOME=WX-520,WY-560
XDIV=0,1,0 YDIV=0,1,0 FRAME=0 HEADER=0
.....
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Colors in GPLOT

<A HREF="q0f_02.html">1 = General information (COLOR?)</A>
<A HREF="q0p1_08.html">2 = Giving colors according to CMYK system (PSCOLOR?)</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The control words appearing in the extra specifications of
the GPLOT (PLOT) operations can be defined by the user.
All such definitions are saved in a text file (Survo device
driver) and maintained easily by the SAVEP and LOADP operations
of Survo.

```

The default device driver for the GPLOT operation is given as
 crt_dev=<name_of_file> in the auxiliary file SURVO.APU in the
 Survo directory.

Most of the specifications in GPLOT schemes can be given like
 GRID=([RED][line_width(2)],XY
 where the driver dependent part has always the form
 ([...][...][...]),
 The words in brackets (like [RED] and [line_width(2)]) have to be
 defined in the driver.

To override the default driver, use INCLUDE=<name_of_driver>
 in your GPLOT scheme.

New drivers can be built by using default drivers as models.

```

<A HREF="q11_01.html">P = More information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PALETTE=&lt;name of a .PAL file&gt;
(specification in GPLOT operation)
determines the color palette for the current graph.
Default directory for .PAL files is the current data path
and secondarily &lt;Survo&gt;\U\SYS .
Each .PAL file is a text file with several lines of the form
&lt;color_index&gt; &lt;Red_intensity&gt; &lt;Green_intensity&gt; &lt;Blue_intensity&gt;
where &lt;color_index&gt; is 0,1,... (max 15 for EGA, for example) and
intensities are integers from 0 to 1000.
The PAL1.PAL file corresponds to the default colors obtained without
any PALETTE specification.
<A HREF="q11_02.html">G = More information on GPLOT</A>
<A HREF="q11_01.html">P = More information on plotting in general</A>

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">GPLOT /PALETTE &lt;old_PAL_file&gt;,&lt;new_PAL_file&gt;
displays the colors represented by the &lt;old_PAL_file&gt; (with default
extension .PAL) with their RGB values ranging from 0 to 1000.
The default path for .PAL files is the current data path and
secondarily &lt;Survo&gt;\U\SYS .

```

The RGB values are rescaled to range from 0 to 63 during editing.
The user can edit the RGB values by moving the cursor and increasing and decreasing the values by + and - keys. The colors will be changing accordingly.
Finally, by pressing ENTER the edited RGB values will be saved as a <new_PAL_file>. The original scaling from 0 to 1000 will be resumed.

```

<A HREF="q111_02.html">G = More information on GPLOT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Any character font in the current Windows environment can be used
SURVO MM screen plots.
Names of available fonts and text samples using them is obtained
by activating the sucro command
/FONTS .
Any text item in the graph can be given with a [FONT(font_name,size)]
code attribute. For example, using the "Times New Roman" font of size 20 in the

```


plot header and in 'red' color and in italics can be indicated by

HEADER=[FONT(Times_New_Roman,20)][RED][ITALIC],Steiner_circles

Please note that spaces must be replaced by '_'s in these notations.

All code attributes for screen plotting are defined in the CRT16.DEV text file (in directory <Survo>\U\SYS).

For compability with earlier Survos and PostScript plotting CRT16.DEV includes shorthand ready-made definitions like (this equals to the above HEADER):

HEADER=[TimesI(20)][RED],Steiner_circles

Similarly [TimesB(12)] is the same as [FONT(Times_New_Roman,12)][BOLD].

GPLOT /FRAME / Load the setup by '+' and activate this line!

HEADER=Various_fonts_in_Survo_screen_graphics:_(This_is_[NORMAL]) FRAME=0

MODE=EGA Width=640 Height=350-Gap Gap=20

R1=Height-1*Gap R5=Height-5*Gap R9=Height-9*Gap

R2=Height-2*Gap R6=Height-6*Gap R10=Height-10*Gap

R3=Height-3*Gap R7=Height-7*Gap R11=Height-11*Gap

R4=Height-4*Gap R8=Height-8*Gap R12=Height-12*Gap

TEXTS=T1,T2,T3,T4,S1,S2,S3,S4,C1,C2,C3,L

T1=[Times(10)],[Times(10)],Gap,R1 S1=[Swiss(10)],[Swiss(10)],Width/2,R1

T2=[Times(15)],[Times(15)],Gap,R2 S2=[Swiss(13)],[Swiss(13)],Width/2,R2

T3=[Times(20)],[Times(20)],Gap,R3 S3=[Swiss(17)],[Swiss(17)],Width/2,R3

T4=[Times(25)],[Times(25)],Gap,R4-9 S4=[Swiss(22)],[Swiss(22)],Width/2,R4

C1=[Courier(10)],[Courier(10)],Gap,R5 C2=[Courier(12)],[Courier(12)],8*Gap,R5

C3=[Courier(15)],[Courier(15)],Gap,R6

SM=[SMALL],22_Oct_1991/SM_(This_is_[SMALL]),Gap,R8

L=[RED][SMALL],#LINES:CUR+7,CUR+15,Gap,R9,12

G = More information on GPLOT

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Extra specifications in GPLOT

1 = COLORS

2 = COLOR_CHANGE

3 = PIEBORDER

4 = TITLE

5 = WSTYLE

6 = MOUSE

7 = SHOW

8 = ROP (Raster Options)

9 = TOP (Setting visibility of a graphics window)

```

<A HREF="q111_02.html">G = More information on GPLOT</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">COLORS=[foreground][background]
(in GPLOT operation) selects the colors for the plot.
COLORS=[BLACK][WHITE] is the default combination.
The PEN and LINETYPE specifications should be always set accordingly.
Example: COLORS=[RED][CYAN] PEN=[RED] LINETYPE=[RED]

<A HREF="q0f_02.html">C = More information on color management</A>
<A HREF="q113_01.html">S = More information on GPLOT specifications</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
<A HREF="q113_01.html">S = More information on GPLOT specifications</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">COLOR_CHANGE=&lt;expression&gt;,&lt;max&gt;
(in GPLOT and PLOT operations for families of curves)
selects the line color for each curve individually according to the
&lt;expression&gt; depending on any of the cycling parameters. The color
indices are selected modulo &lt;max&gt;. Then the possible values are
0,1,2,...,&lt;max&gt;-1 .

Each color may be selected separately by COLOR(n) specifications.

For example,
GPLOT Y(X)=A
YSCALE=0(1)15 X=[line_width(15)],-10,10,20
COLOR_CHANGE=A A=0,15,1
displays the entire 16 color palette as horizontal bars.

  <A HREF="q113_01.html">S = More information on GPLOT specifications</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
  <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
  <META NAME="Generator" CONTENT="SURVO MM">
  <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
  <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
  <META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
  <META NAME="Classification" CONTENT="help system">
  <META NAME="Keywords" CONTENT="Survo, help, hypertext">
  </HEAD>
  <BODY>
  <H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
  <P><PRE CLASS="HelpText">PIEBORDER=&lt;1 or 0&gt;
  (in GPLOT operation of TYPE=PIE or TYPE=%PIE)
  specifies whether the the outlines of the sectors should be drawn
  (PIEBORDER=1) or not (PIEBORDER=0). Default is PIEBORDER=0.

  <A HREF="q113_01.html">S = More information on GPLOT specifications</A>
  </PRE></P><HR>
  <DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
  </BODY>
  </HTML>
  <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Display-off mode of Survo

```

In certain applications of Survo it is good to freeze the main window and display only selected portions of the work on the screen. This is appropriate especially in sucros made as teaching programs or as presentations of graphical displays.

The key code PREFIX 'L' 'o' (in sucros {disp off}) disables the main window.

Text is written normally in the edit field but not shown in the window.

the main window is restored (and updated) by the keystrokes

PREFIX 'L' 'O' (in sucros {disp on}) or by the F8:EXIT key.

It is also possible to hide the main window by the WIN MIN command.

Then it is restored by WIN NORMAL.

Test this by continuous activation (F2 ESC) of the commands:

WIN MIN

WAIT 2

WIN NORMAL

```

  <A HREF="q113_01.html">S = More information on GPLOT specifications</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/q113_01.html">S = More information on GPLOT specifications</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--

```

```

    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">By default each Survo graphics window has a title bar above the
graph. The title bar text has the form

```

C3: SURVO MM Graphics

Where C identifies the current Survo session (blank=A,B,C,D,...)

and 3 # of the current graphics window in that session.

The text can be replaced by any other giving the specification

TITLE=<text>.

The title bar is completely omitted if specification WSTYLE=0 is used.

```
<A HREF="q113_01.html">S = More information on GPLOT specifications</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">In a Survo graphics window the title bar is left out by giving
the specification WSTYLE=0 in the GPLOT scheme.
Such a window cannot be moved or resized by the mouse. It can,
however, be closed by clicking it and pressing alt-F4.
Also the GPLOT /DEL &lt;ALL or #&gt; command closes such windows.

  <A HREF="q113_01.html">S = More information on GPLOT specifications</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The logical coordinates (determined usually by the MODE specification
of a point clicked by the mouse in a Survo graphics window can be saved
as a text file by giving a specification
MOUSE=&lt;pathname_of_file&gt;
in the GPLOT scheme.
The information is saved in the text file as a single line of the form
&lt;# of window&gt; &lt;L or R&gt; &lt;x coordinate&gt; &lt;y coordinate&gt;.
The button pressed is indicated by L (left) or R (right).
```

The MOUSE specification is intended for sucros working with graphics

windows and enables mouse-controlled activities with Survo graphics.

```
<A HREF="q113_01.html">S = More information on GPLOT specifications</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">If specification SHOW=0 is given in a GPLOT scheme, the graphics
is not shown at all. This feature is useful in sucros and enables
creating EMF files which are shown later by GPLOT FILE.
Default is SHOW=1.
```

```
<A HREF="q113_01.html">S = More information on GPLOT specifications</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ROP=&lt;integer 0,1,2,...,15&gt;
(in GPLOT) determines how overlapping colors are combined.
See another example in POLY?
```

```
<A HREF="q113_01.html">S = More information on GPLOT specifications</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TOP=1
specifies that the graphics window should be placed above all
non-topmost windows and should stay above them, even when the window is
deactivated.
Default is TOP=0 (non-topmost window).

  <A HREF="q113_01.html">S = More information on GPLOT specifications</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PLOT is an operation for plotting various graphs.
PLOT has several forms:
  <A HREF="q111_01.html">G = General information on different plotting devices</A>
  <A HREF="q11_02.html">1 = Bar charts (horizontal/vertical, pie charts, matrix diagrams)</A>
  <A HREF="q12_01.html">2 = Scatter diagrams (correlation diagrams, box plots)</A>
  <A HREF="q13_01.html">3 = Time series plots and line graphs</A>
  <A HREF="q13_03.html">4 = Probability plots (normal distribution)</A>
  <A HREF="q16_01.html">5 = Curves</A>
  <A HREF="q1a_01.html">6 = Histograms</A>
  <A HREF="q1k_01.html">7 = Frames, texts and lines</A>
  <A HREF="q11c_01.html">8 = Contour plots</A>
  <A HREF="q11c_03.html">9 = Matrix plots</A>
  <A HREF="q11_09.html">T = Texts in Survo graphics</A>
  <A HREF="q1d_01.html">M = Representation of multivariate data</A>
  <A HREF="qkv0_15.html">C = Sucros for composite plots</A>
  <A HREF="q21_01.html">D = More information on data analysis</A>
  <A HREF="q01_02.html">E = More information on the Survo Editor</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>

```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">PLOT &lt;name of data>gt;
plots a bar chart of a data set on disk or defined by a DATA
specification.
```

The first active field of the data set will be assumed a string field
and it is used as the label for each bar/pie.

If the label field is not the first one, it can be indicated by a 'L' mask.

All other active fields will be plotted.

If the label field is not a string field, no labels are used and all
active fields are plotted.

```
<A HREF="q11_03.html">T = types of bar/pie charts</A>
```

```
<A HREF="q11_04.html">X = Extra specifications</A>
```

```
<A HREF="q11_01.html">P = More information on plotting</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">http://www.survo.fi/</A></DIV>
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">TYPE specifies the type of the chart in the PLOT operation.
```

```
Default is TYPE=HBAR (horizontal bar chart).
```

Other types are:

TYPE=VBAR (vertical bar chart)

TYPE=%HBAR (horizontal bar chart in percentages)

TYPE=%VBAR (vertical bar chart in percentages)

TYPE=MHBAR (multiple horizontal bar chart)

TYPE=MVBAR (multiple vertical bar chart)

TYPE=%MHBAR (multiple horizontal bar chart in percentages)

TYPE=%MVBAR (multiple vertical bar chart in percentages)

TYPE=%AHBAR (as %HBAR but with areas equal to absolute size)

TYPE=%AVBAR (as %VBAR but with areas equal to absolute size)
TYPE=NHBAR (as HBAR but negative bars are stacked to the left)
TYPE=NVBAR (as VBAR but negative bars are stacked downwards)
TYPE=PYRAMID (age pyramids etc.)
TYPE=PIE (multiple pie chart, total area proportional to column sum)
TYPE=%PIE (multiple pie chart, total area constant)

```
<A HREF="q11_12.html">E = Examples</A>
<A HREF="q11_11.html">M = Mean-deviation plots in attitude surveys</A>
<A HREF="q11_01.html">P = More information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
    <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
    <META NAME="Generator" CONTENT="SURVO MM">
    <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
    <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
    <META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
    <META NAME="Classification" CONTENT="help system">
    <META NAME="Keywords" CONTENT="Survo, help, hypertext">
  </HEAD>
  <BODY>
    <H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
    <P><PRE CLASS="HelpText">Extra specifications for bar/pie charts:

    <A HREF="q11_05.html">1 = HOME, SIZE, XDIV, YDIV, PEN, LINETYPE</A>
    <A HREF="q19_01.html">2 = SCALE</A>
    <A HREF="q11_06.html">3 = FRAME, GRID, TICK, TICKLENGTH (boxes and grids)</A>
    <A HREF="q15_01.html">4 = HEADER</A>
    <A HREF="q1k_03.html">5 = TEXTS (additional labels and texts)</A>
    <A HREF="q11_07.html">6 = SHADING, LEGEND</A>
    <A HREF="q11_08.html">7 = VALUES, LABELS, NAMES (writing text in bars/pies)</A>
    <A HREF="q19_11.html">8 = GAP</A>
    <A HREF="q19_12.html">9 = PLAN (in pie charts)</A>
    <A HREF="q19_15.html">0 = MINVALUE</A>
    <A HREF="q19_13.html">A = ANGLE (in pie charts)</A>
    <A HREF="q19_14.html">M = MAX (in pie charts)</A>
    <A HREF="q11_10.html">G = GROUPING (bar chart of several groups)</A>
    <A HREF="q11_13.html">L = LAB_DELIMITER (in horizontal bar graphs)</A>
    <A HREF="q11_01.html">P = More information on plotting in general</A>
  </PRE></P><HR>
  <DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
  </BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
    <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
    <META NAME="Generator" CONTENT="SURVO MM">
    <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
    <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q14_04.html">1 = HOME (coordinates of the lower le
  <A HREF="q14_05.html">2 = SIZE (size of the graph)</A>
  <A HREF="q14_06.html">3 = XDIV (horizontal division)</A>
  <A HREF="q14_07.html">4 = YDIV (vertical division)</A>
  <A HREF="q13_06.html">5 = PEN (graphical attributes of text)</A>
  <A HREF="q13_07.html">6 = LINETYPE (graphical attributes of lines)</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q14_08.html">1 = FRAME (frames around the graph)
  <A HREF="q14_09.html">2 = GRID</A>
  <A HREF="q14_10.html">3 = TICK</A>
  <A HREF="q16_08.html">4 = TICKLENGTH</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q19_03.html">1 = SHADING (filling the bars/pies)</A>
  <A HREF="q19_08.html">2 = LEGEND (label for the list of shadings or coordinates of the legend)
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

```

```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q19_09.html">1 = VALUES (values in bars/pies)</A>
  <A HREF="q19_10.html">2 = LABELS (names of variables in bars/pies)</A>
  <A HREF="q19_16.html">3 = NAMES (names of observations)</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TEXTS in Survo graphics:

```

Texts can be included in each type of Survo plots on the screen (GPLOT) or in the PostScript format (PLOT).

Texts are given in PLOT schemes by various specifications (see e.g. HEADER? TEXTS? SCALE? XSCALE? YSCALE? XLABEL? YLABEL?).

Since, in editorial interface, characters 'space' and 'comma' (,) are important delimiters, they cannot be used in texts as such.

A space must be replaced by _
and a comma must be replaced by ;

If characters ; and _ are needed in these texts, they can be typed as \; and _ respectively.

Example:

.....

See what happens to

HEADER=Example:_comma_;\;_semicolon_\;_space__;_underscore__
when activated by

GPLOT /FRAME

Then the header will appear in the graph in the form

Example: comma , semicolon ;, space _ , underscore _

```

.....
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Several data sets can be presented in the same bar chart by using
a grouping specification
GROUPING=&lt;name_of_a_string_variable&gt;.
In the graph groups are separated by gaps. The width of such a gap
corresponds to the width of one bar.
In the data set the default order of variables is:
Grouping_variable  Label_of_observation  Variables_to_be_plotted

The GROUPING option is most suitable in types %HBAR,%VBAR,HBAR,VBAR
but it can be also used in other types of bar charts depending on
the situation.

```

The example on the next page illustrates usage of GROUPING.

```

.....
Example: Bar chart of several groups (PostScript version on the next page!)

```

```

DATA D
Diagnosis  Symptom  None_  Mild  Severe
Depression  SSP    34    11    6
Depression  SP     40     8    2
Depression  NSP    43     6    2
Anxiety     SSP    36    12    5
Anxiety     SP     41     9    0
Anxiety     NSP    44     3    2
Hyperactivity SP    36    12    5
Hyperactivity NSP   38    10    3

```

```

GPLOT D / TYPE=%HBAR  MODE=PS          GROUPING=Diagnosis
HEADER=[Swiss(15)],Prevalence_of_symptoms  XDIV=25,70,5
LEGEND=Symptom_severity: PEN=[autom_color(0)][Swiss(10)]
SCALE=0(10)100 SIZE=1420,950 GAP=0.2,0.7,0.7 SHADING=0,1,7
VALUES=[autom_color(0.4)][Swiss(6)],##.##%,-0.5 VALUEMIN=8
FRAMES=F F=0,0,1420,950,11

```

```

.....
PLOT D / TYPE=%HBAR  DEVICE=PS,D.PS    GROUPING=Diagnosis
/PS-PDF D.PS / Displaying the graph by Adobe Acrobat after PLOT
HEADER=[Swiss(15)],Prevalence_of_symptoms  XDIV=25,70,5
LEGEND=Symptom_severity: PEN=[autom_color(0)][Swiss(10)]
SCALE=0(10)100 SIZE=1420,950 GAP=0.2,0.7,0.7 SHADING=0,2,6
VALUES=[autom_color(0.4)][Swiss(6)],##.##%,-0.5 VALUEMIN=8

```

```

<A HREF="q11_04.html">X = Extra specifications for bar/pie charts:</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Mean-deviation plots

```

These graphs are made by the `sucro` command
`/DEV PLOT <data>,<type>`;
 where `<type>` is either `VBAR` or `HBAR`. The means of selected variables
 are plotted as bars with line segments indicating the interval
 (mean-stddev, mean+stddev).

`/DEV PLOT` creates and activates a `GPLOT` scheme which can be edited
 afterwards according to the needs of the user.

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Examples of bar and pie charts:

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--

```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LAB_DELIMITER=&lt;char&gt;,&lt;vertical_gap&gt;;
(in horizontal bar charts, HBAR etc.)
gives a possibility to break labels of record names into suitable parts.
&lt;char&gt; ('|' by default) in a label indicates a line break. The gap between
lines is specified by &lt;vertical_gap&gt;.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PLOT Z(X,Y)=&lt;function of X,Y&gt; / TYPE=CONTOUR
(with DEVICE=PS or DEVICE=G or as GPLOT)
draws a contour plot of the given function of two variables as a
raster image.
```

The function is written according to the rules of curve plotting (see CURVES?). X and Y may be replaced by any words. The scaling must be indicated by the SCALE, XSCALE, YSCALE, X and Y specifications, for example, as follows:

SCALE=0(0.1)1 X=0,1,0.01 Y=0,1,0.01

The last parameter (0.01) in X and Y specifications gives the steplength. The ranges of XSCALE and X (and YSCALE and Y) must coincide.

The function is evaluated in the middle of each cell defined by the X and Y specifications and these function values are mapped to various colours or shades of gray.

In the color mapping the function values are assumed to be within the interval (0,1). If they are not, the values are treated modulo 1.

This feature is very useful when clear contour curves should be obtained.

Before the color mapping, the function values $f(x,y)$ can be linearly transformed to $a*f(x,y)+b$ by giving a specification ZSCALING=a,b .

On the screen, various palettes may be used by the PALETTE specification. It refers to a text file with extension .PAL.

For example, VGAGRAY.PAL gives 16 different shades of gray.

On PostScript devices, the true amount of gray shades greatly depends on the resolution.

The SCREEN=NEG specification reverses the order of the palette colors or gray shades. Default is SCREEN=POS.

On PostScript devices, the SCREEN specification has an extended form SCREEN=<POS | NEG>,<raster_width_(samples/inch)>,<raster_angle> . On the small laser printers (300 pixels/inch), the default setting is SCREEN=POS,60,0 .

Example 1: Paraboloid

```
.....
GPLOT Z(X,Y)=X*X+Y*Y / TYPE=CONTOUR
SCALE=-1(0.5)1 X=-1,1,0.05 Y=-1,1,0.05
ZSCALING=0.5,0
PALETTE=VGAGRAY
.....
```

Example 2: Influence curves for correlation coefficient

CORR DECA,CUR+1 / VARS=Height,Weight

Means, std.devs and correlations of DECA N=48

Variable Mean Std.dev.

Height 186.9583 5.090493

Weight 85.56250 6.847600

Correlations:

	Height	Weight
Height	1.0000	0.8522
Weight	0.8522	1.0000

```
.....
r=0.85 mx=186.96 my=85.56 sx=5.09 sy=6.85 n=48
HEADER=[MAGENTA],Influence_curves_for_correlation_coefficient
<B>GPLOT z(x,y)=abs(r*(1-w)+u*v)/w</B>
u=sqrt(n/(n*n-1))*(x-mx)/sx v=sqrt(n/(n*n-1))*(y-my)/sy w=sqrt((1+u*u)*(1+v*v))
x=150,220,0.25 y=40,130,0.25
TYPE=CONTOUR SCREEN=NEG 1/0.05=20
ZSCALING=20,0 (One band corresponds to 0.05 increase/decrease in corr.)
XSCALE=150(10)220 YSCALE=40(10)130 PALETTE=VGAGRAY
.....
```

A general macro for making these plots on the next page!

Macro /INFL_R makes influence curves for the correlation coefficient of two variables of any data set as contour plots.

The user may indicate a new point in the graph by the mouse and see its effect to the correlation coefficient.

See

/INFL_R

Example:

/INFL_R DECA,Height,Weight,0.05

Reference: http://www.survo.fi/papers/corrc

P = More information on PLOT

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">  <A HREF="q11_01.html">P = More information on PLOT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PLOT &lt;data&gt; / TYPE=MATRIX
(with DEVICE=PS or DEVICE=G or as GPLOT)
makes a matrix plot of the active part of &lt;data&gt; as a raster image.

```

In the graph, the active variables appear as columns and active observations as rows. For each data value, a box with a color depending on the value of the current variable in the current observation will be drawn.

By default (NORM=C), the values are scaled by columns (i.e. separately for each variable). Other alternatives are indicated by NORM=R (scaling by rows) and NORM=T (uniform scaling over entire data).

After scaling, the highest values are set to 1 and lowest to 0.

These values are mapped to various colors or shades of gray (see description in contour plots PLOTCONT?).

The color for missing values can be given by MISSING=x where 0<=x<=1.

Default is MISSING=0.

In matrix plots, the columns are labelled by names of active variables and rows by names of cases as in HBAR plots (see PLOTBAR?).

The setting of labels is adjusted by specifications

ROWLABELS=1,<number_of_label_columns>,<max.length_of_label>;

COLUMNLABELS=1,<number_of_label_rows>;

In both specifications, the second parameter is an integer (default 1).

Its purpose is to give more space for otherwise too tight setting of labels.

The labels are omitted completely by giving ROWLABELS=0, COLUMNLABELS=0.

Example:

```
.....
DATA CHESS
```

```
_ C1 C2 C3 C4 C5 C6 C7 C8 _
```


R1 - 0 - 0 - 0 - 0 .2
R2 0 - 0 - 0 - 0 - .3
R3 - 0 - 0 - 0 - 0 .4
R4 0 - 0 - 0 - 0 - .5
R5 - 0 - 0 - 0 - 0 .6
R6 0 - 0 - 0 - 0 - .7
R7 - 0 - 0 - 0 - 0 .8
R8 0 - 0 - 0 - 0 - .9
_ .2 .3 .4 .5 .6 .7 .8 .9 1

G PLOT CHESS / TYPE=MATRIX NORM=T MODE=EGA
PALETTE=VGAGRAY MISSING=.1
ROWLABELS=[MAGENTA],1,4,2
COLUMNLABELS=[MAGENTA],1,2

```

.....
<A HREF="q11_01.html">P = More information on PLOT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> Plotting scatter diagrams and time series (line graphs)

<A HREF="q12_02.html">1 = General information</A>
<A HREF="q0b1_01.html">2 = Special information on time series plotting</A>
<A HREF="qkv0_03.html">3 = Box plots (/BOXPLOT)</A>
<A HREF="q12_10.html">4 = Arrow diagrams</A>
<A HREF="q12_03.html">X = Extra specifications</A>
<A HREF="q12_09.html">E = Examples</A>

<A HREF="q11_01.html">P = More information on plotting in general</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">

```

```

<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PLOT &lt;data&gt;,&lt;xvar&gt;,&lt;yvar&gt;
where &lt;xvar&gt; and &lt;yvar&gt; are names of the variables in the data file.
plots a scatter diagram or a time series.

```

The character indicating the place of each observation may be given by a POINT=<character> specification. If POINT is omitted, a small point is plotted. Also values of a third variable may be plotted by using POINT=<name of variable>.

To make a line graph (plot of time series) a LINE specification has to be included. It has the form LINE=<line type>,<thickness>,<line label>; see LINE.

In time series plotting <xvar> may be replaced by TIME(<xvar>). Then the points on the X scale will be notated by the values of <xvar>.

For example, in plotting a monthly time series SER12 in data DATA3 and using variable YEAR for X scale notations

PLOT DATA3,TIME(YEAR),SER12 / XSCALE=1(12)61 GRID=XY TICK=1 produces a graph where years are notated with labels and months with small ticks.

PLOT <data>,<xvar>,<yvar1>,<yvar2>;... plots simultaneously (at most 12) variables <yvar1>,<yvar2>;, against one <xvar>.

The consecutive points of each <yvar> are connected by a line specified by LINE. Each <yvar> can have a line type of its own by giving specifications of the form

<yvar>LINE=<line type>,<thickness>,<line label>; (see LINE). The consecutive points of each <yvar> are labelled by the POINT specification. Each <yvar> can have a label of its own by giving specifications of the form

<yvar>POINT=<list of parameters according to POINT>; (see POINT).

X = Extra specifications

P = More information on plotting in general

```

</PRE></P><HR>

```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>

```

```

</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

```

"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>

```

```

<!--

```

```

Created by using the PRINT operation of SURVO MM

```

```

For more information, see http://www.survo.fi/

```

```

-->

```

```

<HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

```

```

<META NAME="Generator" CONTENT="SURVO MM">

```

```

<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>

```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META

```

```

<META NAME="Classification" CONTENT="help system">

```

```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```

</HEAD>

```

```

<BODY>

```

```

<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&

```

```

<P><PRE CLASS="HelpText"> Scatter diagrams and time series

```

```

Extra specifications:

```

```

<A HREF="q12_04.html">1 = HOME, SIZE, XDIV, YDIV, PEN, LINETYPE</A>
<A HREF="q14_02.html">2 = XSCALE, YSCALE (scales)</A>
<A HREF="q12_05.html">3 = FRAME, GRID, TICK, TICKLENGTH (boxes and grids)</A>
<A HREF="q12_06.html">4 = HEADER, XLABEL, YLABEL (labels)</A>
<A HREF="q12_07.html">5 = POINT, LINE (indicating observations in the graph)</A>
<A HREF="q1k_03.html">6 = TEXTS (additional labels and texts)</A>
<A HREF="q13_02.html">7 = LAG (constant displacement of points)</A>
<A HREF="q13_05.html">8 = FILL (shading area between two time series etc.)</A>
<A HREF="q07_04.html">9 = IND (selecting observations by an indicator variable)</A>
<A HREF="q1c_01.html">A = CONTOUR (contour ellipses)</A>
<A HREF="q1c_02.html">B = TREND (linear trend)</A>
<A HREF="q14_11.html">C = AXES (moving the coordinate axes)</A>
<A HREF="q14_12.html">D = MISSLINE (connecting points over missing ones)</A>
<A HREF="q12_08.html">E = XJITTER, YJITTER (jittering data values)</A>
<A HREF="q1c_04.html">F = Confidence intervals in simple linear regression</A>

<A HREF="q11_01.html">P = more information on plotting in general</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText"> <A HREF="q14_04.html">1 = HOME (coordinates of the lower left corner)
<A HREF="q14_05.html">2 = SIZE (size of the graph)</A>
<A HREF="q14_06.html">3 = XDIV (horizontal division)</A>
<A HREF="q14_07.html">4 = YDIV (vertical division)</A>
<A HREF="q13_06.html">5 = PEN (graphical attributes of text)</A>
<A HREF="q13_07.html">6 = LINETYPE (graphical attributes of lines)</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```

</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q14_08.html">1 = FRAME (frames around the graph)
  <A HREF="q14_09.html">2 = GRID</A>
  <A HREF="q14_10.html">3 = TICK</A>
  <A HREF="q16_08.html">4 = TICKLENGTH</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q15_01.html">1 = HEADER (title of the graph)</A>
  <A HREF="q15_03.html">2 = XLABEL,YLABEL (labels of the axis)</A>
  <A HREF="q14_02.html">3 = XSCALE, YSCALE (scales and labels)</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q15_04.html">1 = POINT (labels for points in the grap
  <A HREF="q15_07.html">2 = LINE (joining points in the graph)</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM

```

For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">XJITTER=x_step YJITTER=y_step
randomize data points in plotting a scatter diagram by positioning
a point (x,y) randomly in a rectangle with the left upper corner
(x-x_step,y+y_step) and the right lower corner (x+x_step,y-y_step).
This trick makes the plot more informative by slightly moving
(jittering) overlapping points.
```

Suitable jitter steps may be found by the MINSTAT operation, for example.

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
```

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Examples of scatter and time series plots (mostly from the Survo book)
```

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
```

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
```

<BODY>
 <H1>&
 <P><PRE CLASS="HelpText">(in PostScript graphics only)
 Points in a scatter plot can be connected by arrows (or line segments)
 by giving an ARROWS specification.
 Its simplest form is
 ARROWS=A
 where A=[a_{ij}] is an incidence matrix saved as a matrix file and
 a_{ij}=1 means that points of observations i and j are to be connected
 and a_{ij}=0 that points i and j are not to be connected.
 It is assumed that when the data set has n observations, A is an
 m x n (m<=n) matrix. Thus restrictions by IND, CASES etc. are not permitted.

The general form of ARROWS is
 ARROWS=matrix,gap,type,alen,angle
 where default
 matrix: incidence matrix (MAT file) -
 gap: distance from end points (in plotting units) 0
 type: 0=no arrow, 1=end arrow, 2=start arrow, 3=both, 4= <--> 0
 corresponding negative value = filled arrow head
 alen: length of arrow (in plotting units) 20
 angle: angle (sharpness) of arrow (in radians) pi/6

To give a possibility to configure each connection individually
 (i.e. variation in line width, type, and color as well as in arrow type),
 the non-zero elements can be presented as decimal numbers of form

a_{ij} = swww.tacc
 where www (one or more digits) is the line width as multiple of
 0.24 Points, 0.24(Point:mm)=0.084666...,
 t (one digit) is index of line type (LINETYPE?),
 a (one digit) is arrow type (see previous page),
 cc (two digits) is the index of color given by FILL spec.,
 s (sign) '-' gives filled arrow head(s).

For example, a_{ij}=-5.0304 implies an arrow having width 5*0.24=1.2 Points,
 solid line type (0), arrow type <--> (3), filled arrow heads (-), and
 color (4) specified by FILL(-4)=c,m,y,k (See PSCOLOR?).

Examples are given in

```
<A HREF="http://www.survo.fi/tmp/VectorDiagrams.pdf">http://www.survo.fi/tmp/VectorDiagrams
and an edit file containing these examples is
<A HREF="http://www.survo.fi/tmp/ARROWS.EDT">http://www.survo.fi/tmp/ARROWS.EDT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Time series and line graphs may be plotted like scatter diagrams,
```

but using an extra specification LINE to join the observation points.

Notation of the time axis:

If you have no time variable in the data, use TIME as the X variable and enter it in the form TIME(<xvar>) where <xvar> is the variable giving the labels for the regular time axis.

The default range (scale) of the time axis (TIME) is always from 1 to # of observations in data, unless otherwise stated by XSCALE.

A LAG specification is also available for relocating the graph in the current coordinate system and a FILL specification for coloring areas between time series.

```
<A HREF="q12_01.html">J = Joint information on scatter diagrams and time series</A>
<A HREF="q11_01.html">P = More information on plotting in general</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LAG=&lt;X step&gt;,&lt;Y step&gt;
(in PLOT operation for time series and scatter diagrams)
is a specification indicating (in units of the current X and Y scales)
the amount of dislocation of the graph in the current coordinate
system. &lt;Y step&gt; is optional and default is LAG=0,0.
The main purpose of LAG is to enable plotting of lagged variables or
positioning of the observation points in the middle of time inter-
vals (LAG=0.5).
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```

</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PLOT <data>,<x var>,<PROBIT
plots variable <x var> in <data> on normal probability paper.
The data must be sorted in ascending order of <x var>.

```

The extra specifications of this form of PLOT are the same as those of PLOT for scatter diagrams. The default YSCALE is in this case YSCALE=*probit(y),0.001,0.01,0.1,0.5,0.9,0.99,0.999

```

  <A HREF="q12_01.html">S = more information on scatter diagrams</A>
  <A HREF="q11_01.html">P = more information on plotting in general</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q13_05.html">1 = FILL specification for times series p
  <A HREF="q17_06.html">2 = FILL specification for curve plotting</A>
  <A HREF="q19_03.html">3 = SHADING specification for bar/pie charts</A>
  <A HREF="q13_08.html">4 = FILL command for systematic replacement of keywords by strings<
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILL=<density>,<init.val.>,<fin.val.>,<base val
(in PLOT operation for time series) draws line segments parallel to Y
axis from the points on the time series curve to another time series
<base variable> or to a fixed <base value>.

```


<base val. or var.> is optional and default is 0.

The area to be filled by these line segments is limited by the optional parameters <initial value>,<final value> given as indices 1,2,...,N of the observations. Default is the whole plotting range.

<density> (an integer 1,2,3...) gives the gap between the consecutive fill lines as a multiple of the plotting unit.

<line_type> (optional) gives the form of the line for the <base variable>.
Possible values of <line_type> are 1,2,3,4,5 (default 1) and their interpretation is same as that of the first parameter (line type) of the LINE specification.

Example: PLOT TDATA1,TIME(Year),Ser1 / FILL=4,1,35,Trend1
plots Ser1 and fills the area between Ser1 and Trend1 for the first 35 observations. The gap between fill lines is 4 plotting units.

FILL-=<density>

(in PLOT operation for time series on plotter only) supports the FILL specification by giving the possibility to fill the negative parts between the series to be plotted by using another density (color).
If FILL- is not given, filling takes place according to FILL for both positive and negative parts.

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">PEN=<list_of_device-dependent_control_words>;

(in PLOT operation) determines the default setting of various graphical attributes of texts to be plotted in the graph like those given in HEADER and TEXTS specifications. The settings of PEN are temporarily overridden by corresponding device-dependent statements given in any of the other specifications.

Examples:

PEN=[Times(24)][rot(0)]

tells that texts should be written in 24 Point Times font. [rot(0)]

means that the rotation angle of texts is 0.

PEN=[RED] or PEN=[color(0.333,1,1,0)] (see also COLORSYS
gives 'red' as the default color in all texts.

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LINETYPE=&lt;list_of_device-dependent_control_words&gt;
(in PLOT operation) corresponds to PEN (PEN?) but gives the default
setting for plotting lines and curves.
```

Examples:

LINETYPE=[line_width(0.48)][line_color(0.5)] (in PostScript plotting)

LINETYPE=[line_color(-1)][line_type(4)]

FILL(-1)=0.2,0,1,0 (giving CMYK values for [line_color(-1)])

[line_type(x)] (in GPLOT and PLOT) specifies the type of the line to be drawn. The alternatives are

[line_type(0)] solid line (in GPLOT round endcaps)

[line_type(1)] long dash

[line_type(2)] dotted

[line_type(3)] dash dotted

[line_type(4)] medium dash

[line_type(5)] dash with two dots

[line_type(6)] short dash

[line_type(7)] dash with three dots

[line_type(8)] solid line without round end cups (GPLOT only)

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">FILL
```

(command) without parameters

replaces keywords given as a list on consecutive lines below the command line by strings after each keyword on all subsequent lines in the edit field.

----- Example:

FILL

#1: (Mathematics)

#2: (Statistical methods)

#3: Graphics

Example about topic G #3:
Regression analysis #2:
More about regression analysis #2:
Family of curves #1:

After activation of FILL above, lines after the list of keywords become:

Example about topic G: #3: Graphics
Regression analysis #2: (Statistical methods)
More about regression analysis #2: (Statistical methods)
Family of curves #1: (Mathematics)

Keywords (here #1:, #2:, #3:) may be any distinct strings but they should be unique in the current context.
When a string indicated by a keyword is set on a line containing that keyword, all text after the replacement on that line is removed.

FILL -
works in the same way but removes the keywords (#1: etc.) and the result would be
Example about topic G: Graphics
Regression analysis (Statistical methods)
More about regression analysis (Statistical methods)
Family of curves (Mathematics)

If FILL is activated again in the original example with empty strings, i.e.

FILL
%1:
%2:
%3:

the original setup is restored:

Example about topic G #3:
Regression analysis #2:
More about regression analysis #2:
Family of curves #1:

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">YSCALE=&lt;min.value&gt;,&lt;2nd value&gt;,...,&lt;max.value&gt;
(in PLOT operation for diagrams and curves) determines a linear scale
and the scale notations on the Y axis.
```

The texts (numerical values) on the Y scale are set aligned to the right

by default.

To override this practice, a specification YSCALEPOS=y1,y2 can be given. y1 is a number giving the relative start position of the texts for YSCALE and y2 similarly for YSCALE2.

Otherwise the rules of YSCALE are same as those of XSCALE.

```
<A HREF="q14_02.html">X = Information on XSCALE</A>
<A HREF="q11_01.html">P = General information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">XSCALE=&lt;min.value&gt;,&lt;2nd value&gt;,...,&lt;max.value&gt;
(in PLOT operation for diagrams and curves) determines a linear scale
and the scale notations on the X axis. If XSCALE is not given,
scaling is automatic according to the current data.
In curve plotting default is XSCALE=-10,0,10.
```

Any point given in XSCALE may be labelled by text given after a colon ':':

For example, XSCALE=-3.1416:-pi,0,2.7183:e,3.1416:pi
determines a scale from -3.1416 to 3.1416 with scale notations
-pi 0 e pi

The short tick line marking the scale is omitted for any scale notation by giving a '?' in front of the label:

For example in XSCALE=-10,0:?0,10

all the three points are labelled normally but '0' will appear without a tick line.

Symbolic notations (without parentheses) are permitted as scale values.

Thus the previous example may be written as

XSCALE=-pi,0,e,pi pi=3.1416 e=2.7183

Abbreviations of the form <init value>(<step>)<final value> may also be used. For example XSCALE=0(1)5,6(2)12,15 generates the scale

0,1,2,3,4,5,6,8,10,12,15 and

XSCALE=a(d)a+n*d a=10 d=2 n=5 gives 10,12,14,16,18,20.

The points on the axis corresponding to scale notations are indicated by tick lines drawn normally outside the the graph area. Their length and direction can be adjusted by specifications TICKLENGTH and TICKTURN.

XSCALE=<scale type>,<min.value>,...,<max.value>;
(in PLOT operation for diagrams and curves) determines a nonlinear scale. The rules are same as those of the previous form of XSCALE.

$f(x)$ ($f(y)$ for YSCALE), where f is any monotonous function of x (y).

In addition to standard functions (sqrt,log,exp etc.) and their combinations also the inverse cumulative distribution function of the standard normal distribution is available by name probit.

Example: XSCALE=$\log(x)$,1,2,5,10,20,50,100

YSCALE=$\text{probit}(y)$,0.001,0.01,0.1,0.5,0.9,0.99,0.999

The X scale notations can also be located above the graph by using the XSCALE2 specification and similarly the Y scale notations may appear in the right margin, too, by using YSCALE2.

```
<A HREF="q14_01.html">Y = YSCALE</A>
<A HREF="q15_08.html">X = XSCALE2,YSCALE2</A>
<A HREF="q11_01.html">P = More information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
    <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
    <META NAME="Generator" CONTENT="SURVO MM">
    <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
    <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
    <META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
    <META NAME="Classification" CONTENT="help system">
    <META NAME="Keywords" CONTENT="Survo, help, hypertext">
  </HEAD>
  <BODY>
    <H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
    <P><PRE CLASS="HelpText"> <A HREF="q11_01.html">P = more information on plotting</A>
    </PRE></P><HR>
    <DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
  </BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
    <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
    <META NAME="Generator" CONTENT="SURVO MM">
    <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
    <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
    <META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
    <META NAME="Classification" CONTENT="help system">
    <META NAME="Keywords" CONTENT="Survo, help, hypertext">
  </HEAD>
  <BODY>
    <H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
    <P><PRE CLASS="HelpText">HOME=&lt;x coord&gt;&lt;y coord&gt;
    (in PLOT operation) specifies the location of the lower left corner of
    the graph. Coordinates are given in the plotting units.
    Default value may be inquired by PLOT ? or GPLOT ?.
```

```

    <A HREF="q11_01.html">P = more information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SIZE=&lt;width&gt;,&lt;height&gt;
(in PLOT operation) specifies the size of the graph in plotting units.
Default value may be inquired by PLOT ? or GPLOT ?.
    <A HREF="q11_01.html">P = more information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">XDIV=&lt;left margin&gt;,&lt;plot width&gt;,&lt;right margin&gt;
(in PLOT operation) specifies the division of the picture width.
It is sufficient to use values proportional to actual parameters.
Default values may be inquired by PLOT ? or GPLOT ?.
    <A HREF="q11_01.html">P = more information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">YDIV=&lt;bottom margin&gt;,&lt;plot height&gt;,&lt;top margin&
(in PLOT operation) specifies the division of the picture height.
It is sufficient to use values proportional to actual parameters.
Default values may be inquired by PLOT ? or GPLOT ?.
  <A HREF="q11_01.html">P = more information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FRAME=&lt;0,1,2,3,4,5 or 6&gt;
(in PLOT operation) controls plotting of frames around the graph.
FRAME=2 is default and means that all frames are plotted.
FRAME=1 erases the outer frame.
FRAME=0 erases all frames and coordinate axes notations.
FRAME=3 erases the inner frame and coordinate axes notations.
FRAME=4 erases the inner frame.
FRAME=5 erases the top and rightmost line in the inner frame.
FRAME=6 as 5 but erases also the outer frame.

PLOT /FRAME
is a special operation for frame plotting according to HOME, SIZE,
HEADER, FRAME, PEN, FRAMES, TEXTS, FILLS and LINES specifications.
(See <A HREF="q1k_01.html">PLOTFR</A>?)
  <A HREF="q11_01.html">P = more information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">GRID=&lt;X or Y or XY&gt;
(in PLOT operation) draws straight line parallel to X axis (GRID=X)
or Y axis (GRID=Y) or both (GRID=XY) through the points indicated by
XSCALE and YSCALE, respectively.
GRID=&lt;x step&gt;,&lt;y step&gt;
works as GRID above, but uses the steps &lt;x step&gt; and &lt;y step&gt; in
drawing. If a step parameter is negative, only a small tick is
drawn (outside the inner frame).
Mixed notations like GRID=0.1,Y are also possible
  <A HREF="q11_01.html">P = more information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TICK=&lt;x step&gt;,&lt;y step&gt;
(in PLOT operation) draws small ticks on the X and Y axes (inside
the inner frame) by using step lengths &lt;x step&gt; and &lt;y step&gt;.
  <A HREF="q11_01.html">P = more information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```



```

</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">AXES=&lt;x_move&gt;,&lt;y_move&gt; (in curves and scatter diag
relocates the coordinate axes with their notations by moving the X axis
by &lt;x_move&gt; plotting units (in the Y direction) and the Y axis
by &lt;y_move&gt; plotting units (in the X direction).

```

Example:

```

.....
A=0.1,0.5,0.1
PLOT Y(X)=A*(X-3)*(X+3)
SCALE=-5(1)-1,0:_,1(1)5
AXES=500,500 (default size of the plotting region is 1000x1000)
FRAME=3 TICK=0.1,0.1 DEVICE=PS
.....
<A HREF="q11_01.html">P = more information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MISSLINE=1 (in scatter plots and time series)
When consecutive points are connected (by LINE specification), the
line is normally broken when missing observations are encountered.
By using MISSLINE=1, this convention is overruled and the line
will be drawn continuously by interpolating the missing points.
However, no markings (due to POINT specification) will appear for
missing points.
<A HREF="q11_01.html">P = more information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">

```

```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TICKTURN specification (in PLOT operation)
By default, the (longer) tick lines indicating the scale notations
on the coordinate axis are drawn outside the graph area.
This convention can be changed by the TICKTURN specification.
TICKTURN does have no effect on shorter tick lines specified by TICK
and TICK2. Those ticks appear always inside the graph area.
TICKTURN=-1 draws the longer scale notation ticks inside the graph area.
In general, TICKTURN=x draws tick lines of length x times the default
length (or the length determined by TICKLENGTH) and the sign of x
indicates the direction.
Default is TICKTURN=1.
  <A HREF="q11_01.html">P = more information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">HEADER=&lt;a_string_without_spaces&gt;
(in PLOT operation) gives a title to be plotted in the upper left corner
of the picture area. Default is HEADER=&lt;type&gt;_diagram_of_&lt;data&gt; etc.
depending on the type of the graph.
  <A HREF="q11_01.html">P = more information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&

```

```

<P><PRE CLASS="HelpText"> <A HREF="q11_01.html">P = more information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">XLABEL=&lt;a_string_without_spaces&gt;
(in PLOT operation for diagrams and curves) gives a title for the X
axis. Default is the name of the variable etc. depending on the type of
the graph.
<A NAME="YLABEL"></A>YLABEL=&lt;a_string_without_spaces&gt;
(in PLOT operation for diagrams and curves) gives a title for the Y
axis. Default is the name of the variable etc. depending on the type of
the graph.
<A HREF="q11_01.html">P = more information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">POINT=&lt;character or name of a variable&gt;
(in PLOT operation for scatter diagrams and time series)
specifies the label to be plotted for each observation in the graph.
In case of &lt;name of variable&gt; the values of that variable will be
plotted so that the center of the first character indicates the position
of the observation.
If POINT is omitted, a small dot or circle is plotted for each observation.

Another form of the POINT specification is
POINT=&lt;marker_type&gt;,&lt;marker_size&gt; or
POINT=&lt;marker_type&gt;,&lt;max_marker_size&gt;,&lt;marker_variable&gt;,&lt;max_value&gt;

```

permitting symbols of various sizes depending on the value of the marker variable.

The possible values of <marker_type> are 0,1,2,... and their interpretation depends on the plotting device. A table of types is given on the next page.

The size of the symbol in the general case is

$\text{<max_marker_size>} * \text{<value_of_marker_variable>} / \text{<max_value>}$

If <max_value>=0, the values of <marker_variable> will be used as <marker_type> values. Thus different observations may have different markers.

This can also be done by a POINT_TYPE specification (see [POINTT](q15_06.html)).

The color of the marker can be specified individually for each observation (see [POINTC](q15_05.html)).

Possible Survo marker types on different devices:

	Screen	PostScript	
0	filled circle	same	
1	plus	same	
2	asterisk	same	
3	circle	same	
4	cross	same	
5	square	same	
6	filled square	same	
7	triangle	same	
8	filled triangle	same	
9	diamond	same	
10	filled diamond	same	
11	pixel	-	
21	-	arrow	ARROWLEN=integer specifies arrow length
22	-	filled arrow	as coefficient of marker size
default	circle	circle	
size	2	5	

In Survo PostScript graphics, POINT=any,0 draws a marker defined by the PostScript function 'dot'. This function is readily defined in PS.DEV as a tiny dot and may be altered by the user.

In point types 21,22 (arrows) the direction of the arrow is given in POINT specification of the form POINT=...[rotate(var)]... where a variable 'var' gives the rotation angle in degrees.

```

<A HREF="q11_01.html">P = more information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System">
<META NAME="Classification" CONTENT="help system">

```

```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">POINT_COLOR=&lt;color_variable&gt;
(in PLOT operation for time series and scatter diagrams)
specifies the color of the marker of each observation individually
according to the value of &lt;color_variable&gt;.
Only integer values are permitted and for each value 'n' a specification
COLOR(n)=c,m,y,k
must be provided in the current PLOT scheme.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">POINT_TYPE=&lt;type_variable&gt;
(in PLOT operation for time series and scatter diagrams)
specifies the type of the marker of each observation individually
according to the value of &lt;type_variable&gt;.
Values 0,1,2,...,11 refer to various types of markers.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LINE=&lt;line type&gt;,&lt;thickness&gt;,&lt;line label&gt;
(in PLOT operation for time series and scatter diagrams)
gives the line type used for connection of consecutive points.
&lt;line type&gt; can have values 0,1,2,3,4,5,6,7.
&lt;thickness&gt; (optional) is an integer. (See a note on the next page!)

```

<line label> (optional) is a string without spaces to be plotted at the end of the time series (in the right margin). Default=no label.

Possible <line type> values and their interpretation when two consecutive points (x1,y1) and (x2,y2) are connected.

- 0 move from (x1,y1) to (x2,y2) i.e. no visible line (default)
- 1 line from (x1,y1) to (x2,y2)
- 2 line from (x1,y1) to (x2,y1) and move from (x2,y1) to (x2,y2)
- 3 line from (x1,y1) to (x2,y1) and line from (x2,y1) to (x2,y2)
- 4 line from (x1,y1) to (x1,y2) and move from (x1,y2) to (x2,y2)
- 5 line from (x1,y1) to (x1,y2) and line from (x1,y2) to (x2,y2)
- 6 move from (x1,y1) to (x2,y2) and additional points
- 7 line from (x1,y1) to (x2,y2) and additional points

Alternatives 2,3,4 and 5 are for various step functions.

Alternatives 6 and 7 permit additional points to be plotted.

If <line type> is either 6 or 7, each point (x,y) in the diagram will be connected to additional points given by LINE2, LINE3, ..., LINE6 specifications. LINE2 has the form

LINE2=<x2var>,<y2var>;

where <x2var> and <y2var> are two variables (or constants) defining the coordinates of an additional point. Other LINE specifications have the same structure.

The point given by LINE2 can be labelled by a POINT2 specification of

the form POINT2=<marker_type>,<marker_size>; (see POINT

Points defined by LINE3, LINE4,... specifications may be labelled similarly by POINT3, POINT4,...

The original syntax of LINE

LINE=<line type>,<thickness>,<line label>;

should be preferred by

LINE=[line_width(thickness)],<line type>,1,<line label>;

L = Plotting filled polygons (LINE=POLYGON)

P = more information on plotting

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition) help system">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">XSCALE2=XSCALE or XSCALE2=<list of values:labels>;

(in PLOT operation for diagrams and curves)

specifies a secondary X scale above the graph (in the top margin).

In case XSCALE2=XSCALE this secondary scale is exactly same as XSCALE.

In the case of a list of scale values:labels (:label is optional)

the points of the secondary scale are selected from this list and

located according to XSCALE. Use of labels in XSCALE2 permits another

notation for the scale values.

YSCALE2 works similarly on the basis of YSCALE and places a secondary Y scale in the right margin.

Also ticks may be set on XSCALE2 and YSCALE2 by TICK2=<x step>,<y step>,. TICK2=TICK selects identical ticks.

P = more information on plotting

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">XSCALE2=XSCALE or XSCALE2=<list of values:labels>;

(in PLOT operation for diagrams and curves)

specifies a secondary X scale above the graph (in the top margin).

In case XSCALE2=XSCALE this secondary scale is exactly same as XSCALE.

In the case of a list of scale values:labels (:label is optional)

the points of the secondary scale are selected from this list and

located according to XSCALE. Use of labels in XSCALE2 permits another

notation for the scale values.

YSCALE2 works similarly on the basis of YSCALE and places a secondary

Y scale in the right margin.

Also ticks may be set on XSCALE2 and YSCALE2 by TICK2=<x step>,<y step>,. TICK2=TICK selects identical ticks.

P = more information on plotting

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

```

<P><PRE CLASS="HelpText">
Plotting of curves

<A HREF="q16_02.html">1 = simple curves</A>
<A HREF="q16_03.html">2 = families of curves</A>
<A HREF="q17_02.html">3 = more complicated functions</A>
<A HREF="q17_03.html">4 = integral functions</A>
<A HREF="q16_04.html">X = extra specifications in curve plotting</A>

<A HREF="q11_01.html">P = More information on plotting in general</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PLOT Y(X)=&lt;function of X&gt; or PLOT X(T)=f(T),Y(T)=g(T)
plots a curve.
X (and T) can be any 'word' like 'time' in PLOT Y(time)=v*time^2/2.
The plotting area is selected by the XSCALE and YSCALE specifications.
Defaults are XSCALE=-10,0,10 and YSCALE=-10,0,10.
The range of X is given by X=&lt;initial value&gt;,&lt;final value&gt;,&lt;step&gt;.
If &lt;step&gt; is not given, (&lt;final value&gt;-&lt;initial value&gt;)/100 is employed
as the plotting step. If no range is given, limits of XSCALE are used.
For example,
PLOT X(t)=10*cos(t),Y(t)=10*sin(t) / t=0,6.283,0.2
plots a circle of radius 10.

The functions must be written according to the rules of editorial computing.
They may include parameters whose values are given in the edit
field in the form &lt;name of parameter&gt;=&lt;value&gt;.
For example,
PLOT Y(x)=x^n / n=1,4,1 XSCALE=-3(1)3 YSCALE=-100(50)100
plots 4 different power functions.
New options in SURVO MM described on the next page!

In SURVO MM it is possible to give ranges of the variable (X) and
parameters also in the form &lt;initial_value&gt;(&lt;step&gt;)&lt;final_value&gt;.
.....
Example:
GPLOT Y(x)=a*x+b / x=-5(0.01)5 a=0(0.1)1 b=-2(1)2
.....
<A NAME="CC"></A>
<A HREF="q16_01.html">C = More information on curve plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```



```

"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PLOT Y(X)=&lt;function of X&gt; or PLOT X(T)=f(T),Y(T)=g(T)
plots a family of curves when the function(s) include parameters
whose values are given in the edit field in the form
&lt;name of parameter&gt;=&lt;initial value&gt;,&lt;final value&gt;,&lt;step&gt;.
Several varying parameters may occur simultaneously.
For example,
PLOT X(t)=A*cos(t),Y(t)=B*sin(t) / A=1,10,1 B=1,10,1 t=0,6.283,0.2
plots a curve family consisting of 10*10=100 different ellipses.

```

Using data values as varying parameters:

Parameters can take their values from variables of a Survo data set, say TEST. Such parameters, say A and B, are given in the form

A=DATA:TEST,Result1

B=DATA:TEST,Result2[-2] (Result2 is lagged by 2.)

Then a curve for each active observation in TEST is plotted using values of variable Result1 in data TEST as parameter A and similarly values of variable Result2 (lagged by 2) in data TEST as parameter B. Only one data set can be used in one PLOT scheme at a time.

All other varying parameters like C=0,10,1 can be used in combination with data-dependent parameters.

.....
Example 1: Circles with radius from Fibonacci sequence (DATA R):

DATA R: 1 2 3 5 8 13 21 34 55 END

G PLOT X(T)=R*COS(T),Y(T)=R*SIN(T)

R=DATA:R,R

SCALE=-60,60 SIZE=465,349 T=0,2*pi,pi/40 pi=3.141592653589793

.....

Example 2: Olympic rings (See how the correct overlapping is achieved)

DATA OLYMPIC

A	B	C	D	E	Comments
-2	0	9	1	0	Blue A: X coord of the center
0	0	0	1	0	Black B: Y coord of the center
2	0	13	1	0	Red C: Color
-1	-1	5	1	0	Yellow D: Length of the arc
1	-1	10	1	0	Green E: Start angle of the arc
-2	0	9	0.1	-0.2	Blue over yellow
0	0	0	0.1	4	Black over yellow
0	0	0	0.1	-0.2	Black over green
2	0	13	0.1	4	Red over green

G PLOT X(T)=A+R*COS(D*T+E),Y(T)=B+R*SIN(D*T+E)

R=0.90 Radius of the circles

T=[line_width(7)],0,2*pi,pi/20 pi=3.141592653589793

A=DATA:OLYMPIC,A B=DATA:OLYMPIC,B D=DATA:OLYMPIC,D E=DATA:OLYMPIC,E

XSCALE=-3,3 YSCALE=-2,1 SIZE=600,300 HOME=0,100 MODE=VGA

COLOR_CHANGE=C C=DATA:OLYMPIC,C FRAME=0 XDIV=0,1,0 YDIV=0,1,0 HEADER=
.....

Messages in plotting families of curves (screen graphics):
Especially in cases of data-dependent parameters it is useful to display
certain functions of parameters while plotting. This is possible by
using a MESSAGES specification. It has the form
MESSAGES=<list_of_message_names>; where each member is a specification
of the form <member>=<function_of_parameters>;n,x,y indicating that
this message (value of the function) is to be displayed from the
position (x,y) onwards for curves nos. n,2n,3n,4n,...

.....
Example:

GPLOT X(T)=R*COS(T)+A,Y(T)=R*SIN(T)
R=1,20,1 A=1,10,1
SCALE=-30,30 SIZE=465,349 T=0,2*pi,pi/40 pi=3.141592653589793
MESSAGES=M1,M2 M1=R,20,520,330 M2=A,20,520,310
.....

More extensive examples on data-dependent parameters and messages in
plotting of curve families are provided in sucros /BUFFON and /CONFMEAN.

```
<A HREF="q16_01.html">C = More information on curve plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Extra specifications in curve plotting:

  <A HREF="q16_05.html">1 = HOME, SIZE, XDIV, YDIV, PEN, LINETYPE</A>
  <A HREF="q14_02.html">2 = XSCALE, YSCALE (scales)</A>
  <A HREF="q16_06.html">3 = FRAME, GRID, TICK, TICKLENGTH, TICKTURN (boxes and grid)
  <A HREF="q16_07.html">4 = HEADER, XLABEL, YLABEL (labels)</A>
  <A HREF="q1k_03.html">5 = TEXTS (additional labels and texts)</A>
  <A HREF="q17_06.html">6 = FILL, YFILL, OFILL, IFILL</A>
  <A HREF="q17_04.html">7 = INTEGRAL</A>
  <A HREF="q113_04.html">8 = COLOR_CHANGE (individual color for each curve in GPLOT)</A>
  <A HREF="q14_11.html">9 = AXES (moving the coordinate axes)</A>

  <A HREF="q11_01.html">P = more information on plotting in general</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q14_04.html">1 = HOME (coordinates of the lower le
  <A HREF="q14_05.html">2 = SIZE (size of the graph)</A>
  <A HREF="q14_06.html">3 = XDIV (horizontal division)</A>
  <A HREF="q14_07.html">4 = YDIV (vertical division)</A>
  <A HREF="q13_06.html">5 = PEN (graphical attributes of text)</A>
  <A HREF="q13_07.html">6 = LINETYPE (graphical attributes of lines)</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q14_08.html">1 = FRAME (frames around the graph)
  <A HREF="q14_09.html">2 = GRID</A>
  <A HREF="q14_10.html">3 = TICK</A>
  <A HREF="q16_08.html">4 = TICKLENGTH</A>
  <A HREF="q14_13.html">5 = TICKTURN</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q15_01.html">1 = HEADER (label of the graph)</A>
  <A HREF="q15_03.html">2 = XLABEL,YLABEL (labels of the axis)</A>
  <A HREF="q14_02.html">3 = XSCALE, YSCALE (scales and labels)</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TICKLENGTH=integer
gives the length of a tick line. Default is usually 2 for the graphic
screen and 10 for plotters and laser printers.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q16_01.html">C = More information on curve plotting
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--

```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">More complicated functions, whose equations are long or consist of
conditional statements can be plotted by giving a definition with
one or several if-then-else statements as follows:
```

Example: Plotting the density function of the sum of 3 independent
variables uniformly distributed over (0,1).

XSCALE=0(1)3 YSCALE=0(0.1)1

```
PLOT y(x)=if(x<1)then(x*x/2)else(y2)
      y2=if(x<2)then(x*x/2-3*(x-1)*(x-1)/2)else((x-3)*(x-3)/2)
```

The statements may include parameters whose values are given
in the edit field. Also varying parameters are permitted.

```
<A HREF="q16_01.html">C = More information on curve plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PLOT INTEGRAL Y(X)=f(X) (X can be any 'word')
plots the integral function of f(X). The range of integration and
plotting is given in the form X=&lt;lower limit&gt;,&lt;upper limit&gt;,&lt;step&gt;,.
If the limits and the step (which is used both in integration and
plotting) is not given, XSCALE determines them and 1/100 of the
range is used as &lt;step&gt;.
```

See also extra specification INTEGRAL which can be used for normalizing
of the integral on the whole range.

For example,

```
PLOT INTEGRAL Y(X)=EXP(-0.5*(X/sigma)^2)
      INTEGRAL=1 XSCALE=-8(2)8 YSCALE=0(0.1)1 sigma=1,2,0.5
```

plots the cumulative distribution function of $N(0, \sigma^2)$ for $\sigma=1, 1.5, 2$. Observe that $\text{INTEGRAL}=1$ normalizes the integral to 1 on the interval $(-8, 8)$ in this case and so the constant multiplier $1/(\sqrt{2\pi})\sigma$ can be dropped from the normal density.

[C](q16_01.html) = More information on curve plotting

More information on Survo from <http://www.survo.fi>

!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Numerical integration in Survo:

[1](q13_06.html) = Numerical integration in editorial computing

[2](q17_03.html) = Plotting integral functions

[3](q17_05.html) = INTEGRAL specification in curve plotting

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo.fi>

</BODY>

</HTML>

!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">INTEGRAL=<positive constant>

(in PLOT operation for curves)

normalizes the the function to be plotted so that the integral of the function on the range of plotting is equal to the constant given by INTEGRAL. The standard trapezoid rule is used in numeric integration and the step length is same as in plotting.

[C](q16_01.html) = More information on curve plotting

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo.fi>

</BODY>

</HTML>

!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILL=&lt;density value&gt;,&lt;initial value&gt;,&lt;final value&gt;
(in PLOT operation for curves) draws line segments parallel to Y axis
from the points on the curve to X axis in the interval defined by the
optional parameters &lt;initial value&gt;,&lt;final value&gt;. Default is the whole
plotting range.
&lt;density value&gt; (an integer 1,2,3...) gives the gap between the
consecutive fill lines as a multiple of the plotting step.
YFILL=&lt;density value&gt;,&lt;initial value&gt;,&lt;final value&gt;
works as FILL but draws horizontal fill lines.
OFILL=&lt;density value&gt;,&lt;initial value&gt;,&lt;final value&gt;
draws fill lines from the points on the curve to origin (0,0).
IFILL=&lt;density value&gt;,&lt;initial value&gt;,&lt;final value&gt;
draws fill lines from the points on the curve to the initial point
of the current curve.
  <A HREF="q16_01.html">C = More information on curve plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SCALE=&lt;min.value&gt;,&lt;2nd value&gt;,...,&lt;max.value&gt;
(in PLOT operation for bar charts) defines the scale and the scale
labels on the X axis (HBAR,%HBAR,MHBAR) or on the Y axis (VBAR,%VBAR,
MVBAR).
If SCALE is not given, scaling and labelling is automatic.
Observe that negative values are allowed in MHBAR and MVBAR charts
only.
In various HBAR type charts, the labels of cases (on the 'Y axis') are aligned
to the left according to the longest label. In variable pitch fonts and
long labels this convention is not always good. Therefore an extra
specification YSCALEPOS=&lt;x_coord&gt; can be given as the relative start

```

position of labels.

In pie charts, the maximum size of the pies can be defined by giving a specification MAX=<value>; where <value>; typically exceeds the sum of data values in the largest pie.

```
<A HREF="q11_01.html">P = More information on plotting</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText"> <A HREF="q11_01.html">P = More information on plotting</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">SHADING=<list of shading values 0,1,2,...>;
```

(in PLOT operation for bar/pie charts) specifies a shading (color) for each section of bars/pies. The values 0,1,2,... usually refer to tones from "light" to "dark" on paper.

In GPLOT values 0,1,2,...,15 correspond to certain colors which can be seen by activating the suco command

/SHAD

To match these GPLOT colors to those used in earlier Survos, set the system parameter 'color98' to value 1 in SURVO.APU. color98=0 should be otherwise preferred to. This parameter can be set temporarily in any GPLOT scheme by the specification C98=<0 or 1>.

In both PostScript and screen plots the colors may be set individually by COLOR(n) specifications (in SURVO MM version 3.22+)

```
<A HREF="q19_18.html">1 = COLOR(n) specifications</A>
```


2 = Negative values in SHADING
 3 = SHADEMAX specification
 4 = Positions of sectors in pie charts
 5 = Color of texts (VALUES,LABELS) on shaded areas
 P = More information on plotting

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from
 </BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Both in PLOT and GPLOT also negative values -1,-2,... may be used
 in the SHADING list. Each negative value -n correspond to a specific
 color which must be defined by a FILL specification of the form
 FILL(-n)=c,m,y,k where c,m,y,k are numbers on the interval (0,1) and
 give the color components according to the CMYK (Cyan, Magenta, Yellow,
 black) system. These values are used as such in PostScript but in GPLOT
 they are converted into the RGB (Red,Green,Blue) system.

Use of COLOR(n) specifications is recommended instead of FILL(-n).

.....
 This example shows how the shading values 2,3,4 (when color98=0)
 are close to selected negative values -1,-2,-3:

GPLOT RGB / Activate this command!

DATA RGB

N R1 R2 G1 G2 B1 B2

A 1 1 1 1 1 1

SHADING=2,-1,3,-2,4,-3 GAP=0 C98=0

FILL(-1)=0,1,1,0.3

FILL(-2)=1,0,1,0.3

FILL(-3)=1,1,0,0.3

.....
 Negative shading values should be preferred especially in cases where
 the final plotting is to be done by PLOT (PostScript).

The CMYK colors in PostScript may slightly differ from those used in
 GPLOT depending on the device used for PostScript plotting.

Usually a small adjustment in the last CMYK component (Black) will
 improve the correspondence.

S = More information on SHADING

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  <A HREF="q19_03.html">S = More information on SHADING</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">In pie charts any of the sectors may be pulled out by adding P after
the shading value. The distance of the new location of the sector will
be 20 per cent of the radius. To alter this distance, use P3 instead
of P for 30 per cent distance, for example.
If SHADING is not given, an ascending set of shading values is used
with regular intervals.

  <A HREF="q19_03.html">S = More information on SHADING</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SHADEMAX=&lt;integer&gt;
(specification in GPLOT and PLOT)
defines the maximum number of shadings (or colors) which can be given in
the SHADING specification.
Default is 7 in GPLOT and 11 in PLOT. Maximum value is 32.

  <A HREF="q19_03.html">S = More information on SHADING</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Each bar/pie chart includes a list of shadings defined by SHADING.
LEGEND=&lt;a_string_without_spaces&gt;
gives a title for this list.
The list will be omitted by using LEGEND=-

```

The default setting of the legend (on one row below the graph) can be overridden by LEGEND of the form
 LEGEND=<x_coord>,<y_coord>,<#_of_columns>;
 where the coordinates of the starting position of the legend (relatively to HOME of the graph)

and the number of columns to be used are given.

The locations of the boxes and texts (names of variables) describing the shadings can be given more accurately by specifications

```

LEGEND_BOX=&lt;x_box&gt;,&lt;y_box&gt;,&lt;box_width&gt;,&lt;box_height&gt;;
LEGEND_TEXT=&lt;x_text&gt;,&lt;y_text&gt;;

```

where <x_box>,<y_box> describe the spacing of boxes and <box_width>,<box_height> (optional) give their dimensions.

<x_text>,<y_text> give the starting position of the text (name of the variable) with respect to the low bottom corner of the current box.

(Example on the next page)

Example: Using the extended form of LEGEND

.....
 DATA TEST

Name A B C D E F

Case1 1 1 1 1 1 1

Case2 1 2 1 2 1 2

Case3 2 1 2 1 2 1

GPLOT TEST / TYPE=%AVBAR

XDIV=100,300,249

LEGEND=500,200,2 LEGEND_BOX=60,-40 LEGEND_TEXT=[SMALL],20,0

TEXTS=A A=[RED],Legend:,500,230 FRAMES=F F=480,100,120,150

.....
P = More information on plotting

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">VALUES=<image>,<distance>

(in PLOT operation for bar and pie charts) specifies values of the

observations to be plotted in the bar/pie in question as a label.

<image> is either of the form ###.# or ##.##. In the latter case

the value of the current section will plotted in percentages.

<distance> indicates the place of the label. <distance> is given as # of

character widths from the lower end of bars. However, if <distance> is

negative, labels will be positioned near the higher end of bars.

In pie charts <distance> must be positive and it is given in 10 per cent

units of the radius and from the center.

To place the labels outside of the bars (in bar charts), insert an extra

word (like 1) to the VALUES specification: VALUES=<image>,<distance>,1.

The sign of <distance> again indicates to which end of the bars the

labels will be placed.

To suppress value denotations in small bar portions and pies, use

VALUEMIN=<min>. Then values less than <min> are not printed in the graph.

VALUES is also available in (G)HISTO (from version 2.11).

P = More information on plotting

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

```

<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LABELS=&lt;distance&gt;
(in PLOT operation for bar and pie charts) specifies names of the
variables to be plotted on the bars/pies.

```

<distance> indicates the place of the label. <distance> is given as # of character widths from the left end of the bar in VBAR charts and in 10 per cent units of the radius and from the center in PIE charts.

```

<A HREF="q11_01.html">P = More information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">GAP=&lt;ratio of the gap between the bars and the bar width&gt;
(in PLOT operation for bar charts) has default value 2/3.

```

GAP=<gap>,<gap_start>,<gap_end>;
(in PLOT operation for bar charts) gives the proportional values for gaps between the bars (gap), before the first bar (gap_start), and after the last bar (gap_end).

The default values are gap=2/3*bar_width, gap_start=gap, gap_end=0.

```

<A HREF="q11_01.html">P = More information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>

```

```

<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PLAN=R1,R2,...
(in PLOT operation for pie charts) specifies the setup of charts in the
plotting area so that R1 is # of charts on the first row, R2 on the
second etc.
If PLAN is not given an automatic solution is generated on the basis
of the shape of the plotting area and the number of pies.
  <A HREF="q11_01.html">P = More information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ANGLE=&lt;angle_in_degrees&gt;
gives the start angle of the first sector in pie charts with respect
to the X axis. Default is ANGLE=0.
  <A HREF="q11_01.html">P = More information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAX=&lt;number&gt;
controls the size of circles in pie charts. Default is the maximum sum of
the values in one case.
  <A HREF="q11_01.html">P = More information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">MINVALUE=<minvalue>

(in PLOT operation for HBAR and VBAR graphs) converts barheights

below <minvalue> to 0. Default is MINVALUE=-1e30, i.e. no conversion.

MINVALUE can be used for clipping bars at the minimum SCALE value.

For example, to plot data 200,250,230 as a bar chart in scale

SCALE=200(10)250, MINVALUE=200 could be used.

P = More information on plotting

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">NAMES=<1 or 0>

(in PLOT operation for bar and pie charts) specifies names of the

observations to be plotted for each bar/pie.

Default is NAMES=1, i.e. the names will be plotted.

By NAMES=0, the names are omitted.

For example, on the screen (GPLOT), NAMES=[RED],1 implies that the

names are written in red.

NAMES=<#_of_lines>,<line_space>

(in PLOT operation for vertical bar charts of type VBAR etc.)

specifies the names of the observations to be plotted on several

lines using a given line space.

P = More information on plotting

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">Color of texts on bars (defined by VALUES and LABELS):
```

The color (black/white) can be determined automatically by
[autom_color(x)] where $0 \leq x \leq 1$ (typically $x=0.5$).

Thus when the background (shading) is light, texts are black
and when the background is dark, texts appear in white.

These colors may be also set individually, see [COLORN?](#)

```
.....  
Example:
```

```
DATA TEST2
```

```
Name X Y Z
```

```
Case_1 12 17 15
```

```
Case_2 8 10 20
```

```
GPLOT TEST2 / TYPE=%HBAR MODE=PS
```

```
PEN=[autom_color(0)][Swiss(15)]
```

```
SHADING=0,5,7
```

```
VALUES=[autom_color(0.5)][Swissb(10)],##.##,1
```

```
.....  
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">For each integer value n in the SHADING list, the color may be given  
by a COLOR(n) specification of the form
```

COLOR(n)=c,m,y,k where c,m,y,k are numbers on the interval (0,1) and
give the color components according to the CMYK (Cyan, Magenta, Yellow,
black) system. These values are used as such in PostScript but in GPLOT
they are converted into the RGB (Red,Green,Blue) system.

When COLOR(n) specifications are used, also texts produced by VALUES and LABELS specifications can be set individually by SHADING of the form
 SHADING=c1/t1,c2/t2,...
 where c1,c2,... are color numbers as in SHADING=c1,c2,... and
 t1,t2,... are color numbers for VALUES and LABELS texts.
 For each c1,c2,...,t1,t2,... a corresponding COLOR() specification must appear.

.....
 This example shows how the default colors 2,3,4 in GPLOT
 are close to selected COLOR codes 5,6,7 given below:

GPLOT RGB / Activate this command!

DATA RGB

N R1 R2 G1 G2 B1 B2

A 1 1 1 1 1 1

SHADING=2,5,3,6,4,7 GAP=0

COLOR(5)=0,1,1,0.3

COLOR(6)=1,0,1,0.3

COLOR(7)=1,1,0,0.3

.....
 COLOR(n) specifications should be preferred especially in cases where
 the final plotting is to be done by PLOT (PostScript).

The CMYK colors in PostScript may slightly differ from those used in
 GPLOT depending on the device used for PostScript plotting.

Usually a small adjustment in the last CMYK component (Black) will
 improve the correspondence.

S = More information on SHADING

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System ">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">HISTO <data>,<variable>,L

GHISTO <data>,<variable>,L / for graphic screen

forms the frequency distribution and plots the histogram of <variable>;

in <data> according to a classification given by

<variable>=<lower limit>(<step>)<upper limit>;

L (optional parameter) is the first line for the table of the frequency
 distribution. The results are saved also in an output file, if that is
 specified (see OUTPUT).

Furthermore the frequency distribution is saved in file FREQ.F on
 the data disk and it can be used later by a HISTO operation of the form
 HISTO data>F,<variable>,L.

Especially histograms of large data files are replotted faster by this
 option thus permitting fitting of various theoretical distributions to

the same frequency distribution (see FIT below).

Example: HISTO DATA1,Weight / Weight=40(2)100
Classes of Weight will be 1: 40<Weight<=42
2: 42<Weight<=44

30: 98<Weight<=100

Various theoretical distributions may be fitted and the corresponding frequency curve is plotted on the histogram by using a specification of the form FIT=<name of the distribution>.

The following distributions are available:

NORMAL(mean,variance)	X is N(mean,variance)
LOGNORMAL(mean,variance)	log X is N(mean,variance)
UNIFORM(a,b)	X has uniform distribution on (a,b)
BINOMIAL(N,p)	X is Bin(N,p)
POISSON(mean)	X is Poisson(mean)

The user may also define his/her own distribution (see below).

If the parameters of the distribution are not given, the maximum likelihood estimates computed from the frequency distribution are used. Examples: FIT=NORMAL(175,36.5) FIT=NORMAL

If FIT is used, the results will also include the fitted frequencies and the common Chi-square test. In this test consecutive classes are combined when necessary to meet the condition

expected frequency >= min
where <min> is given by MINF=<min>. Default is MINF=5.

When using FIT for discrete distributions the <variable> specification must be of the form <variable>=-0.5(1)<max.value+0.5>.

In continuous distributions, theoretical frequencies are computed by numerical integration using a step length <step>/2. To replace this by <step>/K, a specification STEPDIVISOR=K must be given.

Other extra specifications of HISTO are

HOME, SIZE, XDIV, YDIV, PEN, LINETYPE, XSCALE, YSCALE, FRAME, GRID, TICK, HEADER, XLABEL, YLABEL, TEXT, IND, VALUES
being mostly the same as those of the PLOT operation for scatter diagrams.

The bars in the histogram are filled with the shading [FILL1] defined in the current plotting driver. Redefinition like [FILL1]=[FILL4] is allowed in the HISTO scheme. By FILL=NO bars are not filled at all. In PostScript plotting the color for bars can be selected, for example, by setting [FILL-1]=1,1,0.5,0 (cmYk components) FILL=-1 .

By default, an error message is given if no observations are accepted. This message is removed by ACCEPT=0.

Also an error message appears when all observations belong to the same class. This message is removed by ACCEPT=1 (or ACCEPT=0).

U = User-defined distributions for HISTO

S = Information on scatter diagrams

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/

-->

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">User-defined distributions for HISTO

  <A HREF="q1b_02.html">1 = Density or probablities given in the edit field</A>
  <A HREF="q1b_03.html">2 = Discrete distribution given in a matrix file</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The user may define any distribution by a DENSITY or a PROBABI
specification given in the current edit field. DENSITY is used for
continuous variables and PROBABILITY for discrete ones (with values
0,1,2,...).

```

A FIT specification may then refer to any such distribution in the same way as to predefined distributions (explained above).

The DENSITY specification has the form
 DENSITY <name of distribution>(<list of parameters>)
 $Y(X)=$ <density Y as a function of X and parameters>;

The PROBABILITY specification has the form
 PROBABILITY <name of distribution>(<list of parameters>)
 $Y(X)=$ <probability of value X>;

The rules in writing density and probability functions are the same as those of the VAR operation (see VAR types 2 and 3).

For example, the Beta(a,b) distribution may be defined as follows:
 DENSITY Beta(a,b)

```

Y(X)=if(X<=0)then(0)else(Y2)
Y2=if(X<=1)then(X^(a-1)*(1-X)^(b-1))else(0)

```

Observe that the density function can be given without any normalizing constant, since the computation procedure of HISTO automatically rescales it so that the integral of Y is 1 on the range of classi-

fication defined by $\text{variable} = \text{lower limit}; (\text{step}); \text{upper limit}$.
 The trapezoidal rule is used in numeric integration with step length step . Since for nonnormalized densities the integral has to be recomputed whenever any of the parameter values is changed, giving a normalized density speeds up the computation.

As an example on discrete distributions the geometric distribution can be defined as follows:

PROBABILITY Geom(p)

$Y(X) = \text{if}(X \geq 0) \text{then}(p * (1-p)^X) \text{else}(0)$

In this case the probabilities are correctly scaled, but in general they can be rescaled so that their sum is 1 on the range of classification. The user is responsible for selecting the range wide enough.

When referring to a user-defined distribution in the FIT specification either form $\text{FIT} = \text{Beta}(3,7)$ (parameters given)

or $\text{FIT} = \text{Beta}$ (parameters are to be estimated from the current grouped data)

can be used. In the latter case the parameter estimates are computed by ML method using the polytope algorithm (Nelder, Mead 1965) in maximization of the likelihood function (See Walsh: Methods of Optimization, p.81-84).

The initial estimates may be given by an INIT specification $\text{INIT} = 2,8$ (for example). If INIT is not given, 0's are used as initial values. The

initial step lengths for the optimization algorithm may be given by

$\text{STEP} = \text{step1}, \text{step2}, \dots$, or $\text{STEP} = \text{step}$; where step is the common step length for all the parameters. Default is $\text{STEP} = 0.1$.

[H](q1a_01.html) = More information on HISTO

More information on Survo from <http://www.survo.fi>

!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System;">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>

<P><PRE CLASS="HelpText">The probabilities p_0, p_1, p_2, \dots of a discrete distribution of a variable with possible values $0, 1, 2, \dots$ can also be given by a FIT specification of an alternative form

$\text{FIT} = \text{MATRIX}(\text{name_of_matrix_file})$ (for example, $\text{FIT} = \text{MATRIX}(P5)$)

In this case the probabilities p_0, p_1, p_2, \dots must be saved as the first column of the matrix file.

If these probabilities have been computed by using some estimates of parameters (computed from the current data), the number of such parameters should be given by a PARAM specification.

[H](q1a_01.html) = More information on HISTO

More information on Survo from <http://www.survo.fi>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">CONTOUR=eps1,eps2,... BINORM=E(X),E(Y),S(X),S(Y),Corr(X,Y)

(in PLOT operation for scatter diagrams) determines the contour

ellipses to be plotted on levels eps1,eps2,... on the basis of the
two-dimensional normal distribution defined by a BINORM specification.

If BINORM is missing, the parameters are selected according to the plot-

ted data. The parameters eps1,eps2,... refer to the probabilities of

an observation to be found inside the ellipse. Particularly, eps1=0

causes the principal axes to be plotted.

Example: CONTOUR=0,0.5,0.9,0.99 BINORM=0,0,1,1,0.707

S = Simultaneous contour ellipses for subgroups of data (/DCONTOUR

C = General contour plots (TYPE=CONTOUR)

P = More information on plotting in general

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">TREND=C1,C2,...

(in PLOT operation for scatter diagrams) determines lines parallel to

a linear trend to be plotted. If the trend is $Y=aX+b$ and the residual

variance is s^2 , then the lines $Y=aX+b+C_s$ and $Y=aX+b-C_s$ will be plotted

for $C=C1,C2,...$ For example, TREND=0 causes the trend itself to be

drawn. The trend is estimated by the OLS method from the plotted data.

However, if a BINORM specification is given, the trend will be computed

according to the corresponding bivariate normal distribution.

If X appears in the TREND list, also the trend line $X=a'Y+b'$ will
be plotted. Example: TREND=0,X plots the both trends.

By TREND=O a trend line according to orthogonal regression is drawn.

```
<A HREF="q11_01.html">P = More information on plotting in general</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="qm2_01.html">1 = Matrix computations (MAT operation)
<A HREF="q11c_03.html">2 = Matrix diagrams</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">In scatter diagrams done by PLOT operation,
confidence bands for simple linear regression are obtained
by following specifications: (These options suggested by Simo Puntanen)
```

The confidence intervals for the average is plotted by
CONF_BAND1=<list of confidence levels>.

Prediction intervals for a single observation is plotted by
CONF_BAND2=<list of confidence levels>.

The Working-Hotelling confidence band is plotted by
CONF_BAND3=<list of confidence levels>.

References:

Section 6.1.3 in

Seber, George A.F. and Lee, Alan J. (2003).

Linear Regression Analysis. Second Edition. Wiley, New York.

Section 1.7 in

Weisberg, Sanford (1985). Applied Linear Regression. Second Edition.

Wiley, New York.

```
<A HREF="q12_02.html">P = Plotting of scatter diagrams</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Plotting multivariate data

  <A HREF="q1d_02.html">1 = Andrews' function plots</A>
  <A HREF="q1e_01.html">2 = Chernoff's faces</A>
  <A HREF="q1e_03.html">3 = Star symbol plots</A>
  <A HREF="q1e_04.html">4 = Profile symbol plots</A>
  <A HREF="q1d_03.html">5 = Draftsman's display (simultaneous scatter plots)</A>
  <A HREF="q11_01.html">P = More information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PLOT &lt;data> / TYPE=ANDREWS
plots each observation of a multivariate data set as a curve
```

$$Y(t)=X1/\text{sqr}(2)+X2*\sin(t)+X3*\cos(t)+X4*\sin(2t)+X5*\cos(2t)+\dots$$

(-pi<math>\leq t \leq \pi)

where $X1, X2, \dots$ are (scaled) variables selected from <data>.
The variables involved as well as their scalings are determined by
a list following the PLOT operation:

VARIABLES: A B Term

```

&lt;name of X1&gt; A1 B1 1/sqr(2)
&lt;name of X2&gt; A2 B2 sin(t)
&lt;name of X3&gt; A3 B3 cos(t)
etc.
END

```

Each variable X_i will be scaled by using it in the form $X_i' = (X_i - A_i)/B_i$. If A_i is replaced by a '*', the mean of the variable in the current data will be used. Similarly a '*' as B_i implies the standard deviation to be selected. A fixed scaling with constant A_i and B_i values A, B can be given by a specification $FSCALING=A, B$ and it overrides the values in the VARIABLES list. For example, $FSCALING=0, 1$ means that all the variables are used without rescaling. If the PLOT operation (with $TYPE=ANDREWS$) is activated without a VARIABLES list, a model of such a list will be written in the edit field below the PLOT line on request.

The PLOT operation for Andrews' curves is supported by the typical extra specifications used in curve plotting (like HEADER, HOME, SIZE, FRAME, XDIV, YDIV, GRID, TICK, XSCALE, YSCALE, XLABEL, YLABEL). However, neither scale transformations nor fills are permitted.

$LABEL=\<label\ variable\>,\<step\>,\<shift\>$ is an extra specification determining a label variable (name) for identifying each curve by a label to be printed on the curve with regular intervals specified in # of plotting steps by $\<step\>$. To avoid overlapping of labels, $\<shift\>$ gives the distance between the labels of consecutive curves in # of plotting steps. Parameters $\<step\>$ and $\<shift\>$ are optional and their default values are 30 and 4, respectively.

$PLOT\ \<data\>\ / \ TYPE=ANDREWS,POLAR,c$ draws the Andrews' curves in polar coordinates and gives the results in a layout similar to Chernoff's faces. Then the FSIZE and LABEL specifications are used as in Chernoff's faces. Parameter c is an optional additive constant in $Y(t)$. Default is $c=0$.

```

<A HREF="q1d_01.html">M = more information on multivariate plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PLOT &lt;data&gt; / TYPE=DRAFTS
plots the draftsman's display, i.e. all pairwise scatter plots of m
active variables as an m x m array of graphs.
The output can be limited to the upper triangle of the array by
TYPE=DRAFTS,UPPER or to the lower triangle by TYPE=DRAFTS,LOWER .

```


All normal specifications related to the size and the location of the graph are available. Also the POINT specification can be used as in standard scatter plots (see [POINT](q15_04.html)?).

The scaling of variables is determined automatically according to the minimum and maximum values of the current data.

Discrete variables with few possible values (normally producing uninformative plots because many points overlap) can be jittered (scattered) by entering a specification JITTER=k. Then variables with at most k distinct values are randomized uniformly around the true values within a total interval (jitter step) of (max-min)/(h-1) where h is the number of distinct values.

The ranges of the variables and their jitter steps can be saved in a text file by a specification OUTSCALE=<name_of_file>. The automatic settings of ranges and jitter setps may be changed by editing this file and reproducing the plots with a specification INSCALE=<name_of_file>.

OUTSCALE and INSCALE are also helpful when partial data sets with different point symbols are to be overlaid as seen from the following example. (Activate the GPLOT schemes on the next page in the given order.)

Example of a draftsman's display

Plotting the whole data (specifying scalings and jittering):

```
GPLOT FINLAND / TYPE=DRAFTS OUTSCALE=SCALES.TXT JITTER=30
XDIV=0,1,0 YDIV=0,1,0 HEADER= MASK=--AAAAAAAAAA-A
```

Plotting small communes (black dots by default):

```
GPLOT FINLAND / TYPE=DRAFTS HEADER= XDIV=0,1,0 YDIV=0,1,0
INSCALE=SCALES.TXT MASK=--AAAAAAAAAA-A IND=Popul,0,8000 OUTFILE=A
```

Plotting large communes (red dots added to the previous graph):

```
GPLOT FINLAND / TYPE=DRAFTS HEADER= XDIV=0,1,0 YDIV=0,1,0
INSCALE=SCALES.TXT MASK=--AAAAAAAAAA-A IND=Popul,8001,500000
POINT=[RED],0,0 INFILE=A OUTFILE=A
```

Plotting one particular case (large green dots on the previous graph):

```
GPLOT FINLAND / TYPE=DRAFTS HEADER= XDIV=0,1,0 YDIV=0,1,0
INSCALE=SCALES.TXT MASK=--AAAAAAAAAA-A CASES=Commune:Helsinki
POINT=[GREEN],0,3 INFILE=A (This can be replotted for any other cases.)
```

[M = more information on multivariate plotting](q1d_01.html)

More information on Survo from <http://www.survo>

DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

```

<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Jittering of observations in scatter plots:
  <A HREF="q12_08.html">1 = Standard scatter plots</A>
  <A HREF="q1d_03.html">2 = Scatter plot matrices (draftsman's plots)</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PLOT &lt;data&gt; / TYPE=FACES
plots multidimensional data as Chernoff's faces.
Reference: Chernoff,H.(1973) Using faces to represent points in
k-dimensional space graphically, JASA,68,361-368.

```

The mapping from data to various features of the face is defined by a VARIABLES list written after the PLOT line.

To create this list, it is best to activate PLOT (with TYPE=FACES) without any list. Then a model of the list with appropriate comments will be displayed below the current PLOT line.

A typical list is following:

PLOT <data> / TYPE=FACES

```

VARIABLES: xmin    xmax    Features                fmin fmax
&lt;X1&gt;    &lt;min X1&gt; &lt;max X1&gt; Radius_to_corner_of_face_OP  0.6 1.0
&lt;X2&gt;    &lt;min X2&gt; &lt;max X2&gt; Angle_of_OP_to_horizontal    0.0 0.6
&lt;X3&gt;    &lt;min X3&gt; &lt;max X3&gt; Vertical_size_of_face_OU    0.6 1.0
&lt;X4&gt;    &lt;min X4&gt; &lt;max X4&gt; Eccentricity_of_upper_face  0.5 1.5
&lt;X5&gt;    &lt;min X5&gt; &lt;max X5&gt; Eccentricity_of_lower_face  0.5 1.5
&lt;X6&gt;    &lt;min X6&gt; &lt;max X6&gt; Length_of_nose                0.1 0.5
&lt;X7&gt;    &lt;min X7&gt; &lt;max X7&gt; Vertical_position_of_mouth  0.2 0.8
&lt;X8&gt;    &lt;min X8&gt; &lt;max X8&gt; Curvature_of_mouth_1/R    -4.0 4.0
&lt;X9&gt;    &lt;min X9&gt; &lt;max X9&gt; Width_of_mouth                0.2 1.0
&lt;X10&gt;   &lt;min X10&gt; &lt;max X10&gt; Vertical_position_of_eyes  0.0 0.4
&lt;X11&gt;   &lt;min X11&gt; &lt;max X11&gt; Separation_of_eyes          0.3 0.8
&lt;X12&gt;   &lt;min X12&gt; &lt;max X12&gt; Slant_of_eyes                -0.5 0.5
&lt;X13&gt;   &lt;min X13&gt; &lt;max X13&gt; Eccentricity_of_eyes        0.3 1.0
&lt;X14&gt;   &lt;min X14&gt; &lt;max X14&gt; Size_of_eyes                0.1 0.2
&lt;X15&gt;   &lt;min X15&gt; &lt;max X15&gt; Position_of_pupils          -0.1 0.1
&lt;X16&gt;   &lt;min X16&gt; &lt;max X16&gt; Vertical_position_of_eyebrows 0.2 0.4
&lt;X17&gt;   &lt;min X17&gt; &lt;max X17&gt; Slant_of_eyebrows          -0.5 0.5
&lt;X18&gt;   &lt;min X18&gt; &lt;max X18&gt; Size_of_eyebrows           0.1 0.5
END of plotting specifications

```

The variables selected will be mapped to various features linearly so that xmin -> fmin and xmax -> fmax. This scheme may be freely edited by altering xmin and ymin values (eventually also fmin and fmax) to achieve a desired result. For example, the influence of certain variable could be reversed by changing its xmin and xmax values.

To keep certain features constant, use character '-' instead of a variable. Then $(fmin+fmax)/2$ will be used as the value of the feature for all observations.

The default list obtained after activating PLOT with TYPE=FACES without a list has '-' as each variable, '*' for xmin and '**' for xmax.

If now '-' is replaced by a name of a variable and PLOT is activated, the faces are plotted by using the true minimum value value in place of '*' and maximum value in place of '**'. (The list is automatically updated with true values ending to '*' or '**'.)

The user may then add various features gradually and see their effects immediately. The mapping can be fixed by erasing '*'s.

The PLOT operation for Chernoff's faces may be supported by the extra specifications HEADER,HOME,SIZE,XDIV,YDIV as in any curve plotting schemes.

Furthermore two special specifications LABEL and FSIZE are available.

LABEL=<label variable>; selects the name of the observation to be printed under the face. If LABEL is omitted, # of observation will be used as default.

FSIZE=c gives the side length of the square to be used as an area for each face. c is given in plotting units and has the default value which is one fifth of the current width of the plot.

The specifications SIZE,XDIV,YDIV and FSIZE determine together the layout for the faces.

On the screen (GPLOT), the various parts of the faces can be drawn with different colors possibly depending on values of selected variables.

The face and the eyes can also be painted.

The colors are selected by adding a COLORS list (before the END line in the VARIABLES list).

A model of such a list is obtained by activating GPLOT with TYPE=FACES without a VARIABLES list.

```
<A HREF="q1d_01.html">M = more information on multivariate plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;Help</H1>
<P><PRE CLASS="HelpText">
  <A HREF="q1d_01.html">M = more information on multivariate plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PLOT &lt;data&gt; / TYPE=STARS
plots multidimensional data as star symbol plots.
Reference: Chambers,Cleveland,Kleiner,P.A.Tukey: Graphical Methods for
          Data Analysis. The Wadsworth Statistics/Probability Series, 1983
          (pp. 158-161)
Each observation of m active variables is represented as a set of rays
whose directions are equally spaced around the circle and the length
of the ray corresponding to the variable x is
  
$$(1-c)*(x-xmin)/(xmax-xmin)+c$$

c is a constant with the default value 0.2. Another value for c can be
selected by entering the TYPE specification in the form TYPE=STARS,c .
The order of activate variables in the stars is determined by the alpha-
betic order of their mask symbols and secondarily by their order in the
data set.
The general layout of the star symbol plots in the plotting region is
the same as that of Chernoff's faces. The LABEL and FSIZE specifications
are available as well (See <A HREF="q1e_01.html">FACES</A>?).

  <A HREF="q1d_01.html">M = more information on multivariate plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">http://www.survo.fi/</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
</HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PLOT &lt;data&gt; / TYPE=PROFILES
plots multidimensional data as profile symbol plots.
Reference: Chambers,Cleveland,Kleiner,P.A.Tukey: Graphical Methods for
          Data Analysis. The Wadsworth Statistics/Probability Series, 1983
          (pp. 159-163)
Each observation of m active variables is represented as a broken line
connecting points (1,y1),(2,y2),...,(m,ym) where y coordinates are
the scaled values  $y=x/\max(\text{abs}(x))$ .
Also the base line and the vertical side lines are plotted for each

```

profile.

The order of activate variables in the profiles is determined by the alphabetic order of their mask symbols and secondarily by their order in the data set.

The general layout of the profile symbol plots in the plotting region is the same as that of Chernoff's faces. The LABEL and FSIZE specifications are available as well (See [FACES](q1e_01.html)?).

```
<A HREF="q1d_01.html">M = more information on multivariate plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PLOT /FRAME
plots frames, texts and lines according to following specifications

  <A HREF="q14_08.html">1 = FRAME</A>
  <A HREF="q1k_02.html">2 = FRAMES</A>
  <A HREF="q1k_03.html">3 = TEXTS</A>
  <A HREF="q1k_04.html">4 = FILLS (in screen plotting only)</A>
  <A HREF="q1k_05.html">5 = LINES</A>
  <A HREF="q1k_09.html">6 = POLYGONS (in screen plotting only)</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FRAMES=&lt;list_of_frame_specifications&gt;
gives a list of extra frames (boxes) to be drawn in the current graph.
```

Each member of this list is a word (name of the frame) and any such a frame must be given in the form

<name_of_the_frame>=<xhome>,<yhome>,<width>,<height>,<fill

where (xhome,yhome) are the coordinates of the left-bottom corner of the frame and <width> and <height> give the size of the frame. All the values are in plotting units (not in user coordinates). <fill> is optional and gives the fill index. The default is no fill.

```
<A HREF="q11_01.html">P = More information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TEXTS=<list_of_text_specifications>
gives a list of extra texts to be written in the current graph. Each
member of this list is a word (name of the text), and any such a text
is given in the form
```

<name_of_the_text>=<string>,x,y

where (x,y) is the starting point of the text in plotting units and <string> is a string without spaces and ', 's to be written. Possible spaces should be replaced by ' 's. Similarly ', 's must be replaced by ', 's. (', ' and ' ' are given as '\;' and '\ '.)

Example: TEXTS=T1,T2 T1=[Times(15)],SURVO_84C,500,50 T2=9_May_1987,650,50
As in T1, a control code in brackets may precede the text.

If a text is to be plotted in parentheses or brackets, a control code (in brackets or parentheses) must precede it:

Example: TEXTS=L1,Label2 L1=[Times(15)],(SURVO_84C),100,300
Label2=(),[4_Jan_1992],400,50

In Label2, () is a dummy control code. The texts to be plotted will be (SURVO 84C) and [4 Jan 1992] .

New alternative: Text on multiple lines (see next page!)

Text on multiple lines:

Any of the text names, say TL, listed in the TEXTS specification, can also refer to a set of several lines. In this case TL has the form

TL=#LINES:<first_line>,<last_line>,x,y,<line_spacing>
where (x,y) is the starting point of the first line. The following lines will be plotted below the first one by using the given

line spacing.

Example:

```
.....
GPLOT Y(X)=A*sin(X) / A=0,10,1 X=[line_width(5)][RED],-pi,pi,pi/20
MODE=EGA pi=3.141592653589793 XSCALE=-pi,0,pi
TEXTS=T T=[Times(20)],#LINES:CUR+3,CUR+5,50,270,30
This is a family
of sinus curves
with different amplitudes.
FRAMES=F F=40,200,280,100,4 FRAME=0
.....
```

```
<A HREF="q111_13.html">R = Moving and rotating texts</A>
<A HREF="q11_01.html">P = More information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
```

```
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILLS=&lt;list_of_fill_specifications&gt;
gives a list of fill definitions for the current graph. Each member
of this list is a word (name of the fill) and any such a definition
must be given in the form
```

<name_of_the_fill>=<x>,<y>,<fill_index>;

where <x>,<y> are the coordinates (in plotting units) of the point inside the area to be filled and <fill_index> gives the fill type. FILLS is not valid in PostScript plotting.

```
<A HREF="q11_01.html">P = More information on plotting</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">LINES=&lt;list_of_line_specifications&gt;
```

```
(in the PLOT /FRAME operation)
```

gives a list of extra sequences of line segments to be drawn in the current graph. Each member of this list is a word (name of the sequence) and any such a sequence must be given in the form

<name_of_the_sequence>=xhome,yhome,x1,y1,x2,y2,...,xn,yn

Then a polyline starting from point (xhome,yhome) and going through points

(xhome+x1,xhome+y1)

(xhome+x1+x2,yhome+y1,y2)

...

(xhome+x1+x2+...+xn,yhome+y1+y2+...+yn)

will be drawn.

All the values are in plotting units (not in user coordinates).

```
<A HREF="q11_01.html">P = More information on plotting</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">Plotting (filled, colored) polygons:
```

```
<A HREF="q1k_07.html">1 = PLOT &lt;data&gt;,&lt;xvar&gt;,&lt;yvar&gt; / LINE=POLYGON
```

```
<A HREF="q1k_09.html">2 = PLOT /FRAME / POLYGONS=&lt;list_of_polygons </A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```



```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">A (filled) polygon can be plotted by a PLOT operation of the form  
PLOT &lt;data&gt;,&lt;xvar&gt;,&lt;yvar&gt; / LINE=POLYGON,&lt;fill_index&gt;;  
The coordinates of the vertices are given by the &lt;xvar&gt; and &lt;yvar&gt;;  
variables and the polygon is filled by the shading (or color)  
given by the (optional) &lt;fill_index&gt;.
```

```
.....  
Example:
```

```
DATA POLY6:(X,Y) 0,0 4,1 3,3 2,2 0,2 1,1 END
```

```
GPLOT POLY6,X,Y / LINE=POLYGON,5 GRID=1,1
```

```
.....  
A more general form on the next page!
```

If <yvar> has missing values, a sequence of polygons is plotted.

A missing <yvar> value terminates plotting of the current polygon

and starts a new one with <fill_index> given by the <xvar> value.

If <fill_index> is 0, only the edges of the polygon are drawn.

LINE=[line_width(0)],POLYGON,<fill_index>;

means that the edges are not drawn but the polygon is filled.

```
.....  
Example: Three partially overlapping polygons
```

```
DATA POLY14:(X,Y) 2,0.5 4,3 0,0 3,- 0,2.5 0,1 4,2 3,2.7 2,-  
4,0 4,1 2.8,1.2 2.5,3 2.3,0
```

```
GPLOT POLY14,X,Y / LINE=POLYGON,5 GRID=1,1
```

```
ROP=9 (Test various raster options using ROP values 0,1,2,...,15!)
```

```
.....  
<A HREF="q1k_06.html">P = More information about polygons</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">
```

```
<A HREF="q1k_06.html">P = More information about polygons</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">POLYGONS=&lt;list_of_polygon_specifications&gt;
gives a list of polygon definitions for the current graph. Each
member of this list is a word (name of the polygon) and any such a definition
must be given in the form
```

<name_of_the_polygon>=<x1>,<y1>,<x2>,<y2>,...,<xn>,<yn>

where <xi>,<yi>, i=1,2,...,n are the vertices (in plotting units)
of the polygon to be plotted and the optional <fill_index> gives
the fill type.

```
<A HREF="q1k_06.html">P = More information about polygons</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Statistical operations in Survo
<A HREF="q23_01.html">D = Representation of data sets (DATA specification)</A>
<A HREF="q21_02.html">S = Selecting variables and observations</A>
<A HREF="q0e_01.html">O = Results of statistical analyses</A>
<A HREF="qv1_01.html">V = Transformations of variables (VAR,TRANSFORM,CLASSIFY,LIN)
<A HREF="q1a_01.html">H = Frequency distributions, histograms, fitting distributions (HISTO)</A>
<A HREF="q22_02.html">M = Multiway tables (TAB)</A>
<A HREF="q27_01.html">A = Analysis of variance (ANOVA)</A>
<A HREF="qu1_01.html">L = Generalised Linear Models (TABFIT,GENREG)</A>
<A HREF="q29_01.html">B = Basic statistics (STAT, STATMSF, MINSTAT, Making samples)</A>
<A HREF="q21_03.html">C = Means, standard deviations and correlations (CORR)</A>
<A HREF="q21_04.html">J = Probability distributions</A>
<A HREF="qa1_01.html">T = Statistical tests</A>
<A HREF="q26_01.html">R = Linear regression analysis (LINREG,REGDIAG)</A>
<A HREF="q24_01.html">E = Nonlinear estimation and regression analysis (ESTIMATE)</A>
<A HREF="qmr2_01.html">P = Multivariate analysis</A>
<A HREF="qt1_01.html">U = Time series analysis, Survival analysis</A>
```

```

<A HREF="q11_01.html">G = Graphical methods (PLOT)</A>
<A HREF="q01_02.html">X = General information on the Survo Editor</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Selecting variables and observations in statistical analysis
  <A HREF="q03_11.html">1 = Selecting variables into analysis</A>
  <A HREF="q07_02.html">2 = Selecting observations into analysis</A>
  <A HREF="q28_01.html">3 = Scale types of variables</A>
  <A HREF="q21_01.html">S = General information on statistical operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">CORR &lt;data>;L
computes the means, standard deviations and correlations of all active
variables and observations in &lt;data>. Specifications like VARS, MASK,
CASES and IND may be used for selecting variables and observations.
Observations with missing values at least in one of the active
variables are omitted. For incomplete data CORRMV can be used.

The results will appear from line L onwards. If L is missing, results
are not displayed in the edit field. If an output file (see <A HREF="q0e_02.html">OUTPUT</A>) is
selected, the results are appended to the end of that file. Printing of
results may be completely left out by entering RESULTS=0.

In any case the results (in full precision) are saved in matrix files
CORR.M correlations

```

MSN.M col.1=means col.2=stddevs col.3=number of observations
on the current data disk.
Their names can be changed by the OS command >REN, for example.
Many operations in multivariate analysis and linear models can use
matrix files CORR.M and MSN.M as a basis for their work.
/COV computes the covariance matrix COV.M from current CORR.M and MSN.M.

All the computations are carried out in double precision. When computing
the moments the values of the first observation are used as temporary
means. If a variable is a constant, no error message is given, but all
the correlations (including the diagonal element, which normally is 1)
are set to 0 for that variable.

If specification RESULTS=-1 is given, only means and standard deviations
(and matrix MSN.M) are computed.

Specification RESULTS=0 cancels saving of results in the output file
but the matrix files CORR.M and MSN.M are computed even in this case.

When the number of variables is high, the best way to study the corre-
lation matrix obtained by CORR is to activate
/MATSHOW CORR.M or /MATSHOW CORR.M,12.123 (for example).

The correlation matrix can also be loaded into the edit field in a
partitioned form with significant elements highlighted by
/LOADCORR

Before activating /LOADCORR it is usually necessary to increase the
of lines and shadow lines by REDIM.

LOADM is the general operation used by /MATSHOW and /LOADCORR.

```
<A HREF="q26_03.html">L = LINREG</A>
<A HREF="qmr2_01.html">M = Multivariate analysis</A>
<A HREF="q21_01.html">S = General information on statistical operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Probability distributions

<A HREF="ql2_01.html">1 = Computing values of functions related to standard distributions</A>
<A HREF="qv3_01.html">2 = Simulation of distributions</A>
<A HREF="qa1_01.html">3 = Statistical tests</A>
<A HREF="qmc1_02.html">4 = Distributions in combinatorics</A>
<A HREF="q21c_01.html">5 = Central limit theorem</A>

<A HREF="q21_01.html">S = More information on statistical operations</A>
```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Central limit theorem

```

Certain sucros are available for demonstrating the importance of the central limit theorem.

This theorem says that - under very general conditions - the sum of independent random variables tends to the normal distribution when the number of summands grows.

Demonstration programs:

/DISTRSUM (In English)

/SATSUMMA (In Finnish)

Se also:

```

<A HREF="qv3_04.html#TRANSF2">1 = TRANSFORM &lt;data> BY DISTR(P) (|EXAMPLE
<A HREF="q21_04.html">D = Probability distributions</A>

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TAB &lt;data>;L
makes cross-tabulations of &lt;data>; according to selected variables and
saves the results in the output file (see <A HREF="q0e_02.html">OUTPUT</A>) and from line L
onwards in the current edit field, if L is given.
Also means and standard deviations of a cell variable can be computed

```

(see CELL specification below).

The table can also be saved as a Survo data file (see [TABFILE](q22_03.html)?).

The IND and CASES specifications may be used to restrict the set of observations.

Tables produced by TAB have a header and letters as line labels.

The header and the labels are omitted by giving a specification LABELS=0 .

The variables controlling classification can be numeric or string variables and they are to be listed by the specification

VARIABLES=<column var>,<row var 1>,<row var 2>,...,<row var n>;
or

VARIABLES=<column var>,<row var 1>,<row var 2>,...,<row var n>;

The first alternative of the VARIABLES specification implies computing of one n-dimensional table.

The second one (with a colon ':' after <column var>) implies computing of n two-dimensional tables with a common <column var>.

There is still a more general alternative

VARIABLES=<cvar 1>,<cvar 2>,...,<cvar m>,<rvar 1>,<rvar 2>,...
which allows m nested column variables for each row variable.

The classification of a numeric variable has to be given in the form

<name of var>=L1,U1,U2,U3,...

where L1=lower limit of the 1st class

U1=upper limit of the 1st class

U2=upper limit of the 2nd class etc.

For example, Age=0,6,12,21 specifies age groups 0-6,7-12 and 13-21.

Any class can be given a name in parentheses after the upper limit.

For example, Color=1,1(white),2(red),3(blue).

If the class widths are equal, classification may also be given in the

form <name of var>=<up.limit_of_1.st_class>(<class_width>)<last_class>;

For example, Age=10(5)25 is same as Age=5,10,15,20,25. In this abbreviated notation no class names can be given.

By default, cases with missing values in classifiers are omitted.

However, for numeric classifiers a special class MISSING can be given as the last class. Example; Age=5,10,15,20,25,MISSING

The classification of a string variable is described by examples:

1) Assume that 'Weekday' is a string variable with values 'Su','Mo' etc.

A classification for 'Weekday' could be

Weekday=/Mo/Tu/We/Th/Fr(Workdays),/Sa/Su(Weekend)

thus forming 2 classes Workdays=(Mo,Tu,We,Th,Fr) and Weekend=(Sa,Su).

2) Assume that 'Letter' is a string variable with values 'A','B','C' etc.

To classify letters to vowels and consonants the following specification is valid:

Letter=/A/E/I/O/U(vowel),/-(consonant)

where /- denotes all the remaining alternatives.

The printout of the (frequency) table may be include column and row sums, too. In addition to frequencies various tables of percentages can obtained. These options are selected by a RESULTS specification of the form

RESULTS=CSUMS,RSUMS,C%,R%,T%

with following consequences:

CSUMS sums of columns

RSUMS sums of rows

C% table of percentages in columns

R% table of percentages in rows

T% table of percentages from the grand total

Any of the key words in RESULTS may be omitted.

An example of a complete TAB operation for a 3-dimensional contingency table with column and row sums:

TAB COMMUNES,27

VARIABLES=Industry,Province,People RESULTS=CSUMS,RSUMS

Industry=0,2,5,9 (proportion of people working in industry 0-9)

Province=/UUS/KYM,/TUR/AHV,-/ (3 classes)

People=0,5000(small),20000(medium),500000(large)

Tables of means, standard deviations and sums:

To compute means and standard deviations for a selected variable, a CELL specification may be included. It has the form

CELL=<cell variable>,<format for the results, ###.# for example>;

Sums of the cell variable are computed (instead of means and standard deviations) by giving the CELL specification in the form

CELL=<cell variable>,<format>,<FSUM or SUM>;

For FSUM, both frequencies and sums are printed. For SUM, sums only are printed.

```
<A HREF="q22_02.html">T = More information on TAB operations</A>
<A HREF="q21_01.html">S = General information on statistical operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM
<P><PRE CLASS="HelpText">TAB operations for multiway tables:

  <A HREF="q22_01.html">1 = Computing frequency tables and tables of means, std.devs and sums
  <A HREF="q27_01.html">2 = Analysis of variance (TABFIT)</A>
  <A HREF="qu2_01.html">3 = Management and editing of multiway tables</A>
  <A HREF="qu1_02.html">4 = Fitting log-linear models (TABFIT)</A>
  <A HREF="qu1_03.html">5 = Testing 2-way frequency tables by simulation (TABTEST)</A>
  <A HREF="qw5_01.html">M = MTAB operation (by M.Korhonen)</A>
  <A HREF="q02_02.html">T = TAB key</A>
  <A HREF="qkv0_07.html">P = Producing several tables at the same time (/TABULATE by KV)</A>
  <A HREF="qkv3_08.html">B = Creating Burt's contingency tables (BURT by KV)</A>

  <A HREF="q21_01.html">S = More information on statistical operations</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```

"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">When a multiway table with VARIABLES list without any ':'s is created
by a TAB command, the table is also saved as a new Survo data file
by giving a specification FILE=&lt;name_of_new_data_file>;.
Selected lines (typically the current TAB definition lines) are saved
as comments to the new data file by a specification COMMENTS=L1,L2.

```

Example:

```

11 *TAB FINLAND / <STRONG>FILE=TAB_FIN1 COMMENTS=11,17</STRONG>
12 *VARIABLES=Province,Popul,Area CELL=Brthrate
13 *Province=UUS/TUR/AHV/KYM(South),H'M/MIK/KUO/KES/VAA/KAR(Middle),&
14 *      /-(North)
15 *Popul=0,5000,20000,500000
16 *Brthrate=0,10,15,30
17 *Area=0,1000,20000
18 *

```

This option is available in versions 3.33+.

```

  <A HREF="q22_01.html">T = More information on TAB operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/q22_01.html">T = More information on TAB operations</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Survo supports several forms of data in statistical analysis.
The data sets to be processed may be either in Survo data files or
located in the edit field.
All forms listed below are valid as input data. However, when saving
derived variables like residuals in regression analysis or making
transformed variables (by VAR operation, for example), type 4 or
5 is required.

```


The FILE COPY operation can be used to move data of types 1-4 to a Survo data file.

```
<A HREF="q23_07.html">1 = Small sample as a list of data values in the edit field</A>
<A HREF="q23_04.html">2 = Data matrix in the edit field (without line labels)</A>
<A HREF="q23_05.html">3 = Data matrix in the edit field (without mask line)</A>
<A HREF="q23_06.html">4 = Data matrix in the edit field (general form)</A>
<A HREF="q23_02.html">5 = Data file</A>
<A HREF="q23_08.html">6 = Matrix file</A>
<A HREF="q23_09.html">D = Data values in editorial computing</A>
<A HREF="q07_01.html">C = Selecting variables and observations</A>
<A HREF="qf1_01.html">F = File management (FILE COPY etc.)</A>
<A HREF="qu2_01.html">T = Multiway tables (TAB operations)</A>
<A HREF="qm2_01.html">M = Matrices (MAT operations)</A>
<A HREF="q21_01.html">S = Statistical operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM
<P><PRE CLASS="HelpText"><B>Data in a data file:</B>
When processing the whole set of observations in a data file the name
of the data file is referred to in the statistical operation.
To select a subset of observations a specification of the form
DATA &lt;name of data set> IN &lt;data file>,&lt;# of 1st obs.>,&lt;# of last obs.>
may be given in the current edit field.
For example, DATA SAMPLE IN FILE1,1,30 defines SAMPLE as the 30 first
observations of data file FILE1.
The last observation of the data file can generally be referred to by
END in the DATA ... IN ... construction. Thus the last 30 observations
of FILE1 can be defined by DATA SAMPLE2 IN FILE1,END-29,END.

Another possibility to select a subset of observations is to use the
IND, CASES and SELECT specifications (see <A HREF="q07_02.html">SELECTC</A>).

In all cases above only active variables of the data file will be
processed (see <A HREF="qf1_01.html">FILE</A> ACTIVATE, MASK).
For general information on data files, see <A HREF="qf1_01.html">FILE</A>?
<A HREF="q23_01.html">D = More information on data representation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
```

```

-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q23_01.html">D = More information on data representation</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/

```

```

-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Simplest form of a data matrix is following:

11 *DATA ABC1
12 * X Y test1
13 * 1.2 5 -4.56
14 * 3.4 11 3.52
15 * 2.0 9 2
16 * 1.7 4 4.6
17 *

```

The data set ABC1 consists of three variables (X,Y,test1) and 4 observations (on lines 13-16). The empty line 17 terminates the data set. The line of labels (12) must be immediately after the DATA line (11).

Missing values are indicated by a '-'.</p>
</div>

```

<A HREF="q23_01.html">D = More information on data representation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">

```

```

<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The line labels for the names of variables and data itself can
be given explicitly as follows:

```

```

11 *DATA ABC1,13,16,12
12 * X Y test1
13 * 1.2 5 -4.56
14 * 3.4 11 3.52
15 * 2.0 9 2
16 * 1.7 4 4.6
17 * (this line can contain any text)

```

Here DATA ABC1,13,16,12 indicates that data values are on lines 13-16 and labels on line 12.

Thus it is not necessary to have the DATA line, labels and data values on consecutive lines. Also symbolic labels may be used for lines.

Missing values are indicated by a '-'.</p>
D = More information on data representation
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO MM Help System (web edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO MM Help System (web edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1>&
<P><PRE CLASS="HelpText">The most general representation of data matrix is following:
29 *DATA COUNTRIES,A,B,C,D
30 C Country Coffee Tea Beer Wine Spirits
31 D ----- AAAA AAAA ----- XXX
32 A Italy 3.6 0.06 13.6 106.6 2.0
33 * Portugal 2.2 0.03 27.5 89.3 0.9
34 * Finland 12.5 0.15 54.7 7.6 2.7

43 B Ireland 0.2 3.73 124.5 3.8 1.9

Data COUNTRIES is defined by a DATA specification on line 29.

The observations are on lines A-B (32-43) and the names of the variables (columns) on line C (30). The new parameter D (31)

is the label of a mask line which specifies the status of each variable (column) in the analysis (--- is an inactive variable).

Missing values are indicated by a '-' or by leaving the cell empty.

This is the only form of a data matrix which permits writing new data values (like residuals and other derived variables)

in statistical operations. Data files are, of course, still more flexible in this respect.

[D](q23_01.html) = More information on data representation

More information on Survo from <http://www.survo.fi>

DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Small data sets with only one or few variables can be listed simply as follows:

```
11 *DATA X: 17.3 -3.4 4.5 6.8 END
```

```
12 *
```

```
13 *DATA TEST:(X,Y,test1) 2,4,6 7,2,0 8,4,5 11,5,0
```

```
14 *    3,2,1 5,12,7 4,6,6 9,9,5 4,5,1 8,6,14 END
```

```
15 *
```

Above two data sets X and TEST are written.

Please, observe the colon ':' after the name of the data set.

The X data has only one variable (X) with 4 observations. In the TEST

data we have three variables (X,Y,test1) and 10 triplets of

observations. END or an empty line terminates the list of values.

These data can be used as any other in statistical operations.

For example, CORR TEST computes the means, std.devs and correlations for the three variables of TEST.

In more advanced applications other forms of Survo data representation should be preferred to.

[D](q23_01.html) = More information on data representation

More information on Survo from <http://www.survo.fi>

DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Matrix files generated by various statistical operations as inter-
mediate results (typically with extension .M) can be used as input
data in all operations working with statistical data sets. Then
the columns are considered variables and rows cases (observations).
In addition, the row labels correspond to a string variable (CASE)
appearing as #1 among variables. The actual columns of the matrix
are numerical (double precision) variables with indices 2,3,...
and their names are the column labels. By default, the CASE variable
is passive but the other variables are active (activated by 'A').
Use names of variables or VARS,MASK specifications for other selections.

```

Exception:

Matrix files of symmetric and diagonal matrices are not accepted as data files since a normal data set (table) is not "symmetric".
In special cases where a symmetric matrix should be used as a data matrix it is easy to convert it to a Survo data file by
FILE SAVE MAT command. For example, the correlation matrix CORR.M (produced by CORR) is converted to a Survo data file D_CORR by
FILE SAVE MAT CORR.M TO D_CORR

If a matrix file is used as a data set, it must be referred to by the complete pathname with the extension (.M or .MAT).

For example, the two first factors (F1,F2) of a factor matrix FACT.M created as a result of the FACTA operation can be plotted on the screen by the PLOT scheme:

```

GPLOT FACT.M,F1,F2
SCALE=-1,0,1 GRID=XY POINT=CASE
LINE=6 LINE2=0,0 (Points are to be connected to the origin)

```

To make a MVBAR chart of the same factors with CASE indicating each pair of bars, use the following scheme:

```

GPLOT FACT.M / TYPE=MVBAR MASK=AAA (The first 'A' indicates CASE)

```

```

<A HREF="q23_01.html">D = More information on data representation</A>
<A HREF="qm2_01.html">M = More information on matrix operations</A>
<A HREF="qm7_01.html">S = Saving matrices into Survo data files (FILE SAVE MAT)</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Survo data sets in editorial computing

```

Any numeric value in a Survo data set (data file, data matrix in the

edit field etc.) can be used in editorial computing by a special DAT function. For example, if DAT_FINLAND(Helsinki,Popul)=_ is activated, we obtain

DAT_FINLAND(Helsinki,Popul)=483057

The first argument refers to the name of the observation and the second one to the variable. Thus in this case we get the number of inhabitants (Popul) in Helsinki from the data file FINLAND.

DAT function can be used in mathematical expressions. For example, the population of Helsinki in thousands is given by
DAT_FINLAND(Helsinki,Popul)/1000=483.057

Also values of string variables can be displayed by DAT function. For example, DAT_FINLAND(Helsinki,Province)=UUS gives the the name of the Helsinki province. In numerical computations such values are treated as zeros: DAT_FINLAND(Helsinki,Province)+100=100

If the name of the observation is not the first one in the data set, it can be referred to by notation Name_of_name_variable>Value.

For example, in FINLAND

DAT_FINLAND(Commune>Helsinki,Popul)=483057

is, of course, the same as DAT_FINLAND(Helsinki,Popul).

The first commune of the UUS province can be found by

DAT_FINLAND(Province>UUS,Commune)=Artj rvi

and its population either by

DAT_FINLAND(Province>UUS,Popul)=2039 or DAT_FINLAND(Artj rvi,Popul)=2039

The order (place) of Helsinki in data FINLAND is obtained by

DAT_FINLAND(Helsinki,ORDER)=47 and observations can also be referred to by their order. For example, DAT_FINLAND(#47,Commune)=Helsinki

S = Shorthand notation for functions

E = More information on editorial computing

D = More information on data sets in Survo

X = X function

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi
</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition) help system">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText"> 1 = Estimation of linear and non-linear

2 = Maximum likelihood estimates for user-defined distributions

3 = Estimating regression models with autocorrelated disturbances

4 = Estimating ARMAX models

S = More information on statistical analysis

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi
</BODY>

```

</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ESTIMATE &lt;data&gt;,&lt;name of model&gt;,L
estimates the parameters of a linear or a nonlinear regression model.
Parameter L is optional and gives the first line for the results in
the edit field.
The regression model has to be defined by a MODEL specification typed on
any two consecutive lines in the edit field as follows:
    MODEL &lt;name of model&gt;
    &lt;regressand&gt;=&lt;function of regressors and parameters&gt;
&lt;data&gt; may either be defined by the DATA specification in the edit
field or it may be a Survo data file.
The regressand and the regressors are notated by the names given as
labels for the columns in the DATA specification of the data set.
Unidentified words in the model are interpreted as parameters to be
estimated.

ESTIMATE is able to evaluate the expressions of first and second
derivatives of the model function with respect to parameters. This
information is employed in the model identification and in the numerical
computation of estimates.

The estimation process can be controlled by extra specifications typed
in the edit field.
<A NAME="EXTRA"></A>Extra specifications and parameters in ESTIMATE:

  <A HREF="q24_08.html">1 = model specification (MODEL)</A>
  <A HREF="q24_03.html">2 = estimation criterion (CRITERION)</A>
  <A HREF="q24_05.html">3 = numerical (optimization) method (METHOD)</A>
  <A HREF="q24_06.html">4 = initial values for parameters</A>
  <A HREF="q24_07.html">5 = weight variable (WEIGHT)</A>
  <A HREF="q24_10.html">6 = step length (STEP)</A>
  <A HREF="q24_11.html">7 = residuals, predicted values</A>
  <A HREF="q24_12.html">8 = selecting observations</A>
  <A HREF="q24_13.html">9 = constants in the model function</A>
  <A HREF="q24_09.html">A = displaying intermediate results</A>
  <A HREF="q24_16.html">M = results in matrix files</A>
  <A HREF="q21_01.html">D = more on data analysis</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM

```

For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Unless otherwise stated the estimation method is ordinary least
squares (OLS). As an alternative the Lp norm may be used as the
measure for goodness-of-fit and the p value is indicated by the extra
specification CRITERION=Lp where p is a positive number.
Thus CRITERION=L2 is same as OLS and CRITERION=L1 corresponds to
the minimum absolute deviation, which may also be selected by
CRITERION=ABS. If p<2, METHOD=H must be used.
  <A HREF="q24_02.html#EXTRA">S = more on extra specifications in ESTIMATE</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q24_02.html#EXTRA">S = more on extra specifications in ESTIMATE
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
```


<H1>&
<P><PRE CLASS="HelpText">The iterative numerical algorithm needed for minimizing of the
residual sum of squares may be selected by the user by an extra
specification METHOD typed in the edit field. At the moment we have
the alternatives:

METHOD=N Newton-Raphson (see e.g. Walsh, 1975 p.108)
METHOD=M Modified Newton (see e.g. Gill & al., 1982 p.105-)
METHOD=D Davidon-Fletcher-Powell (see e.g. Walsh, 1975 p.110)
METHOD=d As D above, but without 2nd derivatives (saves space)
METHOD=H Hooke-Jeeves (see e.g. Walsh, 1975 p. 76)
METHOD=G Direct search in a grid of parameter space

The search values for each parameter A must given as
A=<lower_limit>,<upper_limit>,<step>;
This last alternative exists mainly for searching for good
initial values of parameters to be estimated.

In case of a linear model METHOD=N is default and in case of a non-
linear model METHOD=D is default.

References: Walsh: Methods of optimization, Wiley (1975)

Gill,Murray,Wright: Practical Optimization, Academic Press (1982)

S = more on extra specifications in ESTIMATE

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from
</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">When the model is linear with respect to parameters, no initial values
are needed.

In case of a non-linear model the initial values of the parameters may

be entered in the field in the form <parameter>=<initial value>. If an
initial value is not given, 0 will be default.

S = more on extra specifications in ESTIMATE

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from
</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;("
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The observations may be weighted by any variable or by a function of
variables appearing in the data set. The weight function is defined
by a WEIGHT specification of the form:
    WEIGHT=&lt;function of variables&gt;
If the WEIGHT specification is missing, WEIGHT=1 will be used.
    <A HREF="q24_02.html#EXTRA">S = more on extra specifications in ESTIMATE</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;("web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;("
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MODEL is a specification to be used in conjunction with the ESTIMATE
operation. In regression models the general structure is
MODEL &lt;name of the model&gt;
&lt;regressand&gt;=&lt;function of regressors and parameters&gt;

```

Examples: Weight=a+b*Length
 $\log(Y) = \text{constant} + S \sin(s*t) + C \cos(c*t)$
 $(Z^c - 1)/c = a*X + b$ (c on the left side is a parameter.)

It is possible to make literal substitutions in the model notation
by using abbreviations in braces as follows:

```

{L}=log(Length)
MODEL M1
Y=a0+a1*{L}+a2*{L}^2+a3*{L}^3

```

```

    <A HREF="q24_15.html">F = mathematical functions available in ESTIMATE</A>
    <A HREF="q24_14.html">M = general ML estimation</A>
    <A HREF="q24_02.html#EXTRA">S = More information on extra specifications in ESTIMATE</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
-->
<HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">DISPLAY=1
gives the possibility to monitor preliminary stages
of the analysis on the screen. For example, the analytical
derivatives will be displayed temporarily.
Also scanning of observations and saving of residuals will
be displayed.
If DISPLAY is omitted, only the optimization process will
be shown as a temporary display.
  <A HREF="q24_02.html#EXTRA">S = more on extra specifications in ESTIMATE</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">If METHOD=D or METHOD=H is in use, the initial step length may
selected by STEP=&lt;step length&gt;;. STEP=1 is default.
If METHOD=H is used, the STEP specification may also be given in an
augmented form STEP=&lt;initial step&gt;;&lt;final step&gt;;. The default values
correspond to STEP=1,0.00001
  <A HREF="q24_02.html#EXTRA">S = more on extra specifications in ESTIMATE</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">

```

```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> Residuals and predicted values
The residuals and the predicted values of the regression model may
be obtained by activating variables in the data set by R,F or G
where
  R is a mask for the residuals,
  F is a mask for the predicted values of the model function and
  G is a mask for the values of the regressand (function).
The VARS and MASK specifications may be used for these activations
as well.
  <A HREF="q24_02.html#EXTRA">S = more on extra specifications in ESTIMATE</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> Selecting observations
The IND and CASES specifications can be used.
  <A HREF="q24_02.html#EXTRA">S = more on extra specifications in ESTIMATE</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Various constants (for example, fixed parameters) in the model
function may also have symbolic names with a '#' as a prefix.
For instance, #mean1=102.83333 may be typed in the edit field
and thereafter 102.83333 can be notated in the model specification

```

by mean1.

S = more on extra specifications in ESTIMATE

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">By the ESTIMATE operation also maximum likelihood estimates for parameters of a user-defined univariate distribution can be computed.

The distribution has to be defined by a MODEL specification of the form:

10 *MODEL <name of model>;

11 *LOGDENSITY=<logarithm of the density function>;

All other specifications are same as in ESTIMATE for regression models.

Example on the next page:

.....
Estimation of a logit model:

FILE CREATE TEST,24,3,64,7,10000 / Creating file TEST (10000 cases)

FIELDS:

1 N 4 X1

2 N 4 X2

3 N 1 Y

END

VAR X1,X2,Y TO TEST / Making simulated data values

X1=rand(2002) X2=rand(2002) Y=int(rand(2002)+1/(1+exp(3-2*X1-3*X2)))

Y is 1 with probability 1/(1+exp(3-2*X1-3*X2)) and Y=0 otherwise.

Estimation of the model on the next page:

Estimation of the logit model:

{P}=1/(1+exp(C+a*X1+b*X2)) / Shorthand notation for the model function

MODEL LM1

LOGDENSITY=Y*log({P})+(1-Y)*log(1-{P})

ESTIMATE TEST,LM1,CUR+1 / METHOD=M PRIND=0

Estimated parameters of model LM1:

C=2.87264 (0.0711958)

a=-1.99688 (0.0807001)

b=-2.75048 (0.0835568)

n=10000 log(L)=-5830.526990 nf=56

Correlations:

	C	a	b
C	1.000	-0.714	-0.749

a -0.714 1.000 0.188
b -0.749 0.188 1.000

```
<A HREF="q24_01.html">E = More information on ESTIMATE</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&#160;
<P><PRE CLASS="HelpText">Functions available in ESTIMATE model specifications:
```

Functions with derivatives:

sqrt, log (ln), exp, sin, cos, tan, atan (arctan), sinh, cosh,
tanh, asin (arcsin), acos (arccos), lgamma, phi, PHI.

lgamma is the logarithm of the gamma function.

phi and PHI are the density and cumulative distribution functions
of the standardized normal distribution, respectively.

Functions without derivatives:

abs, int, round.

round(x) is x rounded to the nearest integer.

```
<A HREF="q24_02.html#EXTRA">S = more on extra specifications in ESTIMATE</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&#160;
<P><PRE CLASS="HelpText">When estimating regression models, results are saved in matrix files
as follows:
```

EST_PAR.M parameter estimates and their standard errors
 EST_CORR.M correlations of parameter estimates
 EST.M various basic statistics
 For example, MAT_EST.M(SSE)=
 when activated after ESTIMATE gives the residual sum of errors.

```
<A HREF="q24_02.html#EXTRA">S = more information on ESTIMATE</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">Estimating AR(p) models by ESTIMATE
```

The AR(p) model is

$$(1) Y = X \cdot \beta + u$$

where Y is an n-vector of dependent variable, X is an n*m-matrix of regressors, beta is an m-vector of regression coefficients and u = (u(1),u(2),...,u(n))' are residuals of the form

$$u(j) = r(1) \cdot u(j-1) + \dots + r(p) \cdot u(j-p) + e(j)$$

where e(j), j=1,2,...,n are independent N(0,sigma^2) variables.

The easiest method for estimation of beta and r(1),...,r(p)

is to estimate the nonlinear regression model (please note that u=Y-X*beta)

$$(2) y(j) = x(j) \cdot \beta + \sum_{i=1}^p r(i) \cdot [y(j-i) - x(j-i) \cdot \beta] + e(j),$$

$$j = p+1, 2, \dots, n,$$

where x(j) is a row vector of regressors x1,x2,...,xm in the j'th observation.

Least squares estimates for the model (2) are obtained by the ESTIMATE operation as follows (the scheme is here presented for p=3 in a case where we have Y as the regressand and X1,X2,X3,X4 as regressors).

```
.....
{A0}=b0+b1*X1+b2*X2+b3*X3+b4*X4
{A1}=r1*(Y[-1]-b0-b1*X1[-1]-b2*X2[-1]-b3*X3[-1]-b4*X4[-1])
{A2}=r2*(Y[-2]-b0-b1*X1[-2]-b2*X2[-2]-b3*X3[-2]-b4*X4[-2])
{A3}=r3*(Y[-3]-b0-b1*X1[-3]-b2*X2[-3]-b3*X3[-3]-b4*X4[-3])
```

MODEL AR3

$$Y = \{A0\} + \{A1\} + \{A2\} + \{A3\}$$

ESTIMATE <data>,AR3,<line_for_results>

```
.....
```

ESTIMATE automatically recognizes the observed variables Y,X1,X2,X3,X4 from the data and interprets unidentified notations b0,b1,b2,b3,b4 and r1,r2,r3 as parameters to be estimated.

The components of the model are presented by shorthand notations {A0},{A1},... permitting a brief notation for the model itself. Lagged values are notated as Y[-2] (Y lagged by 2) as in the VAR operation. It is easy to extend the model for larger p and even drop some {Ai} components.

Good starting values for b's are obtained from OLS estimates (LINREG, REGDIAG, or ESTIMATE with model Y={A0}).

Since ARMA(p,q) models can be represented as A(infinity), in many cases the regression coefficients may be estimated for such more general models from AR(p) when p is large enough.

[1](http://www.survo.fi/q24_01.html) = More information about ESTIMATE operation

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">Estimating ARMAX(p,q) models by ESTIMATE
```

A general ARMAX(p,q) model is

$$(1) Y = X \cdot \beta + u,$$

where Y is an n vector of regressand,

X is an n*m matrix of m regressors,

beta is m vector of regression coefficients,

u is an n vector of residuals u(1),...,u(n)

and the residual u(j) related to the j'th observation depends on

p preceding residuals u(j-1),...,u(j-p) and q independent

N(0,s^2) error terms e(j),e(j-1),...,e(j-q) as follows

$$(2) u(j) = r(1) \cdot u(j-1) + \dots + r(p) \cdot u(j-p) + e(j) + a(1) \cdot e(j-1) + \dots + a(q) \cdot e(j-q),$$

where r(1),...,r(p) and a(1),...,a(q) are unknown parameters.

In fact, also non-linear models, where X*beta (the part of exogenous variables) is replaced by a more general function f(x,beta), may be estimated by the following method.

A conditional maximum likelihood method (see e.g. Hamilton: Time Series Analysis, 1994, Chapter 5.6) will be applied.

The conditional log likelihood function (with respect to first

observations and error terms) is a sum of expressions

$$(3) -0.5*(\log(s^2)+e(j)^2/s^2+\log(2*\pi))$$

where $e(j)$'s are determined by (2) and $u(j)$'s are obtained from (1).

Since $e(j)$ depends on previous values $e(j-1), \dots, e(j-q)$, during the estimation process the values of e variable have to be updated always when values of parameters to be estimated $s, \beta, r(1), \dots, r(p), a(1), \dots, a(q)$ are changed.

To provide this feature in ESTIMATE, an extra variable (say EPS) must be defined in the original data set with initial values 0. Updating of e values is imposed by an UPDATE specification. The final values of e will be saved in the data set after the estimation.

For example, in the model

$$Y=b_0+b_1*X_1+b_2*X_2+b_3*X_3+b_4*X_4+u,$$

where u has the ARMA(3,1) structure, the ESTIMATE scheme is written as follows:

```
-----
11 *{A0}=Y-b0-b1*X1-b2*X2-b3*X3-b4*X4
12 *{AR1}=r1*(Y[-1]-b0-b1*X1[-1]-b2*X2[-1]-b3*X3[-1]-b4*X4[-1])
13 *{AR2}=r2*(Y[-2]-b0-b1*X1[-2]-b2*X2[-2]-b3*X3[-2]-b4*X4[-2])
14 *{AR3}=r3*(Y[-3]-b0-b1*X1[-3]-b2*X2[-3]-b3*X3[-3]-b4*X4[-3])
15 *{EPS}={A0}-{AR1}-{AR2}-{AR3}-a1*EPS[-1]
16 *UPDATE=EPS
17 *
18 *MODEL ARMA
19 *LOGDENSITY=-0.5*(log(s*s)+({EPS})^2/(s*s))
20 *
21 *ESTIMATE <data>,,ARMA,CUR+1
22 *
-----
```

The model ARMA (lines 18-19) is defined according to (3) and the {EPS} expression, $e(j)$ solved from (2), is given on line 15. Various components of the model (in braces) are on lines 11-14.

The specification UPDATE=EPS guarantees that ESTIMATE will update EPS according to expression {EPS} (line 15) and saves the final values as variable EPS.

UPDATE admits even a list of variables which may be useful in more general models.

Because the likelihood function has typically many local maxima, one has to be careful when selecting initial values for parameters. Good values for s and β may be obtained from OLS estimation (by LINREG or REGDIAG).

Initial values for ARMA parameters may be found by making a grid search (METHOD=G in ESTIMATE).

[1](http://www.survo.fi/q24_01.html) = More information about ESTIMATE operation

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo.fi>

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Linear regression analysis
The linear regression model is specified by activating variables in the
data set as follows:
  Y is the regressand,
  X is a regressor,
  R is the residual variable (optional, must not be protected),
  P is the variable for predicted values (optional, not protected).
For general rules of variable selection, see <A HREF="q03_13.html">MASK</A> and VARS.

The following operations work on this basis:
  <A HREF="q26_03.html">A = LINREG (OLS through correlations)</A>
  <A HREF="q26_04.html">B = REGDIAG (OLS by orthogonalization, regression diagnostics)</A>
  <A HREF="qkv3_09.html">C = MOVREG (Moving linear regression analysis) (by KV)</A>
  <A HREF="q26_06.html">D = ROBREG (Least Median of Squares regression analysis) (by Reino)
  <A HREF="q24_01.html">E = ESTIMATE (for non-linear models)</A>

  <A HREF="q26_02.html">U = Sucros for regression analysis (special applications)</A>
  <A HREF="q21_01.html">S = More information on statistical analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Sucros for regression analysis (special applications):

/RESTREG ? / for linear regression with linear restrictions (by F. ˆberg)
/STEPREG ? / for stepwise and automatic linear regression (by M.Karpoja)
/LM-ANOVA / for diagnostics and graphics (in Finnish) (by M.Lahdenkari)
/LOGREG? / for logistic regression analysis (by KV)
/LMSELECT? / for model selection statistics (by KV)

  <A HREF="q26_01.html">R = More information on linear regression analysis</A>
  <A HREF="q21_01.html">S = More information on statistical analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">LINREG data,L

performs linear regression analysis on active variables in <data>.

The regressand is indicated by mask Y and the regressors by X's.

The optional variables for residuals and predicted values of the model are pointed out by masks R and P, respectively.

The first line for the results (L) is optional.

If the results level is at least 70 (see RESULTS?), the means, standard deviations and correlations of variables included in the model will be also printed.

If several Y variables are given, the same model (with a constant term and X variables) will be computed for each of them. In this case no R and P variable is valid.

LINREG saves the regression coefficients in a matrix file REG.M
and in the case of one regressand and one regressor also coefficients of an orthogonal regression analysis in a matrix file OREG.M.

D = Regression diagnostics

R = More information on regression analysis

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi/</DIV>

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">REGDIAG <data>,L

estimates the parameters of a linear regression model by orthogonalizing the design matrix X.

This procedure is more accurate than the classical approach of LINREG through moment matrix (correlations).

The model is specified by activating variables with Y and X's. The

constant term is omitted by setting $CONSTANT=0$.
 Furthermore the following masks for special output variables may be used:
 R is the residual variable,
 P is the variable for predicted values,
 H is the diagonal of the hat matrix $X*INV(X'*X)*X'$,
 S is the variable for (externally) Studentized residuals,
 C is the variable for (signed square roots of) Cook's distances.

These output variables provide a basis for regression diagnostics.

See Belsley, Kuh & Welsch (1980): Regression Diagnostics, for example.

```
<A HREF="q26_05.html">M = Matrix files created by REGDIAG</A>
<A HREF="q26_01.html">R = More information on regression analysis</A>
<A HREF="qm6_07.html">S = MAT SOLVE (is a similar procedure in the matrix interpreter)</A>
<A HREF="q1c_04.html">C = Confidence intervals in simple linear regression (in PLOT)</A>
<A HREF="q26_07.html">D = Durbin-Watson test statistics and its P-values</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM
<P><PRE CLASS="HelpText">Matrix files created by REGDIAG
```

The following matrices are available for additional computations:

REG.M vector of regression coefficients
 REGS.M regression coefficients and their standard errors
 REG_CORR.M correlations of regression coefficients
 RG.M vector of miscellaneous scalars (see next page)

The covariance matrix of regression coefficients can be computed by
 /COV REG_COV,REG_CORR.M,REGS.M

The vector RG.M has the following contents (when displayed by MAT LOAD).

REGDIAG statistics from data DECA

RG.M

```
/// REGDIAG
n      48.000 / # of cases
k      6.000 / # of regression coefficients
const  1.000 / 1 if constant term included, 0 otherwise
df     42.000 / n-k
Yvar   26132.000 / variance of regressand
SST    1228203.979 / total sum of squares
SSE    445535.121 / residual sum of squares
SSR    782668.858 / SST-SSE
MSE    10607.979 / mean square error
Resvar 10607.979 / MSE
R       0.798 / multiple correlation coefficient
R2      0.637 / R^2
kappa  93.968 / condition number
```

```

DW      1.246 / Durbin-Watson statistics
F      14.756 / Overall F-test: SSR/(k-1)/MSE (only when const is 1)
Pr_F    1.000 / P-value of F-test
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ROBREG &lt;data>, L / Reino Siren
Performs a robust estimation of the parameters of a linear regression
model by the method of Least Median of Squares (Rousseeuw 1984,
Rousseeuw & Leroy 1987). Instead of minimizing the sum of squared
residuals (OLS), the median of squared residuals is minimized, giving
estimates which are highly robust to outliers in the data.
The model is specified by activating variables with Y and X-s in the
&lt;data>.
The constant term is omitted by setting CONSTANT=0.
The seed number used in subsampling may be specified by SEED=&lt;integer>.
It is optional.
The number of trials or samples from the data used in the estimation,
may be specified by TRIALS=&lt;integer>. The default value is 1500.

ROBREG (continued)

Furthermore the following masks for special output variables from the
LMS -fit may be used:
U is the residual variable,
V is the variable for predicted values,
T is the variable for the standardized lms-residuals.

The printed output includes the LMS estimates of the regression
coefficients and the robust error scale estimate.
The first line of results (L) is optional.

Literature:
Rousseeuw, Peter, J. 1984. Least median of squares regression. J. Am.
Stat. Assoc. Vol 79, 871-880.
- " - & Leroy, Annick, M. 1987. Robust Regression and Outlier
Detection. Wiley. New York.
<A HREF="http://win-www.uia.ac.be/u/statis/publicat/progress_abstr.html">http://win-www.uia.ac.be
<A HREF="q26_01.html">R = More information on regression analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">REGDIAG gives the value of the Durbin-Watson statistics for testing
the first order autocorrelation of residuals.
To get its P-value enter a specification DWN=&lt;integer&gt;
where &lt;integer&gt; must be at least 10000.
Then the P-value will be computed by simulation using &lt;integer&gt;
replicates.

```

Also higher-order autocorrelations can be tested by the same method.
 By MAXLAG=k the order 1,2,...,k autocorrelations of residuals
 will be tested by using the generalized DW statistics

$$D(j) = \frac{\sum [\text{res}(i) - \text{res}(i-j)]^2}{\sum [\text{res}(i)]^2}$$

where res(1),...,res(n) are the residuals of the estimated linear regression model

$Y = X * \text{beta} + \text{eps}$
 where X is the n*m design matrix and eps is N(0,sigma^2*I).
 Then we have res=M*eps where M=I-X*inv(X'X)X'.

By making the SVD decomposition $X=U*D*V'$ where U is a n*m matrix
 the residuals can be computed by 2*m*n multiplications by
 $\text{res}=(I-U*U')*\text{eps}$.

In randomized tests DWN replicates of D(j), j=1,2,...,k are
 computed and the P values are obtained as the proportion of replicates
 having a lower value than the original one.

By using RN specification instead of DWN the randomized tests
 will be based on autocorrelations instead of DW values.

```

  <A HREF="q24a_01.html">E = Estimating regression models with autocorrelated disturbances</A>
  <A HREF="q26_04.html">R = More about REGDIAG</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">

```

```

<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">  Analysis of variance

  <A HREF="qw1_01.html">1 = General ANOVA including fixed effects models in unbalanced designs,
    random effects and mixed models in balanced designs and multiple
    comparisons of means (ANOVA)
    (made by Markku Korhonen)

  <A HREF="qu1_02.html">2 = ANOVA from data in a multiway table (type X) for
    balanced designs (TABFIT)

  <A HREF="q21_01.html">S = More information on statistical analysis</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Means of variables in statistical data sets can be computed by
various Survo modules. See e.g.

  <A HREF="q21_03.html">1 = CORR for means, std.devs, and correlations</A>
  <A HREF="q29_03.html">2 = STAT for means and other basic univariate statistics</A>
  <A HREF="qmm1_14.html">3 = STATMSF for means, std.devs etc. in compressed form</A>
  <A HREF="q29_06.html">4 = MINSTAT for means, std.devs, minima, and maxima in compressed form</A>
  <A HREF="qa2_01.html">5 = COMPARE for comparisons of means</A>
  <A HREF="q27_01.html">6 = ANOVA for analysis of variance</A>
  <A HREF="q22_02.html">7 = TAB for tables of frequencies, means, etc.</A>
  <A HREF="qw5_01.html">8 = MTAB for large range of tables for frequencies, means, sums, and
    other descriptive statistics (including cumulative statistics).
    (MTAB is made by M.Korhonen.)
  <A HREF="q27_03.html">9 = LOGMEAN for logarithmic mean (and other mean numbers)</A>
  <A HREF="q11_11.html">A = Mean-deviation plots (e.g. in attitude surveys)</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LOGMEAN &lt;data&gt;,&lt;var&gt;,L
computes the logarithmic mean of values x1,x2,...,xn of &lt;var&gt; in &lt;data&gt;.
By specification OTHERS=1 also the arithmetic, geometric, and harmonic
means are computed.
All values x1,x2,...,xn must be positive.

```

```

.....
Example:
DATA X: 1 2 3 4 5 6 7

```

```

LOGMEAN X,X,CUR+1 / OTHERS=1
Data: X Variable: X N=7
Logarithmic mean: 3.463055785678741
Arithmetic mean: 4.0000000000000000
Geometric mean: 3.380015159141296
Harmonic mean: 2.699724517906336
.....

```

The logarithmic mean $L(x_1, x_2, \dots, x_n)$ for n observations is a generalization by S. Mustonen (1974, unpublished manuscript) of the logarithmic mean $L(x, y)$ defined as

$$L(x, y) = \begin{cases} (x-y)/\log(x/y) & \text{when } x \neq y, \\ x & \text{when } x = y. \end{cases}$$

According to the paper

L.T. Rnqvist, P. Vartia, Y. Vartia (1985): How Should Relative Changes Be Measured. The American Statistician. February 1985, Vol.39, No.1

the "log-mean" concept was first advanced by T. Rnqvist (1935, Swedish). The term "logarithmic mean" was introduced by Yrjö Vartia in early 1970's.

Extension by S. Mustonen (1974) to n observations is described on next pages:

The starting point for the generalization was the observation that $L(x, y)$ is found to be related to the arithmetic mean $M(x, y) = (x+y)/2$ and the geometric mean $G(x, y) = \sqrt{x \cdot y}$ by using suitable series expansions for each of them.

By denoting

$$x = \exp(u), y = \exp(v)$$

the following expansions based on

$$\exp(u) = 1 + u + u^2/2! + u^3/3! + \dots$$

are immediately obtained:

$$M(x, y) = 1 + (u+v)/2 + (u^2+v^2)/(2 \cdot 2!) + (u^3+v^3)/(2 \cdot 3!) + \dots$$

$$G(x, y) = \sqrt{e^u \cdot e^v} = \exp[(u+v)/2]$$

$$= 1 + (u+v)/2 + (u+v)^2/(2^2 \cdot 2!) + (u+v)^3/(2^3 \cdot 3!) + \dots$$

$$= 1 + (u+v)/2 + (u^2+2uv+v^2)/(2^2 \cdot 2!)$$

$$+ (u^3 + 3u^2v + 3uv^2 + v^3)/(2^3 \cdot 3!) + \dots$$

$$\begin{aligned} L(x,y) &= (\exp(u) - \exp(v))/(u-v) \\ &= 1 + (u+v)/2 + (u^2 + u^*v + v^2)/(3 \cdot 2!) \\ &\quad + (u^3 + u^2*v + u*v^2 + v^3)/(4 \cdot 2!) + \dots \end{aligned}$$

The expansions are identical up to the first degree. In the term of degree $m \geq 1$ the essential factor is a homogeneous polynomial of the form

$$B(m) \cdot u^m + B(m-1) \cdot u^{(m-1)} \cdot v + B(m-2) \cdot u^{(m-2)} \cdot v^2 + \dots + B(0) \cdot v^m$$

divided by the sum of its coefficients $B(m), B(m-1), \dots, B(0)$. These coefficients characterize each of the means completely.

In the arithmetic mean we have

$$B(m) = B(0) = 1 \text{ and } B(2) = \dots = B(m-1) = 0.$$

In the geometric mean they are binomial coefficients

$$B(i) = C(m, i), \quad i = 0, 1, \dots, m$$

and in the logarithmic mean all coefficients equal to 1:

$$B(i) = 1, \quad i = 0, 1, \dots, m.$$

The coefficients of the logarithmic mean arise from division $[u^{(m+1)} - v^{(m+1)}]/(u-v)$ which symmetrizes its structure.

Also other means (like harmonic and moment means) have similar expansions but their B coefficients are more complicated.

Thus the logarithmic mean has the simplest and most balanced B coefficients.

On the basis of this fact it was natural to generalize it in such a way that it still has this simple structure.

Thus the logarithmic mean for n observations

$$x(i) = \exp(u(i)), \quad i = 1, 2, \dots, n$$

is defined by

$$L(x_1, x_2, \dots, x_n) = 1 + (u_1 + u_2 + \dots + u_n)/n$$

$$\begin{aligned} &+ \frac{u_1^2 + u_1 \cdot u_2 + \dots + u_1 \cdot u_n + u_2^2 + u_2 \cdot u_3 + \dots + u_n^2}{C(n+1, 2) \cdot 2!} \\ &\dots \\ &+ \frac{u_1^m + u_1^{(m-1)} \cdot u_2 + \dots + u_n^m}{C(n+m-1, m) \cdot m!} \\ &+ \dots \end{aligned}$$

In this series expansion the polynomial in the term of degree m has the form

$$\begin{aligned} P(n, m) = \sum_{\substack{i_1 + i_2 + \dots + i_n = m \\ i_1 \geq 0, i_2 \geq 0, \dots, i_n \geq 0}} u_1^{i_1} \cdot u_2^{i_2} \cdot \dots \cdot u_n^{i_n} \end{aligned}$$

and so the all B coefficients are equal to 1. They have divisors $C(n+m-1, m)$ corresponding to the number of summands.

In my study in 1974 I succeeded in transforming this expansion to a closed form (See [LOGMEAN2](http://www.iosco.org/publications/workingpapers/LOGMEAN2.pdf))

$$L(x_1, x_2, \dots, x_n) = (n-1)! \sum_{i=1}^n \frac{x_i}{n} \cdot \prod_{j=1}^n \log(x_i/x_j) \quad (*)$$

j<&t;>i

In case n=3 we have

$$L(x,y,z)=2*\left[\frac{x}{\log(x/y)*\log(x/z)} + \frac{y}{\log(y/x)*\log(y/z)} + \frac{z}{\log(z/x)*\log(z/y)}\right].$$

It is a weighted sum of observations but the weights are weird indeed.
For example, already in case n=6 and x1=1 x2=2 x3=3 x4=4 x5=5 x6=6
the weights are

fact(5)/log(1/2)/log(1/3)/log(1/4)/log(1/5)/log(1/6)=-39.418667545093
fact(5)/log(2/1)/log(2/3)/log(2/4)/log(2/5)/log(2/6)=611.92625925381
fact(5)/log(3/1)/log(3/2)/log(3/4)/log(3/5)/log(3/6)=-2644.6753804824
fact(5)/log(4/1)/log(4/2)/log(4/3)/log(4/5)/log(4/6)=4797.8835355792
fact(5)/log(5/1)/log(5/2)/log(5/3)/log(5/4)/log(5/6)=-3915.4230188467
fact(5)/log(6/1)/log(6/2)/log(6/3)/log(6/4)/log(6/5)=1189.7072720412

and behaving very wildly. (The sum of weights is 0.)

Therefore calculating of logarithmic means from this closed expression
is very unsafe. In double precision this expression does not give
reliable results for n>14.

In LOGMEAN, formula (*) is applied in calculations by setting METHOD=1.

In practice it is better to use the series expansion of the logarithmic
mean. Then it is essential how the homogeneous polynomials

$$\begin{aligned} P(n,m) = & u(n)^m \\ & + u(n)^{(m-1)}*(u1+u2+...+u(n-1)) \\ & + u(n)^{(m-2)}*(u1^2+u1*u2+...+u1*u(n-1)+u2^2+u2*u3+...+u(n-1)^2) \\ & ... \\ & + u(n)^0*(u1^m+u1^{(m-1)}*u2+...+u(n-1)^{(m-1)}) \end{aligned}$$

are evaluated. From this presentation of P(n,m) according to descending
powers of u(n) it can be seen that P(n,m) can be expressed recursively
as

$$\begin{aligned} P(n,m) = & u(n)^m \\ & + u(n)^{(m-1)}*P(n-1,1) \\ & + u(n)^{(m-2)}*P(n-1,2) \\ & ... \\ & + u(n)^1*P(n-1,m-1) \\ & + u(n)^0*P(n-1,m) \end{aligned}$$

with initial conditions $P(n,1) = u1+u2+...+u(n)$,
 $P(1,m) = u1^m$.

To speed up the recursion the LOGMEAN module saves all P(n,m) values
computed in a table. Thus in each recursive step it is checked
whether the current P(n,m) has been already calculated.
By this technique cases where n is less than 10000 are calculated
very rapidly.

The next example describes calculation of means from data
1 2 3 ... n for n=200000. It takes about 135 seconds on a 1.6 GHz PC.
Of course computing other means takes no time compared to log-mean.

```
.....
FILE MAKE TEST,1,200000,X,8
VAR X=ORDER TO TEST
TIME COUNT START
LOGMEAN TEST,X,CUR+3 / OTHERS=1
TIME COUNT END 134.834
```

Data: TEST Variable: X N=200000
Logarithmic mean: 73578.65538616560
Arithmetic mean: 100000.50000000000

Geometric mean: 73578.47151997556
Harmonic mean: 15645.42362103067

.....

It is obvious that

$$G(x_1, x_2, \dots, x_n) \leq L(x_1, x_2, \dots, x_n) \leq M(x_1, x_2, \dots, x_n).$$

This has been proved only for $n=2$.

For a data sets with (approximate) linear growth L is very close to G .

If in the data set $1\ 2\ 3\ \dots\ n$ means are denoted by $G(n), L(n), M(n)$

it is clear that $M(n) - M(n-1) = 1/2$ for all n , but what happens to

$L(n)$ and $G(n)$?

.....

In the preceding example the last value is left out: IND=ORDER,1,199999

LOGMEAN TEST,X,CUR+1 / OTHERS=1

Data: TEST Variable: X N=199999

Logarithmic mean: 73578.28750580405

Arithmetic mean: 100000.00000000000

Geometric mean: 73578.10363961496

Harmonic mean: 15645.35151336623

Thus for $n=200000$

$$L(n) - L(n-1) = 0.36788036154758 \quad L(n)/n = 0.36789327693083$$

$$G(n) - G(n-1) = 0.3678803606017 \quad G(n)/n = 0.36789235759988$$

.....

On the basis of these calculations it is obvious that

$$\lim_{n \rightarrow \infty} L(n) - L(n-1) = \lim_{n \rightarrow \infty} G(n) - G(n-1) = 1/e = \exp(-1) = 0.367879...$$

and also

$$\lim_{n \rightarrow \infty} L(n)/n = \lim_{n \rightarrow \infty} G(n)/n = 1/e.$$

For the geometric mean these results can be proved by Stirling's formula. The same may be difficult for the logarithmic mean.

For observations of the form

$$x_0, x_0*c, x_0*c^2, x_0*c^3, \dots, x_0*c^{(n-1)}$$

the "closed expression" (*) above gives a surprisingly simple result

$$L = x_0 * L(c, 1)^{(n-1)}.$$

In this case the geometric mean has an analogous representation

$$G = x_0 * G(c, 1)^{(n-1)}.$$

A similar expression is not available for the arithmetic mean M .

1 = Proof of the closed expression (*)

M = More information on means

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Derivation of the formula

```

$$(1) L(x_1, x_2, \dots, x_n) = \sum_{i=1}^n \frac{x_i}{(n-1)!} \prod_{\substack{j=1 \\ j \neq i}}^n \log(x_i/x_j)$$

from the definition of L as a series expansion

$$(2) L(x_1, x_2, \dots, x_n) = 1 + (u_1 + u_2 + \dots + u_n)/n + \dots \\ + \frac{u_1^m + u_1^{m-1}u_2 + \dots + u_n^m}{C(n+m-1, m) \cdot m!} + \dots$$

where $u_i = \log(x_i)$, $i=1, 2, \dots, n$ and the homogeneous, symmetric polynomial in the term of the m 'th degree has the form

$$P(n, m) = \sum_{\substack{i_1 + i_2 + \dots + i_n = m \\ i_1 \geq 0, i_2 \geq 0, \dots, i_n \geq 0}} u_1^{i_1} u_2^{i_2} \dots u_n^{i_n}$$

Thus the coefficients are all equal to 1 which was typical for the basic case $n=2$. Binomial coefficients $C(n+m-1, m)$ appearing as divisors equal to number of terms in the polynomial.

It was mentioned already that $P(n, m)$ can be represented in a recursive form according to decreasing powers of the last u as

$$(3) P(n, m) = u(n)^m + u(n)^{m-1}P(n-1, 1) + u(n)^{m-2}P(n-1, 2) + \dots + u(n)^1P(n-1, m-1) + u(n)^0P(n-1, m)$$

$$\text{with side conditions } P(n, 1) = u_1 + u_2 + \dots + u(n), \\ P(1, m) = u_1^m.$$

If all x 's (as well u 's) are mutually different, it is fundamental to notice that these polynomials can be represented by another way by using expressions

$$(4) Q(n, m) = \sum_{i=1}^n \frac{u_i^m}{T(i)}, \quad k=0, 1, 2, \dots,$$

where

$$(4b) T(i) = \prod_{\substack{j=1 \\ j \neq i}}^n (u_i - u_j).$$

The following identities are valid and will be proved at the end of this text:

$$(5) \quad Q(n,m) = 0 \quad \text{for } m=0,1,2,\dots,n-2,$$

$$(6) \quad Q(n,n-1) = 1,$$

$$(7) \quad Q(n,m) = P(n,m-n+1) \quad \text{for } m=n,n+1,n+2,\dots$$

By means of these identities we can derive (1) from (2).

The series expansion (2) is transformed stepwise as follows:

$$L(x_1, x_2, \dots, x_n) = 1 + P(n,1)/n + P(n,2)/[C(n+1,2)*2!] + \dots$$

$$+ P(n,m)/[C(n+m-1,m)*m!] + \dots$$

$$= 1 + (n-1)! \sum_{m=1}^{\infty} \frac{P(n,m)}{(n+m-1)!}$$

$$= 1 + (n-1)! \sum_{m=1}^{\infty} \frac{Q(n,n+m-1)}{(n+m-1)!} \quad \text{from (7)}$$

$$= 1 + (n-1)! \sum_{k=n}^{\infty} \frac{Q(n,k)}{k!}$$

$$= (n-1)! \sum_{k=n-1}^{\infty} \frac{Q(n,k)}{k!} \quad \text{from (6)}$$

$$= (n-1)! \sum_{k=0}^{\infty} \frac{Q(n,k)}{k!} \quad \text{from (5)}$$

$$= (n-1)! \sum_{k=0}^{\infty} \frac{\sum_{i=1}^n u_i^k T(i)}{k!} \quad \text{from (4)}$$

$$= (n-1)! \sum_{i=1}^n \frac{\sum_{k=0}^{\infty} \frac{u_i^k}{k!} T(i)}{T(i)}$$

$$= (n-1)! \sum_{i=1}^n \frac{\exp(u_i)}{\prod_{j=1, j \neq i}^n (u_i - u_j)} \quad \text{from (4b)}$$

which is identical with (1) since $u_i = \log(x_i)$, $i=1,2,\dots,n$.

Jorma Merikoski (University of Tampere) remarked that (5) and (6) are well-known identities when considering divided differences (in the Lagrange interpolation scheme) for powers u^k , $k=0,1,\dots,n-2$.

His note led me to find out that (1) is equal to the (only) $(n-1)$ th order divided difference of 'function values' $x_i = \exp(u_i)$, $i=1,2,\dots,n$, multiplied by $(n-1)!$.

See also <http://mathworld.wolfram.com/DividedDifference.html>

By METHOD=4, LOGMEAN computes the logarithmic mean by using this divided difference scheme but it has the same computational deficiencies for larger n as (1).

Proof of identities (5),(6),(7) (without using results for divided differences):

It can be seen that these identities are valid for $n=2$. In this case

$$Q(2,k) = u_1^k/(u_1-u_2) + u_2^k/(u_2-u_1) = (u_1^k - u_2^k)/(u_1 - u_2), \quad k=0,1,2,\dots$$

and

$$Q(2,0)=0, \quad Q(2,1)=1 \quad \text{and} \quad Q(2,k)=P(2,k-1) \quad \text{for} \quad k=2,3,\dots$$

The general proof is based on induction from $n-1$ to n . Thus by assuming that the identities are valid in case $n-1$ it will be shown that they are valid in case n , too.

By writing denominators u_i^m in (4) in the form $(u_i^m - u_n^m) + u_n^m$ and by splitting these terms and by dividing the first part by the last factor $u_i - u_n$ in the divisor we get a recursion formula

$$(8) \quad Q(n,m) = u_n^{m-1}Q(n-1,0) + u_n^{m-2}Q(n-1,1) + \dots + u_n^0Q(n-1,m-1) + u_n^mQ(n,0) \quad \text{for} \quad m=1,2,\dots$$

Let's denote

$Q(n,0) = f(u_1, u_2, \dots, u_n)$ and study the function f by the inverse values of its arguments, i.e. the function $f(1/u_1, 1/u_2, \dots, 1/u_n)$.

Then the expressions $1/u_i - 1/u_j$ can be written in the form $(u_j - u_i)/(u_i u_j)$ and after simplification we get

$$f(1/u_1, 1/u_2, \dots, 1/u_n) = (-1)^n u_1 u_2 \dots u_n Q(n, n-2)$$

By applying the recursion formula (8) to the last factor and by observing that (5) is valid in case $n-1$, we see that only the last term in the recursion formula can be different from 0 and hence

$$f(1/u_1, 1/u_2, \dots, 1/u_n) = (-1)^n u_1 u_2 \dots u_n^{n-2} f(u_1, u_2, \dots, u_n).$$

Function $f(u_1, \dots, u_n)$ is homogeneous and symmetric.

If f were else than identically zero, this leads to a contradiction since the right side of the last equation could not be a symmetric function in cases $n \geq 2$. Thus $Q(n,0)=0$ for $n=2,3,\dots$ and (5) has been proved in case $m=0$.

Then in (8) the last term can be omitted and we have

$$(9) \quad Q(n,m) = u_n^{m-1}Q(n-1,0) + u_n^{m-2}Q(n-1,1) + \dots + u_n^0Q(n-1,m-1) \quad \text{for} \quad m=1,2,\dots$$

By the induction assumption this gives

$$\begin{aligned} Q(n,1) &= u_n^0 Q(n-1,0) = 0, \\ Q(n,2) &= u_n^1 Q(n-1,0) + u_n^0 Q(n-1,1) = 0, \\ &\dots \\ Q(n,n-2) &= u_n^{n-3} Q(n-1,0) + \dots + u_n^0 Q(n-1,n-3) = 0 \end{aligned}$$

Thus (5) has been proved also for $m=1,2,\dots,n-2$.

In case $m=n-1$ (9) gives

$$Q(n,n-1) = u_n^0 Q(n-1,n-2) = 1 \cdot 1 = 1$$

and (6) is valid.

In case $m=n$ (9) gives

$$\begin{aligned} Q(n,n) &= u^{n-1} * Q(n-1,n-2) + u^{n-2} * Q(n-1,n-1) \\ &= u^{n-1} * 1 + 1 * (u^1 + u^2 + \dots + u^{n-1}) = u^1 + u^2 + \dots + u^n \end{aligned}$$

and (7) is valid when $m=n$ and $Q(n,n)=P(n,1)$.

By these results the recursion formula (9) can be reduced to the form

$$\begin{aligned} (10) \quad Q(n,m) &= u^{m-n+1} \\ &+ u^{m-n} * Q(n-1,n-1) \\ &\dots \\ &+ u^{m-n+1-k} * Q(n-1,m-k), \quad k=1,2,\dots \end{aligned}$$

By using this formula and (7) for $n-1$ we get

$$\begin{aligned} Q(n,n+1) &= u^{n+1-n} + u^{n-1} * Q(n-1,n-1) + u^{n-2} * Q(n-1,n) \\ &= u^{n+1-n} + u^{n-1} * P(n-1,1) + P(n-1,2) \\ &= P(n,2) \quad \text{by (3)} \end{aligned}$$

which means that (7) is valid for $m=n+1$ and $Q(n,n+1)=P(n,2)$.

Correspondingly when $m > n$ we obtain by using (10) and (7) (the latter for $n-1$)

$$\begin{aligned} Q(n,m) &= u^{m-n+1} \\ &+ u^{m-n} * P(n-1,1) \\ &+ u^{m-n-1} * P(n-1,2) \\ &\dots \\ &+ u^{m-n+1-k} * P(n-1,m-k+1) \\ &= P(n,m-n+1) \quad \text{by (3)} \end{aligned}$$

and this proves (7) in general.

```
<A HREF="q27_03.html">L = More information on logarithmic mean</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The following codes can be used in mask column 3 when a data file is
activated (by FILE ACTIVATE or FILE_ACT or MASK).

```

- no scale (variable is cancelled in all statistical operations)

D Dichotomy (two distinct numeric values)
 N Nominal
 O Ordinal (discrete)
 o Ordinal (continuous)
 S Score (discrete)
 s Score (continuous)
 I Interval (discrete)
 i Interval (continuous)
 R Ratio (discrete)
 r Ratio (continuous)
 F Frequency

If scale type is omitted (code is blank), no scale control will be performed and data is accepted in all applications.

The statistical operations observe scale types when desired. The strictness of scale type control depends on the system parameter `scale_check` in the system file `SURVO.APU` as follows:

- 0 no control
- 1 warning when a variable with insufficient scale is selected
- 2 warning and interrupt of operation

Scale types can be given for variables in Survo data files only.

```

<A HREF="q21_01.html">S = More information on statistical operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">Basic statistics

  <A HREF="q29_03.html">1 = STAT operation</A>
  <A HREF="qmm1_14.html">2 = STATMSF operation</A>
  <A HREF="q29_06.html">3 = MINSTAT operation</A>

  <A HREF="q2a_01.html">X = Making samples in Survo</A>

  <A HREF="q21_01.html">S = More information on statistical operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
  -->

```


For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="q29_01.html">S = More information on basic statistics
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">STAT &lt;data>;L
computes certain basic statistics and summaries for active variables in
&lt;data>; and forms a frequency distribution for each of them according to
an automatic classification.
```

L (optional) is the first line for the results.
The IND, CASES and SELECT specifications may limit the observations and the missing values are recorded for each variable separately.
The main application of STAT is give an crude, overall account on the behaviour of active variables. On the basis of the STAT results decisions about more refined analysis can be done.

The basic statistics given by STAT include, for example, min, max, mean, stddev, skewness, kurtosis, first order autocorrelation, median, quartiles and entropy.

The selection of statistics depends, however, on the scale type of the variable. Certain statistics (like autocorrelation) are also omitted, if no information seems to be gained (autocorrelation $\leq 2/\sqrt{N}$).

Sums, sums of squares, etc. are computed by giving a specification SUMS=<integer>; where <integer>;=1,2,3, or 4.
Thus by SUMS=1 plain sums are computed and displayed as sum1=<value>;.

Special means of the form $((X_1^k + X_2^k + \dots + X_N^k)/N)^{1/k}$ will be computed for positive variables X and for various values of the exponent $k=k_1, k_2, \dots$ by entering a specification MEANS=k1,k2,...
Thus Quadratic means are obtained by $k=2$ or $k=Q$, Harmonic means by $k=-1$ or $k=H$, Arithmetic means by $k=1$ or $k=A$, and Geometric means by $k=0$ or $k=G$. For example, all these means plus a power mean with the exponent $k=2.5$ are obtained by MEANS=A,G,H,Q,2.5

More fractiles are computed (from automatically grouped data) by the specification FRACTILES=p1,p2,... where $0 < p < 1$, for $p=p1,p2,\dots$. Order statistics are not given if (due to an outlier etc.) most of the data values are accumulated into a single class.

Confidence intervals for means (under normality assumption) are obtained by specification CONFMEAN, (Example: CONFMEAN=0.95).

In frequency distributions, maximum number of classes is given by the CLASSMAX=<#_of_classes> specification (default CLASSMAX=30). When making frequency distributions, STAT first tries to keep record on each variable for each distinct value up to the limit CLASSMAX. If it is not possible, a classification with equal class widths is selected on the basis of values found so far. This classification will be further redefined, by doubling the class widths, if values outside the current range is found.

Values of string variables are considered up to # of characters given by the MAXSTRING specification (default MAXSTRING=8).

The printout of frequency distributions is omitted if RESULTS<=30.

For grouped distributions with user-defined classes see HISTO and T

```
<A HREF="qmm1_14.html">A = Simple statistics (means, stddevs, frequency distributions)</A>
<A HREF="q29_01.html">B = Basic statistics</A>
<A HREF="q21_01.html">S = general information on statistical operations</A>
<A HREF="qf5_02.html">F = STAT command for giving information about the status of the data f
<A HREF="q29_04.html">M = Results of STAT as a matrix file STAT.M</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">From SURVO MM ver.3.06 certain results of STAT are also saved as
a matrix file in the following form.
Example: STAT DECA / VARS=Height,Weight
```

```
MAT LOAD STAT.M'
MATRIX STAT.M'
Basic_statistics_of_DECA'
///      Height  Weight
mean    186.958  85.563
stddev   5.090   6.848
N        48.000  48.000
min      173.000  68.000
max      198.000 105.000
N_miss   0.000   0.000
skewness -0.448  -0.042
kurtosis 0.327   1.201
```

lower_Q 184.000 82.000
median 188.000 86.000
upper_Q 190.000 90.000

Elements of this matrix can be obtained e.g. for editorial computing as
MAT_STAT.M(Height,kurtosis)=0.32694177614304

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi</SMALL></DIV></BODY></HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Sums of statistical or other variables in Survo data sets can be
computed in various ways.

The simplest alternative is to use the STAT operation with SUMS=1
specification.

Example:

STAT COUNTRIES,CUR+1 / VARS=Popul,Area SUMS=1

1 = More information about STAT

2 = More information about computation of means etc.

3 = More information on statistical operations in general

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi</SMALL></DIV></BODY></HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">MINSTAT <data>,L
computes basic statistics of active variables for selected observations
and lists the results in a tabular form

Variable mean stddev N minimum maximum

Furthermore the table of results is saved as a matrix file STAT.M in the current data path.

By giving specification JITTER=<integer> the table as well as the matrix file STAT.M is extended by two extra columns '#val' and 'jitter' giving the number of distinct values of each variable when that number does not exceed <integer>. Otherwise '#val' is set 0. 'jitter' is computed as ('maximum'-'minimum')/('#val'-1) giving suitable jitter steps for XJITTER and YJITTER specifications in scatter plots (See SCAT?).

See an example on the next page!

DATA TEST2

Height Weight

174	61
171	60
171	60
171	64
173	60
173	60
170	60
173	61
171	62

MINSTAT TEST2,CUR+1 / JITTER=5

Basic statistics of data TEST2 N=9

Variable	mean	stddev	N	minimum	maximum	#val	jitter
Height	171.8889	1.364225	9	170.0000	174.0000	4	1.3333
Weight	60.88889	1.364225	9	60.00000	64.00000	4	1.3333

MAT_STAT.M(Weight,minimum)=60

S = More information on basic statistics

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Making samples

1 = MAT #SAMPLES (for making random samples of integers 1,2,...,N

2 = MAT #INDVAR (making random samples of data files after MAT #

3 = MAT #SAMPLE (for creating SRS and URS samples)

4 = MAT #JACKKNIFE (for creating jackknife samples)

C = Comparing samples

S = More information on statistical operations

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Statistical tests in Survo:
Many of the general statistical operations in Survo provide test statistics
and P values for them.

```

For special operations making separate tests for samples,
see following alternatives:

```

  <A HREF="qa2_01.html">1 = COMPARE for univariate parametric and non-parametric tests</A>
  <A HREF="qa1_02.html">2 = Simple examples of using COMPARE</A>
  <A HREF="qu1_03.html">3 = TABTEST for various tests related to two-dimensional tables of frequencies</A>
  <A HREF="qa1_03.html">4 = Comparing multivariate samples</A>
  <A HREF="qmm1_13.html">5 = MNTEST for various tests for multivariate normality</A>
  <A HREF="qmm2_01.html">6 = CORRTEST for testing correlation coefficients</A>
  <A HREF="qkv0_12.html">7 = /X2 for X^2 test in a two-dimensional table of frequencies (Tarkenton)</A>
  <A HREF="qa3_01.html">8 = RUNTEST for testing randomness (Wald-Wolfowitz test etc.)</A>

  <A HREF="q2a_01.html">M = Making samples</A>
  <A HREF="q21_01.html">S = More information about statistical operations</A>

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Separate tests for samples given in the edit field or taken from data
files can be performed by a COMPARE operation.

```

For example, to compare two small samples by using standard tests, we may activate COMPARE in the following scheme:

```
DATA CORN1: 83 91 94 89 89 96 91 92 90 END
DATA CORN2: 91 90 81 83 84 83 88 91 89 84 END
<B>COMPARE CORN1,CORN2</B>
```

When the data set consists of several variables, the selected variable is given in the form <name_of_data>(<variable>). For example, a paired comparison may be performed as:

```
DATA TEST:(X,Y) 1.2,1.5 3.2,5 3.9,5 2.8,3.7 END
<B>COMPARE TEST(X),TEST(Y)</B> / TEST=Paired
```

```
<A HREF="qa2_01.html">C = COMPARE operation</A>
<A HREF="q21_01.html">S = More information about statistical operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">Comparing multivariate samples

<A HREF="qa1_04.html">1 = Comparing samples from multivariate normal distribution (/MTEST)
<A HREF="qa1_11.html">2 = Comparing mean vectors of 2 multivariate samples (T2TEST)</A>
<A HREF="qa1_12.html">3 = Testing equality of several covariance matrices (COVTEST)</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
```

<P><PRE CLASS="HelpText">Comparing samples from multivariate normal distribution:
(Sucro family /MTEST)

1 = Hotelling's T2, one-sample test
2 = Hotelling's T2, two-sample test
3 = Covariance matrix equal to given matrix
4 = Equality of several covariance matrices
5 = Same multivariate normal distribution

T = More information about statistical tests

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">/MTEST-T2/1 / Hotelling's T2, one-sample test

Comparing means of a multinormal sample to a hypothetical mean vector

by Hotelling's T2 test:

This sucro must be activated in the form

/MTEST-T2/1 CORR,MSN,M0

where CORR is the correlation matrix and MSN is the matrix of
means and std.devs of the sample (obtained directly by CORR).

The hypothetical mean vector must be given as the first column
of matrix file M0.

M = More information on the /MTEST sucro family

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

```

<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  <A HREF="qa1_04.html">M = More information on the /MTEST sucro family</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">/MTEST-T2/2      / Hotelling's T2, two-sample test
Comparing means of two multivariate normal samples by Hotelling's T2 test:
This sucro must be activated in the form
/MTEST-T2/2 CORR1,MSN1,CORR2,MSN2
where CORR1 is the correlation matrix and MSN1 is the matrix of
means and std.devs of the first sample (obtained directly by
CORR). CORR2 and MSN2 are the corresponding matrices of the
second sample. The variables must be the same in both samples.

As an additional result this sucro gives the differences of the
sample means and the coefficients of the linear discriminant
function as a matrix file T2COEFF.M .

  <A HREF="qa1_04.html">M = More information on the /MTEST sucro family</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">/MTEST-COV1      / Covariance matrix equal to given matrix

```


Comparing the covariance matrix S of a multivariate normal sample to a given positive definite matrix S_0 by an asymptotic test.

This sucro must be activated in the form

/MTEST-COV1 R,MSN,S0

R is the sample correlation matrix and MSN the matrix of means and standard deviations. These matrices are usually obtained as CORR.M and MSN.M by the CORR operation.

[M = More information on the /MTEST sucro family](#)

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo.fi/>

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">/MTEST-COV2 / Equality of several covariance matrices

Comparing several covariance matrices of multinormal samples
by an asymptotic test.

This sucro must be activated in the form

/MTEST-COV2

without parameters but with specifications

COV=COV1,COV2,COV3,...

SIZES=N1,N2,N3,...

where COV gives the names of the covariance matrices and SIZES gives
the sample sizes

Each covariance matrix is obtained usually by activating the /COV sucro
after the CORR operation.

[M = More information on the /MTEST sucro family](#)

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo.fi/>

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">/MTEST-SAMEMULT / Same multivariate normal distribution
Testing that the samples are obtained from the same
multinormal distribution.

This sucro must be activated in the form

/MTEST-SAMEMULT

without parameters but with specifications

COV=COV0,COV1,COV2,COV3,...

SIZES=N0,N1,N2,N3,...

where COV gives the names of the covariance matrices and SIZES gives
the sample sizes. The covariance matrix of the combined sample
is given as the first one (COV0) and the size of it (N0) similarly.

Thus we must have $N0=N1+N2+N3+...$

Each covarince matrix is obtained usually by activating the /COV sucro
after the CORR operation.

M = More information on the /MTEST sucro family

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">T2TEST <data1>,<data2>,<output_line>

compares mean vectors of two multivariate samples given as Survo

data <data1> and <data2>.

By default T2TEST performs Hotelling's T2 test thus assuming
multivariate normality and population covariance matrices to be equal.

It also continues by making a randomization test by using the T2 test
statistics without multivariate normality assumption.

The number of replicates in the simulation process is given by
a SIMUMAX specification. Default is SIMUMAX=10000.

When a specification METHOD=2 is given, T2TEST performs Yao's T2 test
assuming multivariate normality but allowing unequal covariance
matrices (generalized Behrens-Fisher problem).

See e.g. "Methods of Multivariate Statistics" by M.S.Srivastava (2002).

Also in this case the process is continued by a randomization test
using the T2 statistics without assumption of multivariate normality.

M = Comparing multivariate samples

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">COVTEST <output_line> / SAMPLES=<data1>,<data2>
tests the equality of covariance matrices of <data1>,<data2>,...
by assuming multivariate normality.
See e.g. "Methods of Multivariate Statistics" by M.S.Srivastava (2002).

```

The testing procedure is also continued by a randomization test using the same test statistics but without assumption of multivariate normality.

The number of replicates in the simulation process is given by a SIMUMAX specification. Default is SIMUMAX=10000.
(An example in T2TEST?)

```

  <A HREF="qa1_03.html">M = Comparing multivariate samples</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">COMPARE <Sample_1>,<Sample_2>,...,<Sample_s>
performs statistical tests for samples from various Survo data sets.
L (optional) is the first line for the results in the edit field.
Each sample is referred to by <name_of_data>(<name_of_variable>). If the
data set consists of one variable, the name of variable may be omitted.
Typically, COMPARE is intended for small sample comparisons.
The CASES, IND and SELECT specifications are not valid in COMPARE operation.
Use FILE COPY, for example, to form samples from larger data sets.
Example:
COMPARE FILE1(Test3),FILE2(Test4),X,FILE4(Test7),11

```

COMPARE computes and displays relevant statistical summaries and gives the test statistics usually with critical levels (P values).

In many cases also randomization tests are performed by simulating the sampling process under the null hypothesis. Then the true critical level will appear as a limit for the proportion of those cases where the null hypotheses is rejected more clearly than in the case observed. Also the standard error of the critical level is displayed. The user can interrupt simulation whenever by a single keystroke.

COMPARE:

The testing procedures are selected according to the number of the samples *s* and an optional TEST specification.

1 = Comparison of 2 or more independent samples
 2 = Comparison of 2 paired samples, rank correlations
 3 = Tests for normality
 4 = Quantile-Quantile plots
 5 = Specifications for randomization
 S = More information on statistical tests

An interactive procedure for comparison of 2 samples is provided by the /COMPARE *suco*. It selects the tests automatically and "interprets" the results. Usage: /COMPARE <sample1>,<sample2>;

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi
 </BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System;(web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System;(web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">COMPARE <Sample_1>,<Sample_2>;,...,<Sample_s>
 (Reference: Conover: Practical Nonparametric statistics, 2nd Edition)

2 independent samples:

TEST=Mann-Whitney (Conover p.216)

TEST=Pitman (Conover p.328)

TEST=t (Conover p.225)

TEST=Smirnov (Conover p.369)

TEST=Wald-Wolfowitz (See also RUNTEST?)

Default: Mann-Whitney,Pitman,t

2 or more independent samples:

TEST=Kruskal-Wallis (Conover p.229)

TEST=F (Conover p.237)

Default: Kruskal-Wallis,F (s>2)

T = More information about COMPARE

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="qa2_01.html#TEST">T = More information about CO
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">COMPARE &lt;Sample_1&gt;,&lt;Sample_2&gt;,L
Paired observations:
TEST=PAIRED   Paired t, Wilcoxon, Randomization tests
TEST=Wilcoxon as TEST=PAIRED (Conover p.290,280,330)
TEST=CORRELATION r, Spearman's Rho, Kendall's Tau

  <A HREF="qa2_01.html#TEST">T = More information about COMPARE</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">

```

```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">COMPARE &lt;Sample&gt;,#NORMAL,L
displays some basic statistics and performs the following tests for
normality:
    Shapiro-Wilk (for sample sizes N&lt;=50) (Conover p.363)
    D'Agostino (50&lt;=N&lt;=500)
    Anderson-Darling

From version 3.30 the old D'Agostino test has been replaced by
a more powerful D'Agostino-Pearson omnibus test.
The results are given in the form
D'Agostino-Pearson K^2=##.##### P=#.#### (#.### #.###)
where K^2 is the test statistics with an approximate Chi^2 distribution
with 2 degrees of freedom and P its p value. The numbers in brackets
are normal approximations for tests based for skewness and kurtosis,
respectively (K^2 is the sum of their squares), giving more information
about kind of departure from normal distribution.
Source:
D'Agostino & al. "A Suggestion for Using Powerful and Informative Tests
of Normality", The American Statistician, Vol 44, No. 4, pp. 316-321
    <A HREF="qa2_01.html#TEST">T = More information about COMPARE</A>
    <A HREF="qmm1_13.html">M = Tests for multivariate normality</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">When a randomization test is performed by COMPARE, the number
replicates is given by a SIMUMAX specification.
Default is SIMUMAX=1000000.
The seed number of the pseudo-random number generator can be given
by SEED= integer .
    <A HREF="qa2_01.html#TEST">T = More information about COMPARE</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
-->
<HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Q-Q plots

```

COMPARE <Sample_1>,<Sample_2>,,L / TEST=Q-Q
 computes the quantiles of both samples, saves them in a Survo data
 file _QQ.SVO, and generates a GPLOT scheme (from the line L onwards)
 for making a quantile-quantile (q-q) plot.
 This scheme may be refined by the user according to his/her needs.

If $0 \leq p \leq 1$, and the fraction of values below $x(p)$ is p , $x(p)$ is the
 p -quantile in the (empirical) distribution of x .
 In the q-q plot the $x(p)$ -values of both samples are plotted against
 each other. If the sample sizes are not equal, the $x(p)$ -values of
 the smaller sample are plotted against corresponding values in the
 greater sample obtained by linear interpolation.
 Hence if the samples come from the same distribution, the quantile
 points are approximately on the line $y=x$.

More generally, if samples 1 and 2 are generated from distributions
 of independent variables X and Y and the Y distribution is obtained
 from the X distribution by a linear mapping $Y=aX+b$, then in the q-q
 plot we have the same dependence.

For example, if the samples are drawn from distributions $N(m_1, s_1^2)$ and
 $N(m_2, s_2^2)$, the quantile points are roughly on the line
 $(y-m_2)/s_2=(x-m_1)/s_1$. Thus mere linearity of a q-q graph does not imply
 a common distribution.

```

<A HREF="qa2_01.html#TEST">T = More information about COMPARE</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--

```

Created by using the PRINT operation of SURVO MM
 For more information, see <http://www.survo.fi/>

```

-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">RUNTEST <data>,<variable>,<L
tests whether a given sequence of 0's (zeros) and 1's (non-zeros)
is a random sequence, i.e. a sequence of Bernoulli trials where
the trials are independent and the probability of 1 is a constant  $p$ 
 $0 \leq p \leq 1$  and  $p$  is unknown.
The sequence to be tested is saved as <variable> in <data>.

```

Besides for testing randomness of a sequence, RUNTEST may be applied for comparing two samples of a continuous variable for testing whether the samples are drawn from the same population. In this case the user has to create an indicator variable with values 0 for the first sample and 1 for the second one and the combined sample is sorted according to the continuous variable. If the samples are from the same distribution, the sequence of the values of the indicator variable must be a random sequence of 0's and 1's after sorting. This was the application for which the classical Wald-Wolfowitz run test was originally planned. (See also [COMPARE2](#))

RUNTEST performs simultaneously several tests based mainly on runs of 0's and 1's in the given sequence.

Wald-Wolfowitz test:

This test is simply based on the number of runs.

For $n \leq 1000$ the exact conditional distribution of runs for given n_0 and n_1 (i.e. observed numbers of 0's and 1's, respectively) is computed. For $n > 1000$ the standard normal approximation is used. Low P values indicate excessive lengths of runs (low number of runs) which is typical for samples drawn from different populations.

Geometric distribution test (by SM 2001):

The run length of 0's has the geometric distribution with parameter p and similarly the run length of 1's has the geometric distribution with parameter $q=1-p$. Thus p is estimated from the sequence ($p=n_1/n$) and the observed lengths are compared to the expected ones from the geometric distribution by the common Chi-square test.

For example, in the sequence

0 0 1 1 0 1 1 1 0 1 1 1 1 0 1 1 0 0 1 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1
1 0 1 1 0 1 0 1 0 1 1 0 1 0 1 1 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 1 0

we have $n=68$, $n_1=33$ and the number of 1-runs is $r_1=34$. Please note that there are 18 "1-runs of length 0" between consecutive 0's.

Since the estimated value of p is now $n_1/n=33/68$, the expected frequencies $r_1 \cdot p^i \cdot q$, $i=0,1,2,\dots$ listed with observed ones are:

| | | | | |
|------------|------|------|-----------|----------------------|
| length (i) | 0 | 1 | 2 or more | |
| observed | 18 | 4 | 12 | $X^2=4.38$ $P=0.036$ |
| expected | 17.5 | 8.49 | 8.01 | |

The reason for departure from the null hypothesis that the sequence is random is the fact that the second half of the sequence is almost identical with the first half. The Wald-Wolfowitz test does not detect such kind of systematic or almost systematic effects.

Geometric distribution test (continuation):

RUNTEST performs a similar test also for 0-runs.

To make the test more powerful these tests are combined, but it cannot be done directly since the X^2 test statistics for 0-runs and 1-runs are not independent. They can be made independent for large samples by leaving out "the runs of length 0".

Simulation experiments (made by SM) have shown that by fitting the run length distribution to truncated geometric distributions without the zero values, the X^2 -statistics of 0-runs is Chi-square distributed with k_0-q degrees of freedom where k_0 is the number of classes (for values $1,2,\dots,k_0-1, > k_0$)

The corresponding X^2 -statistics of 1-runs has the Chi-square distribution with k_1-p degrees of freedom.

The sum of these two statistics is Chi-square distributed with k_0+k_1-1 degrees of freedom under the null hypothesis.

The numbers of classes k_0 , k_1 are determined by the condition that the expected frequency of the tail class is at least a value given by specification MINF. Default is MINF=5.

Chi-square test for triples (SM 2001):

This test studies behaviour of three consecutive observations U_1, U_2, U_3

by making a table of frequencies

| U3 | | 0 | 1 | Example (below): | |
|----|----|------|------|------------------|----|
| U1 | U2 | ** | | | |
| 0 | 0 | F000 | F001 | 11 | 7 |
| 0 | 1 | F010 | F011 | 4 | 12 |
| 1 | 0 | F100 | F101 | 6 | 9 |
| 1 | 1 | F110 | F111 | 12 | 5 |

Under the null hypothesis (U3 is independent of U1 and U2) the common Chi-square statistics has the Chi-square distribution with 3 degrees of freedom. Simulation experiments (made by SM) show that this is a valid test, although consecutive triples are partially dependent on each other.

For example, the sequence

0 0 1 1 0 1 1 1 0 1 1 1 1 0 0 1 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1
1 0 1 1 0 1 0 1 0 1 1 0 1 0 1 1 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 1 0
giving triples 001,011,110,101,... yields a table shown above.

O'Brien-Dyck test: (Biometrics 41, 237-244, 1985)

In this test variances of run lengths of 0-runs V0 and 1-runs V1 are computed and pooled together in such a way that the test statistics will have Chi-square distribution under the null hypothesis. Simulation experiments (by SM) have shown that this test is usually giving too small P values when the sequence is not random and thus it rejects the null hypothesis too easily.

Therefore the P value is evaluated also by simulation.

Example:

DATA K:

0 0 1 1 0 1 1 1 0 1 1 1 1 0 0 1 1 1 1 0 0 0 0 0 1 1 1 0 0 0 0 1 1
1 0 1 1 0 1 0 1 0 1 1 0 1 0 1 1 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 1 0

RUNTEST K,K,CUR+1

Run tests for K in data K:

N=68 N0=35 N1=33 p=0.485294 run0=17 run1=16

Wald-Wolfowitz test: P=0.359033

Geometric distribution test: X2=5.20952 df=1 P=0.0224635

for 0-runs separately: X20=0.730043 df=1 P=0.392869

for 1-runs separately: X21=4.38174 df=1 P=0.0363259

Chi-square test for triples: X2=8.37124 df=3 P=0.0389311

O'Brien-Dyck test: X2=17.7686 df=21.1611 P=0.67298

1000000 0.68589000 0.68498026 lower limit (O'Brien-Dyck test)
s.e. 0.00046416 0.68679974 upper limit (conf.level=0.95)

T = More information on statistical tests

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

```

<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Numerical conversions in Survo:
  <A HREF="qc1_02.html">1 = General information</A>
Converting...
  <A HREF="qc2_01.html">2 = Lengths, areas, volumes, weights, etc. from a unit to another</A>
  <A HREF="qc2_09.html">3 = Currency</A>
  <A HREF="qc1_04.html">4 = Integers from a base to another</A>
  <A HREF="qc1_05.html">5 = ASCII characters</A>
  <A HREF="qc1_06.html">6 = Roman numerals</A>
  <A HREF="qc1_07.html">7 = Decimal numbers to fractions</A>
  <A HREF="qc1_08.html">8 = Integer to prime factors</A>

  <A HREF="q01_02.html">E = More information on Survo</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">As an extension of editorial computing, various numerical conversio
may be performed by activating expressions like
  &lt;number_or_word>(&lt;unit1>:&lt;unit2>)=_

For example, 440(yard:meter)=402.336 gives 440 yards as 402.336 meters.

In place of &lt;number_or_word>, no composite expressions are accepted.
If &lt;number_or_word> is missing, '1' is used as default.
For example, 1(yard:meter)=0.9144 (yard:meter)=0.9144

Multiple activations occur along the rules of editorial computing
by using '.' instead of '='. For example,
  (ton:kg).=_ (pound:kg).=_ (pound:ounce).=_
gives
  (ton:kg).=1000 (pound:kg).=0.45358541666624 (pound:ounce).=16

If a conversion between unsuitable units like (kg:m)= is attempted,
an error message 'Conversion from kg to m is impossible!' is displayed.

When appropriate, the prefixes of the International System like
'mega' and 'micro' are recognized. Examples: (megaton:ton)=1000000
(nanometer:ngstr m)=1 (femtosecond:sec)=1e-015

The data base for units of measurement is the edit field MEASURES.EDT
in the \SYS subdirectory of Survo. This field lists the possible units
with pertinent information in alphabetic order. The user can edit this
field by following instructions given in the same edit field.

  <A HREF="qc1_01.html">C = More information on numerical conversions</A>

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  <A HREF="qc1_01.html">C = More information on numerical conversions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Converting integers from a base to another:
Examples:
1988(10:2)=11111000100   1988 from base 10 to base 2
11111000100(2:10)=1988   11111000100 from base 2 to base 10
254(10:8)=376            254 is 376 as an octal (base 8) number
254(10:16)=FE            254 is FE as a hexadecimal number
7C4(16:10)=1988
FFFF(hex:dec)=65535      hex and dec are allowed instead of 16 and 10
777(oct:bin)=11111111    oct and bin are allowed instead of 8 and 2

Max. base is 36. In bases >10, digits are
0,1,2,3,4,5,6,8,9,A,B,C,D,....,Z .

  <A HREF="qc1_01.html">C = More information on numerical conversions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

```

"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Converting ASCII characters:
Examples:
  A(ascii:10)=65  A(ascii:8)=101  A(ascii:16)=41
  65(10:ascii)=A  101(8:ascii)=A  41(16:ascii)=A

  <A HREF="qc1_01.html">C = More information on numerical conversions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Converting Roman numerals:
Examples:
  1988(10:Roman)=MCMLXXXVIII  1988(10:roman)=mcmlxxxviii
  MCMLXXXVIII(Roman:10)=1988  MXIV(roman:2)=1000000000
  2000(10:Roman)=MM  MM(Roman:10)=2000

  <A HREF="qc1_01.html">C = More information on numerical conversions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

```

```

<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Converting decimal numbers to fractions:

```

Examples:

```

3.14159265(1:ratio).=3/1 (0.14159265)
3.14159265(4:ratio).=16/5 (-0.05840735)
3.14159265(5:ratio).=22/7 (-0.00126449285714)
3.14159265(11:ratio).=355/113 (-0.00000027035398)
3.14159265(20:ratio).=96893/30842 (0.00000001657804)

```

replaces the decimal number 3.14159265 by the best possible approximate fraction (ratio of two integers) by using accuracies 1,4,5,11 and 20.

The numbers in parentheses are errors.

In $x(c:ratio)=n/m$,

the best approximation n/m for x is found by minimising the function

$$f(x,m,n)=n+10^c*(m*x/n-1)^2$$

with respect to integers m and n . This technique is originally used in S.Mustonen's studies for musical consonances and dissonances. There x corresponds to a (impure) musical interval and the optimal m and n values give the ideal ratio for the musical interval recognised for a selected accuracy of the 'ear' c .

For example, the 'neutral third' $11/9=1.22222222$

will be heard as an impure minor third ($6/5$) by a moderate ear $c=4$:

```
1.22222222(4:ratio)=6/5 (0.02222222)
```

but as an interval of its own ($11/9$) by a very accurate ear $c=5$:

```
1.22222222(5:ratio)=11/9 (-0.0000000022222)
```

```

<A HREF="qc1_01.html">C = More information on numerical conversions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Finding the prime factors of an integer:

```

Examples:

```

30(10:factors)=2*3*5
144(dec:factors)=2^4*3^2
1000000000000000000(bin:factors)=2^20

```

10000(7:factors)=7^4
ACCURACY=30
Max. number to be factored is 2^63=9223372036854775808. ACCURACY=30
2^63 9223372036854775808(10:factors)=2^63
2^63-1 9223372036854775807(10:factors)=7^2*73*127*337*92737*649657
2^61-1 2305843009213693951(10:factors)=2305843009213693951 (Mersenne prime)
10000000000000000001(10:factors)=101*9901*999999000001
65520^2-1= 4292870399(dec:factors)=65519*65521 (both primes!)
9223371873002223329(dec:factors)=3037000453*3037000493

```
<A HREF="qc1_01.html">C = More information on numerical conversions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Conversion of physical measures, etc.:
  <A HREF="qc2_02.html">1 = Linear measures, lengths</A>
  <A HREF="qc2_04.html">2 = Areas</A>
  <A HREF="qc2_05.html">3 = Volumes</A>
  <A HREF="qc2_06.html">4 = Masses, weights, forces</A>
  <A HREF="qc2_07.html">5 = Time and angles</A>
  <A HREF="qc2_08.html">6 = Work, power, pressure</A>
  <A HREF="qc2_10.html">7 = Typographical measures</A>

  <A HREF="qc1_01.html">C = More information on numerical conversions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

<P><PRE CLASS="HelpText">Conversion of lengths:

Examples:

1000(m:km)=1 (meter:mm)=1000 100(cm:dekameter)=0.1
(megameter:m)=1000000 (picometer:mm)=0.000000001 (exam:attom)=1e+036
(inch:cm)=2.54 (foot:inch)=12 (yard:foot)=3
(furlong:yard)=220 (rod:m)=5.0292
(³ngstr m:mm)=0.000001

M = More information on physical measures

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">

M = More information on physical measures

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Conversion of areas:

Examples:

10000(m²:ha)=1 (square_meter:square_millimeter)=1000000
(inch²:cm²)=6.4516 (acre:hectare)=0.4046856422
(square_mile:square_kilometer)=2.58998811

M = More information on physical measures

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

```

</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Conversion of volumes:
Examples:
(liter:dm3)=1 (liter:L)=1 (m3:L)=1000 1000(mL:L)=1
(m3:cm3)=1000000 (cubic_centimeter:cubic_millimeter)=1000
(m3:cubic_foot)=35.31466672 (yard3:foot3)=27
(gallon:pint)=8

  <A HREF="qc2_01.html">M = More information on physical measures</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Conversion masses, weights, and forces:
Examples:
1000(kg:ton)=1 (kg:mg)=1000000 (mg:g)=0.001
Avoirdupois: (grain:g)=0.0647979166666
               (dram:grain)=27.343 (ounce:grain)=437.5 (oz:ounce)=1
               (lb:ounce)=16 (short_ton:lb)=2000 (long_ton:lb)=2239.999999
Troy:         (pennyweight:grain)=24
               (oz_t:grain)=480 (lb_t:oz_t)=12
Apothecaries: (scruple:grain)=20 (dram_ap:scruple)=3
               (oz_ap:dram_ap)=8 (lb_ap:oz_ap)=12

               (newton:N)=1 (newton:dyn)=100000 (kg:N)=9.80665

  <A HREF="qc2_01.html">M = More information on physical measures</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>

```



```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Conversion of time and angles:
Examples:
(hour:s)=3600 (h:min)=60 (day:h)=24
10:05:45(hms:s)=36345 36345(s:hms)=10:05:45
(radian:degree)=57.2957795
270:30:00(hms:degree)=270.5 270.5(degree:hms)=270:30:00

  <A HREF="qc2_01.html">M = More information on physical measures</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Conversion of work, power, and pressure units:
Examples:
(joule:J)=1 (calorie:Cal)=1 (Cal:J)=4.1868
3600(kJ:kWh)=1 (eV:J)=1.602e-019

(watt:W)=1 (kW:W)=1000 (horsepower:W)=0.7355

(pascal:Pa)=1 (atm:Pa)=101325 760(torr:atm)=0.99999999984209
(bar:Pa)=100000 (mmHg:torr)=1 (at:Pa)=98066.5

  <A HREF="qc2_01.html">M = More information on physical measures</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>

```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)&nbsp;help&nbsp;system">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">Exchange rates for currencies:
```

```
Example:
```

```
100(USD:FIM)=431.8
```

In file <Survo>\U\SYS\MEASURES.EDT, each currency is represented by two rates (Buy,Sell). The proper alternative is selected according to the case. If only one value is given, it will be used as a rate in both directions.

To update these rates, the easiest way is to use the UPDATE scheme in the edit file <Survo>\U\SYS\CURRENCY.EDT .

```
<A HREF="qc1_01.html">C = More information on numerical conversions</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A></DIV>
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)&nbsp;help&nbsp;system">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">Typographical measures:
```

Big point:

(inch:Point)=72 12(Point:mm)=4.23333333333333

Original point:

(point:Point)=0.996264

(inch:pica)=12 (pica:Point)=6

```
<A HREF="qc1_01.html">C = More information on numerical conversions</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A></DIV>
```

```
</BODY>
```

```

</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILE management in Survo:

  <A HREF="qf1_02.html">1 = General information</A>
  <A HREF="qf2_01.html">2 = FILE CREATE, FILE MAKE (creating a data file)</A>
  <A HREF="qf3_01.html">3 = FILE SHOW, FILE EDIT, FILE MEDIT (input and editing of data v
  <A HREF="qf1_06.html">4 = FILE ACTIVATE, FILE MASK (selecting active and protected field
  <A HREF="qf5_01.html">5 = FILE STATUS (displaying the structure of the data file)</A>
  <A HREF="qf5_05.html">6 = FILE UPDATE (defining more variables, for example)</A>
  <A HREF="qf7_01.html">7 = FILE LOAD (copying data file in edit field or text file)</A>
  <A HREF="qf6_01.html">8 = FILE SAVE (copying text file in data file)</A>
  <A HREF="qf6_06.html">9 = FILE COPY, FILE SELECT, FILE EXPAND (copying data files)</A>
  <A HREF="qf4_02.html">S = FILE SORT (sorting observations)</A>
  <A HREF="qf4_03.html">I = FILE INIT (adding missing observations)</A>
  <A HREF="qf7_04.html">A = FILE AGGRE (combining observations as sums or means)</A>
  <A HREF="qf7_04.html">B = FILE AGGR (conditional statistics within aggregates)</A>
  <A HREF="qf1_04.html">D = FILE DEL (deleting a data file)</A>
  <A HREF="qf1_05.html">C = FILE REDUCE (deleting fields and observations)</A>
  <A HREF="qv1_01.html">V = VAR (transformation of fields/variables)</A>

  <A HREF="q23_01.html">R = Representation of statistical data</A>
  <A HREF="q01_02.html">E = General information on Survo</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
The statistical operations and modules in Survo are able to handle
data sets either saved in special data files or located in the edit

```

field. The data in the edit field can be easily saved in edit files.

To change information with other systems producing data sets or text, Survo also can move data from and to text files (ASCII files). All the results of statistical operations can be saved in a text file, too.

Observe also that the operating system provides several options for file copying etc. and those options can be used in conjunction with the operations of Survo. (See [OS](http://www.survo.fi/q03_14.html)).

The following file types are supported by Survo:

[1](http://www.survo.fi/qf1_03.html) = Survo data files

[2](http://www.survo.fi/qf2_03.html) = Survo edit files and general text files

See also

[3](http://www.survo.fi/q23_01.html) = DATA specification

[4](http://www.survo.fi/q0e_02.html) = Survo output file

More information on Survo from <http://www.survo.fi>

!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

SURVO MM Help System (web edition)

SURVO MM Help System (web edition)

```
Survo data files consist of header records which describe the structure of the file and of any number of records for observations.
```

The data sets are saved in these files in the form of a data matrix having, say, M columns (M=# of variables) and N rows (N=# of observations).

The variables can be either numeric or string variables.

A numeric variable can be any of 4 different types:

length

in bytes:

1: 0<=X<=254 (integer) missing value=255

2: -32768<=X<=32766 (integer) missing value=32767

4: real, 7 digits missing value=1e+38

8: real, 15 digits missing value=1e+306

A string variable can have a length varying from 1 to 70.

Each observation consisting of M variables (fields) needs a fixed number of bytes. This number as well as the maximum number of fields (variables) in each observation (record) is given by the user when creating a data file (see [FILE](http://www.survo.fi/qf1_01.html) CREATE).

Since the values of the numeric variables are compressed into a binary form in saving, a Survo data file cannot be listed as a text file.

To see its contents and to edit it, use FILE EDIT, for example.

The order of variables and variable types is immaterial. However, it

is a convention to define the first field as a string variable and store the name of the observation in it.

The names of the variables (fields) are strings whose lengths vary between 8 and 64. The 8 first characters are used as a reference word in statistical operations. The rest of the name can be specified freely, but it may include (in case of a numeric variable)

- the format of the variable for printouts etc. in the form (###.##)
- the range in the form {lower limit,upper limit}

1 = Creating a Survo data file (FILE CREATE)

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">FILE DEL <data_file>

deletes the data file with the default extension .SVO from the current

Survo data path. By giving a complete pathname, any file on the

disk can be deleted by FILE DEL.

F = More information on FILE operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">FILE REDUCE <data_file>,M,N

reduces the size of <data_file> to M first fields and N first observations.

If N is not given, the observations remain the same.

FILE REDUCE <data_file>*,*N

reduces only the number of observations. The fields remain the same.

```
<A HREF="qf1_01.html">F = More information on FILE operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Selecting active and protected fields, etc.
  <A HREF="qf4_01.html">1 = FILE ACTIVATE (or alt-F6)</A>
  <A HREF="qf4_04.html">2 = FILE MASK</A>
  <A HREF="qf1_01.html">F = More information on FILE operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">A new Survo data file can be created

    either  automatically (from a text file) by FILE SAVE operation
    or      by activating a FILE CREATE operation
    or      by activating a FILE MAKE operation
```

There are also other commands like FILE COPY and FILE SAVE MAT
for creating new data files from data sets in the edit field or
from matrix files, etc.

```
<A HREF="qf6_01.html">1 = FILE SAVE for transforming a text file into a Survo data file</A>
<A HREF="qf2_02.html">2 = FILE CREATE for creating general data files</A>
<A HREF="qf2_04.html">3 = FILE MAKE for creating frames for simulated data</A>
```

4 = FILE COPY for copying data sets into data files
 5 = FILE SAVE MAT for copying matrix files into data files
 D = More information on data management

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from
 </BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
 "http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM
 For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">FILE CREATE <name>,<bytes/obs>,<max # fields>
 creates a Survo data file as described in the following example.

Creating Survo data file COMMUNES:

* <bytes/obs> = number of bytes for each record (commune) is 128.

* <max # fields> = maximum number of variables (fields) is 20.

* A free description of the purpose and the contents of the file may precede the field descriptions (between lines FIELDS: and END).

* Each field is defined by one line including information as follows:

of field

| Type of field (S=string, N=numeric)

|| Length of field (1,2,4 or 8 for numeric, up to 70 for string)

|| | Name of field (8 first characters form the reference word)

|| |

FILE CREATE COMMUNES,128,20

The file consists of the Finnish communes.

Statistics mostly from 1979-80

FIELDS:

1 S 16 Commune Name of the commune

2 S 3 County UUS,TUR,AHV,HAM,KYM,MIK,KAR,KUO,KES,VAA,OUL,LAP

3 N 4 People Population 1.1.1980 (#####) {100,500000}

4 N 4 Births Live births in 1978 (####) {0,6000}

5 N 8 Area Land area km^2 1.1.1979 (#####.##)

END

In case of a numeric field the field description may include

- the format of the variable for printouts etc. in the form (###.#),

in case of string fields the proper format is (#12), 12=# of bytes

- the range of permitted values in the form {lower limit,upper limit}

The range of the variable is tested when data are entered in FILE EDIT or FILE SHOW operation, for example.

Parameters <bytes/obs> and <max # fields> in

FILE CREATE <name>,<bytes/obs>,<max # fields>

are optional. If they are missing, values are selected according to

the FIELDS list by adding some extra space for future expansions.

There are still other optional parameters available, but they are needed only in special circumstances (See next page).

The extra parameters A1,A2 and A3 in
FILE CREATE <name>,<bytes/obs>,<max # fields>,<A1,A2,A3>
have the following tasks:

A1 is the length of the field name (default is 64).

A2 is the number of mask columns (see MASK?), (default 7).

A3 is the number of initial observations (default is 0).

For example, a file XYZ to be filled entirely with artificial data
(generated by the VAR operation, for example) can be originated with
space allocated for 500 observations by

FILE CREATE XYZ,128,20,64,7,500

D = More information on data management

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">The current edit field can be always saved in an edit file by a
SAVE <name of edit file> operation which normally is located on
the first line of the edit field.

Any edit file formed in this way may be loaded back to the edit
field by a LOAD <name of edit file> operation and the former contents
of the edit field will then be lost. To load parts of edit files
on the empty lines of the edit field without spoiling the current
situation, use a SHOW <name of edit file> operation.

Edit files are almost like text files, but with a rigid structure
(constant line length) and lines saved without cr,lf ending.
An edit file name has the default extension .EDT.

An edit file can be converted to a text file by first loading it to
the edit field and then saving it using COPY L1,L2 TO <text file>;
where L1-L2 are the edit lines to be saved. Observe that COPY
appends lines L1-L2 to the end of <text file>.

To copy in the opposite direction from a text file to the edit field,
use the SHOW <text file> operation which enables scrolling of the
text file in a temporary window and loading of any lines from it.

Data sets typed in the edit field can be saved in Survo data files
first by saving the edit field in a text file (by COPY for example)
and then by using the FILE SAVE <text_file>,<Survo_data_file>;
operation.

For data lists and tables with a DATA header, a straightforward method
for this task is the FILE COPY operation:

FILE COPY <data_list_or_table>,<Survo_data_file>;

Survo provides various additional formats for files of sucros, matrices, results, etc.

```
<A HREF="qf1_01.html">D = More information on data management</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">FILE MAKE &lt;new_data_file&gt;,&lt;m&gt;,&lt;n&gt;,&lt;X&gt;
```

(where <new_data_file>,<m>,<n> are obligatory parameters)

creates a Survo data file with <m> variables and <n> missing observations.

Optional parameters:

The names of variables have the string <X> as

their common forepart and they are indexed by 1,2,3,...

For example if <X> is VAR then the names of variables will be VAR1,VAR2,... Default for <X> is X.

In case m=1 the only variable gets no index.

The common (numerical) type of variables is given by <type>.

Alternatives are 1,2,4, and 8. Default is 4.

<lname> is the length of field names (default 64) and

<actcol> is number of activation columns (default 7).

By default space is reserved for certain amount of additional variables. This space can be adjusted also by a NEWSPACE=s1,s2 specification where s1 is # of extra bytes in each record and s2 is # of extra variables. Thus by NEWSPACE=0,0 no extra space for variables is reserved.

The format of fields can be given by a specification like

FORMAT=####.##

Permitted range of values is given by LIMITS=<min>,<max>.

Default indices (1,2,3,...) of variables can be altered by a BASE specification. For example, BASE=0 implies indices 0,1,2,... and BASE=001 indices 001,002,003,...

FILE MAKE is intended primarily for creating frames for simulated data sets. For example, commands

FILE MAKE BIN,100,1000

TRANSFORM BIN BY #UNIFORM(0,2)

generate a sample of size 1000 of 100 Bernoulli(0.5) variables
X1,X2,...,X100.

D = More information on data management

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi
</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText"> 1 = FILE SHOW

2 = FILE EDIT

3 = FILE MEDIT

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi
</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">FILE SHOW <data_file>

is an overall tool for scanning and editing of Survo data files.

The file will be shown on the screen so that each record takes one

line. In the traditional 24 line mode, 21 consecutive records are shown

simultaneously. When more space is reserved for the main window by

the RESIZE command, the number of records and cases shown simultaneously

is correspondingly greater.

The active fields are displayed as columns.

There are no limitations for number of fields and records.

Records (lines) can be scrolled by PgDn, PgUp, ArrowUp, ArrowDn and

fields (columns) by TAB, END and HOME keys.

To get permission for editing of data values, F3 must be pressed once. Most of the keys have the same tasks as in the edit field. However, the functions of INSERT, DELETE and ctrl-END (erase) are limited to the current field.

Special features of FILE SHOW:

```
<A HREF="qf3_03.html">1 = Formats and limits of the fields</A>
<A HREF="qf3_05.html">2 = Inserting and deleting single records.</A>
<A HREF="qf3_06.html">3 = Marking blocks of records for moving, deleting, etc.</A>
<A HREF="qf3_07.html">4 = Copying records and fields</A>
<A HREF="qf3_08.html">5 = Search facilities</A>
<A HREF="qf3_09.html">6 = Sound effects (not available in SURVO MM, but see <A HREF="q0
<A HREF="qf3_10.html">7 = Other specialities</A>
<A HREF="qf3_11.html">8 = Summary of key codes</A>
<A HREF="qf3_12.html">9 = Predefined options</A>
<A HREF="qf3_13.html">A = Displaying long string fields</A>
<A HREF="qf1_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">In FILE SHOW, the fields are displayed in formats given in the field
descriptions in the form (###.##) . To edit these formats, use FILE
STATUS and FILE UPDATE. If no format is given for a particular field,
the default format is:
    ### for 1 byte numeric field,
    ##### for 2 byte numeric field,
    #####.### for 4 and 8 byte numeric fields,
    entire field width for a string field.
Missing values appear always as empty fields.
If the data value exceeds the limits given by the current format,
an empty field terminated by '*' will be displayed instead.
To see the true value of such a field, touch it by the cursor. Then
the value will be displayed on the top line.
```

Setting limits for values:

When editing numerical fields, extra limits may be set by the limit specifications of the form {lower_limit,upper_limit} in the field descriptions. These limits can be altered by FILE UPDATE.

The values of a string field can be limited to a predetermined set by giving the permitted values as a list of the form [value1,value2,...] in the field description.

For example, [A,B,C] tells that 'A', 'B', and 'C' are the only possible values.

```
<A HREF="qf3_02.html">S = More information on FILE SHOW</A>
```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="qf3_02.html">S = More information on FILE SHOW<
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The current record is deleted from the data file by alt-F10 key.
An empty record is inserted after the current record by the alt-F9 key.

```

When records are inserted and deleted (or moved by alt-F4), the FILE SHOW operation does not change the contents of the data file immediately, but creates a special indicator vector for this purpose. If n is the number of records, an extra space of 4*(n+1000) bytes is needed in the CPU. This space will be automatically reserved by FILE SHOW. In very large data files of, say more than 40000 records, allocation of the extra space may be impossible. In that case FILE SHOW will give a message and operations like FILE EDIT or FILE COPY should be used for the task. The maximum number of new records to be inserted between the old ones is 1000.

When records have been inserted and deleted in the preceding manner, and FILE SHOW is terminated (by F8), the pertinent information will be copied from the current data file to a new one (SURVO.XXX) on the same path on the disk. Then the original file is deleted and SURVO.XXX renamed with the true name.

Please, note that the restrictions above do not apply to new records typed

at the end of the data. There are no relevant limits for the number of old and new records.

S = More information on FILE SHOW

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">In FILE SHOW, a block of consecutive records can be marked by using the alt-F4 key repeatedly. The marked block is indicated by emphasized numbers in the first (order) column.

A marked block is moved to another place in the data file by indicating the new position of the first record of the block by the cursor and pressing alt-F4. Please, note that the current observation indicated by the cursor will be the first after the block. After the move, no block is marked.

A marked block is deleted by the ctrl-END key.

S = More information on FILE SHOW

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">For typing of values occurring in consecutive records or simply for copying existing records and fields, keys F4 and F5 are available.

F4 copies the current field and F5 the entire record. If a marked block (by alt-F4) exists, the first record of it is used as the model. If there is no marked block, the previous field (or record) just above is copied.

If the current field is not empty, F4 has no effect.

Similarly, if the current record is not empty, F5 has no effect.

S = More information on FILE SHOW

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Searches are initiated by the alt-F5 (SEARCH) key.

The search takes place according to the values of the current field
or # of the record. Permitted conditions (search keys) are, for example,

<100 >=25.5 <>1 (not equal to 1)

In string fields the search key is a sequence of characters and the
search is succesful when a case starting with this sequence is found.

In addition, a partial string (in the middle of the field) can be
searched for, by using a search word of the form *<string>.

The search is sequential from the current record onwards. The search
is stopped when the first succesful record has been found and this
record will be displayed. The search can then be continued simply by
pressing ESC. If only number of succesful cases is wanted, press
PREFIX ESC.

The sequential search is replaced in string field by the much faster
binary search if a specification of the form SORT:<sort_field> appears
in the general file description (between FILE CREATE and FIELDS lines).

It is then assumed that the file has been sorted in alphabetic order
with respect to the field in question. In fact, the FILE SORT operation
adds this specification automatically to the sorted file.

In FILE SHOW also fields (variables, columns) can be searched for
by their names. This is relevant when there are very many active
fields. To initiate such a search, press PREFIX alt-F5 .

S = More information on FILE SHOW

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PREFIX F7 turns on/off the sound effects defined in the SOUND.BI
file in the &lt;Survo&gt;\U\SYS directory. (Not yet available in SURVO MM!)
SOUND.BIN is a binary file of 256 characters. It can be edited by the
CODES LOAD and CODES SAVE operations.
For each printable character, the SOUND.BIN file gives a value 0 - 255
which is the pitch of that character on a twelve-tone scale.
When the cursor is moved either up or down, each character touched will
generate the tone defined in SOUND.BIN .
The value for standard pitch ( a = 440 hz) is given as the second byte
in SOUND.BIN. Default is 65.
The first byte in SOUND.BIN is the duration of each sound.
In the default setting of SOUND.BIN, the letters give the chromatic
scale starting from A,a=440 hz and digits 0,1,2,3,... ascending C major
triad tones. This simplifies detecting of outliers in numerical columns.
Moving over field borders in horizontal direction gives same tones as
the digits 0,1,2,3,... in vertical direction.
Any column in the FILE SHOW display can also be "played" automatically
by turning the sound on (by PREFIX F7) and starting by PREFIX (DOWN) .
The tempo can be adjusted during the play by the '+' and '-' keys.
The original tempo is given as the third byte in SOUND.BIN .
  <A HREF="qf3_02.html">S = More information on FILE SHOW</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILE SHOW:
F7 sets and recalls a reference point in the data file.
PREFIX ENTER sets the return column thus simplifying typing data in one
column.
PREFIX (DOWN) moves the cursor primarily to the last line and secondarily
to the last record in the file. However, if the sound is on, PREFIX (DOWN)
starts playing of the current column (see Sound effects).

The active fields appearing as columns in FILE SHOW display are selected
by the first mask column of the data file. Another mask column may be
selected by activating FILE SHOW of the form
FILE SHOW &lt;data_file&gt;,&lt;#_of_the_mask_column&gt; .

To go directly to the line after the last record (line)
(instead of the first one), activate
FILE SHOW &lt;data_file&gt;+

```

and you can start typing new records at once. This situation is also achieved in the FILE SHOW mode by PREFIX (DOWN) PREFIX (DOWN) . Similarly, FILE SHOW <data_file>- leads straight to the last record (line).

```
<A HREF="qf3_02.html">S = More information on FILE SHOW</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
```

```
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">-----
```

Key codes in FILE SHOW:

F1 Help F2 PREFIX F3 Permit editing
F4 Copy a field alt-F4 Block definition etc.
F5 Copy a record alt-F5 Search for records
 PREFIX alt-F5 Search for fields
F6 Field description PREFIX F6 Continuous display of field descriptions
F7 Set/Recall a reference point alt-F7 Append field to the tutstack
F8 Exit
F9 Insert mode on/off alt-F9 Insert a record (line)
F10 Delete character or block mode alt-F10 Delete a record

PgDn Next page PgUp Previous page

TAB Next field

END Last field / Scroll to the right

HOME First field / Scroll to the left / First page

PREFIX ENTER Set the return column

PREFIX F7 Sound on/off (not yet available in SURVO MM)

ctrl-DEL deletes the current field (column) (in current display only)

```
<A HREF="qf3_02.html">S = More information on FILE SHOW</A>
```

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
```

```
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
```



```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Predefined options in FILE SHOW:
<STRONG>Specification OPTIONS=</STRONG>&lt;<STRONG>string</STRONG>&gt;<STRON
OPTIONS=W permits updating of data (without a need to press F3).
OPTIONS=N displays complete names of fields.
OPTIONS=I sets insert mode.
OPTIONS=S initiates sound effects.
OPTIONS=T forces pressing TAB when encountering a field limit
        when data is typed or edited.
OPTIONS=C writes '.' instead of ',' and vice versa.
Options can be combined. Example: OPTIONS=WS
<STRONG>Specification RECORD tells the first record to be displayed.</STRONG>
RECORD=101 selects record (observation) #101.
RECORD=Country:Finland selects the (first) observation with value 'Finland'
        in field 'Country'. The file must be sorted by the field in question.
RECORD=Popul&gt;100000000 selects the first observation with greater value
        than 100000000 in variable 'Popul'.
<STRONG>Specification FIELD=</STRONG>&lt;<STRONG>name_of_field</STRONG>&gt;<STRON
to be displayed.

```

Predefined options in FILE SHOW: (continued)

```

Options are most useful in making sucros for data management.
Default options can be defined in SURVO.APU by 'file_show'.
For example, file_show=NI in SURVO.APU is the same as OPTIONS=NI.
  <A HREF="qf3_02.html">S = More information on FILE SHOW</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
        "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">By selecting a small font (by a FONT command) and a large main w
(by /WINMAX) very wide string fields may be displayed by FILE SHOW.

From version 3.36 a too wide string field (exceeding the space allowed
by the current width of the window) is also shown entirely piecewise
on several short lines on the right side of the window.
The length of these short lines can be set by the SHOWLONG specification.
Default is SHOWLONG=24.
The length during the display may be increased by the '+' key and
decreased by '-'.
This optional setup is cancelled (and resumed) by the F1 key.
  <A HREF="qf3_02.html">S = More information on FILE SHOW</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

```

```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILE EDIT &lt;name of data file>
is an operation for data input and editing of Survo data files
created by a FILE CREATE operation.

```

After activation of FILE EDIT a display containing all active fields of the data file will appear on the screen. For example, when FILE EDIT is activated for an empty data file COMMUNES (see [FILE](qf1_01.html) CREATE) have the following display

```

-----
DATA FILE: COMMUNES   Record # 1                      N= 0
Commune <B>_          </B>
Province<B>          </B>
People  <B>          </B>
Births  <B>          </B>
Area    <B>          </B>

```

To stop, press EXIT!

 where a cell of appropriate length is reserved for each active field. After creation all fields are active, but the status of each field is easily specified later by FILE ACTIVATE (or simply by FILE_ACT).

The data values can now be entered in a natural way. To move the cursor between the fields, press either RETURN or the arrow keys. When the last field has been filled, the data is saved and the display for the next observation will appear. To move from an observation to another, the keys NEXT and PREV can be used.

The data may be edited simply by moving the cursor to the desired point and the corrections are made by overtyping and by using the keys INSERT and DELETE. However, if a field is protected (see [FILE](qf1_01.html) ACTIVATE) it cannot be edited. Protected cells are labelled with 'P'.

An observation may be searched for by its number or by the value of the current field first by pressing SEARCH and then entering either the number of observation or for example <100, which means that the first observation having value less than 100 in the current field will be found.

Limits for the data values:

The range of numeric fields is specified by a notation of the form {lower_limit,upper_limit} in the field description.

Similarly, the set of possible values for a string field is given as a list [value1,value2,...] in the field description.

These limitations are easily altered by the FILE STATUS and FILE UPDATE operations.

Searching in sorted data:

If the data are sorted in alphabetic order according to some string field (by FILE SORT, for example), observations may be searched for much faster. However, the system must be told before pressing SEARCH which is the string field representing the alphabetic order. This takes place by inserting a specification of the form

SORT:<name of string field>

on any of the header lines of the data file. The header lines are the lines before the FIELDS section in FILE UPDATE. Thus use FILE UPDATE for this task after the data has been sorted.

FILE EDIT <data_file>,<#_of_mask_column>

works similarly, but displays the fields which are active in the given mask column. Default is 1.

FILE EDIT <data_file>+

works as FILE EDIT <data_file> but goes to the end of the data file and displays the first empty observation after the current last one.

```
<A HREF="qf1_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
```

```
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">After a Survo data file has been created all the fields are active
and unprotected.
```

When a field is active, it will be used and it will be displayed in all Survo operations which treat the data file as a whole.

When a field is unprotected, its values can be changed.

To change the status of the fields with respect to these properties, a FILE ACTIVATE operation is used. Since this operation is very common, it can be started for the current data file also simply by pressing FILE_ACT (alt-F6).

When activating and protecting fields we have a display where one line is reserved for each field of the data file. If there are more than 20 fields, several pages of a similar type will be available.

For example, in case of the COMMUNES file (see FILE CREATE) it could be following: (The emphasized character indicates the cursor.)

```
-----
Data file: COMMUNES M= 14 Col= 1  M(active)= 5  M(protected)= 0
1 A- Commune  Name of the commune
2 A- Province UUS,TUR,AHV,H'M,KYM,MIK,KAR,KUO,KES,VAA,OUL,LAP
3 A- People   Population 1.1.1980 (#####) {100,500000}
4 A- Births   Live births in 1978 (####) {0,6000}
5 A- Area     Land area km^2 1.1.1979 (#####.##)
```

Denote passive variables by - and active by A,X,Y etc. Stop by EXIT!

After the field number a set of mask columns (now filled with A--) are displayed and these columns can now be edited simply by moving the cursor and overtyping.

The first column (now filled by A's) is meant for activation. Usually all symbols except '-' indicate an active field, but in some operations different symbols tell more about the role of the field. For example, in linear regression analysis (LINREG) 'Y' is a regressand, 'X' is a regressor, 'R' is a residual variable, etc.

The second one-character column is for protection of the fields. It is originally filled with '-'s which means that no field is protected and its values can be changed. To protect a field, simply move the cursor to that column and put 'P' instead of '-'.

For example, the display below indicates a situation where the fields 'People', 'Births' and 'Area' are active and the fields 'Commune', 'Province' and 'People' are protected:

Data file: COMMUNES M= 14 Col= 2 M(active)= 4 M(protected)= 3
1 -P Commune Name of the commune
2 AP Province UUS,TUR,AHV,H`M,KYM,MIK,KAR,KUO,KES,VAA,OUL,LAP
3 AP People Population 1.1.1980 (#####) {100,500000}
4 A- Births Live births in 1978 (####) {0,6000}
5 A- Area Land area km^2 1.1.1979 (#####.##)

Denote protected variables by P. Stop by EXIT!

As an option the scale types of the statistical variables can be given as mask column 3. By default this column is empty.
More information about scale types is found by SCALES?.

Data file: COMMUNES M= 14 Col= 3 M(active)= 4 M(protected)= 3
1 -P- Commune Name of the commune
2 APN Province UUS,TUR,AHV,H`M,KYM,MIK,KAR,KUO,KES,VAA,OUL,LAP
3 APF People Population 1.1.1980 (#####) {100,500000}
4 A-F Births Live births in 1978 (####) {0,6000}
5 A-R Area Land area km^2 1.1.1979 (#####.##)

Enter scale types: N=nominal, O=order, I=interval, R=ratio, -=no

Additional mask columns become visible by pressing ESC.
These columns can be used to save various selections of variables and they are referred to by the MASK specification of the form MASK=#7 (=mask column 7) in Survo operations.
The mask columns can be interchanged during file activation by the COPY key.

A typical situation after pressing ESC is displayed. Here the mask column 7 is being edited.

Data file: COMMUNES M= 14 Col= 7 M(active)= 4 M(protected)= 3
1 -P---A- Commune Name of the commune
2 APN---- Province UUS,TUR,AHV,H`M,KYM,MIK,KAR,KUO,KES,VAA,OUL,LAP
3 APF--AX People Population 1.1.1980 (#####) {100,500000}
4 A-F--AX Births Live births in 1978 (####) {0,6000}
5 A-R--AY Area Land area km^2 1.1.1979 (#####.##)

To stop, press EXIT!

More information during file activation mode is obtained by the HELP key.

```

<A HREF="q03_13.html">M = MASK operation/specification for dynamic activation</A>
<A HREF="qf1_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">FILE SORT &lt;data file&gt; BY &lt;list of sort keys&gt; TO &lt;new data file&gt;
where &lt;list of sort keys&gt; has the form &lt;field 1&gt;,&lt;field 2&gt;,...
sorts the observations of &lt;data file&gt; in the order specified by
&lt;list of sort keys&gt; and places the sorted data to &lt;new data file&gt;.
In &lt;list of sort keys&gt; &lt;field 1&gt; is the primary sort key, &lt;field 2&gt;
the secondary one, etc.
In case of a numeric field (sort key) the data is sorted in ascending
order. However, a '-' in front of the sort key causes the data to be
sorted in descending order.
In case of a string field as a sort key, any part of the field can be used
by indicating the first and last byte in the form
&lt;name_of the_field&gt;[&lt;first_byte&gt;:&lt;last_byte&gt;].

For example,
FILE SORT COMMUNES BY Province[1:3],-People TO B:COMSORT
sorts the data in COMMUNES primarily with respect to counties
using the 3 first letters as the sort key and then within the
counties in descending order with respect of 'People'.

In case of ties the original order will be preserved.

If string fields appear as a part of the sort key, the characters
are sorted according to the order specified by a FILTER=&lt;code_file&gt;
specification. In &lt;code_file&gt; the complete pathname must be given.
Default is FILTER=SORTCODE.BIN which equates lower case letters to upper
case ones.
You may study existing code files (extension .BIN) and create new code
files by using the CODES SAVE and CODES LOAD operations.
If no cases are active, an error message is displayed. This message is
avoided and an empty &lt;new data file&gt; created by specification SAVE=1.
As an option, a limited number of the records in the sorted data are
moved to &lt;new data file&gt;. By giving NSORT=k, only k first of the
sorted records are moved.
This is an useful option when FILE SORT is used for taking random
samples. Then random variable, say R, is computed by VAR R=rnd(0)
and the data is sorted with respect of R by
FILE SORT &lt;data file&gt; BY R TO &lt;new data file&gt; / NSORT=&lt;samplesize&gt;
<A HREF="qf5_06.html">F = Additional specifications for space allocation &amp; intermediate fil
<A HREF="qf1_01.html">D = More information on data management</A>
<A HREF="q0c_01.html">C = CODES operations</A>
<A HREF="q0b_02.html">S = Sorting of lines in the edit field</A>

```

```

<A HREF="qf7_07.html">A = Saving the sort keys</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILE INIT &lt;data_file&gt;,N
adds N new missing observations to the end of &lt;data_file&gt;.
Since, for example, VAR operates on existing observations only,
FILE INIT can be used for making space for simulated data etc.

```

```

<A HREF="qf1_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILE MASK &lt;data&gt;,&lt;1st_var&gt;,&lt;mask_column&gt;,&
writes &lt;mask&gt; in &lt;mask_column&gt; from &lt;1st_var&gt; onwards.
Example: FILE MASK DATA1,CASE,1,---
makes variable CASE and two next ones passive (-) in data file DATA1.

```

Other forms of FILE MASK:

FILE MASK DATA1,VAR3,1,A...

sets mask A (in mask column 1) for variables from VAR3 onwards.

FILE MASK DATA1,#2,3,P...

sets mask P (in mask column 3) for variables from variable #2 onwards,
i.e. protects them.

FILE MASK DATA1,(XYZ),1,A

sets mask A (in mask column 1) for variables activated by X,Y, or Z.

FILE MASK with a MASKING list: (Example)

FILE MASK DECA,M1,1

Comments

MASKING M1

Points: Y / Regressand Points

100m-400m,Weight: X / Regressors 100m,L_jump,Shot_put,L_jump,400m,Weight

RES: R / Residuals RES

OTHERS: -

END

Also indices of variables can be used. Thus in DECA, #3-#7 is the same as 100m-400m.

```
<A HREF="qf1_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">FILE STATUS &lt;name of Survo data file&gt;
displays the structure of a data file in the edit field from the last
non-empty line onwards.
The status is given as a table according to the format used in FILE
CREATE and FILE UPDATE operations. Thus when updating data files, it is
typical to use FILE STATUS first. Then it is easy to make the changes
required and alter FILE STATUS to FILE UPDATE before reactivation.
FILE STATUS shows all active fields by default and all fields by ALL=1.
FILE STATUS also offers a basis for creating new data files of related
structure.
FILE STATUS also gives the status of each field after the type (N or S)
in the form AB where A tells the activation status and B the protection
status (- or P) of the field.
The third status byte (scale type of variable) is not normally shown.
However, this and other optional status bytes can be seen in the
FILE STATUS table by activating it in the form
FILE STATUS &lt;name of Survo data file&gt;,&lt;# of status bytes&gt;
```

```
<A HREF="qf5_02.html">S = File status in a short form</A>
<A HREF="qf5_04.html">T = FILE STATUS for single variables with a given mask</A>
<A HREF="qf1_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">STAT &lt;data_file&gt;,L,STATUS
gives a short description of the structure and status of &lt;data_file&gt;
from line L onwards. As an option #MASK=&lt;list_of_characters&gt;; tells
the numbers of variables activated by given characters.
Example:
STAT DECA,CUR+1,STATUS / #MASK=XY-
#var=15 #act=5 #obs=48
#X=4 #Y=1 #-=10

```

This operation is used mostly by sucros for studying properties of a given data set.

```

<A HREF="qf1_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/qf1_01.html">D = More information on data management</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
This operation is used mostly by sucros for studying properties of
a given data set.
<A HREF="qf1_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/qf1_01.html">D = More information on data management</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM

```


For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILE STATUS &lt;data_file&gt; / GETVAR=&lt;mask_character&
prints the status and name of the &lt;n&gt;th variable
with mask &lt;mask_character&gt; in mask column &lt;col&gt;
on the line below the command line.
Default values are GETVAR=A,1,1
```

If the variable satisfying the GETVAR specification is not found.
NOT FOUND! is printed.

This operation is used mostly by sucros for studying properties of
a given data set.

```
<A HREF="qf1_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
```

```
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The structure of a Survo data file can be updated (for example, more
fields defined) by activating a FILE UPDATE operation:
FILE UPDATE &lt;name of Survo data file&gt;
followed by a complete description of the file structure.
```

In the latter case the set-up is similar to that of FILE CREATE and the
current status in the data file is always easily obtained in that form
in the edit field by activating a FILE STATUS operation.

In FILE UPDATE only those fields need to be described which
are to be changed and new variables may be defined in this way.
Also the free description of the file contents (given between FILE
UPDATE and FIELDS:) can be edited, but number of lines used for it
originally cannot be increased. The type of the field and the length
of it cannot be changed either.

For example, to add three new variables in the data file COMMUNES
(see FILE CREATE) the following FILE UPDATE could be activated

FILE UPDATE COMMUNES

FIELDS:

- 6 S 1 Agri Proportion of people in agriculture (scale 0-9)
- 7 S 1 Industry Proportion of people in industry (scale 0-9)
- 8 S 1 Service Proportion of people in service etc.(scale 0-9)

END

[D = More information on data management](#)

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo.fi/>

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>

<P><PRE CLASS="HelpText">In FILE SORT, space will be allocated for internal sorting of the sort keys. The default size of this space is 65500 bytes and it can be altered by the specification WORKSPACE=<size_in_bytes>.

If more space is required for the sort keys, FILE SORT performs internal sorts for subsets of data, saves the sorted keys in intermediate files and merges these files in one or several passes. Finally, the original data set will be moved to the sorted file according to the the last merged file of the sort keys. Thus, in principle there are no limits for the size of the data to be sorted.

The number of intermediate files merged in one pass is 4 by default.

This number can be altered by the specification FILEMAX=<#_of_files>.

Maximum is 12.

[S = More information on FILE SORT](#)

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo.fi/>

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

```

<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TXTCONV &lt;ascii_file&gt;,&lt;converted_file&gt;
converts the text file according to CONVERSIONS list:
CONVERSIONS:
R &lt;char1&gt; &lt;char2&gt; Replace char &lt;char1&gt; by &lt;char2&gt;
D &lt;char1&gt; Delete char &lt;char1&gt;
T "&lt;text1&gt;" "&lt;text2&gt;" Replace &lt;text1&gt; by &lt;text2&gt;
t "&lt;text1&gt;" "&lt;text2&gt;" Replace &lt;text1&gt; by &lt;text2&gt;
END

```

In alternatives R,D, and t,
non-printable characters are denoted as char(n) n=decimal value.

Default delimiter in texts is character " .
This character can be replaced by another by a TEXTLIMIT
specification. Example: TEXTLIMIT=*

```

<A HREF="qf5_08.html">A = Example</A>
<A HREF="qf5_09.html">B = Inserting extra characters between records</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Example:
SAVEP CUR+1,CUR+3,TXT1.TXT
AAAAAAAAAAAAAAAAABBB SURVO MM BBBBBBBBBBCCCCCCCCCCCCCCCC
1111111111111222222222222222,,,,,,,::::
AAAAAAAAAAA SURVO MM BBBBBBBBBBCCCCCCCCCCCC

```

```

TXTCONV TXT1.TXT,TXT2.TXT
CONVERSIONS:
R A a
R B b
T "SURVO MM" "Survo"
D ,
T "111" "three "
t "2char(50)2" "(char(254))"
END

```

```

LOADP TXT2.TXT
aaaaaaaaaaaaaaaaabbbb Survo bbbbbbbbbbCCCCCCCCCCCCCCCC
three three three three 11( )( )( )2:::
aaaaaaaaa Survo bbbbbbbbbbCCCCCCCCCCCC

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TXTCONV &lt;file&gt;,&lt;converted_file&gt;
CONVERSIONS:
B &lt;first_byte&gt; &lt;record_length&gt; "string"
END

```

is a special form of TXTCONV mainly for converting files where fixed-length records have no delimiters.

Thus the TXTCONV operation above makes from <file> a <converted_file> by cancelling <first_byte> first characters and copying records as such but ending each record by extra characters given as "string".

This type of conversion facilitates saving of non-standard text files in Survo data files by FILE SAVE.

For example,
B 139 48 "char(13)char(10)"

cancels bytes 0,1,2,...,138 from the beginning of <file>,, copies records of length 48, and adds CR and LF characters at the end of each record.

Use CODES LOAD <file> / BYTES=<integer>; for detecting the starting position and the record length in <file>.

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>

```

```

<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TXTRIM &lt;ascii_file&gt;,&lt;converted_file&gt;,&lt;length&gt;,&
increases the length of each line in &lt;text_file&gt; up to &lt;length&gt; characters
by inserting characters &lt;char&gt; at the end of each line.
Default &lt;char&gt; is a space.
The result is saved in &lt;converted_file&gt;.
If any of the lines is longer than &lt;length&gt; characters,
an error message is given and the process is interrupted.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TXTCOUNT &lt;ascii_file&gt;,&lt;count_file&gt;
calculates line by line frequencies of all ascii characters
in &lt;ascii_file&gt; and saves them as a new ascii file &lt;count_file&gt;
in the form:
C0   C1   C2   ... C255
f(1,0) f(1,1) f(1,2) ... f(1,255)
f(2,0) f(2,1) f(2,2) ... f(2,255)
...   ...   ...   ...
where the first line is a fixed line of labels (names)
and f(j,i) is the frequency of char i on line j.

To make statistics of &lt;count_file&gt;, convert it into a Survo data file by
FILE SAVE &lt;count_file&gt; TO &lt;new_data_file&gt; .
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>

```

<H1>&
<P><PRE CLASS="HelpText">TXTEDTOUT <edt_file>,<ascii_file>
copies an edit file (edit field in an .EDT file)
to an ascii (text) file. Also the control column and
shadow lines are copied.
The ascii file can then be sent through a network
to another Survo installation where it can be transformed
back to an edit file by the command
TXTEDTIN <ascii_file>,<edt_file> .

If only text (neither the control column nor shadow lines)
is to be sent, the standard SAVEP command should be used.

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO MM Help System (web edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO MM Help System (web edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>

<BODY>
<H1>&
<P><PRE CLASS="HelpText">TXTEDTIN <ascii_file>,<edt_file>
restores <edt_file> from an <ascii_file> made by
TXTEDTOUT <edt_file>,<ascii_file> .

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--

Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO MM Help System (web edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO MM Help System (web edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>

<BODY>
<H1>&
<P><PRE CLASS="HelpText">TXTDEL <ascii_file>,<converted_file>,L1,L2
deletes lines from <ascii_file>.

The first line to be deleted is given as the edit line L1.

The last line to be deleted is given as the edit line L2.

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TXTSHORT &lt;input_file&gt;,&lt;output_file&gt;,&lt;n&gt;
copies a text file &lt;input_file&gt; to new &lt;output_file&gt;
by shortening long fields separated by characters
defined by a DELIMITER specification (default is TAB)
and line feeds to a length of &lt;n&gt; bytes.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILE SAVE &lt;text file&gt;,&lt;Survo data file&gt;
or FILE SAVE &lt;text file&gt; TO &lt;Survo data file&gt;
adds contents of a text file (or a part of it) to a Survo data file.
If &lt;Survo data file&gt; exists, it is deleted before copying by
FILE SAVE &lt;text file&gt; TO NEW &lt;Survo data file&gt;.

```

FILE SAVE have two main working modes:

- 1 = Automatic conversion (simple alternative)
- 2 = Conversion with a FIELDS list with various options
- L = Limits of FILE SAVE
- S = Space allocation in FILE SAVE

See also:

- M = Saving a matrix file in a Survo data file (FILE SAVE MAT)
- C = TXTCONV for text file processing and modifications
- T = TXTRIM for making line lengths equal in a text file

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILE SAVE &lt;text file&gt; TO &lt;Survo data file&gt;
adds contents of a text file to a Survo data file.

```

If no extra specifications are given, it is assumed that the text file contains N lines each of them having values of M fields. The fields within one line must be separated by one or more space characters. Before creating the Survo data file, FILE SAVE scans the entire text file and observes the structure of each field. For example, it detects whether the field is a string or a numeric field. Also a suitable representation (1,2,4, or 8 bytes) for a numeric field is selected according to its range and numerical structure.

The text file can also have a line of labels (names) for the fields. If it appears as the first line in the text file and the labels are strings (not starting by digits), these labels will appear as names of fields in the new Survo data file. If the label line is missing, names X1,X2,... are selected.

Otherwise no strict format is required in the text file.

Often the text file contains extra information not belonging to the structured part of the data set to be converted. The actual data and label lines are then indicated by FIRST, LAST, and NAMES specifications.

The first and last line to be copied from the text file can be indicated by FIRST=<first line> and LAST=<last_line> specifications. Use SHOW, for example, to find proper FIRST and LAST values.

Even the names of the variables (fields) in the data file can be obtained from the text file, provided that a suitable line before the FIRST line appears with proper labels for the columns. The labels must be contiguous strings separated by spaces. The label line is indicated by a specification NAMES=<# of label line>. If NAMES is missing, names X1,X2,... are selected for the fields in the data file.

For simple mapping of columns in the text file to (active) fields of an existing data file NAMES=DEFAULT is given.

If the fields in the text file are separated from each other by a special character <ch> (instead of 'space'), use the specification DELIMITER=<ch>. Examples: DELIMITER=, DELIMITER=char(9) or DELIMITER=TAB

```

<A HREF="qf6_10.html">I = Dealing with incomplete lines</A>
<A HREF="qf6_11.html">L = Dealing with long names of variables</A>

```



```

<A HREF="qf6_01.html">S = More information on FILE SAVE</A>
<A HREF="qf1_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM</H1>
<P><PRE CLASS="HelpText">
<A HREF="qf6_10.html">I = Dealing with incomplete lines</A>
<A HREF="qf6_11.html">L = Dealing with long names of variables</A>
<A HREF="qf6_01.html">S = More information on FILE SAVE</A>
<A HREF="qf1_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM</H1>
<P><PRE CLASS="HelpText">Limits of FILE SAVE:

```

The maximum line length in the text file is at least 100000. This is not an absolute limit since long records can be divided into several lines.

The maximum number of fields in the text file is limited by the system parameter ep4 (in SURVO.APU). Typically ep4=300. This value is removed temporarily by entering a
MAXFIELDS=<# of fields>;
specification. If the current ep4 (or MAXFIELDS value) is violated, FILE SAVE displays an error message.
There is no limit for the number of records (cases, observations).

```

<A HREF="qf6_10.html">I = Dealing with incomplete lines</A>

```

```

<A HREF="qf6_11.html">L = Dealing with long names of variables</A>
<A HREF="qf6_01.html">S = More information on FILE SAVE</A>
<A HREF="qf1_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILE SAVE &lt;text file&gt; TO &lt;Survo data file&gt;
followed by a list of the form:
FIELDS:
1 &lt;name of a field in Survo data file or '-'&gt; &lt;length or delimiters&gt;
2 &lt;name of a field in Survo data file or '-'&gt; &lt;length or delimiters&gt;
- - -
K &lt;name of a field in Survo data file or '-'&gt; &lt;length or delimiters&gt;
END

```

where K is the number of fields in one logical record in the text file,
copies a part of a text file to a Survo data file.

If the Survo data file does not exist, a new file will be created.

The fields of the text file are mapped to various Survo data fields
according to the list. Fields which are not copied from the text file
are indicated by a '-' in the list.

If <length or delimiters> is not given, the field is assumed to be ter-
minated by one or several spaces in the text file. However,
the last field in each record must be terminated by a line feed.
Other fields ending with line feed should be indicated by LF in the
list. For example, 10 test3 LF

The <length or delimiters> parameter can also be an integer giving the
fixed length of the corresponding field in the text file or it can
be a sequence of delimiter characters.

For example, 11 test6 5

12 test7 :/

defines test6 as a field of 5 characters and test7 as a field of
next characters ending by : or / or space. A delimiter can also
be given in the form [decimal_value]. For example,

13 test8 [50][51]

defines test8 to be terminated by one or several '1's or '2's.

Please, note that

13 test8 12

would define test8 to be a field of 12 characters.

The first line to be copied from the text file is given by the
specification FIRST=<# of first line>. Default is FIRST=1.

Similarly, the last line to be copied is given by LAST=<# of last line>.
Default is the last line in the text file.

To control the mapping from the text file to the Survo data file with respect to observations, a MATCH specification can be given. If MATCH is omitted, all the observations will be copied to the Survo data file as new observations.

MATCH=<name of a field in the data file>; specifies the field in the Survo data file whose contents should be equal to the corresponding field of the text file. The MATCH field has to be given as one of the items in the FIELDS list.

Typically, the name of the observation serves as a match field.

The order of the observations in the text file and in the data file must be same.

Use either a string field or an integer-valued numeric field as a MATCH field. Non-integer fields are not safe as MATCH fields because their values can be rounded.

By giving MATCH=#, the order of the observation will be used as a match variable.

Example:

```
<B>FILE SAVE A:TEXT1,DATA2 </B>_ copies lines from 4 to 33 (i.e. 30 obser-
<B>FIRST=4 LAST=33 MATCH=Name</B>_ vations) from the text file TEXT1 on disk A:
<B>FIELDS: </B>_ to the Survo data file DATA2 on the
<B>1 Name </B>_ current data disk. The match field is
<B>2 Test1 </B>_ 'Name' and the fields #2 and #4 are copied
<B>3 - </B>_ to Survo data fields 'Test1' and 'Test0',
<B>4 Test0 </B>_ respectively.
<B>END </B>_
```

In all forms of FILE SAVE, code conversions are performed by a specification FILTER=<256_byte_conversion_file>.

For making of code conversion files, see [CODES](q0c_01.html)

Unwanted characters (after conversion) are skipped by

SKIP=<list_of_characters>. Example: SKIP=,"

Fields in the text file consisting of spaces and/or '-'s are treated as missing values. This convention can be overridden by a specification MISSING=<string> giving the code word <string> for a missing value. Example: MISSING=.. implies all fields with at least two consecutive '.'s to be missing values.

The default mode (MODE=1), when interpreting the text file, considers spaces as delimiters also when other symbols are given as delimiters.

Thus fields consisting of several words are not treated correctly.

In such cases a specification MODE=2 should be given. Then also empty fields terminating with LF will be accepted.

In many cases it is useful to preprocess the text file by TXTCONV or TXTRIM. For example, harmful characters may be eliminated.

Text files containing plain text or code characters (words) can be saved to Survo as values of one selected (string) variable by entering a specification either of form

FORMAT=WORD,<variable>,"delimiters"

or FORMAT=CHAR,<variable>,<length>.

If FORMAT is given, the FIELDS list is not used at all.

In the former case the text in the text file is splitted into 'words' limited by line feeds and by any of the characters given as "delimiters". Default for "delimiters" is " ,:;?!-".

The 'words' are appended to the end of the Survo data file as values of <variable>.

In the latter case code sequences of <length> characters are the 'words' to be saved as values of <variable>. Default is <length>=1.

Spaces (decimal code 32) are skipped.

By using the FILTER specification with an appropriate conversion file selected codes may be merged or skipped (by mapping them to spaces).

```

<A HREF="qf6_10.html">I = Dealing with incomplete lines</A>
<A HREF="qf6_11.html">L = Dealing with long names of variables</A>
<A HREF="qf6_01.html">S = More information on FILE SAVE</A>
<A HREF="qf1_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="qf6_07.html">1 = FILE COPY</A>
  <A HREF="qf6_09.html">2 = FILE SELECT (partial copy according to a file of key variables)</A>
  <A HREF="qf6_12.html">3 = FILE EXPAND (increasing space for variables)</A>
  <A HREF="qf6_13.html">4 = FILE CONVERT (code conversion for string variables)</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILE COPY &lt;original data&gt;;&lt;target file&gt;;
or FILE COPY &lt;original data&gt; TO &lt;target file&gt;;
copies all the active fields in a Survo data set &lt;original data&gt;;
to another Survo data file, &lt;target file&gt;.
If the latter file does not exist, a new data file will be created.
The records to be copied may be limited by the CASES, IND, and SELECT
specifications.
If the target file exists, the active fields must be defined in it,
but the types and the lengths of the fields need not be the same as in
the original file.
Observations of &lt;original data&gt; will be new ones in &lt;target file&gt;..

```

If <target file> exists, it is deleted before copying by
FILE COPY <original data>; TO NEW <target file>.

If the target file is a new one, extra space is allocated for future needs when new fields are created. If the minimum space for one record is len (in bytes) and the number of active variables m, $1.25 \times \text{len} + 20$ bytes and $1.25 \times m + 4$ fields is reserved for one record in the target file.

This convention may be overridden by a specification

NEWSPACE=<extra_amount_of_bytes>;<extra_#_of_fields>.

For example, NEWSPACE=0,0 creates a file with no extra space for new fields.

NEWSPACE=SAME implies that # of bytes/observation and max # of fields will be the same as the corresponding values in <original data>.

When a Survo data file becomes full and cannot accept new fields, a simple way to extend its capacity is to create a new file by FILE COPY thus letting it to increase space within a record.

To copy new fields to existing observations in <target file>, an extra specification MATCH=<match field> may be given in the current edit field. The observations have to be in the same order in both data files. (See an exception below.)

MATCH=# implies copying of the first observation of <original data> to the first observation of <target file>; etc. without using any match field.

As a new extension (from ver. 1.15) a set of match fields can be given in the form MATCH=<match field 1>;<match field 2>;...

Then the condition for copying is that values of all match fields in <original data> coincide with those of <target file>.

When MATCH is used, FILE COPY assumes that each case to be copied from the source file is also present in the target file. If not, an error message will be given.

Such odd cases (without counterparts in the target file) are ignored by entering a specification ODD=<variable>; .

Then, for odd cases, FILE COPY will write value 1 in the ODD variable of the source file and common cases will be copied according to MATCH.

It is the user's responsibility to initialize the ODD variable to 0

by VAR operation before FILE COPY. After FILE COPY, the ODD cases can then be easily recognized and, for example, copied after the common cases in the target file (by FILE COPY without MATCH).

The ODD variable can be omitted by entering ODD=NUL or by omitting ODD and giving a MODE=1 specification.

If common cases are not in the same order in both files, the specification must be given as ODD=<variable>;,2 or as MODE=2 when no variable for indicating odd cases is needed.

In this case the process will be much slower.

In previous forms of FILE COPY, it has been assumed that each record in source data is copied only once to the first matching record of the target file.

In some cases, it is required that for each record in the target file we have to copy the first matching record from the source data. Then it is typical that one source record is needed for many records in the target file. For example, we want to enter aggregated data for each record separately.

This kind of performance is achieved by the specification MODE=3.

In this case, possible IND, CASES, and SELECT specifications refer to the target file and not to the source file as in previous modes of FILE COPY.

D = More information on data management

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">When a new Survo data file is created by FILE SAVE, space for fields
automatically allocated according to the number and types of fields in
the text file. If the number of fields is m and the total length needed
for them is len, FILE SAVE creates a Survo data file with a capacity for
1.25*len+20 bytes and 1.25*m+4 fields in one record (observation).

```

This default setting is bypassed by a specification
 NEWSPACE=<extra_length_of_record>;<extra_#_of_variables>;
 For example NEWSPACE=0,0 creates a Survo data file with no extra space
 for new variables.

```

  <A HREF="qf6_10.html">I = Dealing with incomplete lines</A>
  <A HREF="qf6_11.html">L = Dealing with long names of variables</A>
  <A HREF="qf6_01.html">S = More information on FILE SAVE</A>
  <A HREF="qf1_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILE SELECT &lt;new_data&gt; FROM &lt;old_data&gt; BY &lt;keys&gt;
with a specification KEYS=&lt;var1&gt;;&lt;var2&gt;;...
makes a &lt;new_data&gt; file by copying observations from the &lt;old_data&gt; file
selectively.
The observations to be copied are determined by &lt;select_file&gt; which also
is a Survo data file.
Only those observations which have same values in variables indicated by
the KEYS specification in &lt;old_data&gt; and &lt;select_file&gt; are copied to

```

<new_data>.

Options:

The cases that are copied from <old_data> can be marked in a variable given by a MARK=<name_of_variable_in_old_data> specification.

The MARK variable must be created before FILE SELECT (and initialized with 0 values). FILE SELECT then gives the value 1 for the MARK variable in those cases which are copied.

By a specification NMATCH=<name_of_variable_in_select_file> the number of cases matched by each key combination is counted and saved.

Also the NMATCH variable must exist before FILE SELECT (and initialized with 0 values).

FILE SELECT is much faster than FILE COPY in applications where a subset of cases is to be selected from a huge data file according to certain identification keys.

A complementary selection of observations can be made by using a KEYS!=<var1>,<var2>,... specification. Then cases which differ at least in one of the key variables are selected.

```
<A HREF="qf1_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM
<P><PRE CLASS="HelpText">Dealing with incomplete lines in FILE SAVE
```

When a line in the text file with too few fields is encountered, an error message

Not enough fields on line (number) in text file (name)...
is displayed and the FILE SAVE operation is interrupted.

Interruption in such cases can be avoided by using a SKIP_ERRORS specification.

Incomplete lines are passed (omitted from the data file) by SKIP_ERRORS=1.

Assuming that all missing fields are at the end of the text line, use of SKIP_ERRORS=2 creates a data record also from an incomplete text line by setting missing values for the missing fields.

```
<A HREF="qf6_01.html">S = More information on FILE SAVE</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```

"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Dealing with long names of variables

```

Names of variables in Survo data files consist of max. 8 character identifier and of its extension (more accurate description, format, etc.). The identifier part must be started by a letter and other characters are typically letters and numbers. Characters like +-* /()[]{} ,! " ' ? & < > should be avoided.

Survo data files are often created from text files containing the names of variables as the first line and the actual data lines thereafter. The names and data values in those text files are separated typically by spaces or tab characters. In the latter case the names (and sometimes also the string values) may consist of long strings which often are not valid as names of variables in Survo data files. For example, the 8 first characters (the identifiers) may be identical for two or more variables.

From version 3.12 of SURVO MM an improved strategy has been adopted in FILE SAVE operation for naming the variables so that the identifiers become unique (by altering the last character when needed) and by inserting the complete name plus format as an extension to the complete name.

The old convention may be preserved by giving a specification CHECK_VAR_NAMES=0 in connection with FILE SAVE.

```

  <A HREF="qf6_01.html">S = More information on FILE SAVE</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&

```


<P><PRE CLASS="HelpText">FILE EXPAND <data_file>,m,n
increases the maximum number of variables in <data_file> by m
and the length of each record of observations by n bytes.
FILE EXPAND <data_file>;
does the job by using parameters m=m1/4+4 (m1=current max.number) and
n=n1/4+20 (n1=current record length).

By using negative values of m and n the size of <data_file> can be
reduced. If "too negative" values are given, FILE EXPAND corrects
them automatically to lowest possible values (See 'min' below).

A reduction to minimal size of the file is achieved by the command
FILE EXPAND <data_file>;min,min
This is a useful alternative when making archive copies of large Survo
data files.

D = More information on data management

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">FILE CONVERT <Survo_data>,<conversion_file(.BIN)>
makes a code conversion for values of active string variables
and active observations of a Survo data by using a conversion file.

For example,

FILE CONVERT <Survo_data>,UPLOW.BIN
converts lower case letters to upper case.

D = More information on data management

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Usage 1: PCOPY &lt;file&gt;,&lt;new_file&gt;,&lt;start&gt;,&lt;n&
PCOPY copies &lt;n&gt;*M bytes starting from position &lt;start&gt;*M
of &lt;file&gt; as a &lt;new_file&gt;.
Constant M is given by SIZE=&lt;integer&gt;.
Default is M=1 bytes.

```

Usage 2: PCOPY <file1>,<file2>
appends <file2> to (adds to the end of) <file1>.

Examples of usage on next pages

Example:

Assume that SURVO MM should be installed in a PC having no CD drive but only a diskette drive.

Then the installation file SETUP.EXE (currently about 11.5 million bytes) can be split into 8 smaller files S0.X,S1.X,...,S7.X by the PCOPY operation (in another PC).

After copying these small files to 8 diskettes the original setup file is restored in the target PC by the second form of the PCOPY operation.

The series of operations could be as follows.

Making a copy of the SURVO MM SETUP.EXE file to diskettes:

```

DIR *.EXE / Checking the size of the setup file.
SETUP.EXE  11317273 25.10.2003 11:22

```

```

SIZE=1420000 / Selecting a suitable size for small files
int(11317273/SIZE)+1=8 diskettes needed

```

```

PCOPY SETUP.EXE S0.X 0 1
PCOPY SETUP.EXE S1.X 1 1
PCOPY SETUP.EXE S2.X 2 1
PCOPY SETUP.EXE S3.X 3 1
PCOPY SETUP.EXE S4.X 4 1
PCOPY SETUP.EXE S5.X 5 1
PCOPY SETUP.EXE S6.X 6 1
PCOPY SETUP.EXE S7.X 7 1

```

Showing sizes of "parts":

```

DIR *.X
S0.X      1420000 27.10.2003 11:46
S1.X      1420000 27.10.2003 11:46
S2.X      1420000 27.10.2003 11:46
S3.X      1420000 27.10.2003 11:46
S4.X      1420000 27.10.2003 11:46
S5.X      1420000 27.10.2003 11:46
S6.X      1420000 27.10.2003 11:46
S7.X      1377273 27.10.2003 11:46
11317273 (total size by touch mode = original size)

```

These files could now be copied to diskettes and loaded back in the target PC.

Then the following commands regenerate the setup file demonstrated here as SETUP2.EXE

```

FILE DEL SETUP2.EXE / Possible existing file deleted
PCOPY SETUP2.EXE S0.X
PCOPY SETUP2.EXE S1.X

```

PCOPY SETUP2.EXE S2.X
PCOPY SETUP2.EXE S3.X
PCOPY SETUP2.EXE S4.X
PCOPY SETUP2.EXE S5.X
PCOPY SETUP2.EXE S6.X
PCOPY SETUP2.EXE S7.X

Checking the result by comparing the original and the restored file:

```
DIR *.EXE
SETUP.EXE  11317273 25.10.2003 11:22
SETUP2.EXE 11317273 27.10.2003 11:46
```

Comparision byte by byte by the (File Compare routine):

>FC SETUP.EXE SETUP2.EXE >RESULT.TXT

LOADP RESULT.TXT

Comparing files SETUP.EXE and SETUP2.EXE

FC: no differences encountered

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">FILE LOAD for loading data to the edit field or to a text file

1 = Loading observations of active fields (standard alternative)

2 = Loading names of variables conditionally on observed values

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">FILE LOAD <Survo_data_file>;L loads the active fields of the data file in the edit field from the line L onwards. If L is omitted, the next edit line is used. IND and CASES specifications are also available. To indicate the fields to be loaded, a MASK specification may be used. If the name of the data file is preceded by a '- ', the header lines are not printed in front of the data values.

Missing values are shown as '- 's. Any <string> may be used as a missing value indicator in the output by giving specification MISSING=<string>. This option applies to numeric fields only.

Example: MISSING=***

Unwanted characters are skipped by

SKIP=<list_of_characters>. Example: SKIP=,"

FILE LOAD <Survo_data_file> TO <text_file>;

moves the active fields of the data file to a text file.

Also the header lines telling the name of the data file and the names of the fields will be moved.

If <Survo_data_file> is preceded by a '- ', the header lines are not moved. This is useful in situations where several parts of a data file has to be copied in a single text file.

Each record will appear as a line terminated by a line feed character.

In both forms above, fields in the output will be separated by a space character. To use another character instead of a space, give DELIMITER=<character>. Then all fields, except the the last one, will be terminated by <character>. To terminate the last field as well with <character>, give DELIMITER=<character>;1 . DELIMITER=TAB is the same as DELIMITER=char(9).

If DELIMITER is used, both leading and trailing space characters in each field are replaced by a character given by

SPACE=<space_character>. Those characters can be erased thereafter by TXTCONV.

The spaces and commas in string variables may be replaced by other characters by using specifications STR_SPACE and STR_COMMA, respectively. For example, STR_SPACE=_ STR_COMMA=; makes the output suitable for plotting it as texts and labels (in GPLOT and PLOT).

By default names of fields are truncated according to the current format.

By NAMES8=1 field names are copied to the normal length of 8 characters.

NAMES8=2 works like NAMES8=1 but replaces the name of the first variable by blanks. This a useful option in making data tables for R, for example. C

The default format of the output is a data matrix (table). Other formats may be selected by a FORMAT specification. It has 3 different forms:

1. FORMAT=ORDER:<field_1>;<field_2>;...
reorders the fields for output.
2. FORMAT=LIST
gives the output in the form of a data list.
3. FORMAT=<name_of_format>;
specifies that a special (multiline) format given in the current edit field is to be used. This format has to be given in the form:

FORMAT <name_of_format>;

one or several lines containing free text and field

descriptions of form name_of_field: ###.##

or [name_of_field]

END

If ###.## is missing, the default format for the field is used.

In the latter case (name in brackets []) the default format is always used and the value overwrites the name of the field.

Example: (Results of FILE LOAD on line 41 appear from line 48 onwards.)

```

41 *<B>FILE LOAD FINLAND,48</B> / FORMAT=PLAN1
42 *FORMAT PLAN1
43 *[Commune]          [Province]
44 +[Popul]           [Births]
45 *-----
46 *END
47 *
48 *Helsinki           UUS
49 +483057            5851
50 *-----
51 *Tampere            H~M
52 +165453            2084
53 *-----
54 *Turku              TUR
55 +164081            2330
56 *-----
    etc.

```

Fields in format lines (lines 43-45 in the preceding example) can have various display attributes (shadow characters) and these attributes will be copied to each result line correspondingly. In this case, make sure that there is room enough for new shadow lines by using the REDIM command. Also control characters of format lines are copied. These features are valid only when data is loaded into the edit field.

In the output of FILE LOAD, a code conversion is carried out by a specification FILTER=<conversion_file> where the 256 first bytes of the conversion file defines a characterwise mapping. This file is generated by using a CODES SAVE command (See CODES?).

In this conversion, certain characters (usually blanks) are skipped (left out) by mapping them to decimal value 0.

```

<A HREF="qf1_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILE LOAD <Survo_data_file>,L
with specification
LIST_VARIABLES=<case_var>,<lower_limit>,<upper_limit>;
and with optional MASK,VARS,IND,CASES,SELECT specifications
lists field names (<case_var>) of selected observations

```

and for each observation the names of variables having values within the range (<lower_limit>,<upper_limit>).

Example: Best events for the 7 first competitors in Decathlon:

```
IND=ORDER,1,7          / Select cases
MASK=--AAAAAAAAAAAA    / Select variables
LIST_VARIABLES=Name,900,2000 / List variables with values >=900
FILE LOAD <Survo>\U\D\DECA,CUR+1
Skowrone: L_jump Hurdles Pole_vlt
Hedmark : Hurdles Javelin
Le_Roy  : L_jump Pole_vlt
Zeilbaue: L_jump Pole_vlt
Zigert  : Shot_put Pole_vlt
Bennett : 100m 400m Pole_vlt
Blinjaje: Pole_vlt
```

By default the names are listed in the short form (max. 8 characters). The names can also be listed with their extensions by giving an extra parameter T in LIST_VARIABLES.

Then, if this extension contains also a format string of the form (##.###), for example, as the L_jump variable in DECA in the form
L_jump Long jump (###) {500,1200}
the #'s are replaced by the value of the variable.

Example: Best events for the 2 first competitors in Decathlon:

```
IND=ORDER,1,2          / Select cases
MASK=--AAAAAAAAAAAA-----
LIST_VARIABLES=Name,900,2000,T / List variables with values >=900
FILE LOAD <Survo>\U\D\DECA,CUR+1
Skowrone
  L_jump Long jump ( 931) {500,1200}
  Hurdles 110 meters hurdles ( 903) {500,1200}
  Pole_vlt Pole vault ( 981) {500,1200}
Hedmark
  Hurdles 110 meters hurdles ( 914) {500,1200}
  Javelin ( 975) {500,1200}
```

Limits <lower_limit>,<upper_limit> are the same for each variable by default. In any variable, however, these values may be replaced separately by giving a specification
<name_of_variable>=<lower_limit>,<upper_limit>;

Example:

```
IND=ORDER,1,7
MASK=--AAAAAAAAAAAA-----
LIST_VARIABLES=Name,900,2000
Height=195,210 Weight=90,130 / Special limits for Height and Weight
FILE LOAD <Survo>\U\D\DECA,CUR+1
Skowrone: L_jump Hurdles Pole_vlt
Hedmark : Hurdles Javelin Height Weight
Le_Roy  : L_jump Pole_vlt Weight
Zeilbaue: L_jump Pole_vlt
Zigert  : Shot_put Pole_vlt Height Weight
Bennett : 100m 400m Pole_vlt
Blinjaje: Pole_vlt Weight
```

D = More information on data management

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Aggregation of observations in a Survo data file

```

There are two operations for this task, FILE AGGRE and FILE AGGR with different options. Since they both require using of other FILE operations, the easiest way for typical aggregations is provided by the sucro /AGGRE which combines FILE AGGR with other necessary actions automatically.

```

  <A HREF="qkv0_10.html">1 = /AGGRE</A>
  <A HREF="qf7_05.html">2 = FILE AGGRE</A>
  <A HREF="qf7_06.html">3 = FILE AGGR</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILE AGGRE &lt;Survo_data_file&gt;, &lt;new_aggregated_file&g
combines observations in a Survo data file according to values
of a selected grouping variable. Only variables activated by 'A'
will be processed. The observations can be weighted by a selected
variable activated by 'W'.

```

Aggregation is controlled by an extra specification AGGRE having the form AGGRE=<grouping variable>, <SUM or MEAN>. The observations with the same value in <grouping variable> are combined either by summing the values of variables (SUM) or by computing their mean values (MEAN). If missing values occur in any active variable, the observation in question is left out.

The aggregated observations are saved in a new Survo data file with the same structure as the original data file. If <new_aggregated_file>

already exists, it is overwritten.

To save the frequencies (or sums of weights, if 'W' variable exists), a specification `FREQ=<name_of_variable>` can be entered. This variable will be automatically created for the new aggregated file.

Example:

```
MASK=---W--AAA-AAA--- / 'Popul' is weight variable
FILE AGGRE FINLAND,PROVS
AGGRE=Province,MEAN FREQ=Popul
```

computes weighted means of 6 variables in provinces of Finland.
The aggregated data set is saved in a new data file PROVS.
Total population of each province will appear as 'Popul' in PROVS.

`D = More information on data management`

`</PRE></P><HR>`

`<DIV CLASS="Details"><SMALL>More information on Survo from `

`</BODY>`

`</HTML>`

`<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">`

`<HTML>`

`<!--`

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

`-->`

`<HEAD>`

`<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">`

`<META NAME="Generator" CONTENT="SURVO MM">`

`<TITLE>SURVO MM Help System (web edition)</TITLE>`

`<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">`

`<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">`

`<META NAME="Classification" CONTENT="help system">`

`<META NAME="Keywords" CONTENT="Survo, help, hypertext">`

`</HEAD>`

`<BODY>`

`<H1>&`

`<P><PRE CLASS="HelpText">FILE AGGR <data> BY <aggr_variable> TO <new_data>`

with a VARIABLES list forms a new data file
by aggregating consecutive observations (with a same value
in <aggr_variable>) according to different rules (functions).

The VARIABLES list is given below the FILE AGGR operation line in the form:
VARIABLES:

A1 Function1 X1 Condition1

A2 Function2 X2 Condition2

..

END

<data> must be sorted by <aggr_variable> before using FILE AGGR.

In the VARIABLES list, A1,A2,... are names of aggregated variables.

Also the type of a variable can be given as Sum:8, Name:S16.

Possible functions are listed on the next page.

X1,X2,... are names of variables in <data> to be aggregated.

Conditions are given in the form $a1*a2+...+b1*b2*...$ (as in SELECT)

Each of terms a1,a2, etc. is given as a condition of type IND or CASES.

Functions in FILE AGGR:

N Number of cases

Example: Nbig N - Big / Big=Popul,30000,500000

'-' above means that N assumes no X variable.

SUM Sum of observations

Example: Popul:8 SUM Popul
 MEAN Arithmetic mean of observations
 STDDEV Standard deviation
 MIN Minimum value
 MAX Maximum value
 #VALUES # of different values (<data> must be sorted also with respect to the X variable.)
 FIRST Value of the first observation within the aggregate
 Typically, the name of the aggregate is copied by FIRST.
 Example: Province FIRST Province
 LAST Value of the last observation within the aggregate
 NMISS Number of missing observations
 SUMS Sum of observations. If any are missing, the result is missing.
 MISSING Just a new variable with missing values is created.
 (To be continued on the next page)

Functions in FILE AGGR (Continued):

MODE Mode of the observations
 MEDIAN Median of the observations
 FRACTILE(p) p-fractile of the observations (0<=p<=1)
 ORDER(k) Observation X_k in the ordered sample X₁<=X₂<=...<=X_n
 If k<0, observation X_(n+k-1)
 Example: ORDER(-1) is same as MAX.
 ORDERN(k,V) Value of variable V for the kth observation
 Example: Maxcomm ORDERN(-1,Commune) Popul
 TMEAN(k) Trimmed mean when k largest and least cases are omitted
 TPMEAN(p) Trimmed mean on rejection probability level p (0<p<0.5)
 CORR(V) Correlation of the X and the V variable
 SLOPE(V) Slope a in the regression model X=a*V+b+eps
 INTERCEPT(V) Intercept constant b in the above regression model.
 In the 3 last functions V can be replaced by ORDER i.e.
 order 1,2,...,n of observation within the aggregate.

An application of FILE AGGR is presented by the sucro
 /AGGRDEMO

```
<A HREF="qf7_07.html">A = Using several aggregation variables</A>
<A HREF="qf1_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
```

Created by using the PRINT operation of SURVO MM
 For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILE AGGR &lt;data&gt; BY &lt;aggr_variable&gt; TO &lt;new_d
allows only one &lt;aggr_variable&gt;.
```

In certain applications a combination of several variables is needed for this purpose. Although such a combination can be created by concatenating string variables (see VARSTR?), a more direct method is to use a specification
 KEY_SAVED=<string_variable>

in the FILE SORT operation which normally precedes FILE AGGR since the data must be sorted by <aggr_variable>; KEY_SAVED in FILE SORT creates a <string_variable> if needed in the <new_data_file>; and saves the combined sort keys in it. All components of the sort key must in this case be string variables. If not, it is easy to make string variables from numeric ones (by VAR XS:S3=X TO <data>;, for example).

The example on the next page shows how this works with data file FINLAND.

```
KEY_SAVED=AIS / Sort keys to be saved as variable AIS
FILE SORT FINLAND BY Agri,Industry,Service TO FIN2
```

```
FILE AGGR FIN2 BY AIS TO FIN_AGGR
```

```
VARIABLES:
```

```
AIS:S3 FIRST AIS
```

```
N:2 N -
```

```
Mean:4 MEAN Tax
```

```
END
```

```
.....
FILE LOAD FIN_AGGR / IND=ORDER,1,5      5 first cases loaded
```

```
DATA FIN_AGGR*
```

AIS	N	Mean
018	2	15.000
027	5	15.700
035	5	16.200
036	10	16.325
044	7	15.657

```
<A HREF="qf7_06.html">A = More information on FILE AGGR</A>
<A HREF="qf1_01.html">D = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">FILE MEDIT <data_file>;
or
FILE MEDIT <data_file> <medit_file>;<name_of_pages>;
```

is an general environment for displaying, saving, and editing of Survo data files.

In the first form FILE MEDIT works like FILE EDIT but enables any number of variables to be displayed and edited. Each observation may then occupy one or more pages.

In the second form a user-defined layout of any number of pages is employed. The pages are defined in an edit file <medit_file>;.

Each page may contain fields for variables in <code><data_file></code> and free-format textual comments. Comments may be conditional, depending on the observation at hand. Also derived fields containing functions of original variables may appear. Furthermore sound effects, voice comments and graphical displays can be inserted.

FILE MEDIT provides general checking facilities for data integrity according to the needs of the user.

Search and other options are similar to those of FILE SHOW.

See also <code>http://www.survo.fi/medit/medit0.html</code>

<code></code>FILE MEDIT

<code>1 = Introductory comments and examples</code>

<code>2 = Saving and editing data</code>

<code>3 = Derived fields and data-dependent comments</code>

<code>4 = Classifying and listing of observations</code>

<code>5 = Conditional moves between pages</code>

<code>6 = Conditional pages</code>

<code>7 = Special functions</code>

<code>8 = Variable-independent setups (MEDIT_VARS)</code>

<code>9 = Inserting graphics etc. to FILE MEDIT pages (sucro /MEDITS)</code>

<code>A = Background information from other data files (INDATA)</code>

<code>C = Checking data values (CHECK specification)</code>

<code>S = Advanced applications</code>

<code>O = Options</code>

<code>D = Data file management in general</code>

<code></PRE></P><HR>

<code><DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi</code>

<code></BODY>

<code></HTML>

<code><!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

<code>"http://www.w3.org/TR/html4/loose.dtd">

<code><HTML>

<code><!--

<code>Created by using the PRINT operation of SURVO MM

<code>For more information, see http://www.survo.fi/

<code>-->

<code><HEAD>

<code><META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<code><META NAME="Generator" CONTENT="SURVO MM">

<code><TITLE>SURVO MM Help System (web edition)</TITLE>

<code><LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<code><META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<code><META NAME="Classification" CONTENT="help system">

<code><META NAME="Keywords" CONTENT="Survo, help, hypertext">

<code></HEAD>

<code><BODY>

<code><H1>&

<code><P><PRE CLASS="HelpText">

<code>M = More information on FILE MEDIT</code>

<code></PRE></P><HR>

<code><DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi</code>

<code></BODY>

<code></HTML>

<code><!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

<code>"http://www.w3.org/TR/html4/loose.dtd">

<code><HTML>

<code><!--

<code>Created by using the PRINT operation of SURVO MM

<code>For more information, see http://www.survo.fi/

```

-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILE MEDIT &lt;data_file&gt;
works like FILE EDIT but enables any number of variables to be displayed
and edited. Each observation may then occupy one or more pages.
Each variable is shown on its own line in the form
  &lt;name_of_variable&gt;; &lt;format&gt; &lt;extension of name of variable&gt;
Example:
  Income: ##### Income per inhabitant in 1979
FILE MEDIT (of the simple form above) also creates an edit file _MEDIT
containing the default layout. This layout can be modified and extended
according to the needs of the user.

  <A HREF="qfm_01.html#MEDIT0">M = More information on FILE MEDIT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">After creating a data file (by FILE CREATE, for example) FILE MEDIT
can be used for saving and editing data values with or without
a predefined setup of FILE MEDIT pages.
The rules are mostly the same as in FILE SHOW.

  <A HREF="qfm_01.html#MEDIT0">M = More information on FILE MEDIT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Various derived fields (calculated according to rules of editorial
computing) are presented on FILE MEDIT pages in the form

```

Population density: #####.# inhabitants/km² / density=Popul/Area

giving in data FINLAND for Helsinki:

Population density: 2731.1 inhabitants/km² / density=Popul/Area

Values of variables and expressions can be presented also
as data-dependent comments, for example:

Population density in %1 is %2. / %1=Commune %2=round(Popul/Area,1)

giving in data FINLAND for Helsinki:

Population density in Helsinki is 2731.1.

```

<A HREF="qfm_01.html#MEDIT0">M = More information on FILE MEDIT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Especially in free-format statements about properties of observations
it is worthwhile to use CLASSIFICATION structures which are partially
similar to those in the CLASSIFY operation.
A classification is defined as
CLASSIFICATION <name_of_classification>
<list_of_values>: <value_or_statement>;
<list_of_values>: <value_or_statement>;
...
END
and the values of variables are classified by a special function
$CLASS(<name_of_variable>,<name_of_classification>).

```

Then, for example, purely verbal narrations of observations may be

created.

In such situations it is also good to collect selected or even all descriptions to one edit field (by a MEDIT_SAVE specification).

These features are illustrated in the next example.

```
<A HREF="qfm_01.html#MEDIT0">M = More information on FILE MEDIT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Advanced applications of FILE MEDIT (not available in the Web ed
```

An application with symbolic notations |X1|,|X2|,...
Monthly data presented by years (tables and graphs)
An example in Finnish
A non-standard application:

```
<A HREF="qfm_01.html#MEDIT0">M = More information on FILE MEDIT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">It is possible to move from a MEDIT FILE page to another
(also backwards) and even within the same observation.
A &lt;NEXT&gt; list located at the end of the page (before END) provides this
facility.
In the &lt;NEXT&gt; list conditional moves to other pages are given in
```

the form

<condition> <page_to_be_selected_if_condition_is_true> <comments>
<condition> can be of the type SELECT or an equality or inequality
composed of arithmetic expression of variables.

Example:

<NEXT> 6 / comments to be shown on the edit line 6
Smoke=1 Smoke Moving to page 'Smoke'!
Smoke=0 NonSmoke Moving to page 'NonSmoke'!
END (of the page)

This feature is useful when saving results of surveys where relevant questions for any individual are dependent on the feedback obtained in earlier questions.

```
<A HREF="qfm_01.html#MEDIT0">M = More information on FILE MEDIT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Some of the FILE MEDIT pages may be conditional depending on the
properties of the observation.
```

A conditional page is indicated by a page header of the form

Page:<name> CONDITION:<condition of type SELECT>

Example:

Northern=Province:LAP,OUL,VAA,KUO Small=Popul,0,10000
Page 2a: CONDITION:Northern*Small

%1 is a northern and small commune. / %1=Commune

END

Since variables with lags and leads can also be used on FILE MEDIT pages, monthly time series may be presented year by year, for example.

In the example below only cases 'January' are selected, but on the pages also information about other months can be given by using notations Temp[+1],Temp[+2],... for variable Temp.

January=Month:1 / Definition of the condition
PAGE Page1: CONDITION:January

Year: ####

Temperature in January %1 / %1=Temp
Temperature in February %1 / %1=Temp[+1]
Temperature in March %1 / %1=Temp[+2]

etc.
END

This feature is used in the following advanced example.

```
<A HREF="qfm_01.html#MEDIT0">M = More information on FILE MEDIT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">In addition to standard mathematical functions (like sqrt(),log(), etc.)
certain special functions are available on FILE MEDIT pages.
```

\$MEAN(X) arithmetic mean of variable X in non-missing observations.
\$STDDEV(X) standard deviation of X
\$N(X) number of non-missing observations of X
\$CORR(X,Y) correlation coefficient between variables X and Y.
\$MIN(X) smallest value of X
\$MAX(X) greatest value of X
\$ORDER() order of current observation
\$DAY() current day of month (values 1,2,...,31)
\$MONTH() current month (values 1,2,...,12)
\$YEAR() current year (values 2005,2006,...)
\$WDAY() current weekday (1=Monday,...,7=Sunday)
\$CLASS See MEDITCL?

In the next [EXAMPLE] also usage of timestamps (MEDIT_TIME) is shown.

```
<A HREF="qfm_01.html#MEDIT0">M = More information on FILE MEDIT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
```



```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">By using symbolic notations |X1|,|X2|,... for variables and a MEDIT_
specification of the form MEDIT_VARS=Var1,Var2,...
variable-independent setups for FILE MEDIT can be created.

```

Example:

Assume that we have created FILE MEDIT pages EX2 in the edit file ED2 and used names |X1| and |X2| for the two variables appearing on pages EX2.

Then the setup can be applied to variables Height and Weight in DECA by FILE MEDIT DECA ED2:EX2 / MEDIT_VARS=Height,Weight and to variables Income and Brthrte in FINLAND by FILE MEDIT FINLAND ED2:EX2 / MEDIT_VARS=Income,Brthrte

[EXAMPLE] of this feature is presented in special applications of FILE MEDIT (Study of two variables).

```

<A HREF="qfm_07.html">S = Special applications</A>
<A HREF="qfm_01.html#MEDIT0">M = More information on FILE MEDIT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The displays of FILE MEDIT pages can be extended by graphs or other
things related to the data and the observation at hand by setting
SUCRO:MEDITS on the PAGE line (see below).
Then a special sucro MEDITS will work with commands and data appearing
between lines &lt;START&gt; and &lt;END&gt; (see below).

```

Example:

PAGE Page1: SUCRO:MEDITS

(Text and fields displayed by FILE MEDIT itself)

<START> data for sucro MEDITS

Commands activated by /MEDITS and specifications related to commands:
Each command to be activated by /MEDITS is indicated by the code <ACT> at the end of the line.

<END> data of sucro MEDITS
END of page

Before the MEDITS sucro does its job in current application, another

(new) Survo session is started and MEDITS will work in this environment.
The code of MEDITS is listed by
/TUTSHOW <Survo>\U\S\MEDITS

MEDITS may be replaced by another surco if needed.

[EXAMPLE]'s of this feature is presented in special applications of
FILE MEDIT (Study of two variables and Weather in Helsinki).

```
<A HREF="qfm_07.html">S = Special applications</A>
<A HREF="qfm_01.html#MEDIT0">M = More information on FILE MEDIT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">Background information from other data files (INDATA)
```

Information from other data files can be displayed on FILE MEDIT pages.
These other data files are referred to by an INFILE specification.
INFILE lists the names of additional data files (as in the VAR
operation). These files are referred to by names D1,D2,... in the order
they appear in the INFILE list.

For example, if we have INFILE=DATX,DATY then D2:Weight refers to
variable 'Weight' in data file DATY.

By default, values of INFILE data are matched according to the order
of the observation.

They can also matched by a certain (identification) variable appearing
in both files by using notation of the form

Di:data_file_i>match_variable (example: D2:Weight>Name).

```
<A HREF="qfm_01.html#MEDIT0">M = More information on FILE MEDIT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
```

```

<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">After saving data values in a Survo data file by FILE MEDIT (or by
FILE SHOW etc.), the correctness of values may be checked by retyping
values in FILE MEDIT by using a CHECK specification.
During checking only values of variables given in the CHECK
specification are readily displayed and they are protected.
Thus typically at least the name or the id number of the observation is
given.
Also values of derived fields are shown. Other fields seem to be blank
but they become visible when the retyping procedure proceeds.
If a new value typed in a blank field is different from the original
one, an error message is displayed and the user may decide which is
the correct value.
Example:
CHECK=Commune,Province
FILE MEDIT FINLAND

```

```

<A HREF="qfm_01.html#MEDIT0">M = More information on FILE MEDIT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Predefined options in FILE SHOW:
<STRONG>Specification OPTIONS=</STRONG>&lt;<STRONG>string</STRONG>&gt;<STRONG>string</STRONG>
OPTIONS=W permits updating of data (without a need to press F3).
OPTIONS=S initiates sound effects.
OPTIONS=I sets insert mode.
OPTIONS=T forces pressing TAB when encountering a field limit
when data is typed or edited.
OPTIONS=P forces pressing PgDn or PgUp for page changes
OPTIONS=C writes ' ' instead of ', ' and vice versa.
Options can be combined. Example: OPTIONS=WS

<STRONG>Specification RECORD tells the first record to be displayed.</STRONG>
RECORD=101 selects record (observation) #101.
RECORD=Commune:Helsinki selects the (first) observation with value
'Helsinki' in field 'Commune'.
RECORD=Popul>400000 selects the first observation with greater value
than 400000 in variable 'Popul'.

```

```

<A HREF="qfm_01.html#MEDIT0">M = More information on FILE MEDIT</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LOWESS &lt;data&gt;,&lt;smooth_level&gt;,&lt;output_matrix&gt;
smooths a variable activated by 'Y' according to the values of another
variable activated by 'X' using a robust locally weighted regression
method (LOWESS = LOcally WEighted Scatterplot Smooth).
The smoothened values are saved into a variable activated by 'S'. If
no 'S' variable exists, the smoothened values (as well as the values of 'X'
and 'Y' variables) are saved into a matrix file given by &lt;output_matrix&gt;.
The default name of the matrix is SMOOTH.M. The results are saved in
increasing order of the 'X' values. The smoothened scatterplot can be
plotted by using this matrix file as an input (see the example below).
The &lt;smooth_level&gt; gives the level of smoothing, specified as how
many percents of the observations around each point affects the smoothing.
A suitable value is 60, which is also the default.
&lt;data&gt; must be sorted by 'X' variable before smoothing, if 'S' mask
is applied.

The number of iterations can be given by ITERATIONS=1 or 2. The default
value of 2 should be adequate for almost all situations.
In addition, the deviances from the smoothened values can be saved
into a variable activated by 'E'. If there are any missing values in &lt;data&gt;,
the 'S' and 'E' variables must also be initialized with missing values.
The IND and CASES specifications can be used to select observations.

Reference: Cleveland, W. (1979). Robust Locally Weighted Regression
and Smoothing Scatterplots. JASA 74, 829-836.

See also <A HREF="qv5_01.html">SMOOTH</A>?
(Example on the next page)

.....
Example:
LOWESS &lt;data&gt;,60,SMOOTH.M / VARS=&lt;xvar&gt;(X),&lt;yvar&gt;(Y)
.....
GPLOT SMOOTH.M,X,Y,S / YLINE=0 SLINE=1
.....
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LIST operations are used for processing of long lists and reports.
Such lists consist of several chapters specified by DEF definitions
(See <A HREF="q04_10.html">DEF</A>?) in different edit files.

  <A HREF="qk1_04.html">1 = LIST definition</A>
  <A HREF="qk3_02.html">2 = Structured LISTs</A>
  <A HREF="qk1_05.html">3 = LIST SHOW</A>
  <A HREF="qk1_06.html">4 = LIST REPLACE    Replacing a string by another in the list</A>
  <A HREF="qk1_02.html">5 = LIST SORT      List sorting</A>
  <A HREF="qk1_07.html">6 = LIST SAVE      Saving list fields by cases in a text file</A>
  <A HREF="qk1_08.html">7 = LIST MAKE      Creating lists from text files</A>
  <A HREF="qk1_09.html">8 = LIST COUNT     Frequencies of given phrases (strings)</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LIST SORT &lt;list&gt; BY &lt;sort keys&gt; TO &lt;new list&gt;;
sorts a structured list consisting of records of varying length in an order
given by &lt;sort keys&gt; and saves the sorted list in a series of other edit files
as &lt;new list&gt;.

&lt;sort keys&gt; is a sequence of the form X,Y,Z,...
where X,Y,Z... are defined as fields in a structured &lt;list&gt; definition.

&lt;new list&gt; gives a common forepart for the new edit files needed for
the sorted records. For example, if &lt;new list&gt; is D:OLIST, then files
D:OLIST1.EDT, D:OLIST2.EDT, D:OLIST3.EDT,... will be used for the
result. The output files will contain DEF definitions which specify
a new list LIST OLIST: A,OLIST1-xxx END .
The definition file of &lt;new list&gt; has the same structure as &lt;list&gt;.

```

By default the sizes of the edit fields in `<new list>` correspond to those of `<list>`. This is changed by the specification `LISTDIM=<#_lines>,<#_columns>,<max_#_shadow_lines>`.

LIST SORT (continued)

LIST SORT permits records of variable number of lines to be sorted. The records are specified in the `.LST` file defining `<list>`.

The records can be treated conditionally by using the same SELECT specification as in conditional processing of Survo data files.

By the specification `NSORT=n` only `n` first of the sorted cases will be saved as a new list.

As a checking procedure, active cases are displayed as well values of selected fields by giving a specification `SHOW=<list_of_fields>`.

LIST SORT (continued)

By the specification `FILE=<name_of_a_new_text_file>[,<delimiter>]` all fields defined in `<list>` can be saved in a text file in a form of a data matrix. The first line in the text file will consist of the names of the fields. Each active record (case) is saved as its own line thereafter. The fields are separated by character `<delimiter>`. Default is the character `|`. Thus the data in the text file can be copied to a (new) Survo data file simply by the command `FILE SAVE <text_file> TO <data_file> / DELIMITER=|`

```
<A HREF="qk1_01.html">L = More information on LIST operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM
<P><PRE CLASS="HelpText">
  <A HREF="qk1_01.html">L = More information on LIST operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LIST in Survo is a sequence of text chapters located in different
edit fields. Each chapter must be defined by a DEF definition in
its own edit field (see <A HREF="q04_10.html">DEF</A>?). The list itself is defined by
a text file with the following minimal structure:

<lt;chapter_1&gt;,&lt;edit_field_1&gt;
<lt;chapter_2&gt;,&lt;edit_field_2&gt;
...
END
```

Abbreviations like A,XYZ1-3 (meaning A,XYZ1 A,XYZ2 A,XYZ3) are also accepted.

The list thus defined is referred to by its file name with .LST as the default extension.

To process a list in a structured form, the LST file must contain some additional information.

In LIST SHOW and LIST REPLACE operations the list can also be defined locally in the current edit field in the following way:

```
LIST <lt;name_of_the_list&gt;: <lt;chapter_1&gt;,&lt;edit_field_1&gt; <lt;chapter_2&gt;,&lt;edit_field_2&gt;
... END
```

The chapters belonging to the list have to be given by DEF definitions in their edit files (See DEF?).

Example:

```
LIST REPORT1: A,INTRO1 A,INTRO2 A,INTRO3
              A,CH1 A,CH2 A,CH3 A,CH4 A,CH5 *,REF END
              (* = entire edit file)
```

The list above can also be given in an abbreviated form

```
LIST REPORT1: A,INTRO1-3 A,CH1-5 *,REF END
```

Edit files can be given with complete pathnames. A common path for all fields is given by PATH=<lt;path>. For example: PATH=D:\REPORT\

```
<A HREF="qk1_01.html">L = More information on LIST operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LIST SHOW &lt;name_of_list&gt;
opens a temporary window below the current (LIST SHOW) line and displays
the contents of the edit fields belonging to the list. The lines (and
columns) may be scrolled in that window in the same way as the edit
field is scrolled on the screen. The user sees the text belonging to
the list as one contiguous stream of lines. The changes of the fields
are indicated by extra header lines telling the edit file and chapter.

```

Various searches of strings over the entire list are initiated by the SEARCH (alt-F5) key. More information while staying in LIST SHOW is obtained by the HELP (F1) key. The S key tells about search options. The search with a previous keyword can be restarted by pressing ESC (twice).

LIST SHOW *
works with the list used most recently by LIST SHOW.

In the LIST SHOW mode, the text in the list (edit fields) cannot be edited. However, by means of a /LIST sucro, an interplay between the LIST SHOW mode and the standard editorial mode can be arranged.

The sucro command
/LIST <name_of_list>
calls the corresponding LIST SHOW operation. On exit from LIST SHOW, the last edit field shown by LIST SHOW is loaded automatically and the cursor indicates the same place as it was pointing at in LIST SHOW. The user can edit the field and save it normally. By activating /LIST * (this could be defined as a macro), FILE SHOW is called again and it immediately gives the same display as in the previous call. In this way, even very long reports are maintained easily.

The sucro command
/HLIST
lists (through LIST SHOW) all the text belonging to the inquiry (help) system of Survo.

```

<A HREF="qk1_01.html">L = More information on LIST operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LIST REPLACE &lt;name_of_list&gt;,L1,L2

```


replaces all the occurrences of the text given on the edit line L1 by that given on line L2. Even shadow characters are observed. However, LIST REPLACE is not able to create new shadow lines. Hence, cases where L2 has shadows but L1 not are not allowed.

For cases where trailing spaces should be observed, a generalized form is available. Its syntax is
LIST REPLACE <name_of_list>,L1,L2,len1,len2
where len1 is the length of the old string and len2 that of the new one.

```
<A HREF="qk1_01.html">L = More information on LIST operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM
<P><PRE CLASS="HelpText">LIST SAVE <list> TO <text_file>[,<delimiter>]
All fields defined in <list> can be saved in a text file in a form
of a data matrix. The first line in the text file will consist of
the names of the fields. Each active record (case) is saved as its
own line thereafter. The fields are separated by character <delimiter>.
Default is the character | .
Example: LIST SAVE LIST1 TO D:DATA1.TXT,char(9) / tab as delimiter
```

The data in the text file can be copied to a (new) Survo data file simply by the command
FILE SAVE <text_file> TO <data_file> / DELIMITER=char(9)

```
<A HREF="qk1_01.html">L = More information on LIST operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```

</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LIST MAKE <new_list> OF <text_file>
creates a list from a given text text file as a sequence of edit files.
For example, if <new_list> is ABC, edit files ABC1,ABC2,ABC3,...
will be created as well as a text file ABC.LST giving the names of the
edit files.
By default the sizes of the edit fields correspond to REDIM 300,100,100.
This is changed by the specification
LISTDIM=<#_lines>,<#_columns>,<max_#_shadow_lines>.

LIST MAKE <new_list> OF #<texts>

#<texts>
pathname_of_text_file_1
pathname_of_text_file_2
...
END

```

does the same job from a series of text files.

```

<A HREF="qk1_01.html">L = More information on LIST operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LIST COUNT,<Survo_list>,<phrases_name>
PHRASES <phrases>;
<phrase 1>;
<phrase 2>;
...

```

counts the frequencies of given phrases (strings) in <Survo_list> and writes the results as a column of frequencies after phrases.

By default LIST COUNT equates upper and lower case letters. To make it work in a case-sensitive way, insert an extra parameter 'C' as follows:
LIST COUNT,<Survo_list>,<phrases_name>,C

Hyphenated words (as Finland) divided into two consecutive lines are connected (as Finland) by default (HYPHENS=1). To ignore hyphenating, set HYPHENS=0 .

Counting may be restricted to selected columns by the specification COLS=C1,C2 .

Default is the entire edit line without the control column, i.e. C1=1 .
For example, by COLS=0,0 only control characters are considered.

Also keywords, strings, and phrases with shadow characters in specific positions are observed.

The following 'general' phrases are available:

	Frequency of
#chapters	chapters in the current Survo list
#records	blocks separated by one ore more empty lines
#lines	edit lines (empty lines included)
#words	strings separated by ' 's or line ends
#integers	integer numbers
#numbers	numbers (integers and decimal numbers)
#characters	all characters (trailing spaces not included)
#spaces	spaces (trailing spaces not included)
#digits	digits 0,1,2,3,4,5,6,7,8,9
#letters	letters (~ ¤ included)
#special characters	#characters-#spaces-#digits-#letters

The above features as well as certain other options are illustrated by activating /LCDemo

```
<A HREF="qk1_01.html">L = More information on LIST operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  <A HREF="qk1_01.html">L = More information on LIST operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Structured LISTs

```

Definition of a list given by a .LST text file can be extended by additional specifications telling about the structure of a list, i.e. how the text in the list can be interpreted as a sequence of cases consisting of one or more lines and how various fields within the text are identified.

In this form a list corresponds to a data file with string and numeric variables. However, there is neither a fixed length nor a fixed position of a field in one record or case.

Thus a structured LIST in Survo consists of a sequence of text chapters in edit fields with a division into cases (records) of one or more edit lines and within each case of fields (variables) in free order.

Structured LISTs (continued)

The cases are limited either by empty lines or by control characters in the control column (one character shows where the case begins and another where it ends).

The fields are indicated in different ways:

- 1) by characters in the control column,
- 2) by shadow characters (colours),
- 3) by key texts within the text itself.

The two first alternatives are most suitable since they admit coding of textual data without inserting technical notation in the text itself.

It is also possible to define subcases (by the above-mentioned means) to indicate their range within a case and define fields within a particular subcase. The subcases can also be nested thus enabling hierarchical structures in lists.

Also several structured definitions can be given to the same sequence of edit file chapters by different .LST files.

For the time being structured lists can be processed by LIST SORT.

Structured LISTs (continued)

Contents of a .LST text file for a structured LIST:

/ comment lines starting by '/'

<chapter_1><edit_field_1>

<chapter_2><edit_field_2>

...

END

CASE_START=<control_character> default: first non-empty line

CASE_END=<control_character> default: first empty line

LIST FIELDS:

1 <type> <length> <field name> <identification key>

2 <type> <length> <field name> <identification key>

...

END

<comment lines>

To a great extent the definition of fields starting from a LIST FIELDS:

line is the same as in the FILE CREATE operation (see FCREATE?)

The essential addition is the <definition> part which is needed for the identification of the field within the text.

Structured LISTS (continued)

Definition of fields:

As an example, one field in LIST FIELDS section can be given in the form

3 S 16 Name1 SHADOW:1,STRING

where '3' is # of the field 'S' the type (string), '16' the length,
and 'Name1' the name of the field.

The identification key is in this case 'SHADOW:1,STRING' which means
that the first red string (i.e. string with consecutive shadow characters 1)
in the current case will be taken as the value of field 'Name1'

Thus, if the first line in the current case with 1's as shadow characters is

This is the SURVO 84C System.

the field 'Name1' will have the value 'SURVO 84C'.

In the list of various identification keys which follows on next pages
this alternative is described briefly as

SHADOW:1,STRING

identification key

This is the SURVO 84C System.

essential part of the case text

SURVO 84C

value obtained by identification

Identification keys in structured LISTS

Keys that are already implemented are indicated by (*).

Using shadow characters:

SHADOW:1,STRING

(*) identification key

This is the SURVO 84C System.

essential part of the case text

SURVO 84C

value obtained by identification

SHADOW:1,WORD

(*)

SURVO 84C System is

System

SHADOW:(- SHADOW:)

(*)

This is the <CODE>SURVO 84</CODE>C System.

()

shadow characters

SURVO 84C

SHADOW:17 - SHADOW:71

(*)

A field (this is it) is indicated
this is it

Identification keys in structured LISTS

Using shadow characters: (continued)

#SHADOW:1,STRING

(*)

#SHADOW:1,WORD

(*)

number of strings or words indicated by shadow '1'

Identification keys in structured LISTS

Using the control column:

*CONTROL:+

(*)

+ the entire line

* the entire line

CONTROL:[- CONTROL:]

(*)

defines a subcase starting from a line with '[' in the control column and
ending to a line with ']' in the control column (the latter line also included).

A subcase is always defined as a field with type and length '-' and
any field within it is defined as follows:

5 - - PART1 CONTROL:{ - CONTROL:}

'PART1' in brackets in the definition of 'KEYW' tells that the field to be identified is the first word within the subcase 'PART1' indicated by the shadow character 1.

Identification keys in structured LISTS

Using the control column: (continued)

```
*CONTROL:+,12          *CONTROL:+,WORD,2
+01234567890123456      +SURVO 84C
*012345678901          *84C
```

```
*CONTROL:+,4,5          *CONTROL:+,WORD,2,END
+01234567890123456      +SURVO 84C System
*34567                  *84C System
```

```
*CONTROL:+,WORD
+SURVO 84C
*SURVO
```

Identification keys in structured LISTS

Using keywords within the text itself:

```
TEXT:Birth_place:_
(any text) Birth place: Helsinki
Helsinki
```

```
TEXT:Birth_place:_,16      (*)
(any text) Birth place: Helsinki 1234567890
Helsinki 1234567
```

```
TEXT:Birth_place:_,WORD
(any text) Birth place: Helsinki 1234567890
Helsinki
```

Identification keys in structured LISTS

Miscellaneous:

```
WORD#:3 [S]                (*)
the third word (in the subcase S).
```

```
#WORDS: [S]                (*)
number of words (in subcase S).
```

```
#WORDS:word1,word2,... [S]  (*)
number of words word1,word2,... (in subcase S).
Also wild card notations of the form *word,word*,*word* permitted.
```

```
#WORDS:#&lt;keyword&gt;/&lt;text_file&gt;] [S]  (*)
as above with a list of words in &lt;text_file&gt; in the form
#&lt;keyword&gt; word1,word2,....
wordn,#END
```

In the two last items comparisons are case-insensitive by default.

To make them case-sensitive, insert 'C' as follows:

```
#WORDS:C:word1,word2,... [S]  (*)
```

Identification keys in structured LISTS

```
#LINES: [S]                (*)
```

```
START:n [S]
n first bytes (control column excluded)
```

```

<A HREF="qk1_01.html">L = More information on LIST operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Several operations are available for managing the 'desktop' and orga
jobs, files, and directories. These modules are programmed by K.Vehkalahti.

<A HREF="qkv1_01.html">1 = Creating an index of files to the edit field (INDEX)</A>
<A HREF="qkv1_02.html">2 = Navigating and browsing files and directories (DD)</A>
<A HREF="qkv2_01.html">3 = Searching occurrences of text string from files (SEARCH)</A>
<A HREF="q03_07.html">4 = Changing the default directory (CD)</A>
<A HREF="qkv2_02.html">5 = Processing of dates, also in Survo data sets (DATE)</A>
<A HREF="qkv2_09.html">6 = Simple calendar functions (CALENDAR)</A>
<A HREF="qkv1_03.html">7 = Searching files from the disks and directories (WHERE)</A>
<A HREF="qkv2_10.html">8 = Copying files by matching two directories (DM)</A>
<A HREF="qkv1_04.html">9 = Browsing directory trees (TREE)</A>
<A HREF="qkv1_05.html">M = Making new directories (MD)</A>
<A HREF="qkv1_06.html">R = Removing a single directory (RD)</A>
<A HREF="qkv1_07.html">D = Removing a directory tree (DELTREE)</A>
<A HREF="qkv0_17.html">N = Useful information on file names and comments</A>

<A HREF="qkv0_02.html">! = Copyright notice and contact information</A>
<A HREF="q03_01.html">C = More information on control operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&

```

<P><PRE CLASS="HelpText">Copyright notice and contact information

The desktop modules and statistical operations
INDEX DD DATE SEARCH PVM RELIAB DATAFIND BURT MOVREG
MD RD CD DIR DELTREE
WHERE DM TREE CALENDAR as well as sucros

/LMSELECT /CHARFREQ /BOXPLOT /BARPLOT /RELIAB /TABMAT /AGGRE /BURT /KAL
/MCORRESP /FREEDISK /DIRSTAT /EDQHTML /LOGREG /DELRES /WHICH /HTML /X2
/DCONTOUR /CODESHOW /LOADMSN /HSEARCH /SEARCH /WINMAX /SCREE /MOVE
/DATACOPY /TXT-CONV /JITPLOT /TCHSHOW /CRPLOT /PS-PDF /SLAVE /OPEN
/SCATPLOT /TABULATE /MATSHOW /MDRAFTS /MASTER /TREE /SHOW /DIR
/TABDATA /SAVENOW /TUTSHOW

are programmed by Kimmo Vehkalahti. (c) K.Vehkalahti 1993-2008

Comments and suggestions may be sent to Kimmo.Vehkalahti@helsinki.fi

```
<A HREF="qkv0_01.html">D = More information on desktop operations</A>
<A HREF="qkv0_15.html">S = Information on sucros for composite plots</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">/BOXPLOT &lt;data&gt;,&lt;xvar&gt;,&lt;yvar&gt; / K
plots side by side box plots of &lt;data&gt;.
There are new options (TEMPLATE and PLOTDATA), see below!
```

Either one of <xvar> and <yvar> is assumed to be measured and the other one is assumed to give the grouping. By default <yvar> is the measured variable and <xvar> is a qualitative variable having at most 30 distinct values. (Change by CLASSMAX=k, if necessary.) The box-and-whisker plots of <yvar> are created for all values of <xvar>. However, if <yvar> is qualitative and <xvar> measured, the roles of the variables are interchanged. The boxes are then drawn horizontally instead of the default, vertical layout.

In any case, the <data> can be restricted by the IND, CASES and SELECT specifications. VARS or MASK may be used to point a label variable (for identifying outliers).

First the <xvar> and <yvar> are copied to a work file. If a label variable has been activated by 'L' mask or given by a LABEL specification (or if the first variable in <data> is of string (S) type), it will also be copied to the work file. Then the work file is sorted and aggregated according to the grouping variable. The files are created in the directory of temporary files.

Box plots are based on certain order statistics: the median, the quartiles

Q1 and Q3, the minimum and the maximum. The boxes are drawn from the lower quartile (Q1) to the upper quartile (Q3). The lines inside the boxes represent the medians. By default, the whiskers are drawn to the nearest values not beyond a standard span from the quartiles. Points beyond (outliers) are drawn individually. Giving RANGE=0 forces the whiskers to the full data range. Any positive value of RANGE multiplies the standard span by that amount. The standard span is $1.5 \times (Q3 - Q1)$.

In addition to the order statistics, the arithmetic means are computed and marked by a cross on the box.

The width of a box is $2/3$ by default. It can be altered by specification WIDTH, for example WIDTH=0.4. Giving WIDTH=N scales the boxes proportional to the number of the observations in that group. An additional parameter c may be given (like WIDTH=N,c) to make boxes wider or narrower. The default value of c is $1/(1+1/k) \times \sqrt{k}$, where k is the # of classes in the grouping variable.

Small staples are drawn in the end of the whiskers. The default length of the staples is $(\max - \min)/100$, where min and max are the minimum and maximum values of the scale of the continuous variable. Any positive value of STAPLES divides this length by that amount.

By default the sucro gives the user a ready made work scheme, where various parameters can be modified, and the picture then easily re-produced. A PostScript version of the picture can be created from that scheme by one sucro command as well. A new TEMPLATE option on the following page!

The specifications in the GLOBAL subfield may be freely modified. For example, the XDIV or YDIV specification could be changed, if there is not enough space for the boxes. Also new specifications may be added. If a label variable was supplied, the possible outliers can be identified just by modifying the *Outlier specification, and activating the /ACTIVATE sucro command, which re-produces the picture in the next graphics window.

.....
Examples:

/BOXPLOT FINLAND Province Tax

.....
/BOXPLOT FINLAND Tax Province / WIDTH=N,10 RANGE=0 STAPLES=0

.....
New: by giving PLOTDATA=1 and TEMPLATE=1
the sucro creates templates for PS and EMF plotting as well as three data files in the working directory. The names of the data sets can be changed by DATANAME specification.

The templates can be freely edited according to needs, and the subsequent calls may omit the TEMPLATE specification. Then, only the data sets will be recreated.

Example:

PLOTDATA=1 TEMPLATE=1
/BOXPLOT FINLAND Province Tax

```
<A HREF="qkv0_15.html">P = More information on composite plots</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Creating HTML applications in Survo (Kimmo Vehkalahti

```

HTML (**HyperText Markup Language**) is used in **WWW** **World Wide Web** structure of Web pages. The HTML documents consist of pure text and various control codes, called **tags**, plus some special characters. That kind of text is easily produced and managed in Survo, without a need to spoil the whole text with the HTML codes. Instead, the HTML codes are indicated in the edit field using

- control characters (characters in the control column),
- shadow characters (colors),
- various code words in brackets on the control lines.

The HTML text files are produced by the PRINT operation using a special driver **HTML40.DEV**. It translates the Survo codes to the HTML codes and converts the text to the ISO-Latin-1 (ISO-8859-1) character set.

The final layout of a page is decided by a **browser**, such as **Netscape**, **Lynx**, **Opera**, or **Internet Explorer**. HTML only defines the structure of the document. The presentation issues may be suggested by **CSS** (**Cascading Style Sheet**).

See next page for new possibilities (added in 2006)!

By using the sucro /HTML-PRINT, ready-made documents can be converted to Web documents. The sucro /HTML-TAB makes cross-tabulations like TAB and converts the table to Web form. Read more information about these sucros by activating /HTML-README . [These sucros may be a bit out-of-date...]

New in 2006: HTML is also useful for moving tables from Survo to MS Word, for example. Check the sucro below to see how to proceed!

```

<A HREF="qkvh_01.html#HTMLCODE">C = Codes and explanations briefly</A>
<A HREF="q01_08.html">H = More about hypertext applications</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&

```

<P><PRE CLASS="HelpText">/DCONTOUR <data>,<classvar>,<xvar>,<yvar>
plots a scatter diagram of <xvar> and <yvar> in <data> grouped by <classvar>
and adding the contour ellipses for each group. Specifications CONTOUR and
POINT can be used. The default values are CONTOUR=0.95 and POINT=<classvar>.
The <classvar> may be of either numeric or string type. Its classification
is sought automatically.

This sucro is useful for example in discriminant analysis, giving a plot of
discriminant space grouped by the classifying variable and each group having
its own confidence ellipse.

By activating the command in a slightly simpler form

/DCONTOUR <data>,<classvar>;

and giving the numeric variables with the MASK specification adds the vectors
describing the correlations of the variables and the discriminators. In that
case, the <xvar> is activated by X and <yvar> with Y. The variables that were
used in computing them (e.g. with /DISCRI or DISCR) are activated with A.

The sucro gives the user a ready made work scheme, where various parameters
can be modified, and the picture then easily re-produced. A PostScript
version of the picture can be created from that scheme by one sucro command
as well.

```
<A HREF="qkv0_15.html">P = More information on composite plots</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">/CRPLOT <data>,<C1>,<C2>,<C_coord>,&
creates a correspondence plot of dimensions <C1> and <C2>; so that the
information from <data> and two matrices are presented in the same
coordinate system. These plots are typical in correspondence analysis. The
data are actually a table of frequencies. See <A HREF="qmr4_01.html">CORRESP</A>? for more i
on correspondence analysis. /CRPLOT assumes that the <data> is a Survo data
file (.SVO).
```

CORRESP saves the row coordinates of the table to variables <C1> and <C2>;,
and the column coordinates to a matrix file <C_coord>. By default the name
of this matrix file is CR_COORD.M .

The column coordinates of supplementary variables (if any) can be given by
the matrix <S_coord> (by default CR_SUPPC.M). If no variables are activated
by 'S' in <data>, <S_coord> is not used.

Specification POINT can be used to give the label variable for the row
coordinates. By default, if the first active variable is a string, it will
serve as a label variable.

The `sucro` gives the user a ready made work scheme, where various parameters can be modified, and the picture then easily re-produced. A PostScript version of the picture can be created from that scheme by one `sucro` command as well.

```
<A HREF="qkv0_15.html">P = More information on composite plots</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">/TABULATE &lt;data&gt; BY &lt;var1&gt;[,&lt;var2&gt;,...] TO &
makes various types of cross-tabulations of &lt;data&gt; according to selected
variables and saves the results in &lt;list&gt;. All variables can be either
numeric or string variables. /TABULATE employs the standard TAB operation
of Survo automatically in different ways.
```

In addition to the TAB operation, `/TABULATE` produces tables of expected frequencies and contributions to chi-square. Also the tables of means and standard deviations have a slightly different form.

The grouping variables are given as parameters. Other variables are activated with mask characters, see below. They are tabulated with the grouping variables one at a time. At least one grouping variable must be given. It will be the column variable of all tables. Up to 7 grouping variables may be used, thus forming maximum of 8-dimensional tables. The second grouping variable (if given) will be the first level row variable, the third will be the second level row variable and so on.

The classifications of the grouping variables must be given following the syntax of TAB (see `TABLE?`). The main idea of `/TABULATE` is that the classifications of the activated variables are found automatically. On the other hand, any number of classifications may be readily given, to ensure proper number of classes, or to give names for the classes, for example.

The automatic classification is based on the information given by STAT, which is run once for all activated variables. Maximum number of classes is given by the `CLASSMAX=<#_of_classes>` specification (default `CLASSMAX=30`).

IND, CASES and SELECT specifications can not be used and the `<data>` can not be a data table in the edit field. Use FILE COPY, for example, to create a data file, possibly with selected observations.

The variables are activated by FILE ACTIVATE using any of the mask columns. The proper mask column is pointed out by `MASK=#<col>`, the default being `MASK=#1`. VARS and the usual MASK specifications are not available.

The sums of columns and rows are computed for each table.

The resulting <list> can be browsed by LIST SHOW <list> and printed e.g. by

```
*PRINT CUR+1,CUR+2
- [Courier(10)][line_spacing(11)][margin(300)]
- list <list>:LST
```

By default the sizes of the edit fields correspond to REDIM 350,150,50.

This is changed by the specification

LISTDIM=<#_lines>,<#_columns>,<max_#_shadow_lines>.

In summary, the results are selected as follows:

Mask Task

f Frequencies (one table)
r Frequencies + percentages in rows (two tables)
c Frequencies + percentages in columns (two tables)
t Frequencies + percentages from the grand total (two tables)
e Frequencies + expected frequencies (two tables)
x Frequencies + contributions to chi-square (two tables)
m Means, standard deviations and frequencies (one table)
F (=f+r+c+t) (four tables)
X (=f+e+x) (three tables)

```
<A HREF="q22_02.html">T = More information on TAB operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">BARPLOT <data> / K.Vehkalahti
plots a bar chart of <data> on the screen. In addition to the PLOT operation,
the colors of the bars can be selected individually (for special applications).
By default, a set of color intensities (CMYK) is given in a form of a data
table, which can be modified in various ways.
```

IND, CASES and SELECT specifications may be used for selecting observations.

Possible chart types are HBAR (default), VBAR, NHBAR and NVBAR, given by the specification TYPE.

The sucro gives the user a ready made work scheme, where various parameters can be modified, and the picture then easily re-produced. A PostScript version of the picture can be created from that scheme by one sucro command as well.

```
<A HREF="qkv0_15.html">P = More information on composite plots</A>
```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LOGREG &lt;data> / K.Vehkalahti
performs logistic regression analysis of &lt;data> by using the GENREG operation.
The logistic regression model is a special case of Generalized Linear Model
(GLM) concept, where the probability distribution is assumed to be binomial.
Most often its canonical link function, the logit function, is used.

```

The dependent variate is activated by Y. Its values can be 1's and 0's only (for success and failure, respectively). The covariates are activated by X's. Also the constant term must be specified by X (i.e. there must be a variable activated by X, in which all values are 1). Another constant variable is needed for the number of trials, which is always 1 in a dichotomous case. This variable is activated by N.

The GENREG operation is applied for the estimation of the parameters and their standard errors. In addition, Wald's Chi-square tests and their p-values are given. The Odds Ratios (OR's) of the parameters are saved in an output matrix OR.M with their 95% confidence intervals.

The residuals and the predicted values may be computed by activating more variables, see GENREG.

IND, CASES and SELECT specifications can not be used.

```

<A HREF="qu1_01.html">M = More information on generalized linear models</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">/AGGRE <data> BY <aggr_variable> TO <new_data_
combines observations in a Survo data file according to values
of <aggr_variable>. Only active variables will be processed and
saved to <new_data_file>. Also <aggr_variable> must be active.
The <data> is automatically sorted according to <aggr_variable>.
If <new_data_file> already exists, it is overwritten.
```

Sucro /AGGRE itself is a combination of existing Survo modules, namely FILE operations SORT, AGGR, COPY, STATUS and UPDATE, offering an easy way for the most typical applications. For more demanding tasks, FILE AGGR includes several additional options.

The observations having the same value in <aggr_variable> are by default combined (aggregated) by computing the means. However, aggregation may be controlled by a specification AGGRE having the value of SUM, MEAN, MEDIAN, MIN, MAX or NMISS. The observations are then combined either by summing the values, computing the means, medians, minimum or maximum values or by summing the number of missing observations.

The frequencies of the groups defined by <aggr_variable> are saved in variable 'FREQ'. An alternative name may be given by specification FREQ=<name_of_variable>.

The IND, CASES and SELECT can be used to select observations. The type (1,2,4 or 8) of new variables can be given by TYPE=<type>. Default is TYPE=4.

If the <data> includes variables which are already aggregated, i.e. they have a constant value within the groups defined by <aggr_variable>, they may be copied into the <new_data_file> as such, by activating them with 'C'.

```
<A HREF="qf7_04.html">M = More information on data aggregation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">/DATACOPY <original data> TO <target file> / K.V
copies all the active fields in a Survo data set <original data> to a
new Survo data file, <target file>. The <original data> can be either
a data table in the edit field or a Survo data file.
```

The records to be copied may be limited by the IND, CASES and SELECT

specifications. The variables (fields) are pointed out either by MASK or VARS specifications or using FILE ACTIVATE.

New space is allocated for the comment texts in <target file>. Optionally more comments may be saved from the edit field, by giving the corresponding lines by a specification LINES=L1,L2 . The <target file> (a new data file) is always created. If it already exists, overwriting is confirmed. To copy records to an existing data file, use FILE COPY.

By combining the standard FILE operations of Survo, this sucro provides an easy way for typical situations of data copying.

```
<A HREF="qf1_01.html">M = More information on data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">/X2 <frequency_table>
/ L.Tarkkonen & K.
computes the chi square test statistics and associated matrices
from a two-dimensional frequency table defined in the edit field, and
writes the essential results in the edit field below the command line.
test
The following matrices are computed and saved in the current data path:
```

```

X2F.M   / The original table in matrix form
X2E.M   / Expected frequencies
X2FM.M  / Observed frequencies with marginals
X2EM.M  / Expected frequencies with marginals
X2CM.M  / Contributions to chi square with marginals
```

The matrices with the marginal sums are loaded into the edit field using the LOADM operation with suitable formats.

```
<A HREF="qa1_01.html">S = More information on statistical tests</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
```



```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">/MDRAFTS &lt;data&gt;,&lt;class_var&gt; / K.V
plots the draftsman's display (see: <A HREF="q1d_03.html">DRAFTS</A>?) of active variables in
using different colors for all distinct values of &lt;class_var&gt;, which may be
either numeric or string variable.

```

This sucro applies the PLOT operation with TYPE=DRAFTS multiple times and gives a ready made work scheme, where parameters can be modified and the picture then easily re-produced. A PostScript version of the picture can be created from that scheme by one sucro command as well.

The VARS or MASK specifications can be employed for activating variables. If neither is found, all active variables are used. In addition, some other specifications may be used. JITTER sets the jittering value of discrete variables (see: JITTER?). By default small dots are printed as observation labels. This can be changed by POINT specification. TYPE=LOWER draws only the lower triangle of the graph (see: DRAFTS?). Correspondingly, TYPE=UPPER is available.

```

<A HREF="qkv0_15.html">P = More information on composite plots</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">/JITPLOT &lt;data&gt;,&lt;xvar&gt;,&lt;yvar&gt;
creates a scatter plot of two variables in the data set &lt;data&gt;, allowing
jittering of the values of either or both variables.

```

The jittering is based on the same principle as in the draftsman's display (see DRAFTS?). In this sucro, the jittering may be set for both variables independently by JITTER=kx,ky . For example, JITTER=0,ky leaves <xvar> intact, thus creating a 'dot plot'.

The true values are plotted as well, if a specification TRUE=1 is given.

The sucro gives the user a ready made work scheme, where various parameters can be modified, and the picture then easily re-produced. A PostScript version of the picture can be created from that scheme by one sucro command

as well.

```
<A HREF="qkv0_15.html">P = More information on composite plots</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Sucros for composite plots
There are no complicated plots, just combinations of simple ones. For example,
a box plot is a scatter diagram consisting of points that are connected with
lines. The PLOT operations include a plenty of general options, such as POINT
and LINE, which allow creating a wide range of different types of graphs.
Putting the pieces together using the sucro language (see <A HREF="qtu6_01.html">SUCROS</A>?)
an efficient way for making new graphs as composite plots.
The following sucros work on this basis:

<A HREF="qkv0_03.html">1 = /BOXPLOT plots vertical/horizontal side by side box plots</A>
<A HREF="qkv0_14.html">2 = /JITPLOT creates a jittered scatter plot of two variables</A>
<A HREF="qkv0_13.html">3 = /MDRAFTS plots a draftsman's display by groups with a legend</A>
<A HREF="qkv0_08.html">4 = /BARPLOT plots a bar chart with varying color intensities</A>
<A HREF="qkv0_06.html">5 = /CRPLOT creates a two-dimensional correspondence plot</A>
<A HREF="qkv0_05.html">6 = /DCONTOUR plots a scatter diagram with contour ellipses by group</A>
<A HREF="qkv0_18.html">7 = /SCATPLOT creates a scatterplot matrix with various options</A>

<A HREF="q11_01.html">P = More information on plotting in general</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

<P><PRE CLASS="HelpText">/LMSELECT <data>
computes linear regression model selection statistics for all combinations
of models specified with active variables in <data>. The activations are
indicated using the MASK specification. The regressand is activated by Y
and the regressors by X's. Other variables must be set passive (by '-').

/ K.Vehkalahti

The number of models is 2^k , where k is the number of regressors.
For example, with 10 regressors there are $2^{10}=1024$ different models.
Hence, a practical upper limit for the number of regressors is about 15.

Models include the constant term.

The following statistics of each model are saved in data file #LMSEL#:

- p = the number of parameters in the model (including constant)
- SSE = residual sum of squares
- s2 = residual variance
- R2 = coefficient of determination (R^2)
- R2a = adjusted coefficient of determination
- Cp = Mallows's Cp
- AIC = Akaike's information criterion
- SBIC = Schwarz's bayesian information criterion
- Coeff0 = regression coefficient of the constant term
- Coeff* = regression coefficients of the regressors (*=1,2,...,9,A,B,...)
- Status* = regressor status (1=included, 0=excluded) (*=1,2,...,9,A,B,...)

The combinations of the model equations are formed with COMB operation
(see COMB?), and the parameters are estimated by ESTIMATE op
(see ESTIMATE?).

References:

Akaike, H. (1974). A new look at the statistical model identification.
IEEE Transactions on Automatic Control, AC-19, 716-723.
Draper, N., & Smith, H. (1998). Applied Regression Analysis, 3rd ed.,
John Wiley & Sons.
Mallows, C. L. (1973). Some comments on Cp. Technometrics, 15, 661-676.
Ryan, T. P. (1997). Modern Regression Methods, John Wiley & Sons.

R = More information on regression analysis
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO MM Help System (web edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO MM Help System (web edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1>&
<P><PRE CLASS="HelpText">Useful information on file names and comments

Traditionally, a file name consists of eight characters at most. In addition,
there is the file type (for example .EDT or .SVO), which is often determined

automatically. It is a good style to give short names for things. However, sometimes longer names may be useful, e.g. when transporting files from Survo to other systems like WWW. Within Survo there is no need to apply any longer names. Actually it is even recommended that very short names are used, for example T1, T2, T3, etc., since more information on the content of the files can be represented by comments.

Most file types of Survo allow additional comments to be written freely.

The most important files are the saved edit fields (.EDT). When saving an edit field, write the SAVE command on the first line like this:

```
<B>SAVE ART3C / part 3 of the article, practical example (9.1.2002)</B>
```

Then, the file name will be "ART3C.EDT", while the rest of the line is saved as a part of the content. It will be used by various Survo operations, like INDEX, DD, SEARCH, the Menu of Jobs, and the List of References.

```
<A HREF="qkv0_01.html">D = Information on desktop operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">/SCATPLOT &lt;data>
                                     / K.Vehkalahti
creates a scatterplot matrix of active variables in the data set &lt;data>.
The graphical view consists of ordinary scatter diagrams (see <A HREF="q12_01.html">SCAT</A>
which are plotted in their own windows (see <A HREF="q111_02.html">GPLOT</A>?). The windows
organized by a special layout file which is created dynamically based on
the number of active variables. Each scatter diagram window can be freely
moved, resized, minimized, maximized, and even deleted by using the mouse.
```

By clicking the EXIT button of the graphical view, all windows are deleted, and the control returns to the edit field. The sucro gives the user a ready made work field, where various specifications can be modified, and the pictures then easily re-produced by one sucro command.

All specifications of scatter diagrams may be used in the work field, and many of them may be given even beforehand when the sucro is started, namely POINT, TREND, CONTOUR, XDIV, YDIV, SIZE, MODE, PEN, and LINETYPE. The sucro then brings these into the GLOBAL part of the work field. The default setting follows the defaults of the scatter diagrams.

Additional specifications on the next page!

Additional specifications of /SCATPLOT:

JITTER=k

Discrete variables (with at most k distinct values) are randomized uniformly around the true values within a total interval (jitter step) of (max-min)/(h-1) where h is the number of distinct values. This option is

exactly the same as in the draftsman's display (see DRAFTS?). The jitter steps are found by the MINSTAT operation (see MINSTAT?). Plotting is achieved by using the XJITTER and YJITTER specifications of GPLOT (see XJITTER?).

LOWESS=<smooth_level>

A LOcally WEighted Scatterplot Smooth (see LOWESS?) is added to the graph with the given <smooth_level>. The value 1 corresponds to the default value of LOWESS operation.

SHOW=0

By SHOW=0 the work field is created but the graphs are not automatically plotted. (By default SHOW=1 is used.)

```
<A HREF="qkv0_15.html">P = More information on composite plots</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">INDEX &lt;filespec&gt;L
                                / K.Vehkalahti
creates an index of given files. If &lt;filespec&gt; includes path, the current
working directory is changed accordingly. The file list will appear on line L
onwards. By default all files (*.*) are listed on line CUR+1.
```

Examples:

```
INDEX D:\DATA,CUR+3 / all files in D:\DATA on line CUR+3
INDEX WORKDIR\*.EDT / Survo edit fields in WORKDIR on the next line
INDEX JOB*.SVO      / Survo data files beginning with 'JOB' on the next line
INDEX END+2         / all files in the current directory on line END+2
```

There are number of specifications described on the following pages.

General options and specifications in the INDEX operation:

The file list consists of the command, file name, comment, file size and the file modification date and time. The default output includes them all in above order. The default width is the same as the width of the visible part of the edit field. The dates appear in format "DD.MM.YY" and the times in format "HH:MM". The files are listed so that directories are first and other files after them in the default order of the operating system (OS).

Each file in the list is preceded by a suitable Survo command depending on the type of the file. The default commands are:

```
SHOW      - edit files (.EDT)          CD      - directories
FILE SHOW - data files (.SVO)          &gt;UNZIP -lv - zip files (.ZIP)
/MATSHOW  - matrix files (.MAT, .M)    /CODESHOW - code files (.BIN)
/TUTSHOW  - sucro files (.TUT)         /TCHSHOW  - touch chains (.TCH)
```

/GV-SHOW - PostScript files (.PS, .EPS) > - executables (*.EXE)
GPLOT FILE - enhanced metafiles (.EMF) SHOW - other files (*.*)
/OPEN - various Windows file types (.PDF, .DOC, .XLS, .PPT, .JPG,
.JPEG, .GIF, .HTM, .HTML, .PNG, .RTF, .TIF, .TIFF)

Alternative commands are obtained simply by specifications <type>=<command>,
for example: TXT=LOADP, TMP=>DEL, TUT=/, SVO=FILE_EDIT, DIR=DD

Specifications of INDEX are:

GROUPING=<list>; Files are grouped according to the <list>; of file types.
The directories form the first group, unless ONLY is used.
An empty line is printed after each group.
Example: GROUPING=EDT,SVO,TXT

ONLY=1 Only the files having one of the types in the
GROUPING list are printed. Default: ONLY=0.

SORT=<rule>; Files are sorted according to <rule>;, which can be one of
the following: DATE, TIME, SIZE, NAME, TYPE, OS.
The default is OS. The sorting order is ascending, but it can
be changed to descending by a preceding '-', e.g., -DATE.

Specifications of INDEX (continued):

DATE=<format>; Selects a date format. Valid formats are:
DD.MM.YY DD/MM/YY DDMMYY YYMMDD MM/DD/YY
DD.MM.YYYY DD/MM/YYYY DDMMYYYY YYYYMMDD MM/DD/YYYY
(DD=day, MM=month, YY(YY)=year). Default is DD.MM.YY.
The date is omitted by DATE=0.

TIME=<format>; Selects a time format. Valid formats are:
HH:MM HH:MM:SS HH.MM HH.MM.SS
(HH=hour, MM=minute, SS=second). Default is HH:MM.
The time is omitted by TIME=0.

SIZE=0 File size is not printed. Default: SIZE=1.

Specifications of INDEX (continued):

COMMENTS=<L/R>;,w Selects whether the comments are printed on the LEFT or
RIGHT side of the file attributes (size, date and time).
The default is LEFT. The comment width may be selected
by w. The default value depends on the total width and
the other fields. <L/R>; can be omitted, if w is used.
Examples: COMMENTS=RIGHT or COMMENTS=20.

WIDTH=<n>; Sets the printing width. The default value is the current
width of the visible part of the edit field.

CASE=<case>; Changes the output to lowercase or uppercase.
By default there is no conversion. Alternatives:
CASE=LOWER or CASE=UPPER.

OUTFILE=<file>; Directs the output to a text file. If no path is given,
the file will be created in the current datapath.
If the file exists, its contents will be destroyed.
This option disables the output in the edit field.

Specifications of INDEX (continued):

TYPES=0 Not all file types are printed. Default: TYPES=1.

CD=0 The current working directory is not changed. Default: CD=1.

FORMAT=<format>; FORMAT=BARE causes only the command and the file name printed (corresponds to DATE=0 TIME=0 SIZE=0 COMMENTS=0).

FORMAT=STATS counts the number of lines and words of text files and edit files and gives them as a comment, for example #lines=13 #words=31

FORMAT=FULL adds the full path (disk and directory) to the file names. Especially useful with CD=0.

DISPLAY=<mode>; Selects whether the temporary output is displayed. Valid modes are ON and OFF. The default is ON. (This option is obsolete, since the general specification PRIND=0 or system parameter prind=0 are better for this.)

The specifications SINCE, BEFORE, MINBYTES and MAXBYTES be used with INDEX.

Most of the options and specifications are shared with the DIR operation. However, COMMENTS and WIDTH are not available with DIR.

```
<A HREF="qkv1_08.html">S = Special forms of INDEX operation</A>
<A HREF="qkv0_01.html">D = More information on desktop operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">DD <filespec>;
                                / K.Vehkalahti
displays given set of files. <filespec> can be any pathname.
The current datapath and the default directory are changed accordingly.
The default is *.* (all files from the current datapath).
```

DD (Directory Dancer) lets you browse the files and the directories very freely. You can change your file and directory selections interactively. DD uses standard Survo tools like SHOW and FILE SHOW to display files.

DD remembers the directories you have visited and finds the same point when you return to that directory. The directory list is obtained by pressing the DISK key (F4).

The key codes of DD can be obtained by pressing the HELP key (F1).

There are three ways in DD to get a new file list on the display:

- 1) Pressing ENTER on a directory name,

- 2) Pressing the Load key (L) and giving a new <filespec>;
- 3) Pressing the DISK key (F4) and selecting the directory from the list by its number.

In addition, there are two special ways:

- 4) Pressing the Where key (W) and giving a <filespec>;, which starts a file search from the given directory and its subdirectories. If no directory name is given, the search starts from the current datapath. In this <filespec>; several disks are accepted, for instance 'CDEF:ABC*.M*'. If no disk is given, only the current disk is searched. If any disks but no directories are given, the search starts from the root directory of each disk. The files, which match the given <filespec>;, are collected into a new file list.
- 5) Pressing ENTER on a zip file (type .ZIP), which not only lists shortly the current contents of that file, but also asks, if you wish to load those files. If 'Y' is answered, the files (and the directory structure) inside the zip file will be unzipped to directory 'DDTMP' which is created on the 'tempdisk'. These files (and directories) now form the new file list. At this point some of the keys have different functions, e.g. the EXIT key (F8) merely returns to the place where the zip file was unzipped (DDTMP directory is then erased).

Deleting of files and removing of empty directories is confirmed. Also, if a file of the same name exists in the target directory of either copy or move operation, overwriting will be confirmed. But, if the target directory does not exist, it will be created without further questions. Please, note that the default answer is almost always 'Y'.

The copy and delete operations correspond to the OS commands COPY and DEL. The move operation is a combination of these. The copy operation checks first, if there is enough disk space on the target drive. If not, none of the files will be copied.

The file attributes may prevent copying or deleting of a file or a directory. Those attributes can also be changed by DD. The files having ReadOnly, Hidden or System attributes are marked with a different color in the list.

By pressing the Free key (F), the disk space usage on all disks is shown. These data are in form of a Survo data, and a ready plot scheme is included. By loading the lines to the edit field and activating the GPLOT command, a nice bar chart is produced.

Specifications of DD are almost the same as in INDEX:

GROUPING=<list>; Files are grouped according to the <list>; of file types. The directories form the first group.

The files can be grouped also interactively by pressing the Group key (G).

SORT=<criteria>; Files are sorted according to <criteria>;. Valid criterias are: DATE, TIME, SIZE, NAME, TYPE, OS, MARK.

The default is OS. The sorting order is ascending, but it can be turned to descending by preceding '-'.
 The files can be sorted also interactively by pressing the Sort key (S).

The directory list file contains the last used GROUPING and SORT for every visited directory. This 'local' information overrides any specifications given in the edit field. If needed, the file can be edited or even deleted at any time.

Specifications of DD (continued):

DATE=<format> Selects a date format. Valid formats are:
DD.MM.YY DD/MM/YY DDMMYY YYMMDD MM/DD/YY
DD.MM.YYYY DD/MM/YYYY DDMMYYYY YYYYMMDD MM/DD/YYYY
(DD=day, MM=month, YY(Y)=year). Default is DD.MM.YY .

TIME=<format> Selects a time format. Valid formats are:
HH:MM HH:MM:SS HH.MM HH.MM.SS
(HH=hour, MM=minute, SS=second). Default is HH:MM .

TUTSTACK=1 The following facts about the file last pointed
to is written to the sucro memory after exit:
W1: one of the letters D,E,F: D=directory,
E=edit file, F=any other file
W2: the name of the file
W3: the path of the file

Specifications of DD (continued):

SINCE=<date> Selects only files which were modified since (on or after)
the given date. The <date> can be any date, and its format
may be given by DATE=<format> (see above), or TODAY, which
means the current date. Also relative dates are possible
with TODAY, for example TODAY-7 or even TODAY+1.

BEFORE=<date> Selects only files which were modified before the given
date. The rules are identical to those of SINCE (see above).

MINBYTES=<size> Selects only files being at least <size> bytes in size.

MAXBYTES=<size> Selects only files being at most <size> bytes in size.

A file is processed only if all given conditions are satisfied.

The previous four specifications (SINCE, BEFORE, MINBYTES, MAXBYTES) are
all available with the same rules in DD, WHERE, SEARCH, INDEX and DM.

```
<A HREF="qkv0_01.html">D = More information on desktop operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">WHERE <filespec>
searches files from the disk(s) by their name. By default the found files
are presented as a file list in another desktop operation, DD (see <A HREF="qkv1_02.html">DD</A>).
The default behaviour can be modified by various specifications, which are
described on the following pages.
```

The <filespec> can contain several disks and wildcards in the filename.
If any disk(s) without directories are given, the search starts from the
root directory of each disk:

WHERE CDE:*.TMP

If the disk(s) are omitted (giving nothing but the filename), only the
current directory tree is searched:

WHERE *.EDT

Scanning of the files is interrupted by pressing '.' (full stop).

WHERE can also be used from DD by the Where key (W).

There is another desktop operation (see SEARCH?), which searches
given words inside the files.

Specifications of WHERE:

WHERE=<rules> Modifies the search in various ways. <rules> may be
any combination of following: (separated by commas)
SUBDIRS -> scan also the subdirectories [1]
FIRST -> exit straight after first match
 (Use of TUTSTACK specification (see DD?)
 may be useful, see also sucro PS-PDF)
DD -> start DD with the files that matched [1]
[1]: (default behaviour, c.f. SEARCH)

OUTFILE=<file> The full pathnames of the found files are written into
the given file, which is erased.

The specifications SINCE, BEFORE, MINBYTES and MAXBYTE
be used with WHERE, as well as any other specifications of DD.

D = More information on desktop operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">TREE <path> / K.Vehkalahti

displays a directory tree of given path. Directories are browsed by arrow and
other keys. The current datapath and the default directory are changed
accordingly. By pressing ENTER, the contents of the current directory are
displayed using DD (see DD?).

The number of files and the amount of bytes in each directory are also
displayed on the screen.

TREE can also be used from DD by the Tree key (T).

Specifications of TREE are:

LEVEL=<!--> Only directories on levels 1-<!--> are shown (0=all).
Possible values are 0-9. Selection can be made also
interactively by pressing one of the keys 0-9.
When a level greater than 0 is selected, the filecount
and the amount of bytes concern the directory and all
its subdirectories. Default: LEVEL=0 .

OUTFILE=<!--file--> Output is written into the given file, which is erased.
The file is suitable for further processing and it can
be easily converted to Survo data file by FILE SAVE.
See also sucro /DIRSTAT which uses this feature.

```
<A HREF="qkv0_01.html">D = More information on desktop operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">MD <!--directory--> / K.Vehkalahti
creates the given <!--directory-->, as well as its parent directories, if needed.

<A HREF="qkv1_06.html">R = Removing a single directory (RD)</A>
<A HREF="qkv1_07.html">T = Removing a directory tree (DELTREE)</A>
<A HREF="qkv0_01.html">D = More information on desktop operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
```

```

<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">RD &lt;directory>;
/ K.Vehkalahti
removes the given &lt;directory>;, if it is empty.

  <A HREF="qkv1_07.html">T = Removing a directory tree (DELTREE)</A>
  <A HREF="qkv1_05.html">M = Making new directories (MD)</A>
  <A HREF="qkv0_01.html">D = More information on desktop operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">DELTREE &lt;directory>;
/ K.Vehkalahti
removes all files in the given &lt;directory>; and its subdirectories.
The operation is confirmed in interactive use, but not under sucros.

  <A HREF="qkv1_05.html">M = Making new directories (MD)</A>
  <A HREF="qkv1_06.html">R = Removing a single directory (RD)</A>
  <A HREF="qkv0_01.html">D = More information on desktop operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The following commands are available for special tasks of Windows

INDEX /SHORTNAME &lt;long_file_name>;
converts the long file name to its short representation and writes the result
on the next line. In erroneous situations, an empty line is written.

```

INDEX /LONGNAME <short_file_name>
converts the short file name to its long representation and writes the result on the next line. In errorneous situations, an empty line is written.

In general, short names should be preferred, and supported with comments in all Survo jobs. (See DESKTOP? - item 'N' for more information)

INDEX /PRINTERS,L
writes information of local printers on line L onwards.

INDEX /WINDOWS,L
writes the name of the Windows system directory on line L.

```
<A HREF="qkv0_01.html">D = More information on desktop operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">SEARCH <words>
/ K.Vehkalahti
searches the given <words> from text files and edit files. The default
behaviour can be modified by various specifications, which are described
on the following pages.
```

By default

- all files (*.*) from the current path are scanned
- actual search is aimed at text files and Survo edit field files
- only the first match on a line counts
- matching is case sensitive, i.e. uppercase and lowercase are not same
- search is paused after every match unless ESC is pressed
- SHOW commands with the filename and the line number are written in the edit field starting at line CUR+1.

There is another desktop operation (see WHERE?), which searches given file(s) by their name.

Specifications of SEARCH are:

FILES=<filespec> Only files matching <filespec> are scanned.
Examples: FILES=*.EDT FILES=D:\WRK\JOB*.TXT
FILES=C:\PROJECTS\2003*.EDT,D:\WRK\JOB*.TXT,E:*.*

SEARCH=<rules> Modifies the search in various ways. <rules> may be any combination of following: (separated by commas)
SUBDIRS -> scan also the subdirectories
DETAILED -> show all occurrences on a line
NOCASE -> case independent search: abc = ABC

QUOTED -> trailing spaces are taken into account:
the character string must be given in
quotation marks, e.g. SEARCH " abc XYZ "
FIRST -> exit straight after first match
FILE -> display only the first match of each file
DD -> start DD with the files that matched
COMMENT -> search from the comment line (1) of edit files
SHADOWS -> search from shadow lines of edit files

Specifications of SEARCH (continued):

OUTFILE=<filespec> Output is written to <filespec>. In this case nothing is written to the edit field.

SHOW=<x> <x>=0 : no SHOW commands in the output.
<x>=1 : SHOW commands in the output (default).
<x>=2 : adds pathname to SHOW commands (default,
if SEARCH=SUBDIRS or FILES includes pathname).
<x>=3 : same than <x>=1 above, but writes the SHOW
commands and comments on distinct lines.
(See sucro /SEARCH which uses this feature!)
<x>=4 : same than <x>=3, but with full pathnames.
(See sucro /HSEARCH which uses this feature!)
<x>=5 : writes the results with the appropriate shadows
when SEARCH=SHADOWS is used.
<x>=6 : same than <x>=5, but with full pathnames.

Specifications of SEARCH (continued):

RUN=1 Search begins immediately in continuous mode.

COLS=C1,C2 Search is restricted to columns C1-C2. Default value
of C2 is C1. C1=0 means the control column in Survo
edit files and the first column in text files.

TUTSTACK=1 The following facts are written to the sucro memory:
- the total number of strings found (W1),
- the number of files scanned (W2),
- the number of lines read (W3).

Exit SEARCH anytime by pressing either F8 (EXIT) or '.' (full stop).
ESC toggles between continuous and stepwise search.
By pressing 'S' the current file can be skipped.

Specifications of SEARCH (continued):

DATE=<format> Selects a date format. Valid formats are:
DD.MM.YY DD/MM/YY DDMMYY YYMMDD MM/DD/YY
DD.MM.YYYY DD/MM/YYYY DDMMYYYY YYYYMMDD MM/DD/YYYY
(DD=day, MM=month, YY(YY)=year). Default is DD.MM.YY .

TIME=<format> Selects a time format. Valid formats are:
HH:MM HH:MM:SS HH.MM HH.MM.SS
(HH=hour, MM=minute, SS=second). Default is HH:MM .

The specifications SINCE, BEFORE, MINBYTES and MAXBYTE
be used with SEARCH.

D = More information on desktop operations
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
<B>Processing of dates with the DATE operation</B> / K.Vehkalahti

```

The DATE operation includes several functions for processing of dates given in the edit field or, more generally, in the Survo data sets.

A plain DATE command without parameters gives the date and time in the form
DATE / Wednesday January 24 1996 22:48:22 Week=04 Day=024
on the current (DATE) line.

```

  <A HREF="qkv2_03.html">1 = Dates in the edit field</A>
  <A HREF="qkv2_04.html">2 = Date conversions in Survo data sets</A>
  <A HREF="qkv2_05.html">3 = Date differences in Survo data sets</A>
  <A HREF="qkv2_06.html">4 = Date formats in the DATE operation</A>
  <A HREF="qkv2_07.html">5 = Notes and examples</A>

  <A HREF="qkv2_08.html">P = P iv ys suomeksi (date and time in Finnish)</A>
  <A HREF="qkv0_01.html">D = More information on desktop operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"><B>Dates in the edit field</B>

```

DATE
without parameters gives the date and time in the form
DATE / Wednesday January 24 1996 22:48:22 Week=04 Day=024

on the current (DATE) line.

DATE <date>

gives the specified date in the same form. The <date> must be given in the format DD.MM.YYYY or DD.MM.YY.

DATE <date-fragment>

gives the date, filling in the missing parts from the present date.

DATE <+/->

gives the date incremented/decreased by the given number of days.

The above forms may be combined, for example

DATE 1.1.2000-1 / Friday December 31 1999 12:37:24 Week=52 Day=365

Dates in the edit field (continued)

DATE <date2> - <date1>

displays the difference of two given dates in the form

DATE 29.02.2000 - 1.12.1999 / Difference=90

DATE <date>;Julian

gives the Julian day number of the given date in the form

DATE 16.11.1858;Julian / Tue Nov 16 1858 Julian_day=2400000

If the given parameter is not recognized as a date or a date fragment, it will be taken as a name of a Survo data set. (See the options for data sets.)

D = More information on DATE operation

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Date conversions in Survo data sets

DATE <data>

makes date conversions in Survo data set <data>. The variables are activated by special mask characters. The conversions can be limited to observations selected by IND, CASES and SELECT specifications.

The input consists of one or more dates. In the case of one date, several output options are available, and the input date may be given either in one variable or split in three variables.

If more than one date is given as input, the same variables serve as output, i.e. the original dates are replaced by the converted ones.

A large selection of date formats is available.

The rules of input and output are described in the following table:

Input masks and formats	Output masks and formats
D,M,Y (one each) or i	d,a,j,w,J
	Format of d variable by ODATE
D (one with no M,Y)	d,a,j,w,J
Format by IDATE	Format of d variable by ODATE
D (one or more with no M,Y)	D
Formats by IDATE	Formats by ODATE

D:day/date, M:month, Y:year, d:date, a:weekday (Mon,Tue,Wed,Thu,Fri,Sat,Sun)
j:day number (001-366), w:week number (01-53), J,i:Julian day number

The week numbers are calculated using a Finnish algorithm.

The Julian days may be scaled to a given date by specification

JULIAN_DAY0=<julian_day_number>. To find out the Julian day number of a date, use DATE <date>,Julian in the edit field.

```

<A HREF="qkv2_06.html">F = Date formats</A>
<A HREF="qkv2_02.html">D = More information on DATE operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText"><B>Date differences in Survo data sets</B>

```

DATE <date>, <rules>;
computes date differences in Survo data set <date>, according to the
given set of <rules>. The differences are days between two given dates.

The <rules> list must be defined in the following form:

```

DATE_RULES <rules>;
<output_variable>=<date_variable>;-<date_variable>;
<output_variable>=<date_variable>;-<date_variable>;
...
END

```

The common format of <date_variable>s are given by IDATE specification.

If <output_variable> does not exist, a new variable will be created.

By default it is of type 2. Other types may be selected by using the
notation <output_variable>:<type>; where <type> is 1,2,4,8 or S<len>;

and <len> is the length of a string variable.

The conversions can be limited to observations selected by IND, CASES and SELECT specifications.

```
<A HREF="qkv2_06.html">F = Date formats</A>
<A HREF="qkv2_02.html">D = More information on DATE operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"><B>Date formats in the DATE operation</B>
```

Date formats are combinations of date elements (Days, Months and Years), represented by codes DD, MM, MMM, YY and YYYY, respectively. The MMM code corresponds to the three-letter abbreviations of months, namely Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec. The other codes correspond to the numeric representations of the elements. The codes MM and MMM are alternatives, as well as YY and YYYY. The four-digit representation of years should be preferred in most applications.

The formats for input and output are given by the specifications IDATE and ODATE, respectively. The delimiters are given separately by the corresponding specifications IDEL and ODEL (or IDEL1, IDEL2, ODEL1, ODEL2 for special needs).

The rules of input and output are described in the following table:

Input (IDATE, IDEL)	Output (ODATE, ODEL)
-----	-----
- any combination of (DD,M*,Y*)	- any subset of (DD,M*,Y*)
- leading zeros required if no delimiters used	- leading zeros preserved in string variables
- month names case-insensitive (when using MMM) (JAN=Jan)	- month names given like Jan or Feb (when using MMM)
-----	-----

In all cases, MM and MMM are alternatives, as well as YY and YYYY.

For example,
IDATE=DDMMMYYYY with IDEL=/ corresponds to dates like 15/Nov/1999
ODATE=YYYYMM with ODEL=+ gives dates like 1999+11

The following special cases are available as shortcuts:

DD.MM.YY DD.MM.YYYY DD/MM/YY DD/MM/YYYY MM/DD/YY MM/DD/YYYY DD-MM-YY

```
<A HREF="qkv2_02.html">D = More information on DATE operation</A>
</PRE></P><HR>
```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"><B>Notes and examples</B>

```

A Julian day algorithm is used in all calculations of DATE. The transition date is 18.2.1753, when Finland (as part of Sweden that time) changed to the Gregorian calendar. The algorithm is valid from 4713 B.C. to 9999 A.D. DATE supports years from 200 A.D. The years 0-99 mean the current century. **[*]** Source: Calendrical Calculations, by Nachum Dershowitz and Edward M. Reingold. In Software-Practice and Experience, 20, number 9 (September 1990), pp899-928.

[*] When working with Survo data sets, the specification **CENTURY** may be used to change this behaviour. For example: CENTURY=1900 (default: CENTURY=2000).

In addition, specification **SHIFT** is available for working with dates that range over the turn of the century and are represented (in the data set) with two digits only. For example: SHIFT=75 (with the default CENTURY=2000) means that years 75-99 are handled as 1975-1999, whereas years 0-74 will be handled as 2000-2074. By default, SHIFT=0. CENTURY always overrides SHIFT.

Examples: (given in 1997)

```

DATE 18.2.1753 / Thursday March 01 1753 21:41:50 Week=09 Day=049
The gap of 10 days corrected the accumulated error in the Julian calendar:
DATE 1.3.1753 / Thursday March 01 1753 21:41:51 Week=09 Day=049
DATE 1.3.1753+85416 / Saturday January 10 1987 21:41:53 Week=02 Day=010
DATE 31.12.99+1 / Saturday January 01 2000 21:41:56 Week=52 Day=001
DATE 29.2.2000-60 / Friday December 31 1999 21:41:56 Week=52 Day=365

```

But,
DATE 31.12.99+1 / Friday January 01 2100 00:26:10 Week=53 Day=001
(given in 2000)!

Hence, it is always recommendable to use four-digit numbers for years.

```

  <A HREF="qkv2_02.html">D = More information on DATE operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->

```

```

-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PVM
kirjoittaa suomenkielisen p iv yksen muodossa
PVM / Keskiviikko, 17. tammikuuta 2001 klo 12.26 (vko 3, pv 17/365)

My s er t muut yleisemm n DATE-operaation muodot ovat k ytett viss ,
esim.
PVM +5 / Maanantai, 22. tammikuuta 2001 klo 12.26 (vko 4, pv 22/365)
PVM 1.6 / Perjantai, 1. kes kuuta 2001 klo 12.26 (vko 22, pv 152/365)
PVM 01.01.01 / Maanantai, 1. tammikuuta 2001 klo 12.26 (vko 1, pv 1/365)
PVM 6.12.1917 / Torstai, 6. joulukuuta 1917 klo 12.26 (vko 49, pv 340/365)

<A HREF="qkv2_02.html">D = Tietoa DATE-operaatiosta englanniksi</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">CALENDAR &lt;calendar file>; / K.Vehka
searches events from the &lt;calendar file>; and displays them on the screen.
The &lt;calendar file>; can be given also as a system parameter 'calendar' in
SURVO.APU file, e.g. calendar=C:\E\D\CALENDAR.96 .
The calendar file is a text file. Every event is described by one line:

&lt;s&gt; &lt;month&gt; &lt;day&gt; &lt;events&gt;

The month names can be abbreviated to three letters.
The &lt;s&gt; parameter is an optional color code (shadow character), so that
different events can be shown with different colors. The default color
is bright white on blue (shadow character '/').
By default the events of the current day and two next days are displayed.
That can be changed by specification DAYS=&lt;number&gt; .
The displayed lines can be loaded to the edit field by pressing '+'.

```

A short example of the calendar file:

SAVEP CALENDAR.95

/ Sep 27 See http://www.helsinki.fi/%7ekvehkala

Sep 28 Algorithms 13-17

/ Oct 3 Final exam in discrete math

5 Oct 12 Version 5.00!

* Oct 17 Presentation (desktop operations) 16-18

1 Nov 7 Deadline for the paper

_ Dec 22 Christmas holidays

```
<A HREF="qkv0_01.html">D = More information on desktop operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">DM &lt;source filespec&gt;,&lt;target filespec&gt;
/ K
displays two given sets of files at the same time. The former, the set of the
source files, is displayed on the left side of the screen while the latter, the
target directory, is displayed on the right side. Both source and target can be
any pathnames but they can not refer to the same directory. Files with the same
name are linked to each other in the display. If either of them is older, it is
displayed with different color.
```

The main function of DM (Directory Matcher) is to compare the contents of two directories, and copy files from the source directory to the target directory. Files may be copied either one by one, or by first marking them and then copying all marked files. The newer files are marked by pressing 'U'.

The key codes of DM can be obtained by pressing the HELP key (F1).

The file attributes may prevent copying of a file. Those attributes can be changed for example by DD (see DD?). The files having ReadOnly System attributes are printed with a different color.

Specifications of DM:

GROUPING=<list> Source files are grouped by the <list> of file types.

The files can be grouped also interactively by pressing the Group key (G).

SORT=<criteria> Source files are sorted by <criteria>. Valid keywords are DATE, TIME, SIZE, NAME, TYPE, OS, MARK.
The default is OS (operating system order).
The sorting order is ascending, but it can be turned to descending by a preceding '-', e.g. -DATE.

The files can be sorted also interactively by pressing the Sort key (S).

Specifications of DM (continued):

DATE=<format> Selects a date format. Valid formats are:
DD.MM.YY DD/MM/YY DDMMYY YYMMDD MM/DD/YY
DD.MM.YYYY DD/MM/YYYY DDMMYYYY YYYYMMDD MM/DD/YYYY
(DD=day, MM=month, YY(YY)=year). Default is DD.MM.YY .

TIME=<format> Selects a time format. Valid formats are:
HH:MM HH:MM:SS HH.MM HH.MM.SS
(HH=hour, MM=minute, SS=second). Default is HH:MM .

DISPLAY=<mode> Selects whether all files of the source directory or only the matching files (present in both directories) are displayed. The default is DISPLAY=ALL and the alternative choice is DISPLAY=MATCHING.
These modes can also be toggled by 'A' and 'M' keys.

All target files are displayed, even if they do not exist in the source directory. The source and target can be exchanged by pressing the '**X**' key. The SHOW operation is called if ENTER is pressed (for better recognition of various file types, use DD - this is meant just for text files and edit files).
DD may be started from the source directory by pressing '**D**'.

In addition to the '**U**' (Update) key, there are two other keys for marking files to be copied: '**F**' (Fill) marks files which do not exist in the target directory. '**B**' (Both) is a combination of Update and Fill.

Specifications of DM (continued):

DM=<option>,<y> <options> one of the following:
UPDATE proceeds like 'U' was pressed
FILL proceeds like 'F' was pressed
BOTH proceeds like 'B' was pressed
NORMAL proceeds like without DM specification.
If any of the first three options are used, files are marked and copying is started after single confirmation.
Overwriting of existing files is not confirmed in these cases. The rest of the confirmations may be removed by adding ",Y" after the option, e.g. DM=UPDATE,Y .
For interactive use DM=NORMAL,Y could be useful, too.
Use this specification with caution.

The specifications **SINCE**, **BEFORE**, **MINBYTES** and **MAXBYTES** be used with DM. (They apply only to the source directory.)

```
<A HREF="qkv0_01.html">D = More information on desktop operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```

<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Reliability of measurement scales

```

Reliability, which is defined as the ratio of the true variance to the total variance, is an important property of measurement. In order to estimate the reliability, the concepts of measurement model and measurement scale are required. The model specifies the structure of the measurement, and the scale, which is a combination of the measured items, represents a realization of the theoretical notions.

The reliability estimation is based on the general measurement framework introduced by Tarkkonen (1987) and further studied by Vehkalahti (2000), Tarkkonen & Vehkalahti (2005) and Vehkalahti & Puntanen & Tarkkonen (2007).

```

<A HREF="qkv3_03.html">1 = Sucro /RELIAB (most typical measurement scales)</A>
<A HREF="qkv3_04.html">2 = RELIAB operation (any given measurement scales)</A>
<A HREF="qkv3_05.html">3 = Examples</A>
<A HREF="qkv3_06.html">4 = References</A>

<A HREF="qmr3_01.html">M = More information on factor analysis and other multivariate analysis
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="qkv3_01.html">M = More information on reliability of measurement
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">

```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">The most user-friendly way to compute the reliabilities is to apply the  
sucro command
```

```
/RELIAB CORR.M,AFACT.M,MSN.M,2
```

where CORR.M is the correlation matrix, AFACT.M is the rotated factor

matrix, and MSN.M is the matrix of means, standard deviations and

number of observations. The last parameter controls the number of decimals

in the output (the default value is 2).

All parameters can be omitted, if default matrices are used.

The sucro also computes Cronbach's alpha for the sum of the items. However, Cronbach's alpha is not recommended, since Tarkkonen's measure is better in every circumstance, see Vehkalahti (2000).

The sucro computes the reliabilities of the factor images, the factor scores and the unweighted sum of the items.

```
<A HREF="qkv3_01.html">M = More information on reliability of measurement scales</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">RELIAB &lt;correlation_matrix>;&lt;factor_matrix>;&lt;factor_scores>
```

computes reliabilities of measurement scales according to a measurement

model, which is usually estimated by the maximum likelihood factor analysis

(see: FACTA?). The <factor_correlation_matrix>; is given by the

operation. If the factors are orthogonal, the matrix can be omitted.

L is the (optional) first line for the results.

The residual covariance and correlation matrices are saved to the matrix files RCOV.M and RCORR.M, respectively. The assumptions of the measurement model may be tested by studying these matrices. In an orthogonal factor model, the residual matrix should be diagonal. The off-diagonal elements (the covariances/correlations of the measurement errors) may reveal some interesting properties of the current model.

The specification MSN=<matrix_of_means,standard_deviations_and_N's>; (typically MSN=MSN.M) implies computing of Cronbach's alpha for all scales. However, Cronbach's alpha is not recommended, since Tarkkonen's measure is better in every circumstance, see Vehkalahti (2000).

For typical applications, sucro /RELIAB is preferable.

The measurement scales corresponding to the factors are called factor

images. The weights of the scales are the (rotated) factor loadings. The reliabilities of the factor images give information on the structural validity of the factor solution.

When the scales are linear combinations of the observed variables, the coefficients of weights are often given by other Survo operations, such as LINREG or /FCOEFF. They may also be set by the user, according to some theory, for example. The coefficient matrix is referred to by the specification WEIGHT.

By default, the reliability of an unweighted sum of the variables is computed, since it is a classical measurement scale is psychometrics.

The reliabilities of second order scales can be computed by using the specification WEIGHT2. Then the coefficient matrix is formed automatically by first removing the Constant-rows of the weight-matrices and then multiplying WEIGHT and WEIGHT2. In this case, the resulting second order scale coefficients are saved in the matrix file WEIGHT2.M .

```
<A HREF="qkv3_01.html">M = More information on reliability of measurement scales</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Some short examples of usage follow. All matrices presented here are
by Survo operations like CORR, FACTA, ROTATE, /FCOEFF, LINREG etc., but
the weights may also be chosen freely, e.g. based on the theory of the
application, earlier experience etc.
In these examples the factors are assumed uncorrelated (orthogonal),
but they could be oblique as well.
```

Using the suco /RELIAB:

The reliabilities of the factor images, the factor scores and the unweighted sum, including Cronbach's alpha for the sum:
/RELIAB

The above command corresponds to the following with the default matrices:
/RELIAB CORR.M,AFACT.M,MSN.M

Using the RELIAB module:

The reliabilities of the factor images and the unweighted sum:
RELIAB CORR.M,AFACT.M,END+2

The reliabilities of the factor scores:
RELIAB CORR.M,AFACT.M,END+2 / WEIGHT=FCOEFF.M

The reliability of a weighted sum of the observed variables:
RELIAB CORR.M,AFACT.M,END+2 / WEIGHT=REG.M

The reliability of a second order scale:
RELIAB CORR.M,AFACT.M,END+2 / WEIGHT=FCOEFF.M WEIGHT2=REG.M
(Here, the factor scores are used as regressors in regression analysis,
and the weights are the regression coefficients.)

The reliabilities of second order scales:
RELIAB CORR.M,AFACT.M,END+2 / WEIGHT=FCOEFF.M WEIGHT2=DISCRL.M
(Here, the factor scores are used in discriminant analysis, and the weights
are the discriminant coefficients.)

In the last two examples, the resulting second order scale coefficients
are saved in the matrix file WEIGHT2.M .

```
<A HREF="qkv3_01.html">M = More information on reliability of measurement scales</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">References:
```

Vehkalahti, Kimmo & Puntanen, Simo & Tarkkonen, Lauri (2007). Effects of measurement errors in predictor selection of linear regression model. Computational Statistics & Data Analysis, 52(2), 1183-1195.
http://dx.doi.org/10.1016/j.csda.2007.05.005

Tarkkonen, L. & Vehkalahti, K. (2005). Measurement errors in multivariate measurement scales. Journal of Multivariate Analysis, 96(1), 172-189.
http://dx.doi.org/10.1016/j.jmva.2004.09.007

Vehkalahti, Kimmo (2000). Reliability of Measurement Scales: Tarkkonen's general method supersedes Cronbach's alpha. Statistical Research Reports 17, Finnish Statistical Society, Helsinki, Finland.

Tarkkonen, Lauri (1987). On Reliability of Composite Scales. Statistical Studies 7, Finnish Statistical Society, Helsinki, Finland.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. Psychometrika, 16, 297-334.

```
<A HREF="qkv3_01.html">M = More information on reliability of measurement scales</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
    <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
    <META NAME="Generator" CONTENT="SURVO MM">
    <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
    <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
    <META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
    <META NAME="Classification" CONTENT="help system">
    <META NAME="Keywords" CONTENT="Survo, help, hypertext">
  </HEAD>
  <BODY>
    <H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
    <P><PRE CLASS="HelpText">DATAFIND &lt;text_file&gt;,L / K.Vehkalahti
    finds data tables from &lt;text_file&gt;. The tables are written to a new text file,
    the name of which is the same as the original, but its file type is '.DAF' .
    That file is created to the current data path. Overwriting is confirmed, if a
    file of that name already exists.

```

DATAFIND gives ready-to-use Survo commands for browsing the new text file and possibly loading some tables to the edit field (SHOW), for creating data files (FILE SAVE) and for listing those data files (INDEX). The commands are written from line L onwards.

A common forepart for the names of the tables (and the data files) is taken from the name of the <text_file> (at most 6 first letters). This can be altered by specification NAME. For example, NAME=D implies names D1, D2, D3, and so on.

The data tables appear in the '.DAF'-file in the simplest form of a data matrix representation of Survo (see DATA?). If no 'natural' names for the variables are found, artificial names X1, X2, etc. are used. The names are modified, if they are not unique to first eight characters.

Continued on next page...

Those tables where the logical lines are split on several physical lines, are converted to the simplest form. This greatly simplifies the task of saving them to Survo data files, because no FIELDS list in FILE SAVE is then needed.

DATAFIND also makes conversions when appropriate. Tab characters are replaced by spaces. The comma sometimes causes problems, because it is used as a parameter delimiter in Survo and as a decimal point in some other systems. Actually, three different cases have to be considered: (converted form in parenthesis)

- 1) commas between numbers: 123,45 (123.45)
- 2) commas as field delimiters: 12,34,5 (12 34 5)
- 3) commas in pure text: 1st, 2nd, and 3rd (1st; 2nd; and 3rd)

In addition, spaces are replaced by underscores when necessary. This applies both to names and values of variables. In final form the data must have equal number of words on every line.

```

  <A HREF="q09_09.html">T = More information on text file processing</A>
  <A HREF="q23_01.html">D = Representation of data sets in Survo</A>
  <A HREF="qf1_01.html">F = Data file management in Survo</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">BURT TABLE &lt;multiway_table&gt; or BURT DATA &lt;data&gt;
creates a Burt's contingency table, which is a symmetric matrix
consisting of cross-tabulations of two or more classifiers. It can be
used as an input for multiple correspondence analysis, for example.
There are two different operations, depending on the type of input:

BURT TABLE &lt;multiway_table&gt;
  creates a Burt's table from the given multiway frequency table.
  Multiway tables are usually created by TAB operations (see: <A HREF="qu2_01.html">TABT</A>

BURT DATA &lt;data&gt;
  creates a Burt's table from the active part of &lt;data&gt;.
  The classifications of numeric variables may be given following the
  syntax of TAB operation. If no classification is given, all distinct
  values of a variable are used. The maximum number of classes is by
  default 30. It can be changed by CLASSMAX specification, if necessary.

By default the resulting Burt's table is saved as a matrix file BURT.M and
a vector of the number of classes per classifier as CLASS.M . Alternative
names can be chosen by specifications BURT and CLASS.
By specification Z=&lt;name&gt; a binary matrix of all classifier combinations
for each observation is saved. This matrix is not saved by default, as it
can easily be quite large. However, it could be useful in some situations,
as it represents a 'dummy-variable' form of the original data.

These operations are best used by the sucros /BURT-TABLE and /BURT-DATA .

For more information on multiple correspondence analysis, see <A HREF="qkv3_10.html">MCORR

References: Burt, C. (1950). The Factorial Analysis of Qualitative Data.
  Journal of Statistical Psychology, Vol. 3, No. 3, pp. 166-185.
  Lebart, L., Morineau, A., & Warwick, K.M. (1984).
  Multivariate Descriptive Statistical Analysis. Wiley.
  Gower, J.C., & Hand, D.J. (1996). Biplots. Chapman & Hall.

<A HREF="q22_02.html">T = More information on TAB operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">

```

```

<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MOVREG &lt;data> / K.Vehkalahti 199
performs moving linear regression analysis by orthogonalization
(based on singular value decomposition).

```

The model is specified by activating variables with Y and X's.
The constant term is omitted by setting CONSTANT=0.
The span length must be specified by SPAN=<#obs>.

The following masks for output variables may be used:

R: residuals,
P: predicted values,
r: squared multiple correlations (R^2)
V: residual variances
B: regression coefficients
S: standard errors of the regression coefficients
T: t-values (regr.coeffs/stderrs)

The number of B's, S's and T's must be the same as the number of the parameters in the model (the X-variables and the constant).

```

<A HREF="q26_01.html">R = More information on regression analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Multiple Correspondence Analysis
is a generalization of the two-way correspondence analysis (see <A HREF="qmr4_01.html">CORRESPONDENCE ANALYSIS</A>).

```

The analysis is based on a symmetrix matrix called Burt's table (see BURTS TABLE) which is created from a multiway table by /BURT-TABLE or from data file by /BURT-DATA . A suitable data file for multiple correspondence analysis is formed from the resulting Burt's table by /BURT-MCORRESP . Finally, the analysis is performed by /MCORRESP . Ready-made plot schemes are provided for screen and PostScript graphs.

/MCORRESP employs the standard CORRESP operation for computing the numerical results.

More detailed information is available for each of the subprograms:
/BURT-TABLE ?

/BURT-DATA ?
/BURT-MCORRESP ?
/MCORRESP ?

```
<A HREF="qmr4_01.html">C = More information on CORRESP operation</A>
<A HREF="q22_02.html">T = More information on TAB operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">

<A NAME="HTMLCODE"></A>
<B>Codes defined in </B><B>HTML40.DEV</B><B> driver</B>

  <A HREF="qkvh_02.html">1 = Structure codes</A>
  <A HREF="qkvh_03.html">2 = Headers and titles</A>
  <A HREF="qkvh_04.html">3 = Lines and paragraphs</A>
  <A HREF="qkvh_05.html">4 = Links</A>
  <A HREF="qkvh_06.html">5 = Lists</A>
  <A HREF="qkvh_07.html">6 = Text styles</A>
  <A HREF="qkvh_08.html">7 = Other elements</A>
  <A HREF="qkvh_09.html">8 = Fonts</A>
  <A HREF="qkvh_10.html">9 = Images</A>
  <A HREF="qkvh_11.html">0 = Forms</A>
  <A HREF="qkvh_12.html">A = Tables</A>
  <A HREF="qkvh_13.html">B = Miscellaneous codes</A>
  <A HREF="qkvh_14.html">C = Colors</A>
  <A HREF="qkvh_15.html">D = Frames</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
```

```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
<B>Structure codes</B>

```

[META] begins meta information of the page, usually in key/value pairs (used e.g. by the search engines of Internet); meta information is given in the header part

&NAME="key" (e.g. NAME="description")

&CONTENT="value" (e.g. CONTENT="short description")

[/META] ends meta information (also shadow !)

[DESCRIPTION] gives a short description of the page (a shorthand for CONTENT in [META] with NAME="description") without quotes ("")

[/DESCRIPTION] end the description (also shadow ')

[KEYWORDS] gives the keywords of the page (a shorthand for CONTENT in [META] with NAME="keywords") without quotes (""), separate the keywords with commas

[/KEYWORDS] ends the keyword list (also shadow ')
(the above codes must be placed in the document header)

[BODY] ends the document header and begins the body part

[END] ends the body part and the HTML document (also shadow E)

```

<A NAME="HTMLCODE"></A>

```

```

<B>Codes defined in </B><B>HTML40.DEV</B><B> driver</B>

```

```

<A HREF="qkvh_02.html">1 = Structure codes</A>

```

```

<A HREF="qkvh_03.html">2 = Headers and titles</A>

```

```

<A HREF="qkvh_04.html">3 = Lines and paragraphs</A>

```

```

<A HREF="qkvh_05.html">4 = Links</A>

```

```

<A HREF="qkvh_06.html">5 = Lists</A>

```

```

<A HREF="qkvh_07.html">6 = Text styles</A>

```

```

<A HREF="qkvh_08.html">7 = Other elements</A>

```

```

<A HREF="qkvh_09.html">8 = Fonts</A>

```

```

<A HREF="qkvh_10.html">9 = Images</A>

```

```

<A HREF="qkvh_11.html">0 = Forms</A>

```

```

<A HREF="qkvh_12.html">A = Tables</A>

```

```

<A HREF="qkvh_13.html">B = Miscellaneous codes</A>

```

```

<A HREF="qkvh_14.html">C = Colors</A>

```

```

<A HREF="qkvh_15.html">D = Frames</A>

```

```

</PRE></P><HR>

```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

```

```

</BODY>

```

```

</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

```

"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>

```

```

<!--

```

```

Created by using the PRINT operation of SURVO MM

```

```

For more information, see http://www.survo.fi/

```

```

-->

```

```

<HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

```

```

<META NAME="Generator" CONTENT="SURVO MM">

```

```

<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>

```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(

```

```

<META NAME="Classification" CONTENT="help system">

```

```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```

</HEAD>

```

```

<BODY>

```

```

<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&

```

<P><PRE CLASS="HelpText">
Headers and titles

[TITLE] gives the title of the page in the header part (also shadow 7)
[/TITLE] ends the title

(the title is obligatory and should be selected carefully)

[HEADER1] or [H1] gives a 1st level header (also shadow j)
[/HEADER1] or [/H1] ends a 1st level header
[HEADER2] or [H2] gives a 2nd level header (also shadow k)
[/HEADER2] or [/H2] ends a 2nd level header
[HEADER3] or [H3] gives a 3rd level header (also shadow l)
[/HEADER3] or [/H3] ends a 3rd level header
[HEADER4] or [H4] gives a 4th level header (also shadow m)
[/HEADER4] or [/H4] ends a 4th level header
[HEADER5] or [H5] gives a 5th level header (also shadow n)
[/HEADER5] or [/H5] ends a 5th level header
[HEADER6] or [H6] gives a 6th level header (also shadow o)
[/HEADER6] or [/H6] ends a 6th level header

Codes defined in HTML40.DEV driver

1 = Structure codes
2 = Headers and titles
3 = Lines and paragraphs
4 = Links
5 = Lists
6 = Text styles
7 = Other elements
8 = Fonts
9 = Images
0 = Forms
A = Tables
B = Miscellaneous codes
C = Colors
D = Frames

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from
</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">

Lines and paragraphs

[/] begins a new paragraph (also shadow /, control /)

[+] begins a new line (also shadow |, control +)

Codes defined in HTML40.DEV driver

1 = Structure codes

2 = Headers and titles

3 = Lines and paragraphs

4 = Links

5 = Lists

6 = Text styles

7 = Other elements

8 = Fonts

9 = Images

0 = Forms

A = Tables

B = Miscellaneous codes

C = Colors

D = Frames

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi</DIV></BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">

Links

[LINK(URL)] establishes a link to any net resource given as a &URL

(Uniform Resource Locator)

[LINK2(URL,NAME)] establishes a link to any net resource given as a &URL so that the &URL is loaded in a frame specified by &NAME.

[/LINK] ends the link description (also shadow |)

[MAIL(x)] gives an email address link

[/MAIL] ends the email address link text (also shadow |)

[NAME(x)] sets a named point ('anchor') to the text

[/NAME] ends the anchor description (also shadow |)

[JUMP(x)] establishes a link to the given anchor

[/JUMP] ends the link description (also shadow |)

Codes defined in HTML40.DEV driver

1 = Structure codes

2 = Headers and titles

3 = Lines and paragraphs

```

<A HREF="qkvh_05.html">4 = Links</A>
<A HREF="qkvh_06.html">5 = Lists</A>
<A HREF="qkvh_07.html">6 = Text styles</A>
<A HREF="qkvh_08.html">7 = Other elements</A>
<A HREF="qkvh_09.html">8 = Fonts</A>
<A HREF="qkvh_10.html">9 = Images</A>
<A HREF="qkvh_11.html">0 = Forms</A>
<A HREF="qkvh_12.html">A = Tables</A>
<A HREF="qkvh_13.html">B = Miscellaneous codes</A>
<A HREF="qkvh_14.html">C = Colors</A>
<A HREF="qkvh_15.html">D = Frames</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">
<B>Lists</B>

<B>[LIST]</B> begins an unsorted list
<B>[/LIST]</B> ends an unsorted list
<B>[NLIST]</B> begins a numerated (ordered) list
<B>[NLIST(TYPE)]</B> begins an ordered list of type
  &nbsp;&nbsp;&nbsp;&1: 1, 2, 3, ...
  &nbsp;&nbsp;&nbsp;a: a, b, c, ...
  &nbsp;&nbsp;&A: A, B, C, ...
  &nbsp;&nbsp;&i: i, ii, iii, iv, ...
  &nbsp;&nbsp;&I: I, II, III, IV, ...
<B>[/NLIST]</B> ends a numerated list
<B>[L]</B> gives a list element (also <B>shadow L</B>, <B>control L</B>)
<B>[DLIST]</B> begins a definition (or glossary) list
<B>[/DLIST]</B> ends a definition list
<B>[T]</B> gives a first level element (a definition term) of a definition list
  (also <B>shadow I</B>, <B>control I</B>)
<B>[D]</B> gives a second level element (the corresponding definition to
  a definition term) of a definition list (also <B>shadow N</B>, <B>control N</B>)

<A NAME="HTMLCODE"></A>
<B>Codes defined in </B><B>HTML40.DEV</B><B> driver</B>

  <A HREF="qkvh_02.html">1 = Structure codes</A>
  <A HREF="qkvh_03.html">2 = Headers and titles</A>
  <A HREF="qkvh_04.html">3 = Lines and paragraphs</A>
  <A HREF="qkvh_05.html">4 = Links</A>
  <A HREF="qkvh_06.html">5 = Lists</A>
  <A HREF="qkvh_07.html">6 = Text styles</A>
  <A HREF="qkvh_08.html">7 = Other elements</A>

```

```

<A HREF="qkvh_09.html">8 = Fonts</A>
<A HREF="qkvh_10.html">9 = Images</A>
<A HREF="qkvh_11.html">0 = Forms</A>
<A HREF="qkvh_12.html">A = Tables</A>
<A HREF="qkvh_13.html">B = Miscellaneous codes</A>
<A HREF="qkvh_14.html">C = Colors</A>
<A HREF="qkvh_15.html">D = Frames</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">
<B>Text styles</B>

<B>[STRONG]</B> begins 'strong' style (also <B>shadow 1</B>)
<B>[/STRONG]</B> ends 'strong' style
<B>[SUB]</B> begins subscript text (also <B>shadow 2</B>)
<B>[/SUB]</B> ends subscript text
<B>[SUP]</B> begins superscript text (also <B>shadow 3</B>)
<B>[/SUP]</B> ends superscript text
<B>[DEFINITION]</B> begins 'definition' style (also <B>shadow 4</B>)
<B>[/DEFINITION]</B> ends 'definition' style
<B>[EMPHASIS]</B> or <B>[EM]</B> begins 'emphasis' style (also <B>shadow 6</B>)
<B>[/EMPHASIS]</B> or <B>[/EM]</B> ends 'emphasis' style
<B>[CITATION]</B> begins 'cite' style (also <B>shadow 9</B>)
<B>[/CITATION]</B> ends 'cite' style

<B>[CODE]</B> begins 'code sample' style (also <B>shadow x,</B> <B>shadow (</B>)
<B>[/CODE]</B> ends 'code sample' style (also <B>shadow )</B>)
<B>shadow 8</B> writes short text in 'address' style
<B>control [</B> begins a multiline address
<B>control ]</B> ends a multiline address
<B>control </B>&lt; begins a quoted text block
<B>control </B>&gt; ends a quoted text block
<B>control (</B> begins a pre-formatted text block
<B>control )</B> ends a pre-formatted text block

<A NAME="HTMLCODE"></A>
<B>Codes defined in </B><B>HTML40.DEV</B><B> driver</B>

<A HREF="qkvh_02.html">1 = Structure codes</A>
<A HREF="qkvh_03.html">2 = Headers and titles</A>
<A HREF="qkvh_04.html">3 = Lines and paragraphs</A>
<A HREF="qkvh_05.html">4 = Links</A>

```

```

<A HREF="qkvh_06.html">5 = Lists</A>
<A HREF="qkvh_07.html">6 = Text styles</A>
<A HREF="qkvh_08.html">7 = Other elements</A>
<A HREF="qkvh_09.html">8 = Fonts</A>
<A HREF="qkvh_10.html">9 = Images</A>
<A HREF="qkvh_11.html">0 = Forms</A>
<A HREF="qkvh_12.html">A = Tables</A>
<A HREF="qkvh_13.html">B = Miscellaneous codes</A>
<A HREF="qkvh_14.html">C = Colors</A>
<A HREF="qkvh_15.html">D = Frames</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM</H1>
<P><PRE CLASS="HelpText">
<B>Other elements</B>

<B>control =</B> draws a horizontal rule line across the page
<B>control |</B> draws a horizontal rule line surrounded by empty lines
<B>Use border (dot) lines freely - the HTML driver removes the dots.</B>
<B>[DIVISION(ALIGN)]</B> aligns all elements to &amp;LEFT, &amp;RIGHT or &amp;CENTER
<B>[/DIVISION]</B> ends aligning
<B>[CENTER]</B> centers all elements (also <B>control {</B>,<B> shadow </B>{</B>})
<B>[/CENTER]</B> ends centering (also <B>control }</B>,<B> shadow }</B>})

<A NAME="HTMLCODE"></A>
<B>Codes defined in </B><B>HTML40.DEV</B><B> driver</B>

<A HREF="qkvh_02.html">1 = Structure codes</A>
<A HREF="qkvh_03.html">2 = Headers and titles</A>
<A HREF="qkvh_04.html">3 = Lines and paragraphs</A>
<A HREF="qkvh_05.html">4 = Links</A>
<A HREF="qkvh_06.html">5 = Lists</A>
<A HREF="qkvh_07.html">6 = Text styles</A>
<A HREF="qkvh_08.html">7 = Other elements</A>
<A HREF="qkvh_09.html">8 = Fonts</A>
<A HREF="qkvh_10.html">9 = Images</A>
<A HREF="qkvh_11.html">0 = Forms</A>
<A HREF="qkvh_12.html">A = Tables</A>
<A HREF="qkvh_13.html">B = Miscellaneous codes</A>
<A HREF="qkvh_14.html">C = Colors</A>
<A HREF="qkvh_15.html">D = Frames</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>

```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">
```

```
<B>Fonts</B>
```

Use Cascading Syle Sheets (CSS

HTML is meant for marking up the structure of the document.

For more information, see for example the following book:

Lie, H. W., & Bos, B. (1997). Cascading Style Sheets. Addison-Wesley.

```
<A NAME="HTMLCODE"></A>
```

```
<B>Codes defined in </B><B>HTML40.DEV</B><B> driver</B>
```

```
<A HREF="qkvh_02.html">1 = Structure codes</A>
```

```
<A HREF="qkvh_03.html">2 = Headers and titles</A>
```

```
<A HREF="qkvh_04.html">3 = Lines and paragraphs</A>
```

```
<A HREF="qkvh_05.html">4 = Links</A>
```

```
<A HREF="qkvh_06.html">5 = Lists</A>
```

```
<A HREF="qkvh_07.html">6 = Text styles</A>
```

```
<A HREF="qkvh_08.html">7 = Other elements</A>
```

```
<A HREF="qkvh_09.html">8 = Fonts</A>
```

```
<A HREF="qkvh_10.html">9 = Images</A>
```

```
<A HREF="qkvh_11.html">0 = Forms</A>
```

```
<A HREF="qkvh_12.html">A = Tables</A>
```

```
<A HREF="qkvh_13.html">B = Miscellaneous codes</A>
```

```
<A HREF="qkvh_14.html">C = Colors</A>
```

```
<A HREF="qkvh_15.html">D = Frames</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```

</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
<B>Images</B>

```

[IMAGE(URL)] inserts an inline image (picture) into the document,
 image given as URL (Uniform Resource Locato
 &ALT="e.g. text describing the picture&"
 (required information; all browsers do not display pictures)
 &ALIGN=TOP, &MIDDLE, &BOTTOM, &LEFT or &RIGHT (picture a
 &WIDTH=x (allocates &x pixels for the picture width)
 &HEIGHT=x (allocates &x pixels for the picture height)
 &BORDER=x (creates a border of &x pixels wide around the picture)
 &ISMAP (the picture is a server-side image map)
 &USEMAP="#NAME" (the picture is used as a client-side image map,
 which is specified by [MAP(NAME)] code)
 [/IMAGE] end code of an image (also shadow !)

```

<A NAME="HTMLCODE"></A>
<B>Codes defined in </B><B>HTML40.DEV</B><B> driver</B>

```

```

<A HREF="qkvh_02.html">1 = Structure codes</A>
<A HREF="qkvh_03.html">2 = Headers and titles</A>
<A HREF="qkvh_04.html">3 = Lines and paragraphs</A>
<A HREF="qkvh_05.html">4 = Links</A>
<A HREF="qkvh_06.html">5 = Lists</A>
<A HREF="qkvh_07.html">6 = Text styles</A>
<A HREF="qkvh_08.html">7 = Other elements</A>
<A HREF="qkvh_09.html">8 = Fonts</A>
<A HREF="qkvh_10.html">9 = Images</A>
<A HREF="qkvh_11.html">0 = Forms</A>
<A HREF="qkvh_12.html">A = Tables</A>
<A HREF="qkvh_13.html">B = Miscellaneous codes</A>
<A HREF="qkvh_14.html">C = Colors</A>
<A HREF="qkvh_15.html">D = Frames</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
<B>Forms</B>

```

[FORM(METHOD,ACTION)] begins a form with &METHOD=POST or &GET
 a CGI program given as &ACTION=URL
 [FORM_DEF] begins a form with special settings

[/FORM_DEF] ends the special settings of a form (also shadow !)
 [INPUT(NAME,TYPE)] gets different types of input from the user within
 a form, a unique name for the input field is given
 as &NAME and &TYPE is one of the following:
 &TEXT (a textfield)
 &SIZE="x" (size of field in characters)
 &MAXLENGTH="x" (maximum size of input data)
 &VALUE="x" (starting value)
 &RADIO (a radiobutton)
 &VALUE="x" (indicates the active button when form is completed)
 &NAME="x" (name of the radiobutton group)
 &CHECKED (pre-selection)

 &CHECKBOX (an on/off choice to be checked)
 &VALUE="x" (indicates the value if checked)
 &CHECKED (pre-selection)
 &SUBMIT (sends the results to the program given by &ACTION above)
 &VALUE (label of the button)
 &RESET (resets the default settings of the form)
 &VALUE (label of the button)
 &IMAGE (converts an image to a submit button)
 &SRC (URL of an image, all parameters
 of [IMAGE(URL)] can be used)
 &VALUE (label of the button)
 &PASSWORD (a textfield, where the text is not displayed on the screen)
 &FILE (a file can be browsed and included, the form
 must be defined with &ENCTYPE="multipart/mime" -
 use [FORM_DEF])
 &HIDDEN (the field is not displayed, the information is
 just sent to the &ACTION program)
 [/INPUT] ends an input field (also shadow !)

[SELECT(NAME)] begins a selection list, the name given by &NAME
 [SELECT_DEF(NAME)] begins a selection list with special settings,
 the name given by &NAME
 &MULTIPLE (more than one item can be selected)
 &SIZE="x" (items displayed at a time)
 [/SELECT_DEF] ends the selection list definition (also shadow !)
 [OPTION] gives an option of a selection list (also shadow O)
 [SELECTED] gives a pre-selected option of a selection list (also shadow S)
 [/SELECT] ends the selection list
 [TEXT(NAME)] begins a multiline text input, the name given by &NAME
 [TEXT_DEF(NAME)] begins a multiline text input with special settings,
 the name given by &NAME
 &ROWS="x" (gives the number of rows)
 &COLS="x" (gives the number of columns)
 [/TEXT_DEF] ends the multiline text input definition (also shadow !)
 [/TEXT] ends the multiline text input
 [/FORM] ends the form

Codes defined in HTML40.DEV driver

1 = Structure codes
 2 = Headers and titles
 3 = Lines and paragraphs
 4 = Links
 5 = Lists
 6 = Text styles
 7 = Other elements

```

<A HREF="qkvh_09.html">8 = Fonts</A>
<A HREF="qkvh_10.html">9 = Images</A>
<A HREF="qkvh_11.html">0 = Forms</A>
<A HREF="qkvh_12.html">A = Tables</A>
<A HREF="qkvh_13.html">B = Miscellaneous codes</A>
<A HREF="qkvh_14.html">C = Colors</A>
<A HREF="qkvh_15.html">D = Frames</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">
<B>Tables</B>

<B>[TABLE]</B> begins a table
<B>[TABLE(BORDER)]</B> begins a table with borders
<B>[TABLE_DEF]</B> begins a table with special settings
&nbsp;&nbsp;&nbsp;&ALIGN=LEFT, &nbsp;&nbsp;&nbsp;&CENTER or &nbsp;&nbsp;&nbsp;&RIGHT (aligning of the table)
&nbsp;&nbsp;&nbsp;&WIDTH=x (the width of the table in pixels or % of the width of the display)
&nbsp;&nbsp;&nbsp;&BORDER=x (creates borders of &nbsp;&x pixels wide around the cells of the table)
&nbsp;&nbsp;&nbsp;&CELLSPACING=x (adds &nbsp;x pixels empty space between the cells)
&nbsp;&nbsp;&nbsp;&CELLPADDING=x (adds &nbsp;x pixels empty space between the cell and
the edge of the table)
<B>[/TABLE_DEF]</B> ends the special settings of a table (also <B>shadow !</B>)
<B>[TABLE_CAPTION]</B> gives the title of a table (also <B>shadow "</B>)
<B>[TABLE_CAPTION(ALIGN)]</B> gives the title of a table
&nbsp;&nbsp;&nbsp;&ALIGN=TOP or &nbsp;&nbsp;&nbsp;&BOTTOM (aligning of the caption)
<B>[/TABLE_CAPTION]</B> ends the title of a table

<B>[TABLE_HEADER]</B> gives a header of a table (also <B>shadow H</B>)
&nbsp;&nbsp;&nbsp;&NOWRAP (no wrapping of the header text)
&nbsp;&nbsp;&nbsp;&ALIGN=LEFT, &nbsp;&nbsp;&nbsp;&CENTER or &nbsp;&nbsp;&nbsp;&RIGHT (horizontal aligning of the header text)
&nbsp;&nbsp;&nbsp;&VALIGN=TOP, &nbsp;&nbsp;&MIDDLE or &nbsp;&nbsp;&BOTTOM (vertical aligning of the header text)
&nbsp;&nbsp;&nbsp;&WIDTH=x (the width of the header in pixels or %)
&nbsp;&nbsp;&nbsp;&HEIGHT=x (the height of the header in pixels or %)
&nbsp;&nbsp;&nbsp;&ROWSPAN=x (makes the header &nbsp;x <B>cells</B> wide)
&nbsp;&nbsp;&nbsp;&COLSPAN=x (makes the header &nbsp;x <B>cells</B> high)
<B>[/TABLE_HEADER]</B> ends the definition of a table header (also <B>shadow !</B>)
<B>[TABLE_HEADER(ROWSPAN,COLSPAN)]</B> gives a header of a table using
given ROWSPAN and COLSPAN values (for no spanning use value 1)
<B>[TABLE_ROW] </B>defines a table row
(also <B>shadow r</B>, <B>control r</B>, <B>control R</B> (ALIGN=RIGHT))
&nbsp;&nbsp;&nbsp;&ALIGN=LEFT, &nbsp;&nbsp;&nbsp;&CENTER or &nbsp;&nbsp;&nbsp;&RIGHT (horizontal aligning of the cell elements)
&nbsp;&nbsp;&nbsp;&VALIGN=TOP, &nbsp;&nbsp;&MIDDLE or &nbsp;&nbsp;&BOTTOM (vertical aligning of the cell elements)
<B>[/TABLE_ROW]</B> ends the definition of a table row (also <B>shadow !</B>)

```


[TABLE_CELL] gives a table cell element
 (also shadow E (ALIGN=LEFT), shadow e (ALIGN=RIGHT))
 NOWRAP (no wrapping of the cell element)
 ALIGN=LEFT, CENTER or RIGHT (horizontal aligning of the cell element)
 VALIGN=TOP, MIDDLE or BOTTOM (vertical aligning of the cell element)
 WIDTH=x (the width of the cell in pixels)
 HEIGHT=x (the height of the cell in pixels)
 [/TABLE_CELL] ends the definition of a table cell element (also shadow !)
 [TABLE_CELL(ROWSPAN,COLSPAN)] gives a table cell element using
 given ROWSPAN and COLSPAN values (for no spanning use value 1)
 [/TABLE] ends the table

Codes defined in HTML40.DEV driver

1 = Structure codes

2 = Headers and titles

3 = Lines and paragraphs

4 = Links

5 = Lists

6 = Text styles

7 = Other elements

8 = Fonts

9 = Images

0 = Forms

A = Tables

B = Miscellaneous codes

C = Colors

D = Frames

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">

Miscellaneous codes

[MAP(NAME)] defines a client-side image map, the name given by NAME

[AREA(URL)] gives the regions within a map, the URL of the region
 given by URL, other attributes are:

 SHAPE=RECT, POLY or CIRCLE (the type of the region)

 COORDS (the coordinates bounding the region)

[/AREA] ends the area code (also shadow !)

[/MAP] ends the client-side image map

shadow < writes &lt; (the HTML code of character <)
 shadow > writes &gt; (the HTML code of character >)
 shadow & writes &amp; (the HTML code of character &)
 The HTML driver removes these three characters, so they MUST be marked
 with the corresponding shadow characters. The extra spaces can be
 removed afterwards with TXTCONV, if necessary.

[Copyright] produces the copyright sign
 shadow ? gives an HTML comment

Codes defined in HTML40.DEV driver

1 = Structure codes

2 = Headers and titles

3 = Lines and paragraphs

4 = Links

5 = Lists

6 = Text styles

7 = Other elements

8 = Fonts

9 = Images

0 = Forms

A = Tables

B = Miscellaneous codes

C = Colors

D = Frames

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">

Colors

Use Cascading Styl Sheets (CSS

HTML is meant for marking up the structure of the document.

For more information, see for example the following book:

Lie, H. W., & Bos, B. (1997). Cascading Style Sheets. Addison-Wesley.

Codes defined in HTML40.DEV driver

```

<A HREF="qkvh_02.html">1 = Structure codes</A>
<A HREF="qkvh_03.html">2 = Headers and titles</A>
<A HREF="qkvh_04.html">3 = Lines and paragraphs</A>
<A HREF="qkvh_05.html">4 = Links</A>
<A HREF="qkvh_06.html">5 = Lists</A>
<A HREF="qkvh_07.html">6 = Text styles</A>
<A HREF="qkvh_08.html">7 = Other elements</A>
<A HREF="qkvh_09.html">8 = Fonts</A>
<A HREF="qkvh_10.html">9 = Images</A>
<A HREF="qkvh_11.html">0 = Forms</A>
<A HREF="qkvh_12.html">A = Tables</A>
<A HREF="qkvh_13.html">B = Miscellaneous codes</A>
<A HREF="qkvh_14.html">C = Colors</A>
<A HREF="qkvh_15.html">D = Frames</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">
<B>Frames</B>

```

The frames are seldom useful, and should be avoided if possible.

[FRAMES_DEF] begins a frame setup with special settings
 &COLS="w1,w2,...,wk" (the number and division of vertical frames)
 &ROWS="h1,h2,...,hk" (the number and division of horizontal frames)
 &BORDER=x (the widths of the frame borders)

[/FRAMES_DEF] ends the special settings of a frame setup

[FRAME_DEF(URL,NAME)] begins a frame definition, where &URL gives the name of the document to be displayed in the frame and &NAME gives an internal name for it to be used in [LINK2(URL,NAME)]

&MARGINWIDTH=x (the margin width of a frame in pixels or %)

&NORESIZE=x (optionally the frame can not be resized by mouse)

[/FRAME_DEF] ends a frame definition

[/FRAMES] ends the frame setup

[NOFRAMES] begins an alternative part of the page for the browsers, which do not support frames; must be followed by [BODY].

[/NOFRAMES] ends the alternative part of the page; includes the end code of the page.

```

<A NAME="HTMLCODE"></A>

```

```

<B>Codes defined in </B><B>HTML40.DEV</B><B> driver</B>

```

```

<A HREF="qkvh_02.html">1 = Structure codes</A>
<A HREF="qkvh_03.html">2 = Headers and titles</A>
<A HREF="qkvh_04.html">3 = Lines and paragraphs</A>
<A HREF="qkvh_05.html">4 = Links</A>

```

```

<A HREF="qkvh_06.html">5 = Lists</A>
<A HREF="qkvh_07.html">6 = Text styles</A>
<A HREF="qkvh_08.html">7 = Other elements</A>
<A HREF="qkvh_09.html">8 = Fonts</A>
<A HREF="qkvh_10.html">9 = Images</A>
<A HREF="qkvh_11.html">0 = Forms</A>
<A HREF="qkvh_12.html">A = Tables</A>
<A HREF="qkvh_13.html">B = Miscellaneous codes</A>
<A HREF="qkvh_14.html">C = Colors</A>
<A HREF="qkvh_15.html">D = Frames</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Survo includes also various special function routines which may be
called both in editorial arithmetics and in touch mode.
This library of functions can be extended by new routines written in C.
A list of current library functions is obtained also by the command /FUNC .

<A HREF="ql2_04.html">I = Making inquiries about library functions</A>
<A HREF="ql2_01.html">C = Combinatorial and statistical functions</A>
<A HREF="ql2_03.html">F = Financial functions</A>
<A HREF="qm1_07.html">S = Standard mathematical functions</A>
<A HREF="ql1_06.html">X = Other functions</A>

<A HREF="ql1_02.html">E = Calling library functions in editorial arithmetics</A>
<A HREF="ql1_04.html">T = Calling library functions in touch mode</A>

<A HREF="qm1_01.html">M = More about mathematical operations</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>

```

```

<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">In editorial arithmetics, library functions are used like any standard
mathematical function. For example,
  n=10 m=5 FACT(n)=3628800 C(n,m)=252
  BIN.f(n,0.5,m)=0.24609375 BIN.F(n,0.5,m)=0.623046875

  <A HREF="ql1_01.html">L = More information about library functions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  <A HREF="ql1_01.html">L = More information about library functions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">In touch mode, library functions of one variable (parameter) are called
like standard functions.
If the function needs several arguments, say X1,X2,...,XM, the first one
(X1) is given normally and the remaining ones (X2,X3,...,XM) are saved
in memory locations 1,2,...,M-1 (by key M) before calling the function.

  <A HREF="ql1_01.html">L = More information about library functions</A>
</PRE></P><HR>

```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Computing on tables

  <A HREF="qv1_01.html">V = VAR operation</A>
  <A HREF="q23_01.html">D = DATA specification (See item 4)</A>
  <A HREF="q0a_01.html">N = More information about numerical operations with tables</A>
  <A HREF="ql1_07.html">T = Referring to numbers in tables in editorial computing</A>
  <A HREF="qm1_03.html">C = Editorial computing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Other library functions:

```

Dissonance functions for musical interval $x \geq 1$:

$\text{diss}(c, x)$ gives the dissonance value of x for accuracy $c \geq 0$.

$\text{diss.f}(c, x)$ gives the ratio $n:m$ in the form $m+n/1000$, i.e.

$n:m$ is the best rational approximation for x .

Example: $\text{diss.f}(5, 3.141592653589793) = 7.022 \quad (22:7)$

$\text{bestval}(a, b)$ finds the 'nicest' number in the closed interval.

This function can be used for finding suitable scale notations. For example, sucros may produce good XSCALE and YSCALE specifications for plotting schemes.

Example: $\text{bestval}(1.27, 7.34) = 5$

```

<A HREF="ql1_01.html">L = More information about library functions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">In editorial computing any number on a specific line (say A) and
appearing as the K'th 'word' on that line can be referred to by
notation X(A,K). This option is most useful when referring to numbers
in tables.
Example:

*.....
A          mean      stddev
*V1      0.0618289640  0.9905467996
*V2     -0.0847910952  0.9653774233
*V3     -0.0224640647  1.0562700086
*
*X(A+1,2)=0.061828964 X(A+3,3)=1.0562700086
*Computing P values when testing mean=0 for X1,X2, and X3:
*N=140
*pt(n,m,s):=t.F(n-1,m/s*sqrt(n))
*i=1 pt(N,X(A+i,2),X(A+i,3))=0.76928781272696
*i=2 pt(N,X(A+i,2),X(A+i,3))=0.15024804223093
*i=3 pt(N,X(A+i,2),X(A+i,3))=0.40084600574657
*
*
<A HREF="ql1_05.html">T = Computing on tables</A>
<A HREF="qm1_03.html">C = Editorial computing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Combinatorial and statistical functions:

FACT(n) n! (n factorial) FACT(5)=120
FACT.L(n) log(n!) FACT.L(1000)=5912.1281784882
C(n,m) binomial coefficient C(10,5)=252
(See also COMB?)

Binomial distribution BIN(n,p):

BIN.f(n,p,x) probability of x BIN.f(4,1/2,0)=0.0625
BIN.F(n,p,x) distribution function BIN.F(4,1/2,3)=0.9375
BIN.G(n,p,y) inverse distribution function BIN.G(4,1/2,0.9375)=3

Poisson distribution POISSON(a):

POISSON.f(a,x) probability of x POISSON.f(5,5)=0.17546736976785
POISSON.F(a,x) distribution function POISSON.F(5,5)=0.61596065483306
POISSON.G(a,y) inverse distribution function POISSON.G(5,0.61)=5

Normal distribution N(m,s^2):

N.f(m,s^2,x) density function N.f(0,1,0)=0.39894228040143
N.F(m,s^2,x) distribution function N.F(0,1,2)=0.97724986805182
N.G(m,s^2,y) inverse distribution function N.G(0,1,0.995)=2.5758293035

t distribution function with n degrees of freedom:

t.f(n,x) density function t.f(30,0)=0.3956321848941
t.F(n,x) distribution function t.F(30,2)=0.97268747751851
t.G(n,y) inverse distribution function t.G(30,0.97)=1.9546454957885

Chi^2 distribution function with n degrees of freedom:

CHI2.f(n,x) density function CHI2.f(10,10)=0.08773368488393
CHI2.F(n,x) distribution function CHI2.F(10,10)=0.55950671493479
CHI2.G(n,y) inverse distribution function CHI2.G(10,0.97)=19.921910008236

Gamma distribution with paramaters a,b:

density $f(x)=x^{a-1} \cdot \exp(-x/b) / [b^a \cdot \text{gamma}(a)]$, $x \geq 0$
gamma.f(lambda,k,x) density function gamma.f(5,2,10)=0.08773368488393
gamma.F(lambda,k,x) distribution function gamma.F(5,2,10)=0.55950671493479
gamma.G(lambda,k,x) inv.distribution function gamma.G(5,2,0.97)=19.921910008236

Relations:

gamma.f(a,b,x)=2/b*chi2.f(2*a,2*x/b)
gamma.F(a,b,x)=chi2.F(2*a,2*x/b)
gamma.G(a,b,x)=b/2*chi2.G(2*a,x)

F distribution function with m and n degrees of freedom:

F.f(m,n,x) density function F.f(5,6,1)=0.44505077818904
F.F(m,n,x) distribution function F.F(5,6,10)=0.99288015699002
F.G(m,n,y) inverse distribution function F.G(5,6,0.993)=10.066447766898

Beta distribution with parameters a,b:

density $f(x)=\text{gamma}(a+b)/[\text{gamma}(a) \cdot \text{gamma}(b)] \cdot x^{a-1} \cdot (1-x)^{b-1}$, $0 < x < 1$
beta.f(a,b,x) density function beta.f(2,3,0.5)=1.5
beta.F(a,b,x) distribution function beta.F(2,3,0.5)=0.6875
beta.G(a,b,x) inverse distribution function beta.G(2,3,0.6875)=0.5

Weibull distribution with parameters a,b:

distribution function $F(x)=1-\exp[-(a \cdot x)^b]$, $x \geq 0$
Weibull.f(a,b,x) density function Weibull.f(1,2,1)=0.73575888234288
Weibull.F(a,b,x) distribution function Weibull.F(1,2,1)=0.63212055882856
Weibull.G(a,b,x) inverse distribution function Weibull.G(1,2,0.6321)=0.99997205804533
Weibull(a,1) is exponential distribution with parameter a.

Exponential distribution with parameter a:

exp.f(a,x), exp.F(a,x), exp.G(a,x) are available.

```
<A HREF="ql1_01.html">L = More information about library functions</A>
<A HREF="q21_04.html">D = More information on probability distributions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">
  <A HREF="ql1_01.html">L = More information about library functions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">Financial functions: n=# of periods

FIN.PV(payment,interest,n) Present Value of an Annuity

FIN.FV(payment,interest,n) Future value of an Annuity

FIN.PMT(principal,interest,n) Payment per Period

  <A HREF="ql1_01.html">L = More information about library functions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">The descriptions of library functions do not appear in this inquiry sys
```

```
Library functions may, however, be inquired in the following way.
```

```
To make an inquiry about functions in the family ABC (say), we activate
```

```
ABC.X(1)=_ where X prompts the file ABC to list all its functions and
```

```
their definitions temporarily on the screen.
```

```
For example, to inquire about financial functions activate FIN.X(1)=_
```

```
A list of library functions is obtained by activating
```

```
/FUNC
```

```
<A HREF="ql1_01.html">L = More information about library functions</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">http://www.survo.fi/
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">Functions defined in the edit field:
```

```
Functions of one or up to 10 variables may be defined by the user
```

```
by entering a definition of the form
```

```
<math>\text{function\_name}(X_1,X_2,\dots)=\text{function\_of\_}X_1,X_2,\dots</math>
```

```
in the current edit field.
```

```
Examples:  $\sinh(X)=(\exp(X)-\exp(-X))/2$ 
```

```
 $\text{norm}(X,Y)=\sqrt{X^2+Y^2}$ 
```

```
 $\text{Fisher}(r)=0.5*\log((1+r)/(1-r))$ 
```

```
Roots of equation  $X^2+P*X+Q=0$ :
```

```
 $\text{Root1}(P,Q)=-P/2+S(P,Q)$   $S(P,Q)=\sqrt{P^2/4-Q}$ 
```

```
 $\text{Root2}(P,Q)=-P/2-S(P,Q)$ 
```

```
The Least Common Denominator:  $\text{lcd}(u,v)=u*v/\text{gcd}(u,v)$ 
```

```
Any function defined in such a way may be used as any standard function.
```

Examples:

```
sinh(1)=1.1752011936
norm(12,norm(3,4))=13
Root1(1,-6)=2  Root2(1,-6)=-3
lcd(144,240)=720
```

Recursive functions:

By means of the if()then()else() structure recursive definitions for functions may given as follows:

```
factorial(N):=if(N=1)then(1)else(N*factorial(N-1))
```

Serial expansion of the exponential function:

```
expn(X,N):=if(N=0)then(1)else(expn(X,N-1)+term(X,N))
```

```
term(X,N):=if(N=1)then(X)else(term(X,N-1)*X/N)
```

Examples:

```
factorial(7)=5040
expn(1,20)=2.7182818285
```

.....
Since recursive computations take much space and time,
it is more efficient to use the 'for' statement for definitions
above:

```
factorial(N):=for(I=1)to(N)product(I)
```

```
expn(X,N):=for(I=0)to(N)sum(X^I/factorial(I))
```

Another way to speed up recursive computation is to employ a
'remember' option (see next page).

.....
A recursive function can also be defined as follows:

```
factorial(N)|=if(N=1)then(1)else(N*factorial(N-1))
```

See a '|' instead ':' in the definition! Then each numerical value
once obtained in recursion process is saved temporarily in a table
and instead of a recursion step a table-lookup is used in subsequent
evaluations. Computation of function values is then much faster.

Recursive computing requires much stack memory and may lead to
a stack overflow. The stack size given for the Survo Editor is
currently 10'000'000 bytes. The system parameter check_stack
(in SURVO.APU) determines the maximum size allowed in editorial
arithmetics. The default setting is check_stack=5000000 and it
can be changed temporarily by the SYSTEM command.

```
<A HREF="qm1_03.html">E = More information on editorial computing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;Help</H1>
<PRE CLASS="HelpText">
<A HREF="qm1_03.html">E = More information on editorial computing</A>
```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Conditional expressions may be given in the form
    if(&lt;condition&gt;)&then(&lt;expression&gt;)&else(&lt;expression&gt;)&
&lt;condition&gt; can be any of the forms: a&lt;b a&lt;=b a&gt;b a&gt;=b a&gt;b and a&lt;&gt;b
Example: Y=if(X&lt;0.5)&then(0)&else(1)

    <A HREF="qm1_03.html">E = More information on editorial computing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Sums products and maxima of expressions of one or more variables
can be computed by the 'for' statement in editorial computing.
The general structure is
    &lt;variable&gt;:=for(I=N1)to(N2)&lt;sum|product|max|maxt&gt;(&lt;expression&gt;)&
or
    &lt;variable&gt;:=for(I=N1)to(N2)term(T=A)&lt;sum|product|max|maxt&gt;(&lt;expression&gt;)&

Examples:
s=for(i=1)to(100)sum(i) s=5050
sum(N):=for(I=1)to(N)sum(1/I/I) sqrt(6*sum(3000))=3.1412743806
factorial(N):=for(I=1)to(N)product(I) factorial(10)=3628800
expn(X,N):=for(I=1)to(N)term(T=1)sum(T*X/I)
    N terms from the serial expansion of exp(X)-1.

```

```

<A HREF="qm1_03.html">E = More information on editorial computing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Several expressions may be activated simultaneously by placing a '='
in front of '=' in all expressions which should be computed.
Simultaneous activation takes place by activating one of the
expressions in a normal way.
For example, by activating sqrt(X).= below
.....
X=5 pi=3.14159265359
sqrt(X).=_ log(X)/X.=
X/10.= tan(pi*X/3).=
X*X= (. missing) X*X.=
.....
the display will be changed to
.....
X=5 pi=3.14159265359
sqrt(X).=2.2360679775 log(X)/X.=0.32188758248682
X/10.=0.5 tan(pi*X/3).=-1.7320508076
X*X= (. missing) X*X.=25
.....

<A HREF="qm1_03.html">E = More information on editorial computing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&

```

<P><PRE CLASS="HelpText">Integral of function f(x) in the interval (a,b) is computed using Simpson's rule by the 'integral' statement of the form
 <variable>=integral(f(x))from(a)to(b)
 or in extended forms
 <variable>=integral(f(x))from(a)to(b)eps(eps) ,
 <variable>=integral(f(x))from(a)to(b)eps(eps)n(n) .
 The original range (a,b) is split by 2^n equidistant points using
 n=1,2,3,... until the relative error is <eps or the optional n value
 is achieved. Default values are eps=1e-10, n=12.
 Examples:

```
.....
a=0 b=1 eps=0.0001 pi=3.141592653589793 infinity=10
I1=integral(x^2)from(a)to(b)eps(eps)
I2=integral(exp(-x*x/2)/sqrt(2*pi))from(-infinity)to(0)
I1.=0.3333333333333333
I2.=0.5
```

.....
 Number of prime integers less than N (here N=1000000) can be roughly
 approximated by the integral

```
integral(1/log(x))from(2)to(N)eps(0)n(17)=78627.636537002
```

while the true number is 78498.

E = More information on editorial computing

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi
 </BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">

 Operating with Markov chains in Survo

1 = Generating Markov chains by Shannon's technique (MARKOV)

2 = Steady-state probabilities of an irreducible chain (/MARKOV-STATIONARY)

3 = Generating Markov chains by TRANSFORM

4 = Structure of the chain and steady-state probabilities (MARKOV SPECTRA)

5 = Computing transition probabilities between 2 given states (MARKOV CHAINS)

6 = Generating and working with Markov chains of higher order

M = More information on mathematical operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi
 </BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MARKOV L1,L2,L / ORDER=&lt;integer&gt;
simulates the behaviour of a Markov chain by a method presented by
Claude Shannon. The states are symbols (digits, letters, etc.)
and a sample of the chain is given as a stream of such characters
on edit lines L1-L2. The simulated results generated according to
this sample are listed as a new stream of characters from line L
onwards. The order of the Markov chain is given by the ORDER
specification. Default is ORDER=1.

Another alternatives are offered by certain spcial forms of the
TRANSFORM operation (See <A HREF="qv3_05.html">MARKOVD</A>?)

  <A HREF="qm10_01.html">M = More information on Markov chains</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  <A HREF="qm10_01.html">M = More information on Markov chains</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MARKOV-STEADY P
computes the steady-state probabilities of an irreducible Markov chain
by direct solution of the homogeneous system of linear equations.
This works only for irreducible chains.
The transition probabilities P must be given as (square) matrix file
P and the steady-state probabilities will be saved in a matrix file
PI.M

```

```

    <A HREF="qm10_01.html">M = More information on Markov chains</A>
</PRE><P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MARKOV STUDY P,L
where P is a matrix file of transition probabilities determines the
class structure of the Markov chain and gives the results from the
edit line L onwards as shown in the following example:
MATRIX P
/// T1 T2 T3 T4 T5
T1 0.4 0 0 0 0.6
T2 0.9 0 0 0.1 0
T3 0 0 0.2 0.8 0
T4 0 0 0.8 0.2 0
T5 0.7 0 0 0 0.3

```

```

MAT SAVE P
MARKOV STUDY P,CUR+1
Structure of Markov chain P of 5 states:
Class structure saved in matrix file MCLASS.M
2 recurrent classes of states:
1 (2): T1 T5
2 (2): T3 T4
1 transient state:
T2

```

By default the results are obtained by finding the transitive closure

of the digraph determined by P.

By using the specification SVD=1 the same task is accomplished by computing the singular value decomposition of I-P. Then also the steady-state probabilities for each recurrent classes are calculated and given as the second column of matrix MCLASS.M
In the above example this gives

```
LOADM MCLASS.M,(C7),CUR+1
Class_structure_of_P_(Transient_states=0)
  Class  Prob
T1      1 0.53846
T2      0 0.00000
T3      2 0.50000
T4      2 0.50000
T5      1 0.46154
```

```
<A HREF="qm10_01.html">M = More information on Markov chains</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MARKOV PROB P,i,j,n,PN
from a transition probability matrix P of a Markov chain
computes k-step transition probabilities from state i to j
for k=1,2,...,n and saves them as a new vector PN.

  <A HREF="qm10_01.html">M = More information on Markov chains</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```

</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
<STRONG> Operating with Markov chains of higher order </STRONG>

  <A HREF="qm10_08.html">1 = Generating Markov chains of order 1,2,3,...</A>
  <A HREF="qm10_10.html">2 = Estimating transition probabilities from a given sample</A>

  <A HREF="qm10_01.html">M = More information on Markov chains</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Generating Markov chains of order 1,2,3,...

```

When the matrix of transition probabilities is given as a Survo matrix file, samples of the chain may be generated

either by the MARKOV command of the form

MARKOV L1,L2 BY P

where P is the transition matrix and L1 is the first line and L2 the last line for the generated sequence (see example on the next page)

or by a special form of the TRANSFORM operation (see MARKOVD)

The following tutorial shows more examples:

/MARKOV-DEMO2

Generating a Markov chain of order 3 with two states A,B:

MATRIX P82

/// A B

AAA 0 1

AAB 0.5 0.5

ABA 0.3 0.7

ABB 0.9 0.1

BAA 0 1

BAB 0.5 0.5

BBA 0.2 0.8

BBB 0.1 0.9

MAT SAVE P82 / Saving the matrix of transition probabilities

MARKOV CUR+1,CUR+5 BY P82 / Generate a sample to next 5 lines!

BABABABABBAABBABABBABABABAABBBBBBBBBBBBBBBBBBBBBBBBBBBBBBABA
BBABBABBBABAABBABBBABABBAABABBABABAABBABBABABABABAABABAABA
BBBBBBBAABABABBABAABBABAABBAABBAABABBABBABABABBBBBBBBBBBBBBABB

BBBBBBBBBBBBBABBAAABABBABBAABBABABABAABBABABABABBABBABAABBAAB
BABBABBAABBABBABABBAABBABBABBABABABAABBABBABABBABBABBABAABAA

```
<A HREF="qm10_07.html">H = More information on Markov chains of higher order</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&#160;
<P><PRE CLASS="HelpText">
  <A HREF="qm10_07.html">H = More information on Markov chains of higher order</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&#160;
<P><PRE CLASS="HelpText">Estimating transition probabilities from a given sample

MARKOV L1,L2 / MATRIX=&lt;matrix&gt; STATES=&lt;list_of_states&gt; ORDER=&lt;integer&gt;
estimates &lt;matrix&gt; of transition probabilities on the basis of a sample
sequence of one-character state names on edit lines L1-L2.
The STATES specification tells the list of the state names.

An example of this operation is found in the tutorial
/MARKOV-DEMO2

  <A HREF="qm10_07.html">H = More information on Markov chains of higher order</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Mathematical operations in Survo:

1 = Editorial computing

2 = Touch mode

3 = Matrix operations

4 = Analytical derivatives

5 = Operations on polynomials (Roots of algebraic equations)

6 = Linear programming (SIMPLEX)

7 = Listing of combinations, permutations, etc. (COMB)

8 = Finding integer relations between real numbers (INTREL)

9 = Markov chains

C = Continued fractions (/CONTFRAC)

G = Geometric constructions and their accuracy (GEOM)

E = More information on the Survo Editor

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">DER <function of variable x>;<variable x>;

forms the analytical derivative of the function with respect to

<variable x> and writes the result on the next two lines in the edit

field. For example,

10 *

11 *DER log(log(1+sqr(Z))) Z

12 * Derivative of log(log(1+sqr(Z))) with respect to Z is

13 * 1/(2*SQR(Z))/(1+sqr(Z))/log(1+sqr(Z))

14 *

15 *DER SIN(G(t)/t) t

16 * Derivative of SIN(G(t)/t) with respect to t is

17 * COS(G(t)/t)*(t*G'(t)-G(t))/t^2
18 *

Survo employs itself analytical derivatives in the ESTIMATE operation for linear and nonlinear regression models and for general Maximum likelihood estimation problems.

 M = More information on mathematical op
</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Editorial computing

A = Simple arithmetics

V = Variables and expressions (also elements of matrices and data sets)

B = Numerical accuracy and form of results

M = Mathematical functions

E = Functions defined in the edit field

I = 'if' statement

F = 'for' statement

J = 'integral' statement for numerical integration

R = Roots of equations

S = Multiple activations

L = Library functions

T = Computing on tables

C = Numerical conversions

P = Multiple precision computations

X = More information on mathematical operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

```

<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Arithmetical operations with single numbers may be typed and activated
in the edit field. For example, to compute 142+68, type 142+68=_
and press ESC when the cursor is located immediately after '='.
Examples: 23.5*(143-22.3)=2836.45 2^10=1024 1/3+1/7=0.47619047619048
  <A HREF="qm1_03.html">A = More information on arithmetics</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">  <A HREF="qm1_03.html">A = More information on arithmetics</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Also names can be given to constants and expressions. For example,
we write in the edit field
  Volume of a sphere with radius R is Vol=4/3*pi*R^3
  where pi=3.14159265.
  Let now R=10. Then Vol=_
and double-click or press ESC we shall have the display
  Volume of a sphere with radius R is Vol=4/3*pi*R^3
  where pi=3.14159265.
  Let now R=10. Then Vol=4188.7902

  <A HREF="qm1_10.html">M = Matrices in editorial computing</A>
  <A HREF="q23_09.html">S = Survo data sets in editorial computing</A>
  <A HREF="qm1_03.html">A = More information on arithmetics</A>

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The following 'standard' functions are available (in editorial comput
int,abs,ind,rnd,sqrt,log,exp,sin,cos,tan,arctan,arcsin,arccos.

```

Examples: $\text{int}(3.7)=3$ $\text{sqrt}(1+24)=5$
 $\text{pi}=3.1415926535898$ $\text{sin}(\text{pi}/4)=0.70710678118655$
 $\text{sqrt}(2)/2=0.70710678118655$

Also the following functions are available:

A modulo B: $A=18$ $B=5$ $\text{mod}(A,B)=3$

Greatest Common Divisor: $\text{GCD}(144,270)=18$

Binomial coefficient: $C(10,5)=252$

Factorial: $\text{fact}(10)=3628800$ Logarithm of factorial: $\text{lfact}(1000)=5912.128178488$

k-factorial: $k_fact(10,4)=5040$ (same as $\text{fact}(10)/\text{fact}(10-4)=5040$)

Logarithm of k-factorial: $\text{lk_fact}(1000,500)=3300.797720028$

Logarithm of gamma function: $\text{exp}(\text{lgamma}(10))=362880$

Riemann's zeta function: $\text{zeta}(1.5)=2.6123753486855$ (for real argument)

$X(A,K)$ gives the value of the K'th 'word' on the edit line A. (See XFUNCT

$\text{round}(x)$ gives the nearest integer: $\text{round}(3.6)=4$

$\text{round}(x,d)$ rounds to d decimal places: $\text{round}(3.456,2)=3.46$ $\text{round}(-171,-2)=-200$

More functions on the next page!

$\text{max}(a1,a2,...)$ gives the maximum of $a1,a2,...$

$\text{min}(a1,a2,...)$ gives the minimum of $a1,a2,...$

$\text{maxn}(a1,a2,...)$ gives the index of the maximal value.

$\text{minn}(a1,a2,...)$ gives the index of the minimal value.

Example: $a=1.9$ $\text{max}(\text{sqrt}(a),\log(a+3),-\tan(a/2))=1.5892352051166$

$\text{maxn}(\text{sqrt}(a),\log(a+3),-\tan(a/2))=2$

$\text{days}(\text{day},\text{month},\text{year})$ gives number of days since day(1,1,2000)=0.

A = More information on arithmetics

```

</PRE></P><HR>

```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"

```

```

</BODY>

```

```

</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

```

"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>

```

```

  <!--

```

```

    Created by using the PRINT operation of SURVO MM

```

```

    For more information, see http://www.survo.fi/

```

```

  -->

```

```

<HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

```

```

<META NAME="Generator" CONTENT="SURVO MM">

```

```

<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>

```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">x=root_of(f(x),x1,x2,acc)
computes the root x (x1<=x<=x2) of equation f(x)=0.
acc is an optional parameter indicating the accuracy of the solution.
Default is acc=1e-14.

```

.....
Example: r=root_of(2*sin(x)-sqrt(x),0.1,2) r=0.2555123276493
.....

root(n,x) gives the n'th root of x.
Examples: root(3,8)=2 root(12,2)=1.0594630943593
.....

See also

```

<A HREF="qm9_01.html">P = Roots of algebraic equations (by POL operations)</A>
<A HREF="qm6_07.html">M = Roots of systems of linear equations (by MAT operations)</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Numerical accuracy and form of results in editorial computing
All calculations in editorial computing are performed - whenever
possible - in double precision, i.e. within an accuracy of 15-16
significant digits. By default, the results are displayed with
13-14 significant digits. The 'accuracy' parameter in SURVO.APU
has no influence in editorial computing.

```

However, an ACCURACY specification controls the display accuracy.
ACCURACY=<4,5,...,or 16> gives # of significant digits in results
of editorial computing. Another form is
ACCURACY=-n where n is 1,2,3,... gives the # of decimals.
Examples:

.....
ACCURACY=7 A=0.12345678901234567
A=0.1234568
.....

ACCURACY=-2 A=12345.6789 B=-12
A.=12345.68 B.=-12.00

When extremely small or large values of results in editorial computing
are needed in accurate form, a ' (single quotation mark) in the
control column on those lines of values implies the results to be
displayed in exponential form (1.123456789012345e+123).

In versions 1.24+ it is possible to make calculations in multiple precision up to about a million digits. See [MULTIPLE](qmp1_01.html)?

```
<A HREF="qm1_03.html">A = More information on arithmetics</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">Matrices in editorial computing
```

Elements of matrices saved as matrix files of Survo can be used in computations.

The element in the i th row and j th column of matrix A (saved as A.MAT) is referred to by MAT_A(i,j).

The row and column indices i,j can be also row and column labels.

For example, if R is a correlation matrix, MAT_R(Height,Weight) is the correlation coefficient between variables 'Height' and 'Weight' and it can be used as a part of any expression in editorial computing.

This property is particularly useful in calculation with empirical functions whose values are saved in vectors or matrices.

Assume that life expectancies (in years) are saved as columns 'Male' and 'Female' for ages (as row labels) 0,1,...,85 in a matrix file LIFE.

Then MAT_LIFE(30,Female) gives the life expectancy for a 30 years old female.

See also [SHORTF](qm1_11.html)? (Shorthand notation for functions).

```
<A HREF="qm1_03.html">A = More information on arithmetics</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;("
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Shorthand notation for functions in editorial computing

```

Names of functions can be abbreviated by giving a substitution specification of the form `<new_name>(<original_name>)`.

Example:

`P()=N.F()`

`P(0,1,1)=0.84134474606854`

This option is especially useful when referring to matrix elements (MAT_) or data items (DAT_).

Examples:

`D()=DAT_G:\E\U\D\FINLAND()`

`D(Helsinki,Popul)=483057 D(Helsinki,Area)=176.87`

After REGDIAG (see `REGDIAG?`):

`M()=MAT_RG.M()`

`M(SSE)+M(SSR)=1228203.9791665`

`M(SST)=1228203.9791665`

```

</PRE></P><HR>

```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

```

```

</BODY>

```

```

</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

```

"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>

```

```

<!--

```

```

Created by using the PRINT operation of SURVO MM

```

```

For more information, see http://www.survo.fi/

```

```

-->

```

```

<HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

```

```

<META NAME="Generator" CONTENT="SURVO MM">

```

```

<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>

```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;("

```

```

<META NAME="Classification" CONTENT="help system">

```

```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```

</HEAD>

```

```

<BODY>

```

```

<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&

```

```

<P><PRE CLASS="HelpText">Matrix operations in Survo:

```

```

  <A HREF="qm2_02.html">A = General information</A>

```

```

  <A HREF="qm2_03.html">B = MAT operations</A>

```

```

  <A HREF="qm4_03.html">C = MAT chains</A>

```

```

  <A HREF="qmr1_01.html">D = MATRUN operations</A>

```

```

  <A HREF="q23_08.html">F = Matrix files as data sets</A>

```

```

  <A HREF="qm7_02.html">G = Matrix expressions</A>

```

```

  <A HREF="qm2_06.html">N = Names of matrices</A>

```

```

  <A HREF="q0e_06.html">R = Results of operations as matrix files</A>

```

```

  <A HREF="qma_01.html">X = Additional MAT #operations</A>

```

```

  <A HREF="q21_01.html">S = More information on statistical operations</A>

```

```

  <A HREF="qm1_01.html">M = More information on mathematical operations</A>

```

```

</PRE></P><HR>

```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

```

```

</BODY>

```

```

</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

```

"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Various matrix computations may be performed by MAT operations
The MAT operations work with matrices saved in special matrix files.
Each matrix file contains only one matrix referred to by the name of
the file. The default extension for matrix files is .MAT
For example,
MAT C=A+B   (or MAT C~A+B)
computes the sum of matrices in files A.MAT and B.MAT and writes the
result in file C.MAT on the current data disk.

Each matrix in a matrix file has also a name which tells the origin
of the matrix in question. The MAT operations update these names
using normal matrix algebra notations.
Assume that in the preceding example A has a name X'*X and B has a name
Y'*Y. Then C will have the name X'*X+Y'*Y.
After the MAT operation the current name of the result will be displayed
on the operation line as follows:
MAT C=A+B           / *C~X'*X+Y'*Y S20*20
'S20*20' tells that C is now a symmetric 20x20 matrix.
To display the numerical results, MAT LOAD operation should be employed.
  <A HREF="qm2_01.html">M = More information on Matrix operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT operations:
  <A HREF="qm3_01.html">A = MAT SAVE (saving matrices in matrix files)</A>
  <A HREF="qm3_04.html">B = MAT LOAD, LOADM (loading matrix files to edit field)</A>
  <A HREF="qm2_04.html">C = Standard matrix algebra (+,-,*,',INV etc.)</A>
  <A HREF="qm8_01.html">D = Normalizations and derived matrices</A>
  <A HREF="qm5_05.html">E = Element by element transformations</A>

```

```

<A HREF="qm4_04.html">F = Scalars in MAT operations</A>
<A HREF="qm6_01.html">G = Matrix decompositions</A>
<A HREF="qm4_01.html">H = Submatrices</A>
<A HREF="qm5_01.html">I = Control and auxiliary operations</A>
<A HREF="qm4_05.html">J = Row and column labels</A>
<A HREF="qma_01.html">K = Additional MAT #operations</A>
<A HREF="qm6_07.html">L = Linear equations and least squares solutions (MAT SOLVE)</A>
<A HREF="qm7_01.html">S = Saving matrix files to Survo data files</A>

<A HREF="qm2_01.html">M = More information on Matrix operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM
<P><PRE CLASS="HelpText">The standard operations for matrix algebra are:
MAT REM &lt;text&gt; / no operation, for comments etc.
MAT A / writes the internal name of matrix A and dimensions
MAT DIM A / writes the dimensions of matrix A on the same line
in the form /* rowA=20 colA=8
If A is diagonal, also rank of A (# of nonzero diagonal
elements) is given in the form rankA=5
MAT C=ZER(10,3) / null matrix 10*3
MAT C=IDN(10,10) / identity matrix 10*10
MAT C=IDN(10,10,0.3) / 0.3*IDN(10,10)
MAT C=CON(10,3) / 10*3 matrix with all elements =1
MAT C=CON(10,3,0.3) / 10*3 matrix with all elements =0.3
MAT C=TRI(10,10,0.3) / upper 10*10 triangular matrix with non-zero elements =0.3
MAT C=A / copies A to C
MAT C=A' / transpose of A
MAT C=A+B
MAT C=A-B
MAT C=A*B
MAT C=MMT(A) / C=A*A' MAT C=MMT2(A,B) / C=A*B'
MAT C=MTM(A) / C=A'*A MAT C=MTM2(A,B) / C=A'*B

MAT C=INV(A) / inverse of A
MAT C=INV(A,det) inverse and determinant of A
determinant is given in the form /* det=1.0045
See also MATSOLVE?
MAT C=DINV(A) / makes a 'generalized inverse' of a diagonal matrix A
by inverting the non-zero diagonal elements only.
See SING(ular value decomposition) and MPINV.
MAT C=DINV(A,eps) uses value eps as upper limit for 'zero'.
Default value for eps is 1e-15.
(Use MAT R=RANK(A) to see the rank.)
MAT TRACE A / trace of A in the form /* trA=30.7

```

MAT C=A^n / n'th power of a square matrix A (n integer>0)
 MAT C=A^k / k'th power of a positive semidefinite A (k>0) or
 positive definite A (k<>0)

For example, MAT C=A^0.5 gives square root of A.

MAT C=A^k / if A is a vector, C is vector of k'th powers of A elements.

MAT C=KRUNECKER(A,B) / Kronecker product of A and B

MAT C=RANK(A) / C(1,1)=the rank of A (C is a 1x1 matrix)

MAT C=TRACE(A) / C is tr(A).

MAT C=DET(A) / C is the determinant of A.

MAT C=LDET(A) / C is the logarithm of DET(A).

MAT C=NULL(A) / C is an orthonormal basis of the null space of A.

See also MATSOLVE?

MAT C=BASIS(A) / C is an orthonormal basis of the column space of A.

See also [MAXDET](qma_14.html)?

MAT C=MPINV(A) / C is the Moore-Penrose inverse of an m*n A. (MPINV?)

In RANK, NULL, BASIS, and MPINV the threshold for a singular value =0
 is EPS*d_max (d_max=maximal singular value) where EPS can be given as
 a specification. By default EPS=1e-15.

More about operations related generalized inverses etc. (See [MPINV](qm2_05.html)/A

Any matrix operand can also be given in transposed form.

For example,

MAT C=A+B'

MAT C=A'*B

MAT C=INV(SUMS')

MAT LOAD A'(1:5,*)

are permitted operations.

G = General matrix expressions

M = More information on MAT operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">MAT G=MPINV(A) computes the Moore-Penrose inverse G of any
 If m<n, G is computed as MPINV(A')'.

Let the singular value decomposition of A be A=U*D*V'

where D is the diagonal matrix of singular values d1>=d2>=...>=dm>=0.

Then MPINV(A)=V*INV_D*U' where INV_D is a diagonal matrix of numbers
 ei, i=1,2,...,m where e1=1/di if di>=eps*d1 and e1=0 otherwise.

eps is given by a specification EPS. By default eps=1e-15.

G is the only generalized inverse of A satisfying the conditions
 $AGA=A$, $GAG=G$, $(AG)'=AG$, $(GA)'=GA$.

Certain useful MAT expressions (proposed by Simo Puntanen):

$\text{MAT } P=A*\text{MPINV}(A)$

is the orthogonal projector (with respect to standard inner product)
onto the column space of A.

$\text{MAT } C=A*\text{MPINV}(A'*V*A)*A'*V$

is the orthogonal projector (with respect to inner product matrix V)
onto the column space of A.

$\text{MAT } P=\text{IDN}(m,m)-\text{BASIS}(A)*(\text{BASIS}(A))'$.

is the orthogonal projector (with respect to standard inner product)
onto the orthocomplement of the column space of A.

$\text{MAT } Z=\text{BASIS}(\text{IDN}(m,m)-\text{BASIS}(A)*(\text{BASIS}(A))')$.

is the orthonormal basis of the orthocomplement of the column space of
A.

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Recommendation:

Names of matrix files should be strings starting by characters

A-Z ! _ & amp;

Names starting by other characters are treated as scalars.

Temporary matrix files created by sucros should have names

starting systematically by one of the characters ! _ & amp;.

Then, for example, matrices starting by ! can be easily deleted
at the end of the sucro by the command

MAT KILL !*.MAT

Many (statistical) Survo operations give results as matrix files

with the extension .M (like CORR.M and MSN.M in CORR).

A list of such matrices is found by MATRES?

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Matrices to be processed by MAT operations have to be saved in ma
files. The MAT SAVE operation does this job both for matrices written
in the edit field and for matrices coming from various Survo files.
  <A HREF="qm3_02.html">A = Saving matrices from the edit field</A>
  <A HREF="qm3_03.html">B = Moving matrices from Survo data files to matrix files</A>

  <A HREF="qm2_03.html">M = More information on MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">A matrix to be saved in a matrix file has to be represented in either
of the two forms below:
```

```
11 * 2x3 matrix A without row and column labels:
12 *MATRIX A ///
13 * -1.45 2.33 -5.00
14 * 0.91 3.07 2.28
15 *
16 * 2x3 matrix B with row and column labels:
17 *MATRIX B
18 */// Y1 Y2 Y3
19 * X1 12.2 33.6 6.1
20 * X2 3.9 0.0 18.7
21 *
```

In both cases the line after the last row in the matrix must be left empty or it has to start with word END.

To save a matrix A located in the edit field, activate
MAT SAVE A

and the first matrix in the current edit field starting with MATRIX A will be saved in matrix file A.MAT on the current data disk.

To save matrix A in matrix file TEST.MAT, activate

MAT SAVE A TO TEST.

Hence MAT SAVE A is equivalent to MAT SAVE A TO A.

A direct way to save a matrix without a MATRIX label is

```
11 *
12 *MAT SAVE AS A
13 * -1.45 2.33 -5.00
14 * 0.91 3.07 2.28
15 *
```

Also general and rowwise comments can be given as shown by the following schematic example:

MATRIX A

This is a general comment 1.

This is a general comment 2.

A

/// C1 C2 C3

R1 11 12 13

R2 21 22 23 / This a comment on line R2.

R3 31 32 33 / This a comment on line R3.

R4 41 42 43

MAT SAVE A / Saving A

If the matrix is loaded by MAT LOAD A, the comments will appear in their proper places.

This feature is useful especially in result matrices like RG.M

in REGDIAG making the output self-documenting. (See [REGDIAG](#))

Symbolic constants in matrices

A matrix to be saved from the edit field may also have expressions of symbolic constants as elements. For example,

```
11 *
12 * r=sqrt(1/n) n=4
13 *MATRIX R ///
14 * 1 r r^2 r^3
15 * r 1 r r^2
16 * r^2 r 1 r
17 * r^3 r^2 r 1
18 *
```

defines a 4*4 matrix which can be saved by MAT SAVE R. Please, note that R will be saved in numerical form only. If r is altered, MAT SAVE R must be activated again.

[S](#) = More information on MAT SAVE

More information on Survo from <http://www.survo.fi>

DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System ">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">


```
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT SAVE DATA &lt;Survo data&gt; TO &lt;matrix file&gt;
saves a Survo data file (active fields) or a part of it to a matrix
file. The specifications VARS, MASK, CASES and IND are available for selecting
variables and observations to be moved. If the first active field is a
string field it will be used as the row label. Otherwise the rows are
labelled numerically. The columns are always labelled by the
corresponding field names (abbreviated to 8 first characters).
```

Since in many applications the order of columns (variables) is important, it can be changed either by specifying the variables in desired order by VARS or by observing the fact that MAT SAVE DATA sorts the columns in alphabetic order with respect of their activation mask symbols. For example, MASK=AYY-XX specifies the order 1,5,6,2,3 (4 omitted) of columns (variables).

```
<A HREF="qm3_01.html">S = More information on MAT SAVE</A>
<A HREF="qmr2_01.html">M = More information on multivariate statistical analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
```

```
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT LOAD &lt;matrix file&gt;,&lt;format&gt;,&lt;L
loads &lt;matrix file&gt; to the edit field using the optional &lt;format&gt;,&lt;L
L will be the first line in the edit field for the loaded matrix.
Examples: MAT LOAD R,##.###,10 MAT LOAD R,20
If &lt;format&gt; is omitted, a proper format will be sought automatically.
MAT LOAD &lt;matrix file&gt;
loads &lt;matrix file&gt; immediately after the command line.
```

Also parts (submatrices) may be loaded as follows:
MAT LOAD R(6:10,1:5),10
loads a submatrix of R consisting of the rows 6-10 and of the columns 1-5.

For temporary displays of matrix files use /MATSHOW <matrix_file> or /MATSHOW <matrix_file>,<format>. Example: /MATSHOW CORR.M,12.123

```
<A HREF="qm3_05.html">L = LOADM operation for output in partitioned form</A>
<A HREF="qm1_10.html">A = Elements of matrices in editorial computing</A>
<A HREF="qm2_03.html">M = More information on MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```

"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LOADM &lt;matrix_file&gt;,&lt;format&gt;,&lt;L
works in principle like MAT LOAD but writes the matrix in the edit
field (and in the output file) in block form where the width of each
block is limited by the visible part of the edit field.
The number and order of rows and columns to be written can be selected
by ROWS and COLUMNS specifications. For example, ROWS=3,2,1,4 informs
that rows 3,2,1,4 only and in this order will be written.

```

To emphasize exceptional elements of the matrix (like high loadings of a factor matrix) in the display, specifications LIMITS and SHADOWS can be used.

Another alternative is to use the SHADOW_MATRIX specification as shown in

LIMITS gives a list of upper bounds of various classes and SHADOWS gives a list of corresponding shadow values.

Example: LIMITS=-0.7,-0.3,0.3,0.7,1

SHADOWS=7,1,0,1,7 (0=normal display)

Another alternative is to use the SHADOW_MATRIX specification as shown in

Formats of elements in LOADM:

Parameter <format> is given in one of the following ways:

1. LOADM <matrix_file>,12.1234,L
writes elements with 2 places in the integer part and with 4 decimals.
2. LOADM <matrix_file>,(10),L
gives elements with 10 characters according to the maximum element by absolute value. Thus when the greatest value is 1998.261213, the selected format corresponds to 1234.1234 (if negative values appear in the matrix) or to 1234.12345 (if not).
3. LOADM <matrix_file>,(C10),L
works as the previous alternative but the format is selected separately for each column of the matrix.

Extended form of LOADM especially for factor matrices according to the style suggested by Lauri Tarkkonen:

LOADM <matrix_file>,<format>,<L
with specifications LIMITS, SHADOWS, SORT, COLUMNS, SUMS, POSDIR, WIDE
writes a (rotated factor) matrix in the edit field by

1. sorting (SORT) the rows hierarchically by factors and loadings of variables,
2. inserting long descriptive names of variables at the end of each row (provided that a name of data giving those names is indicated by SORT),

3. displaying the elements with different shadings according to their sizes (LIMITS, SHADOWS as described earlier, see [LOADM](http://www.survo.fi/qm3_05.html)?),
4. sorting the columns according to the sums of squares (COLUMNS=SORT),
5. displaying marginal sums of squares (SUMS=2) or sums (SUMS=1),
6. orienting the factors (signs of loadings) according to the same rules as in the POSDIR operation (POSDIR=1,2, or 3), see [POSDIR](http://www.survo.fi/qmm1_09.html)
7. allowing wide matrices to be written as a single block (WIDE=1) if the line length is large enough.

The most important specification is SORT of the form
SORT=1

or

SORT=<name_of_data_file>;

In both cases the variables are written in the order of their loadings in different factors as follows. At first the factors are studied according the order of the sums of squares of loadings. Variables having their highest loadings in the strongest factor are sorted to descending order according to the absolute values of their loadings in that factor. These variables in this order will appear as first ones in the output. The same procedure is applied to the remaining variables according to the second strongest factor and so on.

In the latter form of SORT the long names of variables are taken from the given data file and appended to the end of each row. This helps interpretation of factors.

SORT=-1 or SORT=-<name_of_data_file>;

leads to the same sorting procedure but now within each factor the loadings are sorted by their signed values.

An extra parameter in all forms of SORT, for example, SORT=1,0.3 excludes variables with a highest loading less than a given value (0.3) from the sorting procedure and puts those variables (rows) at the end of the matrix.

Sucro /LOADFACT <data_file>;<rotated_factor_matrix>;
does the job automatically with selected values of extra specifications and gives a ready-made work scheme which may be improved by the user.

See

/LOADFACT ?

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo.fi>

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">The submatrix of matrix A consisting of rows a1-a2 and columns b1-b2 is denoted by A(a1:a2,b1:b2). The parameters a1,a2,b1,b2 may be either numeric or symbolic (or literal row and column labels).

The following operations are permitted for submatrices:

MAT C=A(a1:a2,b1:b2) / C will be a submatrix of A
MAT C(a1,b1)=A / A will be copied partially over C so that
C(a1,b1) will be A(1,1).
MAT LOAD A(a1:a2,b1:b2),L / see MAT LOAD
MAT LOAD A(*,b1:b2),L / * indicates the whole range (all rows)

Special cases:

MAT C(3,5)=3.2345 / entering a single element
MAT C(1,2)=k
MAT C(0,2)="sum" / label of column 2 will be "sum"
MAT C(5,0)="row5"

```
<A HREF="qm8_01.html">S = Submatrices by MAT C=SUB(A,Srow,Scol)</A>
<A HREF="qm4_06.html">L = Literal row and column labels</A>
<A HREF="qm2_03.html">M = More information on MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="qm2_03.html">M = More information on MAT operations
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">To speed up consecutive MAT operations, programs may be written
by placing the MAT operations (among other operations as well)
on consecutive lines. Such a series of operations may be activated
```

by pressing PREFIX before the first activation.

An example of a typical MAT chain:

```
n=48 m=10 Correlations of a n*m data matrix X
MAT NAME X AS DATA / *X~DATA 48*10
MAT Y=CENTER(X) / *Y~CENTER(DATA) 48*10
MAT Y=NRM(Y) / *Y~NRM(CENTER(DATA)) 48*10
MAT R=MTM(Y) / *R~NRM(CENTER(DATA))*NRM(CENTER(DATA)) S10*10
MAT KILL Y,MEAN
MAT NAME R AS Correlations / *R~Correlations S10*10
MAT LOAD R,###.##,CUR+2 / R will be loaded from line CUR+2 onwards
```

```
<A HREF="qm2_03.html">M = More information on MAT operations</A>
<A HREF="qmr1_01.html">R = MATRUN operations (MAT chains saved in text files)</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">Both symbolic and numeric constants and expressions may appear in
certain MAT operations. The values of the symbolic constants must be
given in the same subfield. The symbolic constants have to be written in
lowercase letters.
```

For example,

```
m=10 n=5 x=k/100 coeff=2.5 k=3000
MAT C=CON(m,m+n,x) / 10*15 matrix with all elements =30
MAT C=coeff*C / *C~coeff*CON 10*15
MAT C=(sqrt(k))*C / *C~(sqrt(k))*coeff*CON 10*15
```

MAT DIM <matrix>

is an auxiliary operation yielding the dimensions of a matrix in the form

```
MAT DIM A / * rowA=30 colA=5
```

If A is a diagonal matrix, the rank of A is also given as rankA=4.

After MAT DIM A has been executed, symbolic constants rowA, colA, (rankA) may be used as symbolic constants in following lines of a matrix program.

An element of a matrix may be directed to a scalar by

```
MAT s=A(1,3)
```

giving the value of s on the same line in form s~1.234.

```
<A HREF="qm2_03.html">M = More information on MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The rows and columns of all matrices in matrix files are labelled
and these labels are displayed when the MAT LOAD operation is performed.
All MAT operations try to label the rows and the columns of the result
matrices according to the operands and to the nature of the operation.
For example, when a matrix is transposed or inverted, the row and column
labels are exchanged.
This 'label algebra' in conjunction with the automatic updating of the
matrix names makes the results more readable.
Column and row labels can be changed as follows:
MAT C(0,2)="sum"      / label of column 2 will be "sum"
MAT C(5,0)="row5"     / label of row 5 will be "row5"
MAT RLABELS FROM A TO B / row labels are copied from A to B
MAT CLABELS FROM A TO B / column labels are copied from A to B
MAT CLABELS "COMP" TO B / columns of B labelled by COMP1, COMP2,...
MAT RLABELS NUM(0) TO B / rows of B labelled by 0,1,2,...
MAT RLABELS NUM(5) TO B / rows of B labelled by 5,6,7,...

  <A HREF="qm4_06.html">L = Literal row and column labels</A>
  <A HREF="qm2_03.html">M = More information on MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Referring to literal row and column labels

In various MAT operations matrix rows and columns can be referred to
either by their numerical indices 1,2,... as in
MAT C=A(1:7,2:5)
or by symbolic expressions as in
m=7 k=1 n=5
MAT C=A(1:m,k+1,n).

```

It is also possible to use names of rows and columns literally in such operations.

For example, if R is a correlation matrix of variables X1,X2,Y1,Y2,
MAT R3=R(X2:Y2,X2:Y2)

gives R3 as a correlation matrix of the three last variables X2,Y1,Y2 and
MAT LOAD R(*,Y1)

loads the third (Y1) column of R into the edit field.

Any reference to a row or to a column is in the first place interpreted as a row (or column) label.

If this fails, it is handled as a symbolic expression or a plain index.

M = More information on MAT operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">MAT control and auxiliary operations:

1 = MAT NAME

2 = MAT KILL

M = More information on MAT operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">MAT NAME <matrix file> AS <new matrix name>;

renames the matrix currently saved in <matrix file>. The name of the matrix file remains unaltered.

MAT NAME is useful, for example, when the name of the matrix has become too long. There is no upper limit for the name length, but only 128

first characters will be saved.

Another way to change the name of the matrix is to write a MAT operation in the form

MAT C!=A+B / Please, note a (!) after C

Then the result A+B will be saved in file C and the name of it will also be C. The same situation may be reached by the following two operations:

MAT C=A+B / *C~A+B 10*3

MAT NAME C AS C / *C~C 10*3

C = More information on MAT control operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText"> C = More information on MAT control operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">MAT KILL <list of matrix files>

deletes all matrix files in the list from the current data disk.

C = More information on MAT control operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">


```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT TRANSFORM has two different forms:

```

MAT TRANSFORM <matrix file> BY <function of X#>
 transforms each element of the matrix according to <function of X#>.
 For example to take natural logarithms of all elements of A, activate
 MAT TRANSFORM A BY LOG(X#)
 MAT TRANSFORM <X_matrix> BY <Y_matrix> AND <function of X#,Y#>
 transforms each element X# of <X_matrix> by <function of X#,Y#>
 where Y# is the corresponding element of <Y_matrix>.
 For example, to divide each element of A by the corresponding element of
 B, activate
 MAT TRANSFORM A BY B AND X#/Y#

Besides current elements (X#,Y#), both forms of MAT TRANSFORM permit
 referring to current row and column indices by I# and J#, respectively.
 For example, a 10*10 matrix R of the form

$$\begin{matrix}
 1 & r & r^2 & \dots & r^9 \\
 r & 1 & r & \dots & r^8 \\
 r^2 & r & 1 & \dots & r^7 \\
 \dots & & & \dots & \\
 r^9 & r^8 & r^7 & \dots & 1
 \end{matrix}$$

where $r=1/2$, can be created by MAT operations

```

11 *          r=1/2
12 *MAT R=CON(10,10)
13 *MAT TRANSFORM R BY r^abs(I#-J#)

```

```

  <A HREF="qm2_03.html">M = More information on MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```

</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Certain matrix operations are also permitted for large partitioned
matrices, whose elements are matrix files (each containing one super-
element)
A supermatrix is defined always in the current edit field in the form:
MATRIX A%      / % identifies a supermatrix
A11 A12 A13
A21 A22 A23

```

In the example above A% is a 2x3 supermatrix. When A% appears as an operand in a supermatrix operation, all the parts A11,A12,... have to be previously saved in matrix files.

If A% is a result matrix, its superelements need not to be previously defined, but the definition of A% itself must, of course, appear in the current edit field.

Supermatrix operations:

```

C%=A%
C%=A%'      / A%=A%' not permitted
C%=A%+B%
C%=A%-B%
C%=A%*B%      / C% must be distinct from A% and B%
C%=INV(A%)    / diagonal superelements must be nonsingular

```

Example: Inverting a 100x100 matrix R% having all the diagonal elements =1 and the off-diagonal elements =r

```

MATRIX R%

```

```

A B B B
B A B B
B B A B
B B B A

```

```

MATRIX S%

```

```

S11 S12 S13 S14
S21 S22 S23 S24
S31 S32 S33 S34
S41 S42 S43 S44

```

```

n=25 r=0.8

```

```

MAT B!=CON(n,n,r)

```

```

MAT A!=IDN(n,n,1-r)

```

```

MAT A!=A+B

```

```

MAT S%=INV(R%)

```

```

<A HREF="qm2_01.html">M = More information on Matrix operations</A>

```

```

</PRE></P><HR>

```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

```

```

</BODY>

```

```

</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

```

"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>

```

```

<!--

```

```

Created by using the PRINT operation of SURVO MM

```

```

For more information, see http://www.survo.fi/

```

```

-->

```

```

<HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

```

```

<META NAME="Generator" CONTENT="SURVO MM">

```

```

<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>

```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(

```

```

<META NAME="Classification" CONTENT="help system">

```

```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```

</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Matrix decompositions:
  <A HREF="qm6_02.html">C = Cholesky</A>
  <A HREF="qm6_04.html">G = Gram-Schmidt</A>
  <A HREF="qm6_09.html">Q = QR decomposition</A>
  <A HREF="qm6_05.html">E = Spectral decomposition (eigenvalues and vectors)</A>
  <A HREF="qm6_06.html">S = Singular value decomposition</A>

  <A HREF="qm2_03.html">M = More information on MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT C=CHOL(A)
forms the Cholesky decomposition A=CC' of a positive definite matrix A
where C is a lower triangular matrix.

  <A HREF="qm6_01.html">D = More information on matrix decompositions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  <A HREF="qm6_01.html">D = More information on matrix decompositions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>

```

```

</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT GRAM-SCHMIDT DECOMPOSITION OF &lt;A&gt; TO &lt;S&gt;
finds the decomposition  $A=S*U$  where the columns of  $S$  are orthonormal
and  $U$  is upper triangular. The columns of  $A$  must be linearly indepen-
dent.
If the columns of  $A$  are linearly dependent, the process is interrupted
when the first dependency is found and an error message is displayed.
Furthermore the coefficients indicating linear dependency are saved in  $S$ 
as a column vector. The user may check the dependency of columns by
computing  $A*S$  which should be 0.

The accuracy in testing linear dependence may be controlled by an extra
parameter, i.e. writing
MAT GRAM-SCHMIDT DECOMPOSITION OF &lt;A&gt; TO &lt;S&gt;,&lt;U&gt;,eps
Default value for eps is 1e-15.

  <A HREF="qm6_01.html">D = More information on matrix decompositions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT SPECTRAL DECOMPOSITION OF A TO S,L
forms the spectral decomposition  $A=S*L*S'$  of a symmetric matrix  $A$ 
where  $S$  is the orthogonal matrix of eigenvectors (as columns) and
 $L$  is the diagonal matrix of eigenvalues (saved as a column vector).

  <A HREF="qm6_01.html">D = More information on matrix decompositions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">

```

```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT SINGULARVALUE DECOMPOSITION OF A TO U,D,V
Alternative forms:
MAT SINGULAR VALUE DECOMPOSITION OF A TO U,D,V
MAT SVD OF A TO U,D,V

```

computes the singular value decomposition of A ($m \times n$, $m \geq n$)
 $A = U \cdot D \cdot V'$ where U is $m \times n$ and $U'U = I$, V is $n \times n$ and $V'V = I$ and
 D ($n \times n$) is diagonal and consists of singular values.
 To spare space, D will be saved as a column vector.

This decomposition has several applications. For example,
 $X = V \cdot D^{-1} \cdot U'$ is a generalized inverse of A with properties
 $AXA = A$, $XAX = X$, $(AX)' = AX$, $(XA)' = XA$.
 See also qm2_05.html MPINV?

```

  <A HREF="qm6_01.html">D = More information on matrix decompositions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT SOLVE <X> FROM <A>*<X>=<B>;
where A is m*n, m>=n and r(A)=n,
      B is m*k
yields the solution X of linear equations (when m=n)
      or the least squares solution X (when m>n).

```

The algorithm is automatically selected according to the nature of A :

If A is diagonal, solution is trivial,
 else if A is triangular, straight backsubstitution is used,
 else if A is symmetric, 'cholset1' and 'cholsol1' is used,
 else (when $m \geq n$) 'Ortholin1' is used.

If the columns of A are linearly dependent, an error message will be displayed. $\text{eps}=1\text{e-}15$ is the tolerance limit for 'non-zero' entities.

In this case the singular value decomposition may be used (see [SING](qm6_06.html))

Reference: Wilkinson-Reinsch: Handbook for Automatic Computation,
 Vol.II, Linear algebra.

[N = Solving \$AX=0\$ \(Finding null space of A\)](qm6_08.html)

[M = More information on MAT operations](qm2_03.html)

More information on Survo from <http://www.survo.fi>

DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

[Content-Type](#)="text/html; charset=iso-8859-1">

[Generator](#)="SURVO MM">

[TITLE](#)<SURVO MM Help System (web edition)</TITLE>

[LINK REL](#)="stylesheet" [HREF](#)="q.css" [TYPE](#)="text/css">

[META NAME](#)="Description" [CONTENT](#)="SURVO MM Help System (web edition)">

[META NAME](#)="Classification" [CONTENT](#)="help system">

[META NAME](#)="Keywords" [CONTENT](#)="Survo, help, hypertext">

[H1](#)<[IMG SRC](#)="../survologo1.gif" [WIDTH](#)="200" [HEIGHT](#)="82" [ALT](#)="SURVO MM">&

[P](#)<[PRE CLASS](#)="HelpText">A basis for the null space of the matrix A, i.e. the solution of $AX=0$ is found by the command

MAT SOLVE X FROM A*X=0

This is done by the singular value decomposition $A=UDV'$ and taking the basis X of the null space as the columns of V corresponding to singular values = 0 ($< 1\text{e-}15$). The tolerance value ($1\text{e-}15$) can be changed by a specification $\text{EPS}=\text{value}$.

An alternative operation is

MAT X=NULL(A).

MAT SOLVE X FROM $A \cdot X = B$;

where A is $m \times n$, $m \geq n$ and $r(A)=n$,

B is $m \times k$

yields the solution X of linear equations (when $m=n$)

or the least squares solution X (when $m > n$).

The algorithm is automatically selected according to the nature of A:

If A is diagonal, solution is trivial,

else if A is triangular, straight backsubstitution is used,

else if A is symmetric, 'cholset1' and 'cholsol1' is used,

else (when $m \geq n$) 'Ortholin1' is used.

If the columns of A are linearly dependent, an error message will be displayed. $\text{eps}=1\text{e-}15$ is the tolerance limit for 'non-zero' entities.

In this case the singular value decomposition may be used (see [SING](qm6_06.html))

Reference: Wilkinson-Reinsch: Handbook for Automatic Computation,
 Vol.II, Linear algebra.

[N = Solving \$AX=0\$ \(Finding null space of A\)](qm6_08.html)

[M = More information on MAT operations](qm2_03.html)

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT QR OF A TO Q,R
makes the QR factorization of  $m \times n$  A ( $m \geq n$ ) by Householder transformations
(Algorithm 5.2.1 in Golub, van Loan: Matrix Computations, 1989).
Q will be  $m \times m$  orthogonal matrix and R  $m \times n$  upper triangular so that
 $A = Q \cdot R$ .

MAT QRP OF A TO Q,R,tol
makes the Householder QR with column pivoting of  $m \times n$  A
(Algorithm 5.4.1 in Golub, van Loan: Matrix Computations, 1989).
The permutation of columns is saved in QR_PERM.M so that
 $PERM2(A, QR\_PERM.M) = Q \cdot R$ .
tol gives the lowest admitted pivot value for rank determination.
Default is  $tol = 1e-15$ .
 $r = rank(A)$  and an indicator vector of the optimal permutation is saved
in QR_SEL.M .
Then
MAT A2=SUB(A,*,QR_SEL.M)
gives  $m \times r$  A2 as a basis of the column space of A.

<A HREF="qm6_01.html">D = More information on matrix decompositions</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FILE SAVE MAT &lt;matrix file>; TO &lt;Survo data file>;
saves a matrix file to a Survo data file.

```

The first line (row) to be copied from the matrix file is given by the specification FIRST=<# of first line>. Default is FIRST=1. Similarly, the last row to be copied is given by LAST=<# of last row>. Default is the last row in the matrix.

The columns of the matrix are copied to variables of the data file according to the column labels (8 first characters of names should match). If a variable corresponding to a certain matrix column does not exist, a new numeric variable is created. The type (1,2,4 or 8) of new variables can be given by TYPE=<type>. Default is TYPE=4. Without a MATCH specification, all the rows will be copied to the Survo data file as new observations. If the first field in the data file is of the string type, the row labels will be copied to this field (as names of new observations).

However, if a specification LABEL=<name_of_variable> is given, the row labels are saved in this variable.

If the Survo data file does not exist, a new file will be automatically created with suitable dimensions.

To extend existing observations in the Survo data file, a MATCH specification can be given.

If MATCH is omitted, all the rows will be copied to the Survo data file as new observations.

MATCH=<name of a string field> specifies the field in the Survo data file whose contents should be equal to the label of the row to be copied.

The order of the observations in the matrix file and in the data file must be same.

By giving MATCH=# the observations are copied from the matrix file to the data file without a match variable, but the first row to be copied will be placed as the first observation in the data file.

```
<A HREF="qm2_03.html">M = More information on MAT operations</A>
<A HREF="qmr2_01.html">S = More information on multivariate statistical analysis</A>
<A HREF="qf1_01.html">F = More information on Survo data management</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Matrix expressions in the Survo matrix interpreter
```

The basic MAT operations related to standard arithmetics are typically binary (i.e. of the form $MAT\ C=A+B$) and thus only two operands are in use. However, SURVO MM provides a matrix preprocessor for manipulating more complicated expressions like $MAT\ D2=(X-MY)'*INV(S)*(X-MY)$

The preprocessor converts such expressions automatically into basic

MAT commands. The above MAT command is translated within the matrix interpreter into 4 MAT commands

```
%%1=X-MY
```

```
%%2=INV(S)
```

```
%%2=%%2*%%1
```

```
D2=%%1'*%%2
```

where %%1,%%2,... are temporary matrix files on the current data path.

The preprocessor is available in SURVO MM when the system parameter 'mat_parser' (in SURVO.APU) is set to a positive value or command SYSTEM mat_parser=<positive_integer>; is activated. The value of mat_parser should exceed the maximum length of the series of translated MAT commands and twice the length of the longest matrix expression. mat_parser=4000 (default) is recommended.

The matrix expressions may contain all expressions appearing in the MAT commands of the form

```
MAT C=function_of(A,B,...).
```

The preprocessor does not optimize the order of operations. Typically operations are carried out from the left to the right unless otherwise stated by the user by extra parentheses.

Example:

```
MAT Y=A*(B*(C*Y))
```

The translated MAT commands of the last activated general expression are saved in the text file SURVOMAT.TMP in the subdirectory for temporary files of Survo.

Thus the user may inspect how the preprocessor works by studying this file (using SHOW, for example).

Generalized matrix expressions (of more than 2 operands) cannot be used in matrix chains (.MTX files) but they are allowed in continuous activations (with F2 ESC) and in sucros.

In general it is better to make matrix programs as sucros and not as matrix chains (.MTX files).

```
<A HREF="qm2_01.html">M = More information on MAT operations</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">Various normalizations and derived matrices:
```

```
MAT C=SUM(A) / row vector of the sums of the columns
```

```
MAT C=SUM(A,k) / row vector of sums of kth powers by columns
```

```
MAT C=MAX(A) / row vector of the column maxima
```

```
MAT C=MIN(A) / row vector of the column minima
```

```
MAT C=MAX_IJ(A) / 1*1 matrix of maximum element with corresponding labels
```

MAT C=MIN_IJ(A) / 1*1 matrix of minimum element with corresponding labels
 MAT C=CENTER(A) / centers columns of A by subtracting means
 Side result: Means of columns saved in MEAN.MAT
 MAT C=NRM(A) / rescales the columns of A to length=1
 Side result: Lengths of A columns saved in NORM.MAT
 MAT C=DV(A) / makes a diagonal matrix of a column vector A
 MAT C=VD(A) / takes the diagonal of A and forms a column vector
 MAT C=DIAG(A) / forms diagonal matrix of diagonal elements of A
 MAT C=DIAGVEC(A) / makes a symmetric m*m matrix C of an m element vector A as
 C[i,j]=A[abs(i-j)+1].
 MAT C=VEC(A) / forms a single column vector C of all A columns
 MAT C=VEC(A,k) / forms a matrix C of k rows of the elements of A
 MAT C=NVEC(A) / works as VEC, but moves the row labels accordingly.

MAT C=PERM(A,P) / If P is a column vector (m*1) consisting of numbers
 1,2,...,m in any order, the rows of A will be
 permuted according to P.
 If P is a row vector, the columns of A are permuted.
 MAT C=SORT(A,k) / Rows of A are sorted in increasing order
 of elements in the k'th column of A.
 MAT C=P(A,k) / Pivotal operation with pivot A(k,k)
 MAT C=P(A,k:l) / Pivotal operation with pivots A(k,k),...,A(l,l)
 MAT C=CUM(A) / cumulative sums of columns
 MAT A=UNCUM(C) / inverse operation of CUM above
 MAT C=PROD(A) / row vector of the products of the columns
 MAT C=SELECT(A,k) / selects those rows of A where the element in the k'th
 column is not 0.
 MAT C=SUB(A,Srow,Scol) / selects a submatrix of A with rows determined
 by indicator vector Srow and columns by Scol.
 For example, if Srow=[3 0 0 1 2], rows 4,5,1
 are selected in this order. * indicates all rows/columns.

P = MAT PERM (details)
 M = More information on MAT operations
 </PRE></P><HR>
 <DIV CLASS="Details"><SMALL>More information on Survo from
 </BODY>
 </HTML>
 <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
 "http://www.w3.org/TR/html4/loose.dtd">
 <HTML>
 <!--
 Created by using the PRINT operation of SURVO MM
 For more information, see http://www.survo.fi/
 -->
 <HEAD>
 <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
 <META NAME="Generator" CONTENT="SURVO MM">
 <TITLE>SURVO MM Help System (web edition)</TITLE>
 <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
 <META NAME="Description" CONTENT="SURVO MM Help System (web edition)</META>
 <META NAME="Classification" CONTENT="help system">
 <META NAME="Keywords" CONTENT="Survo, help, hypertext">
 </HEAD>
 <BODY>
 <H1>&
 <P><PRE CLASS="HelpText">Permutations:
 1 = Counting and listing permutations (with restrictions) (COMB)
 2 = Permuting matrix rows and columns
 </PRE></P><HR>
 <DIV CLASS="Details"><SMALL>More information on Survo from
 </BODY>
 </HTML>
 <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
 "http://www.w3.org/TR/html4/loose.dtd">

```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT C=PERM(A,P) / If P is a column vector (m*1) consisting of n
      1,2,...,m in any order, the rows of A will be
      permuted according to P.
      If P is a row vector, the columns of A are permuted.
In fact P may contain any distinct numbers. The rows (or columns) of A
are permuted according to the magnitudes of these numbers.
There is another form of this operation
MAT C=PERM2(A,P) which does the same job but the permutation defined
by P is interpreted in a different way.
Let          A=[1,2,3,4,5,6,7,8]
and          P=[5,8,1,3,7,6,4,2].
Then MAT C=PERM(A,P) gives C=[3,8,4,7,1,6,5,2], i.e. C(P(i))=A(i),
but MAT C=PERM2(A,P) gives C=[5,8,1,3,7,6,4,2], i.e. C(i)=A(P(i)).

MAT C=PERM0(A,P) works as PERM2 but assumes that P really consists
of integers 1,2,... in some order. PERM0 is faster than PERM2.

  <A HREF="qm2_03.html">M = More information on MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Operations on polynomials with real or complex coefficients.

The following POL operations are working on polynomials saved in
MAT files (by MAT SAVE, for example). The resulting polynomials will
be found in corresponding MAT files (by MAT LOAD, for example).

POL P=P1+P2
POL P=P1-P2
POL P=P1*P2

```

POL Q=P1/P2 (residual not saved)
 POL Q(R)=P1/P2 (R will be the residual)
 POL D=DER(P) Q(x)=P'(x) (derivative of P(x))
 POL R=ROOTS(P) Roots of algebraic equation P(x)=0
 POL P=PRODUCT(R) P(x)=(x-r1)(x-r2)... (inverse operation for ROOTS)
 POL V=P(X) V=values of polynomial P on components of vector X
 POL L=LAG(P,k) L is P(n-k) expanded to a polynomial of n.

Representation of polynomials in MAT files is described on next page.

A polynomial of degree n with complex coefficients

$P(z) = A_0 + iB_0 + (A_1 + iB_1)z + (A_2 + iB_2)z^2 + \dots + (A_n + iB_n)z^n$
 can be written as a matrix

```

MATRIX P ///
A0 B0
A1 B1
A2 B2
.. ..
An Bn
  
```

which must be saved in a MAT file P.MAT by MAT SAVE P.

If the coefficients are real, the second column may be omitted.

Any matrix saved as a MAT file can be used as a polynomial in the POL operations. Eventual excessive columns 3,4,... are not used.

```

<A HREF="qm1_01.html">M = More information on mathematical operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM
<P><PRE CLASS="HelpText">SURVO MM -j rjestelm n erityispiirteit :
  <A HREF="qm_1_02.html">1 = Taustatietoja</A>
  <A HREF="qm_1_09.html">2 = Hiiren k ytt </A>
  <A HREF="qm_1_03.html">3 = Pehmonapistot</A>
  <A HREF="qm_1_08.html">4 = T itten hallinta pehmonappien avulla (keskusteleva k ytt tapa)</A>
  <A HREF="qm_1_04.html">5 = Toimituskent n hallinta</A>
  <A HREF="qm_1_05.html">6 = Grafiikka</A>
  <A HREF="qm_1_06.html">7 = Erilaiset ikkunat</A>
  <A HREF="qm_1_07.html">8 = Uusia systeemiparametreja</A>
  <A HREF="qm_1_16.html">9 = Tulostus kirjoittimella</A>
  <A HREF="qm_1_20.html">A = Leikep yt </A>
  <A HREF="qm_1_21.html">M = Usean Survon samanaikainen k ytt </A>

  <A HREF="q01_02.html">E = Paluu p valikkoon</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
  
```

```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SURVO MM on Survo-j rjestelm n Windows-versio.
Se toimii Windows 95, 98, NT ja 2000 XP, 7 ja 8 -k ytt j rjestelmiss .
SURVO MM on pyritty tekem n mahdollisimman yhteensopivaksi SURVO 98:n
suhteen. Esim. SURVO 98:ll (ja my s SURVO 84C:ll ) laaditut
toimituskent t, datatiedostot, matriisitiedostot ja sukrot toimivat
sellaisenaan SURVO MM:ss .

```

SURVO MM on kehitetty vuoden 2000 aikana suoraan SURVO 98:n C-kielisen
 l hdekoodin pohjalta. Useimmat (esim. tilastolliset) ohjelmamodulit
 ovat siirtyneet SURVO MM: n hyvin pienin muutoksin.
 Kuvaruutua ja n pp imist koskevat toiminnot on jouduttu rakentamaan
 suurelta osin uudestaan (WIN32 API -funktioiden avulla).
 Lis ksi hiiri on vihdoinkin otettu k ytt n ja t m luonnollisesti
 on tuottanut lis ty t .

Kokeneitten Survoilijoiden kannalta on t rke todeta, ett SURVO MM:
 voi silti k ytt t sm lleen samalla tavalla kuin aikaisempia Survoja.
 Kuitenkin esim. kommentojen aktivointi hiirell lienee usein mukavampaa
 kuin ESC-napilla.

```

  <A HREF="qm_1_01.html">M = Lis tietoja SURVO MM:n erityispiirteist </A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Hiiren avulla voidaan kehitt Survossa aivan uudenlaisia ty nhallinta
jotka vastaavat mm. tyypillisten Windows-ohjelmien alasvedett vi valikkoja.

```

SURVO MM -ikkunan alalaitaan on mahdollista asetella "pehmonappeja", joiden m r m t toiminnot aktivoidaan hiirell . Ko. toiminnot vastaavat mm. jonkin m r tyn tekstin kirjoitusta tai komennon aktivointia. Koska aktivoitavat komennot voivat olla sukkomentoja, pehmonapeille saatetaan m ritell kaikkia mahdollisia teht vi , mit perinteisesti Survossa suoritetaan toimituskentt n kirjoitetuilla komennoina ja komentokaavioilla.

Niinp pehmonapistojen avulla on luotu uudentyyppinen keskustelunomainen k ytt liittym , mik helpottaa aloittelevien k ytt jien tutustumista Survoon. T t pehme mp k ytt tapaa ei tulla ulottamaan vaativimpiin k ytt muotoihin. Vain mm. tavallisimpien tilastollisten analyysien suoritustapaa pyrit n in helpottamaan. T st on esimerkkein olemassa jo mm. lineaarinen regressioanalyysi (LINREG) ja faktorianalyysi (FACTA). T t kautta k ytt j n tulisi pian p st selville Survolle ominaisista toimintatavoista.

Pehmonappeja voi olla SURVO MM -ikkunan alalaidalla useissa riveiss . Kun jotain niist osoitetaan hiirell , kaikkein alimmalle riville ilmestyy silm nr p yksess kuvaus ko. napin teht v st . N p ytt m ll nappia teht v suoritetaan. Pehmonapin painallus voi johtaa my s siihen, ett pehmonapit kokonaan tai osittain korvautuvat uusilla. T m tapahtuu piilotetusti sukkolla, joka aktivoi pehmonappien n kyvyyst hallitsevan uuden SOFTKEYS-komennon. N in voidaan rakentaa hierarkisia pehmonappivalikkoja.

Tyypillisiss Windows-ohjelmissa kaikki hiirell osoitettavat painikkeet ja valikot ovat pysyv sti m riteltyj eik k ytt j p se niit lis m n eik muuttamaan. SURVO MM:ss kaikki pehmonapit ovat k ytt j n itse vapaasti m ritelt viss . Nappien toiminnot kuvataan helposti hyvin survomaisin keinoin k ytt j n valitsemassa levyll talletetuissa toimituskenttiss . K tevt k ytt j t oppivat hyvin nopeasti tekem n itse pehmonapistoja omiin sovelluksiinsa.

Omaksutun tekniikan laajoja mahdollisuuksia kuvanee sekin, ett SURVO MM:n pehmoilu on viet viss (pehmonapeista koostuvien virtuaalin pp imist jen avulla) jopa niin pitk lle, ettei tavallista n pp imist lainkaan tarvita! T ll in kuitenkin ainakin tekstin kirjoittaminen lieene tarpeettoman k mpel eli otettakoon t m vain periaatteellisen huomautuksena. Hiiri korvatkoon n pp imist n vain silloin kun se parhaalta tuntuu.

Kannattaa tutustua hiirell hipaisemalla n kyvill oleviin pehmonappeihin. Esim. toimituskentt voi vieritt k tevt sti eri suuntiin (nappiyhdistelm UDLR) valitsemalla suunnan ja n p ytt m ll hiirell . Jos hiiren vasenta painiketta pit jatkuvasti alhaalla ja liikuttaa hiirt , saa aikaan jatkuvan vierityksen, jonka nopeutta voi s dell liikett hidastamalla tai nopeuttamalla.

Huom. my s toimituskentt n yl puolella olevasta otsikkorivist saa hiirell poimituksi tarkempia selityksi .

```
<A HREF="qm_1_01.html">M = Lis tietoja SURVO MM:n erityispiirteist </A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```

<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SURVO MM:n p ikkunassa ei tarvitse rajoittua aikaisempaan 23 tai
rivin ja 72 sarakkeen n ytt n. Ikkunan eli toimituskent st kerrallaan
n kyv n osan saa joustavasti muotoilluksi uudella RESIZE-komennolla
hyvinkin suureksi (tai pieneksi). Esim. RESIZE 30,100 tekee ikkunasta
sellaisen, ett n kyvill on 30 rivi ja 100 saraketta. T st on hy ty
mm. painettavaksi tarkoitettujen, valmiiksi taitettujen tekstien
katselussa, koska pitk tkin rivit n kyv t silloin kokonaisina.
Huomattavasti suurempiakin ikkunoita voi valita tekstin koon
kustannuksella. Esim. hyvin leveitten, toimituskentt n poimittujen
taulukkojen katselussa j tti-ikkunasta on varmasti hy ty . RESIZE ilman
parametreja palauttaa ikkunan vanhaan tuttuun 23 rivin ja 72 sarakkeen
tilaan.
Jos halutaan, p ikkunan saa kokonaan pois n kyvilt . T st on hy ty
sellaisissa sukrosovelluksissa, jotka on tarkoitettu toimimaan hiirell ohjaten
pelk st n kuvia ja tekstej sis lt vien kuvaikkunoiden v lityksell .
(Kts. WIN? MOUSE2?)

```

P ikkunan alapuolella on tavallisesti yksi tai useampi rivi pehmonappeja. Ensimm isell pehmorivill on OFF-nappi, jolla (palauttaaksesi t ysin entisi Survoja vastaavan tilanteen) voit poistaa pehmonapistot n kyvilt . T ll in (23 tai 48 rivin ja 72 sarakkeen) n yt ss voit my s siirty klassiseen "kokoruutun ytt n" alt-ENTER-n pp imell . N iss tapauksissa n yt n p ivitys on kuitenkin huomattavasti hitaampaa eik t ysin pehmonapittomia vaihtoehtoja siten suositella.

Pehmonapisto palautetaan tarvittaessa n kyville n p ytt m ll hiirell ikkunan alinta rivi .

```

<A HREF="qm_1_01.html">M = Lis tietoja SURVO MM:n erityispiirteist </A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Kuvien piirroksissa ja tekstien painatuksessa PostScript-puoli on entisell
Kuvaruutugrafiikassa (siis GPLOT- ja vastaavilla operaatioilla) piirroksset
tulevat omaan ikkunaan. Grafiikkaikkunoita voi olla useitakin esill
samanaikaisesti. T m helpottaa kuvien vaiheittaista kehittely . Kuvat
tallentuvat ns. laajennettuihin metatiedostoihin (Enhanced Meta File, p tteen

```

.EMF), jolloin ne itse asiassa ovat laiteriippumattomia. T st seuraa etuna mm. se, ett my s kuvaruutukuvia on entist helpompi muuntaa tarkkuuden k rsim tt muihin yleisiin kuvien esitysmuotoihin. Kuvaikkunoita voi vapaasti siirt , venytt ja kutistaa Windowsille ominaisin keinoin. OUTFILE-t smennyksell talletettuja Survon EMF-kuvatiedostoja osaavat suoraan lukea monet Windows-ohjelmat, esim. Word, joilla kuvia voi my s t ydent , muokata ja tulostaa.

Kuvien koordinaatistot voidaan entist helpommin valita esim. my hemmin piirrett v n PostScript-version mukaisesti (MODE=PS GPLOT-kaaviossa), jolloin piirrosten suunnittelu kuvaruudulla ennen siirtymist PostScriptiin on entist vaivattomampaa.

Grafiikkaikkunoiden m r ja sijaintia s dell n komennolla
GPLOT /LAYOUT <SYS-p tteinen_tekstitiedosto>
Oletusasetus m r t n systeemiparametrilla
gplot_layout=SUR_G3.SYS

Ko. SYS-tiedostot sijaitsevat siin alihakemistossa, jossa ovat
GPLOT-modulitkin eli <Survo>\U\G.

SUR_G3.SYS:n sis lt on:

3 1024 768 / ikkunoiden lkm ja referenssikuvavuuden koko
700 0 300 225 / ikkunoiden paikat ja koot
700 250 300 225
700 500 300 225

Esim.

GPLOT /LAYOUT SUR_G8.SYS

vaihtaa 8 ikkunan (4 ikkunaa kahdessa riviss oik. reunassa) n ytt n.

Tietyt 1,2,3,4 ja 8 kuvan asetelmat voi valita suoraan pehmonapein
SYSTEM -> GRAPH.

SURVO MM:n kuvaruutugrafiikan erityispiirteisiin voi tutustua
esimerkkien avulla k ynnist m ll suvrokomennon
/!GP-START .

Se aloittaa useampikohtaisen opetussarjan.

Ko. opetukseen p see my s suoraan pehmonapiston kautta: DEMO -> GPLOT

G = Lis tietoja kuvaruutugrafiikasta englanniksi

M = Lis tietoja SURVO MM:n erityispiirteist

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">P ikkuna:

SURVO MM:n p ikkunassa n kyy Survon toimituskentt . Siit hallitaan

t it joko entiseen tyyliin tai osittain hiiren ja pehmonappien

avulla.

HELP-ikkuna:

Tehtävissä kysely (HELP system) avautuu toinen ikkuna, jossa näkyy avustustekstit ja jossa voi liikkua entiseen tapaan valikkojen kautta. HELP-ikkuna sulkeutuu sen ollessa aktiivisena painamalla ENTER-nappia. Jos kuitenkin palataan kyselyn aikana pääikkunaan näkyy tilsit hiirellä, HELP-ikkuna jää auki. Sitä on mahdollista tilsit kytkeä itsensä pois.

HELP-tekstit saa nähdä myös ilman erillistä ikkunaa) entisten Survojen tyyliin systeemiasetuksella help_window=0 SURVO.APU-tiedostossa tai komennolla SYSTEM help_window=0. Oletuksena on kuitenkin help_window=1 eli kytetty erillistä HELP-ikkunaa.

Sekä pääikkunan että HELP-ikkunan paikan ja (fontti)koon säätely tapahtuu helpoimmin painikkeilla SYSTEM -> WINDOW.

OS-ikkuna:

Jos aktivoidaan kytkeytyvä järjestelmän komentoja (esim. >DIR), avautuu komentotulkkiä vastaava OS-ikkuna, missä näkyy komennon tulokset. Tämä ikkuna on suljettava ENTER-napilla ennenkuin työtä voi jatkaa.

Pääikkunan, HELP-ikkunan ja OS-ikkunan sijainnit ja koot määritellään SURVO.APU-tiedostossa (Win 95, 98) tai suoraan auki ikkunan ominaisuuksia (Properties) muuttamalla Windowsin keinoin (Win NT, 2000), (kts. FONTMM?) Näiden ikkunoiden säätely tapahtuu helpoimmin painikkeilla SYSTEM -> WINDOW.

GPLOT-komennon ja vastaavien tulokset tulevat omiin kuvaikkunoihinsa. Niiden lukumäärä ja koot ja paikat määritellään GPLOT /LAYOUT -komennolla (kts. GLAYOUT?)

```
<A HREF="q0b_30.html">W = Ikkunoiden säätely</A>
<A HREF="qm_1_01.html">M = Lisätietoja SURVO MM:n erityispiirteistä </A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Tyypillisiä (uusien) SURVO.APU-tiedostojen asettavien systeemin
parametrien:
help_window=1 / Neuvontatekstit tulevat omaan ikkunaansa
help_window=0 / Neuvontatekstit pääikkunan yhteyteen (kuten SURVO 98:ssa)
```

gplot_layout=SUR_G3.SYS

ilmaisee tekstitiedoston, joka määrittelee GPLOT-kuvaikkunoiden lukumäärän, paikat ja koot. Ko. tekstitiedostot ovat samassa hakemistossa kuin GPLOT-ohjelmamodulit (eli SURVO MM:n ohjelma-

hakemiston G-alihakemistossa).
Rakenne on hyvin yksinkertainen ja ilmenee katselemalla
valmiina olevia ko. hakemiston .SYS-tiedostoja.

Systeemiparametreja (jatkuu):

videomode=<leveys>,<korkeus> (esim. videomode=1000,1000)
ilmoittaa kuvaikkunoiden oletuskoon loogisina yksiköinä.

Jotta saataisiin aikaan yhteensopivuus aikaisempiin Survoihin,
kytetty on lyhennysmerkintä:

videomode=EGA sama kuin videomode=480,350

videomode=VGA sama kuin videomode=480,480

videomode=CGA sama kuin videomode=320,200

videomode=SVGA sama kuin videomode=800,600

videomode=XRES sama kuin videomode=1024,768

Mahdollisimman hyvän yhteensopivuuden takaamiseksi PostScript-grafiikan
kanssa kannattaa kyttyä vaihtoehtoa

videomode=PS

jolloin parametrit <leveys> ja <korkeus> valitaan SIZE-tasennuksen
mukaisesti. Tällöin myös muut kuvanasetukset
(kuten fonttikoot) muunnetaan sisäisesti sellaisiksi, että kuva vastaa
PostScript-piirrosta.

Systeemiparametreja (jatkuu):

edit_font=8,12,0,0

ilmoittaa pöydän ikkunan (toimittimen) fonttikoon (tässä 8x12)
ja paikan (tässä 0,0). Windowsin tyyliin annetaan vasemman
yläkulman koordinaatit yllä vasemmalle ja alaspäin lukien.
Huom. Jos kytty järjestelmä on Win NT tai 2000, fonttikoolla
ei ole vaikutusta. Näissä ympäristöissä fonttikoko voidaan
pysyvästi muuttaa oletusasetuksesta (8x12) kyttämällä ko.
ikkunan kuvaketta ja valitsemalla Properties (Asetukset) ja
sieltä sopiva fonttikoko.

help_font=8,12,0,400

ilmoittaa HELP-ikkunan koon ja sijainnin kuten yllä kuvattiin.

os_font=8,12,0,420

ilmoittaa kyttäjän komentojen ikkunan ominaisuudet
samalla tavalla.

Em. ikkunoiden paikan ja (fontti)koon säätminen on helpointa
pehmonapein SYSTEM-> WINDOW.

Systeemiparametreja (jatkuu):

cursor=30,80 Kohdistimen "paksuus" normaalissa kirjoitustilassa
ja lisätilassa prosentteina maksimi-arvosta 100.

Huom. poikkeaa aikaisempien Survojen asetuksesta.

printer="<PostScript-kirjoittimen Windows-nimi>"

esim. printer="HP LaserJet 4M Plus"

Oikeat nimet löytyvät Windowsiin asennettujen
kirjoittimien luettelosta.

soft_keys=SUR_SOFT,A

ilmaisee, mikä pehmonapisto tulee kyttämään, kun

SURVO MM käynnistetään.

SUR_SOFT.EDT sijaitsee SURVO MM:n ohjelmahakemistossa

(<Survo>\U). Katselemalla ko. toimituskenttää esim. komennolla

SHOW <Survo>\U\SUR_SOFT

saat kysyä, miten pehmonappeja määritellään.

Systeemiparametreja (jatkuu):

trim_width=72 Oletusleveys TRIM-komennoissa (72 vastaa aikaisempaa)

```
<A HREF="qm_1_01.html">M = Lisätietoja SURVO MM:n erityispiirteistä </A>
<A HREF="q0b_10.html">S = More information on system parameters</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">T itten hallinta pehmonappien avulla (keskustele va k ytt tapa)
```

Koemielessä SURVO MM: n on rakennettu puhtaasti pehmonapeilla hallittava työ tapa. Se on tarkoitettu l i hinn uusille k ytt jille, jotka eiv t hallitse Survon editoriaalista työ skentelytapaa.

Suosittelava työ j rjestys on seuraavanlainen:

1. N p ytet n JOBS-nappia ja valitaan avautuvasta napistosta kohta NEW (Uuden työ n aloitus).
N p ytt m ll NEW-nappia saadaan esille pehmonapeista koostuva "lomake". Antamalla siin hakemiston nimi, työ n nimi ja työ n tarkempi kuvaus sek n p ytt m ll OK-nappia työ tulee perustetuksi (uutena toimituskeskenn , jonka alussa on mm. valmiit SAVE- ja PRINT-komennot.

T itten hallinta pehmonappien avulla (jatkoa):

2. Työ n tultua perustetuksi voidaan samaan tyyliin jatkaa tallentamalla uusi aineisto perustettavaan Survon datatiedostoon (DATA-nappi) ja/tai siirtym ll tekem n analyysia (STAT-nappi).
Kaikki työ vaiheet tallentuvat toimituskeskenn n per k in Survon komentokaavioina ja Survo-komentojen antamina tuloksina. Työ (toimituskeskenn) talletetaan aina automaattisesti uudelleen jokaisen toimenpiteen j lkeen.
3. Työ t ja sen tuloksia voidaan katsella vapaasti selaamalla toimituskeskenn . Viimeisen toimenpiteen tulokset n kyv t esim. seuraavan vaiheen toteuttamisen helpottamiseksi my s erillisessä graafisessa ikkunassa.
Tavoitteena t ll kaikella on se, ett aloitteleva k ytt j saa v hitellen tuntumaa Survolle ominaisiin työ tapoihin ja "uskaltaa" asteittain ryhty kirjoittamaan teksti kaavioiden ja tulosten yhteyteen sek muuttamaan ja kirjoittamaan omia komentoja mallien mukaan.

T itten hallinta pehmonappien avulla (jatkoa):

4. Työ saadaan tulostetuksi PRINT-napilla. Kun painetaan PRINT-nappia,

ty n tulokset (eli JOB-tyyppinen toimituskentt) tulostetaan PostScript-tiedostoksi, jonka nimi on sama kuin ty n nimi (p tteen .PS) ko. ty n omaan hakemistoon.

PRINT-napin painallus tarjoaa my s kolme vaihtoehtoa:

1. PostScript (tulostus suoraan PostScript-kirjoittimella)
2. Ghostview (tulostus Ghostview-ohjelman avulla)
3. Acrobat (tulostus Adoben Acrobat Distiller ja Acrobat-ohjelmien avulla)

Tavat 2,3 mahdollistavat tulostuksen muilla kuin PostScript-kirjoittimilla.

Ghostview- ja Acrobat-ohjelmat eiv t kuulu Survoon. Jos siis tapoja 2 ja 3 halutaan k ytt , on ko. ohjelmat hankittava erikseen.

Ghostview-ohjelman k ytt edellytt , ett SURVO.APU-tiedostossa kerrotaan ko. ohjelman sijainti rivill , joka on muotoa

gv_path=C:\GSTOOLS\GSVIEW

Vastaavasti Acrobat-ohjelma edellytt rivi , joka on muotoa

acrobat_path=C:\PROGRA~1\Adobe\Acroba~1.0

Tapoja 2 ja 3 k ytett ess raportti siirret n lopulta mille tahansa

Windows-kirjoittimelle ko. ohjelman File-valikosta.

T itten hallinta pehmonappien avulla (jatkoa):

Pehmonapeilla ohjattavien Survon toimintojen laajuutta ja luonnetta ei ole lopullisesti p tetty.

Toivomus on, ett koek ytt j t kertoisivat kokemuksistaan ja ehdottaisivat parannuksia.

```
<A HREF="qm_1_01.html">M = Lis tietoja SURVO MM:n erityispiirteist </A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Hiiren k ytt
```

SURVO MM: voi k ytt kuten aikaisempia Survoja ilman hiirt .

Tietyiss toimenpiteiss hiirest on kuitenkin selv sti hy ty .

1 = Kohdistimen siirto ja kommentojen aktivointi

2 = Neuvontaikkunan hallinta (HELP)

3 = Valikot

4 = Kuvaruutugrafiikka

5 = Pehmonapistot

6 = Tekstilohkojen m rittely, kopiointi ja siirto leikep ytiin

M = Lis tietoja SURVO MM:n erityispiirteist

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Hiiri: Kohdistimen siirto ja kommentojen aktivointi

```

Perinteisesti kohdistinta siirret n Survon toimituskesk. ss mm. nuolinapeilla.
Kohdistimen osoittama kommento k ynnistet n ESC-napilla.

SURVO MM:ss kohdistimen siirto onnistuu my s suoraan osoittamalla haluttua
kohtaa hiirell ja n p ytt m ll . Komennot saa aktivoiduksi v litt m sti hiiren
vasemman painikkeen kaksoisn p ytyksell .

Hiiren oikeanpuolisen painikkeen kaksoisn p ytys avaa SURVO MM:n HELP-ikkunan,
johon ilmaantuu tietoja hiiren osoittamasta avainsanasta (esim. toimituskesk. n
kirjoitetusta komennosta).
Periaatteessa mik tahansa sana voi toimia linkkin t h n neuvontaj rjestelm n.

```

  <A HREF="qm_1_09.html">M = Lis tietoja hiiren k yt st </A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Hiiri: Neuvontaikkunan hallinta (HELP)

```

Tietojen haku SURVO MM:n HELP-ikkunassa on helpointa n p ytt m ll hiirell
avainsanoja ja valikkojen rivitunnuksia.
T m toiminta on mahdollista, kun systeemi parametri help_window (SURVO.APU-
tiedostossa) on asetettu arvoon 1. (Arvo 0 merkitsee perinteist asetusta,
jolloin neuvontatekstit peitt v t p ikkunan.)

HELP-ikkunan yllä rivillä on lisäsi hiiriohjausta varten valintapalkki
|Prev| |Next| |Load| |Exit|
|Prev| = siirtyminen edelliseen HELP-ruutuun (sama kuin BACKSPACE)
|Next| = siirtyminen seuraavaan HELP-ruutuun (sama kuin SPACE)
|Load| = HELP-tekstin poiminta toimituskenttään (sama kuin +)
|Exit| = HELP-ikkunan sulkeminen (sama kuin ENTER)

HELP-ikkuna saatetaan jättä auki ja sen ollessa aktiivisena mit tahansa sanoja voidaan yrittää linkkein jatkohauissa.

Listoissa, joiden rivit ovat tyyppi

P = More information on plotting
näpöttäminen hiirellä merkin = edessä merkitsee samaa kuin vastaavan napin (tässä P) painallus eli ko. vaihtoehdon valintaa.

Kyselyt on mahdollista aloittaa toimituskentstä paitsi perinteiseen tapaan aktivoimalla rivin alussa olevan, kysymysmerkkiin päättyvän avainsanan, myös osoittamalla tekstin keskellä olevaa avainsanaa hiirellä ja kaksoisnäpöttämällä hiiren oikeanpuoleista painiketta. (Tämä vastaa näppäinyhdistelmää F2 F1, mikä on ollut käytössä jo aikaisemmissa Survoissa.)

```
<A HREF="qm_1_09.html">M = Lisätietoja hiiren käytöstä</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO MM Help System (web edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO MM Help System">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO MM">
<P><PRE CLASS="HelpText">Hiiri: Valikot
```

Hiirellä voi myös toimia Survon työvalikoissa, alkuvalikossa ja sen alivalikoissa. Sen asemasta että painetaan perinteiseen tyyliin valintaa vastaavaa nappia ja ENTER, valinta voidaan tehdä myös näpöttämällä hiirellä haluttua vaihtoehtoa vastaavaa riviä.

```
<A HREF="qm_1_09.html">M = Lisätietoja hiiren käytöstä</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Hiiri: Kuvaruutugrafiikka

```

Jokainen grafiikkaikkuna, joka syntyy tavallisesti GPLOT-komennolla (kts. KUVAT), edustaa ns. laajennettua metatiedostoa ja t llaista ikkunaa on helppo minimoida, maksimoida, siirt , venytt ja kutistaa Windowsin tyyliin hiiren avulla.

Liitt m ll GPLOT-kaavioon MOUSE-t smennyksen (kts. MOUSE2?) ja n p ytt m ll hiirt syntyneess kuvaikkunassa hiiren osoittaman pisteen loogiset koordinaatit talletetaan tekstitiedostoon. T st on hy ty esim. sellaisissa sukrosovelluksissa, jotka toimivat pelk st n Survon kuvaikkunoiden varassa (toimituskent n ollessa poissa n kyvilt).

Esimerkkej t llaisista sovelluksista l yd t valitsemalla pehmonapistosta joko DEMO -> ESITTELY tai DEMO -> SLIDES. (Kts. my s WIN?).

```

<A HREF="qm_1_09.html">M = Lis tietoja hiiren k yt st </A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
<A HREF="qm_1_09.html">M = Lis tietoja hiiren k yt st </A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Survossa tekstilohkoja on m rittely ja kopioitu perinteisesti
alt-F4:BLOCK-napilla.
Samat teht v t voidaan suorittaa helpoimmin hiiren oikeanpuolimmaisen
napin (RMB) avulla.
Lohkon m rittely alkaa n p ytt m ll esim. vasenta yl kulmaa RMB:ll .
Sitten n p ytet n vastakkaista kulmaa (oikeata alakulmaa) RMB:ll .
T ll in lohko n kyy maalattuna.
```

Lohko siirtyy leikep ytiin n p ytt m ll mit tahansa kohtaa lohkon sis ll RMB:ll tai lohkosta voi tehd kopioita suoraan samaan toimituskentt n osoittamalla mit (tyhj) kohtaa tahansa ja n p ytt m ll RMB:ll .

N m toimenpiteet voi keskeytt painamalla DEL-nappia tai n p ytt m ll hiirell p ikkunan alla olevaa kehotusrivi .

Leikep yt n siirretty tekstilohko kirjoitetaan haluttuun kohtaan toimituskent ss joko painamalla BLOCK-nappia nelj sti tai n p ytt m ll pehmopainiketta p (p=paste) hiirell .

```
<A HREF="qm_1_09.html">M = Lis tietoja hiiren k yt st </A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
```

```
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
Kuten aikaisemmissakin Survoissa tulostus tapahtuu
```

joko suoraan PostScript-kirjoittimella muotoa
PRINT L1,L2
olevalla komennolla, miss L1 on ensimm inen ja L2 viimeinen
tulostettava toimituskent n rivi.

tai PostScript-tiedostoon muotoa
PRINT L1,L2 TO <tiedostonimi>.PS
olevalla komennolla.

J lkimm isess tapauksessa kyseinen PostScript-tiedosto voidaan tulostaa mill tahansa Windows-kirjoittimella jonkin sopivan ulkopuolisen Windows-ohjelman (kuten esim. Ghostscript tai Adobe Acrobat) v lityksell .


```

<A HREF="qm_1_17.html">0 = Tulostus Ghostscript-ohjelmalla (sukro /GS-PDF)</A>
<A HREF="qm_1_18.html">1 = Tulostus Adobe Acrobat -ohjelman kautta</A>
<A HREF="qm_1_19.html">2 = PostScript-kirjoittimen valinta</A>
<A HREF="q08_01.html">P = Lis tietoja PRINT-komennosta</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Kun tulostus on tapahtunut PostScript-tiedostoon, sen saattaminen
mille tahansa Windows-kelpoiselle kirjoittimelle on edullisinta
tehd sukrolla /GS-PDF.

/GS-PDF &lt;nimi&gt;.PS
tekee PostScript-tiedostosta vastaavan PDF-tiedoston Ghostscriptin
avulla ja n ytt sen Adoben Acrobat Reader -ohjelmalla,
jolloin kaikki PostScript-tulostukset voi hoitaa k tev sti
ilman mit n maksullisia ulkoisia ohjelmia.

Sukron k ytt m t ohjelmat Ghostscript ja Acrobat Reader eiv t kuulu
Survoon vaan ne tulee hankkia erikseen esim. imuroimalla verkosta.

<A HREF="q08_01.html">P = Lis tietoja PRINT-komennosta</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Tulostus Adobe Acrobat -ohjelman kautta

```

T h n tarvitaan koko Adobe Acrobat -ohjelmisto, joka on erikseen hankittava.
Pelkk Acrobat Reader ei riit .

Aluksi tulostus tapahtuu PostScript-tiedostoon (esim. TULOS.PS) PRINT-komennolla
PRINT <ensimmäinen_rivi>;<viimeinen_rivi> TO TULOS.PS
ja sitten esikatseluun ja tulostukseen p st n suoraan komennolla
/PS-PDF TULOS.PS

Sukro PS-PDF muuntaa (Adobe Acrobat Distiller -ohjelman avulla)
PS-tiedoston TULOS.PS PDF-muotoon tiedostoksi TULOS.PDF ja kutsuu sitten
Adobe Acrobat -ohjelman näyttämään tulostusta kuvaruudulla.
Acrobatin File-valikosta vied n tulostus Windows-kirjoittimille.

Mukavinta on toimia asettamalla ko. komennot perkkä järjestykseen
/PS-PDF TULOS.PS
PRINT <ensimmäinen_rivi>;<viimeinen_rivi> TO TULOS.PS

```
<A HREF="q08_01.html">P = Lis tietoja PRINT-komennosta</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">PostScript-kirjoitin valitaan SURVO.APU-tiedoston rivillä
```

printer="PostScript-kirjoittimen Windows-nimi"
Esim. printer="HP LaserJet 4M Plus"

Oletusasetus on printer=LPT1:
mikä kelpaa yleensä (ainoalle) yksittäiseen koneeseen kytketyille
PostScript-kirjoittimille.

Kaikkien kirjoittimien nimet löytyvät valitsemalla
Kynnistys->Asetukset->Kirjoittimet (Start->Settings->Printers)
tai saat listauksen suoraan toimituskeskitykseltä esim. komennolla
INDEX /PRINTERS,END+2

Tilapäisesti voi vaihtaa PostScript-kirjoitinta antamalla PRINT-komennon
muodossa
PRINT L1,L2 TO "PostScript-kirjoittimen Windows-nimi"

```
<A HREF="q08_01.html">P = Lis tietoja PRINT-komennosta</A>
<A HREF="qm_1_01.html">M = Lis tietoja SURVO MM:n erityispiirteistä </A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System ">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Leikep yd n k ytt Survossa

Survolla on perinteinen, oma "leikep yt ns ", jota hallitaan
BLOCK (alt-F4) -napilla tai hiirell (kts. HIIRI6?).

SURVO MM:ss BLOCK-napilla (tai hiirell) maalattu alue voidaan kopioida
my s Windowsin leikep yt n suoraan pehmonapilla c (copy).

Vastaavasti Windowsin leikep yd ss oleva tekstilohko on kopioitavissa
Survon toimituskeskitt n kohdistimen osoittamasta paikasta alas ja
oikealle pehmonapilla p (paste). Jos ollaan lis ystilassa (INS),
nykyinen teksti liikuu edelt alasp in. Jos ollaan normaalissa
(p lle)kirjoitustilassa, tekstilohko peitt alleen mahdollisen
aikaisemman tekstin.

Tarkemmat ohjeet seuraavilla sivuilla:

Tekstilohkon kopiointi leikep ytiin: (T m helpommin hiirell , kts. HIIRI6?)

1. Paina BLOCK-nappia (alt-F4).
2. Vie kohdistin hiirell tai nuolinapeilla maalattavan teksti-
tai taulukkolohkon vasempaan yl kulmaan
ja paina uudelleen BLOCK-nappia.
3. Vie kohdistin lohkon oikeaan alakulmaan ja paina j lleen
BLOCK-nappia. Lohko n kyy t ll in maalattuna.
4. N p yt hiirell pehmonappia c, jolloin lohko siirtyy leikep yt n.
T st n kyy 3 sekunnin ajan ikkunan alaosaan ilmoitus
The text block is now copied to the clipboard!
ja lohkon maalaus poistuu eli palataan normaaliin kirjoitustilaan.

Windowsin leikep yt n kopioitu tekstilohko on k ytett viss
t m n j lkeen muissakin Windows-ohjelmissa normaaliin tapaan.

Huom 1: Leikep yt n siirtyy vain itse tekstiosa, ei varjorivej .

Huom 2: Samanaikaisesti kuitenkin koko tekstilohko varjoiheen
tallentuu Survon omaan leikep yt n ja on sielt
my hemmin kopioitavissa mihin tahansa toimituskeskitt n
suoraan nelj ll BLOCK-napin painalluksella.

Leikep yd n sis lt m n tekstin kopiointi Survon toimituskeskitt n:

1. Vie kohdistin hiirell tai nuolinapeilla siihen kohtaan
toimituskeskitt ss , josta kopioidun tekstin tulisi alkaa.
2. Jos haluat, ett leikep yd n teksti ei peit j ljemp n
olevaa toimituskeskitt n teksti , siirry lis ystilaan INS-napilla.
3. Kopioi leikep yd n sis lt pehmonapilla p (kaksoisn p ytys!).

Huom. Edell kuvattu leikep yd n hallintatapa tarjoaa monipuolisemmat
keinot tietojen siirtelyyn kuin Windows-ohjelmissa yleens .
Esim. Leikep yt n kopioitu taulukon osa voidaan Survossa liimata

keskelle jotain toista taulukkoa.

```
<A HREF="qm_1_01.html">M = Lis tietoja SURVO MM:n erityispiirteist </A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Useita Survoja voi olla k yt ss samanaikaisesti.
Jokainen Survoistunto k ynnistet n SURVO MM -kuvakkeesta.
N in esim. yhdell Survolla voi kirjoittaa vaikkapa tutkimusraporttia,
kun samanaikaisesti toinen Survo tekee jotain raskasta simulointikoetta.

Jos t t moniajo-ominaisuutta haluaa hy dynt todella monipuolisesti
niin ett useat Survot hoitavat samanaikaisesti vaativiakin t it ,
on syyt asettaa SURVO.APU-tiedostossa
session_tmp=1.

T ll asetuksella jokaisella Survoistunnolla tulee olemaan oma
alihakemistonsa tilap istiedostoille, jolloin ei ole vaaraa, ett
ty t sekaantuisivat.

Tilap iseen k ytt n voi SURVO MM:st k ynnistet ns. orjasurvon
n pp inyhistelm ll F2 M Z. Lis tietoja saa aktivoimalla
/Z ?

Tilap istiedostoista:
Useat Survon toiminnat synnytt v t ja k ytt v t erilaisia tilap isi
tiedostoja esim. v litulosten talletukseen.

Tilap istiedostot sijoittuvat hakemistoon
&lt;Survo&gt;\TMP (tyypillisesti C:\Program Files\SURVO\TMP) tai SURVO.APU-
tiedostossa annetun
tempdisk=&lt;polkunimi&gt;
asetuksen mukaisesti.

Jos halutaan, ett jokaisella Survoistunnolla on oma tilap ishakemistonsa,
tulee antaa SURVO.APU-tiedostossa
session_tmp=1
jolloin Survo luo istuntokohtaiset hakemistot ja ne ovat tyypillisesti
&lt;Survo&gt;\TMP\A, &lt;Survo&gt;\TMP\B jne.
T ss tapauksessa istuntokohtainen tilap ishakemisto my s poistetaan,
kun poistutaan ao. Survoistunnosta.
Tilap ishakemiston poiston voi est asettamalla SURVO.APU-tiedostossa
del_tmp=0.

<A HREF="qm_1_01.html">M = Lis tietoja SURVO MM:n erityispiirteist </A>
</PRE></P><HR>
```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
Additional MAT #operations:

<A HREF="qma_03.html">1 = MAT #TRANSFORM</A>
<A HREF="qma_05.html">2 = MAT #MULT</A>
<A HREF="qma_06.html">3 = MAT #SAMPLES</A>
<A HREF="qma_07.html">4 = MAT #INDVAR</A>
<A HREF="qma_08.html">5 = MAT #MERGE</A>
<A HREF="qma_09.html">6 = MAT #MINDIFF</A>
<A HREF="qma_10.html">7 = MAT #COLSORT</A>
<A HREF="qma_11.html">8 = MAT #CRSORT</A>
<A HREF="qma_12.html">9 = MAT #EIGEN</A>
<A HREF="qma_13.html">A = MAT #CONVOLUTION</A>
<A HREF="qma_14.html">B = MAT #MAXDET</A>
<A HREF="qma_15.html">C = MAT #INTSCAL, MAT #FRAC_TO_DEC</A>
<A HREF="qma_16.html">D = MAT #SAMPLE</A>
<A HREF="qma_18.html">E = MAT #SORT</A>
<A HREF="qma_19.html">F = MAT #MAGIC</A>
<A HREF="qma_17.html">G = MAT #JACKKNIFE</A>
<A HREF="qma_02.html">H = More MAT # operations</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">

```

Additional MAT #operations:

```
<A HREF="qma_20.html">1 = MAT #EIGLAN, MAT #EIGFEW</A>
<A HREF="qma_21.html">2 = MAT #PRODDIAG</A>
<A HREF="qma_22.html">3 = MAT #RAO_KHATRI</A>
<A HREF="qma_23.html">4 = MAT #HADAMARD</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">MAT #TRANSFORM X BY &lt;expression(X#,I#,J#)&gt;
```

or

MAT #TRANSFORM X BY Y AND <expression(X#,Y#,I#,J#)>

works as MAT TRANSFORM but allows a larger set of functions to be used.

In fact, all features of the VAR operation are available

except those related to data sets like lags and leads, etc.

Thus, for example, temporary functions defined in the edit field

library functions (on disk), and random deviates (rand function etc.)

are permitted.

Examples:

m=8

/ Generating m x m matrix A

MAT A=ZER(m,m)

/ with all elements

MAT #TRANSFORM A BY probit(rand(1995)) / independently distributed as N(0,1)

MAT C=ZER(m,m)

/ Generating m x m matrix C

MAT #TRANSFORM C BY C(I#,J#)

/ of binomial coefficients

MAT #TRANSFORM C BY RECURRENCE N

transforms matrix C by a recurrence relation N of two integer variables.

N must be defined like a temporary function in editorial computing in the form

N(m,n):=function(m,n,N(i1,j1),N(i2,j2),...) where i1,i2,...<m, j1,j2,...<n .

Before using this MAT #TRANSFORM operation the initial conditions

must be given by filling certain first rows/columns/elements with

suitable values. The starting position of iteration is supplied by

a START=i0,j0 specification where i0,j0 are row and column indices.

Rows and columns are implicitly labelled by 0,1,2,... (i.e. starting

from 0 instead of 1). Operations

MAT RLABELS NUM(0) TO C

MAT CLABELS NUM(0) TO C

are available for such labelling.

If C is a column vector, also functions of one integer variable are allowed.

.....
Example: Stirling numbers of the second kind

S2(n,k):=S2(n-1,k-1)+k*S2(n-1,k) Initial condition S2(n,1)=1

```

n=10 k=n          / Numbers for n=1,...,10 k=1,...,10 to be computed
MAT A=ZER(n+1,k+1) / Matrix A initialized by 0's
MAT C=CON(n,1)
MAT A(2,2)=C      / Column 2 (corresponding to k=1) filled with 1's
MAT RLABELS NUM(0) TO A
MAT CLABELS NUM(0) TO A
/MATSHOW A,12     / See matrix A in initial state

```

```

START=2,2        / Starting point for recursion
MAT #TRANSFORM A BY RECURRENCE S2
/MATSHOW A,12345 / See the table of Stirling numbers
.....

```

```

MAT #TRANSFORM X BY #RAND(seed_number)
works as
MAT #TRANSFORM X BY RAND(seed_number)
but is about two times faster.

```

```

MAT #TRANSFORM X BY #DISTR(P,seed_number)
transforms X to a random matrix with elements as a sample from
a discrete distribution defined by a matrix P.

```

P is defined as in the command

```

TRANSFORM &lt;data&gt; BY #DISTR(P) (See <A HREF="qv3_04.html">TRANSFORM</A>?).

```

```

<A HREF="qma_01.html">A = More about additional MAT #operations</A>

```

```

<A HREF="qm2_01.html">M = More about MAT operations</A>

```

```

</PRE></P><HR>

```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

```

```

</BODY>

```

```

</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

```

"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>

```

```

<!--

```

```

Created by using the PRINT operation of SURVO MM

```

```

For more information, see http://www.survo.fi/

```

```

-->

```

```

<HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

```

```

<META NAME="Generator" CONTENT="SURVO MM">

```

```

<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>

```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META

```

```

<META NAME="Classification" CONTENT="help system">

```

```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```

</HEAD>

```

```

<BODY>

```

```

<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&

```

```

<P><PRE CLASS="HelpText">

```

```

<A HREF="qma_01.html">A = More about additional MAT #operations</A>

```

```

<A HREF="qm2_01.html">M = More about MAT operations</A>

```

```

</PRE></P><HR>

```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

```

```

</BODY>

```

```

</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

```

"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>

```

```

<!--

```

```

Created by using the PRINT operation of SURVO MM

```

```

For more information, see http://www.survo.fi/

```

```

-->

```

```

<HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT #MULT(C,A,B,typeA,typeB)
computes matrix C as a product of A and B (C=A*B)
by observing types of operands and
thus avoiding multiplication of 0's.
Valid types are
D   diagonal,
D#  #-diagonal (e.g. D3=tridiagonal),
LT  lower triangular,
UT  upper triangular,
G   general.

```

The actual type of an operand is not checked.
Therefore it is possible, for example, to multiply
by the diagonal of a general square matrix by
giving its type as D.

```

<A HREF="qma_01.html">A = More about additional MAT #operations</A>
<A HREF="qm2_01.html">M = More about MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT #SAMPLES &lt;matrix>;N,n,m,&lt;rand>;
makes m random samples of size n from integers 1,2,...,N
using random number generator &lt;rand>;.
The samples generated are saved as a n x m matrix file &lt;matrix>;.
See also <A HREF="qm2_01.html">MAT</A> #SAMPLE.

```

Example:
MAT #SAMPLES LOTTO,39,7,12,rand(37952049)
MAT LOAD LOTTO,123,CUR+1

MAT #INDVAR is a companion module to MAT #SAMPLES
enabling simple random sampling from Survo data files (See #INDVAR?)

```

<A HREF="qma_01.html">A = More about additional MAT #operations</A>
<A HREF="qm2_01.html">M = More about MAT operations</A>

```



```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT #INDVAR FROM &lt;matrix> TO &lt;Survo_data_file>g
marks subsets (samples) of size n of &lt;Survo_data_file>g
by generating 0-1 indicator variables, say S1,S2,...,Sm,
so that Si indicates by 1's the observations whose #'s
appear in ascending order as the i'th row of an
m x n matrix file &lt;matrix>;

The actual names of the indicator variables are the same as
the column labels of &lt;matrix> and they are created as
new variables in &lt;Survo_data_file> if needed.

MAT #INDVAR is a companion operation to MAT #SAMPLES
which generates m samples of size n from integers 1,2,...,N
and saves them as a m x n matrix with row labels
S1,S2,...,Sm.

Active records of &lt;Survo_data_file> cannot be limited
by IND etc. specifications.

<A HREF="qma_01.html">A = More about additional MAT #operations</A>
<A HREF="qm2_01.html">M = More about MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&

```

<P><PRE CLASS="HelpText">MAT #MERGE A,B TO C
combines two $m \times n$ matrices A and B to an $2m \times n$ matrix C
by merging rows. Thus the rows of C will be:

row 1: row 1 of A
row 2: row 1 of B
row 3: row 2 of A
row 4: row 2 of B

...
row $2m-1$: row m of A
row $2m$: row m of B

MAT #MERGE A,B TO C BY mA,mB
combines an $mA \times k \times n$ matrix A and an $mB \times k \times n$ matrix B
to an $(mA+mB) \times k \times n$ matrix C by merging rows of A and B
in blocks of rows of mA and mB, respectively.

Thus the rows of C will be:

row 1: row 1 of A
row 2: row 2 of A

...
row mA: row mA of A
row mA+1: row 1 of B
row mA+2: row 2 of B

...
row mA+mB: row mB of B
row mA+mB+1: row mA+1 of A
row mA+mB+2: row mA+2 of A

...

A = More about additional MAT #operations

M = More about MAT operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System ">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">MAT #MINDIFF(C,A,B)

computes minimal difference C of $m \times n$ matrices of

$A=[A_1,A_2,...,A_n]$ and

$B=[B_1,B_2,...,B_n]$

by selecting constants $s_1,s_2,...,s_n$ (each either 1 or -1)

so that the sum of squares of the elements of

$C=[A_1-s_1*B_1,A_2-s_1*B_2,...,A_n-s_n*B_n]$

is as small as possible.

A = More about additional MAT #operations

M = More about MAT operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT #COLSORT A TO B
sorts the columns of A into descending order of
their sums of squares and puts the result to B.
MAT #COLSORT A TO B BY MAX
sorts the columns of A into descending order of
the maximum absolute values of elements and puts the result to B.

<A HREF="qma_01.html">A = More about additional MAT #operations</A>
<A HREF="qm2_01.html">M = More about MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT #CRSORT A TO B
sorts the columns of A into descending order of
their sums of squares and after that
the rows in descending order by the absolute values
of elements.

<A HREF="qma_01.html">A = More about additional MAT #operations</A>
<A HREF="qm2_01.html">M = More about MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT #EIGEN(A,D)
computes eigenvalues D
of an n*n nonsymmetric matrix A.
MAT #EIGEN(A,D,R)
computes eigenvalues D and (right) eigenvectors R
MAT #EIGEN(A,D,R,L)
computes also left eigenvectors L.

D will be an n*n tridiagonal matrix where real eigenvalues
occupy diagonal elements while the real and imaginary parts of
pairs of complex eigenvalues u+iv, u-iv occupy respectively
the diagonal and off-diagonal corners of 2*2 blocks.
Afterwards an n*2 matrix D2 of real and imaginary parts of eigenvalues
can be created by
MAT #EIGEN #VAL D,D2 .

Matrices A,D,R,L satisfy, for example, the equations
A=RDL, AR=RD, LA=DL.

The algorithm of MAT #EIGEN is based on a norm reducing Jacobi type method
presented by P.J.Eberlein and J.Boothroyd in Handbook for Automatic
Computation, Vol.2 (Wilkinson and Reinsch, Springer 1971, pp.327-338).
The original algorithm has been speeded up by a factor ca. 7 by SM (1998).

For a n*n symmetric matrix A it is absolutely more efficient to use
MAT SPECTRAL DECOMPOSITION OF A TO R,D
for example.

<A HREF="qma_01.html">A = More about additional MAT #operations</A>
<A HREF="qm2_01.html">M = More about MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```

</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT #CONVOLUTION(C,A,k)
computes k first coefficients of the convolution
of the columns of matrix A and saves them as
a column vector C.
It is assumed that elements a0,a1,a2,... of each A column are
coefficients of a polynomial a0+a1*x+a2*x^2+...
Default for k is k=(m-1)*n+1 where m,n are dimensions of A.

```

Alternatively:

```

MAT #CONVOLUTION(C,A,k,N)
when A has only one column computes the N-fold convolution of this column.
MAT #CONVOLUTION(C,A,B)
computes the convolution C of vectors (1st columns) of A and B.

```

```

.....
Example: Probabilities of binomial distribution
       as convolution of n Bernoulli distributions
p=1/3 n=13

```

```

MATRIX P ///
1-p
p

```

```

MAT SAVE P / Save probabilities of Bernoulli distribution
MAT #CONVOLUTION(C,P,n+1,n)
/MATSHOW C / See binomial probabilities
.....

```

```

<A HREF="qma_01.html">A = More about additional MAT #operations</A>
<A HREF="qm2_01.html">M = More about MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT #MAXDET(C,dim,S)
finds the principal dim*dim submatrix with the maximal
determinant from a symmetric matrix C.
Indices of rows (and columns) belonging to that
submatrix are saved as a column vector S.

```

The algorithms for this task are explained in
S. Mustonen: Matrix computations in Survo
(www.helsinki.fi/survo/matrix99.html).
The extended forms of MAT #MAXDET are

MAT #MAXDET(C,dim,S,0) / Exhaustive search
 MAT #MAXDET(C,dim,S,1) / Stepwise procedure (default)
 MAT #MAXDET(C,dim,S,2) / Improved stepwise procedure
 MAT #MAXDET(C,dim,S,3) / N=#_of_replicates, Random search
 MAT #MAXDET(C,dim,S,4) / N=# Improved random search

Applications: See also www.helsinki.fi/sur

MAT #MAXDET can be applied to determination of a basis of the column space of a $m \times n$ matrix A as follows.

If the rank of A (determined by the SVD of A) is r, the most orthogonal subset of columns of A as an $m \times r$ matrix B is found by the commands

MAT C=MTM(NRM(A))
 MAT #MAXDET(C,r,S) / or MAT #MAXDET(C,r,S,2), for example
 MAT B=SUB(A,*,S)

If A is a factor matrix, the commands

MAT C=MTM(NRM(A'))
 MAT #MAXDET(C,n,S) / Find row space of A
 MAT B=SUB(A,S,*)

correspond to the cosine rotation of factor analysis usually performed by
 ROTATE A,n / METHOD=COS,0

A = More about additional MAT #operations

M = More about MAT operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!-- Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">MAT C=#INTSCAL(A,n)

rescales the columns of A to integers by first evaluating each element as the n'th convergent of a continued fraction expansion of A (default n=10) and then finding the least common multiple of denominators.

If A is a numerical constant or a 1x1 matrix,

MAT C=#INTSCAL(A,n)

evaluates continued fractions of A for up to n terms (default n=10) and saves both partial quotients and convergents etc. in a matrix file C.

MAT D=#FRAC_TO_DEC(C)

converts a continued fraction, represented by its partial quotients, and saved as the first column of matrix C, to a decimal number.

A = More about additional MAT #operations

M = More about MAT operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT C=#SAMPLE(A,m,&lt;SRS|URS&gt;,&lt;rand&gt;)
makes a random sample of size m from rows of matrix A
using random number generator &lt;rand&gt;.
The sample is saved as a matrix file C.
By SRS a Simple Random Sample (i.e. without replacement) and
by URS a Unrestricted Random Sample (i.e. with replacement)
is generated.
MAT C=#SAMPLE(A,m,n,&lt;SRS|URS&gt;,&lt;rand&gt;)
works similarly but makes n samples of size m from rows of A
as a matrix C with m*n rows.

See also <A HREF="qm2_01.html">MAT</A> #SAMPLES
and    MAT #JACKKNIFE

<A HREF="qma_01.html">A = More about additional MAT #operations</A>
<A HREF="qm2_01.html">M = More about MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT C=#JACK(A) or MAT C=#JACKKNIFE(A)
makes the n jackknife samples of the n rows of
matrix A and saves them in a matrix file C.
C will have n*(n-1) rows.

<A HREF="qma_01.html">A = More about additional MAT #operations</A>
<A HREF="qm2_01.html">M = More about MAT operations</A>

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT C=#SORT(A,k)
sorts the rows of matrix A in ascending order of the elements of its
k'th column.

<A HREF="qma_01.html">A = More about additional MAT #operations</A>
<A HREF="qm2_01.html">M = More about MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT M=#MAGIC(m)
creates an m*m magic square matrix M of integers 1,2,...,m^2 where all column
and row sums as well as the diagonal and skew diagonal sums are the same
i.e. equal to m*(m^2+1)/2. The dimension m must be greater than 2.

<A HREF="qma_01.html">A = More about additional MAT #operations</A>
<A HREF="qm2_01.html">M = More about MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```



```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT #EIGLAN(A,k,S,L,n_iter,L_file)
computes k largest eigenvalues L and
their eigenvectors S of a symmetric matrix A by the Lanczos method.
n_iter (by default 10) is the number of Lanczos iterations.
If L_file is given, Lanczos vectors are saved as L_file.

This is an efficient method for computing a few largest eigenvalues
and their eigenvectors when the dimension of A is large,
say, more than 200.

Reference: Golub and van Loan: Matrix computations,
          Chapter 9.2

MAT #EIGFEW(A,k,S,L,tol,iter)
computes k largest eigenvalues L and corresponding eigenvectors S
of matrix A. Parameters tol and iter are optional.
The simple power method is used and this command is intended for
computing a few (k) eigenvalues and vectors when A is a large
square matrix. tol gives the accuracy (default tol=1e-12) and
iter the maximum number of iterations for each eigenvalue
(default iter=100).
When more accurate results are needed and A is symmetric,
MAT SPECTRAL DECOMPOSITION or MAT #EIGLAN should be used.
In non-symmetric cases MAT #EIGEN should be preferred to.

<A HREF="qma_01.html">A = More about additional MAT #operations</A>
<A HREF="qm2_01.html">M = More about MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT #PRODDIAG(D,A,B)

```

computes the diagonal elements as a vector D ($m \times 1$)
of matrix $A \cdot B$ where A is $m \times n$ and B is $n \times m$.

```
<A HREF="qma_01.html">A = More about additional MAT #operations</A>
<A HREF="qm2_01.html">M = More about MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT #RAO_KHATRI(C,A,B)
computes the Rao-Khatri (i.e. row-wise Kronecker) product
of the matrices A (m x n) and B (p x n) and saves the
result in the matrix C (mp x n).

<A HREF="qma_01.html">A = More about additional MAT #operations</A>
<A HREF="qm2_01.html">M = More about MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAT #HADAMARD(C,A,B)
computes the Hadamard (elementwise) product of
matrices A and B (both m x n) and saves the result
in the matrix C (also m x n).

<A HREF="qma_01.html">A = More about additional MAT #operations</A>
<A HREF="qm2_01.html">M = More about MAT operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
```

```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">COMB <name>,L
with a specification <name>=<type>,<list_of_parameters>;
lists various combinatorial entities like
permutations, subgroups, partitions, distributions, etc.
in the edit field from line L onwards.
COMB <name> TO <text_file>;
does the same job but saves the results in a text file.

```

Example:

COMB S1,CUR+1 / S1=SUBSETS,10,5 SYMBOLS=A,B,C,D,E,F,G,H,I,J

Subsets of size 5 of 10 elements: N[S1]=252

A B C D E

A B C D F

A B C D G

A B C D H

.....

E G H I J

F G H I J

```

  <A HREF="qmc1_02.html">C = Various forms of COMB</A>
  <A HREF="qm1_01.html">M = More on mathematical operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">COMB <name>,L

```

```

<A HREF="qmc1_01.html">1 = General Information</A>
<A HREF="qmc1_04.html">2 = Permutations</A>
<A HREF="qmc1_05.html">3 = Subsets</A>
<A HREF="qmc1_06.html">4 = Partitions</A>
<A HREF="qmc1_07.html">5 = Distributions</A>
<A HREF="qmc1_08.html">6 = Integers in given base</A>
<A HREF="qmc1_09.html">7 = Lattice points</A>
<A HREF="qmc1_12.html">8 = Probabilities of multinomial distribution</A>
<A HREF="qmc1_10.html">R = RESULTS specification</A>
<A HREF="qmc1_11.html">S = SYMBOLS specification</A>
<A HREF="qm1_01.html">M = Mathematical operations</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  <A HREF="qmc1_02.html">C = Other forms of COMB</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">COMB P,L / P=PERMUTATIONS,&lt;n&gt;
lists all permutations of &lt;n&gt; given elements (default 1,2,3,...)
in lexicographic order.
Example:
COMB PERM,CUR+1 / PERM=PERMUTATIONS,3
Permutations of 3 elements: N[PERM]=6
1 2 3

```

1 3 2
2 1 3
2 3 1
3 1 2
3 2 1

COMB P,L / P=PERMUTATIONS,<n>,<m>
lists <m>-permutations of <n> given elements (default 1,2,3,...)
in lexicographic order.

Example:

COMB PERM,CUR+1 / PERM=PERMUTATIONS,4,2 ELEMENTS=A,B,C,D
2-permutations of 4 elements: N[PERM]=12

A B
A C
A D
B A
B C
B D
C A
C B
C D
D A
D B
D C

ELEMENTS=<list_of_elements_with_repetitions>
COMB P,L / P=PERMUTATIONS,<n>,<m>
lists <m>-permutations of <n>
in lexicographic order from a list given by ELEMENTS.

Example:

COMB PERM,CUR+1 / PERM=PERMUTATIONS,5,3 ELEMENTS=A,A,A,B,B
3-permutations of 5 elements (with repetitions): N[PERM]=7

A A A
A A B
A B A
A B B
B A A
B A B
B B A

.....
Permutations with restricted positions:

COMB PERM,CUR+1 / PERM=R_PERMUTATIONS,<n> RESTRICTIONS=<matrix_file>
lists permutations of <n> elements with restricted positions
given by non-zero elements in <n>* <n> <matrix_file>.

Example:

MATRIX A5 ///

1 0 0 0 1 / '1' cannot be in positions 1,5.
0 1 1 0 0 / '2' cannot be in positions 2,3.
0 0 1 1 1 / '3' cannot be in positions 3,4,5.
1 1 0 0 0 / '4' cannot be in positions 1,2.
1 0 1 0 1 / '5' cannot be in positions 1,3,5.

MAT SAVE A5

COMB PERM,CUR+1 / PERM=R_PERMUTATIONS,5 RESTRICTIONS=A5
Permutations of 5 elements with restrictions A5: N[PERM]=5

2 3 1 5 4
3 1 4 5 2
3 5 1 2 4
3 5 1 4 2
3 5 4 1 2

R_PERMUTATIONS is much quicker than PERMUTATIONS in cases of
many restricted positions and somewhat slower in simple cases.

PERMUTATIONS generates all permutations and cancels non-allowed cases.
R_PERMUTATIONS uses a recursive algorithm where restrictions are
observed already when permutations are generated.

Example: 'i' not allowed in positions i-1,i,i+1 (i=1,...,n n+1=1)
MATRIX A ///

1	1	0	0	0	0	0	0	1
---	---	---	---	---	---	---	---	---

MAT SAVE A
MAT C=DIAGVEC(A) / *C~DIAGVEC(A) S11*11
/MATSHOW C,12

COMB P,CUR+1 / P=R_PERMUTATIONS,11 RESTRICTIONS=C RESULTS=0
Permutations of 11 elements with restrictions C: N[P]=1445100

is about 6 times faster than
COMB P,CUR+1 / P=PERMUTATIONS,11 RESTRICTIONS=C RESULTS=0

```
<A HREF="qmc1_02.html">C = Other forms of COMB</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
```

```
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">COMB S,L / S=SUBSETS,&lt;n&gt;
lists all non-empty subgroups of &lt;n&gt; elements.
COMB S2,L / S2=SUBSETS,&lt;n&gt;,&lt;m&gt;
lists subsets of &lt;n&gt; elements consisting of &lt;m&gt; elements.
```

Example:
COMB SUB3,CUR+1 / SUB3=SUBSETS,5,3
Subsets of size 3 of 5 elements: N[SUB3]=10

1	2	3
1	2	4
1	2	5
1	3	4
1	3	5
1	4	5
2	3	4
2	3	5
2	4	5
3	4	5

COMB S2,L / S2=SUBSETS,<n>,<m> ELEMENTS=<list_of_elements>
lists all m-subsets of <n> elements given by ELEMENTS list with
possible repetitions.

Example:
COMB SUB5R,CUR+1 / SUB5R=SUBSETS,8,5 ELEMENTS=a,a,a,b,b,c,c,c
5-subsets of 8 elements (with repetitions): N[SUB5R]=9

```

a a a b b
a a a b c
a a a c c
a a b b c
a a b c c
a a c c c
a b b c c
a b c c c
b b c c c

```

```

<A HREF="qmc1_02.html">C = Other forms of COMB</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">COMB PART,L / PART=PARTITIONS,&lt;n&gt;
lists all partitions of interger &lt;n&gt;.
COMB PART,L / PART=PARTITIONS,&lt;n&gt;,&lt;m&gt;
lists partitions of &lt;n&gt; consisting of &lt;m&gt; parts.
.....
In both forms of partitions the sizes of parts can be limited
by MIN and MAX specifications.
Example:
COMB PART1,CUR+1 / PART1=PARTITIONS,12,4 MIN=2 MAX=4
Partitions 4 of 12: N[PART1]=3
2 2 4 4
2 3 3 4
3 3 3 3
.....
By the DISTINCT specification only partitions with distinct parts
are accepted.
Example:
COMB PART1,CUR+1 / PART1=PARTITIONS,18,4 MIN=2 MAX=10 DISTINCT=1
Partitions 4 of 18: N[PART1]=5
2 3 4 9
2 3 5 8
2 3 6 7
2 4 5 7
3 4 5 6
.....
COMB P,L / P=PARTITIONS,&lt;n&gt;
PARTS=&lt;ascending_list_of_positive_integers&gt;
lists all partitions of &lt;n&gt; using only integers given by PARTS.
COMB P,L / PART=PARTITIONS,&lt;n&gt;,&lt;m&gt;
PARTS=&lt;ascending_list_of_positive_integers&gt;

```

lists partitions of n ; consisting of m parts using the PARTS integers.
As a special case, PARTS=POWERS, k is the same as
PARTS=1,2^k,3^k,4^k,...

Examples:

COMB P,CUR+1 / P=PARTITIONS,1729,2 PARTS=POWERS,3

Partitions 2 of 1729: N[P]=2

1 1728

729 1000

.....
PARTS=1,5,10,20,50,100,500,1000 (metal and paper moneys in Finland)

COMB P,CUR+1 / P=PARTITIONS,1000 RESULTS=0

Partitions of 1000: N[P]=2720784

.....
COMB P,L / P=PARTITIONS, n , m ; DISTINCT=1 OFF= i_1,i_2,\dots
makes partitions of size m ; for n ; with distinct elements and
excluding elements i_1,i_2,\dots listed by an OFF specification.

.....
Example:

COMB P,CUR+1 / P=PARTITIONS,25,3 DISTINCT=1 OFF=2,4,6,8,10

Partitions 3 of 25: N[P]=10

1 3 21

1 5 19

1 7 17

1 9 15

1 11 13

3 5 17

3 7 15

3 9 13

5 7 13

5 9 11

.....
COMB P,L / P=PARTITIONS, n ; GREATEST= m ;
lists partitions of n ; with m ; as the greatest part.

Example:

COMB P,CUR+1 / P=PARTITIONS,10 GREATEST=3

Partitions of 10: N[P]=8

1 3 3 3

2 2 3 3

1 1 2 3 3

1 2 2 2 3

1 1 1 1 3 3

1 1 1 2 2 3

1 1 1 1 1 2 3

1 1 1 1 1 1 3

The number of these partitions is the same as those obtained by
PARTITIONS, n , m ;
since there is a bijective mapping between these two types of
partitions proved simply by transposing the Ferrers graph.

.....
COMB P,L / P=PARTITIONS, n , m ; MIN= \min ; MAX= \max ; MULTIN=

both makes partitions of size m ; for n ; and - by assuming that each
partition $f_1+f_2+\dots+f_m=n$ represents frequencies of an n -fold trial with
 m possible outcomes with equal probabilities $1/m$ - computes also the
probability that the conditions $\min \leq f_i \leq \max$, $i=1,2,\dots,m$
are fulfilled. This probability is computed if MULTIN=1 is given.

Example on the next page!

.....
Example: What is the probability that in 600 tosses of an unbiased
dice the frequencies of each of the numbers 1,2,3,4,5,6 fall in
the closed interval [90,110] ?

TIME COUNT START
 COMB P,CUR+2 / P=PARTITIONS,600,6 MIN=90 MAX=110 MULTIN=1 RESULTS=0
 TIME COUNT END 0.220
 Restricted partitions of 600: N[P]=5444 P=0.215947
 Thus the probability is P=0.215947 .

Checking that the sum of all multinomial probabilities is 1:
 Please note that it takes "some time". This is computed on a 700 MHz PC.

TIME COUNT START
 COMB P,CUR+2 / P=PARTITIONS,600,6 MIN=0 MAX=600 MULTIN=1 RESULTS=0
 TIME COUNT END 1406.632
 Restricted partitions of 600: N[P]=981355696 P=1

```
<A HREF="qmc1_02.html">C = Other forms of COMB</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
```

```
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
```

```
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">COMB D,L / D=DISTRIBUTIONS,&lt;n&gt;,&lt;m&gt;;
lists distributions of &lt;n&gt; like elements into &lt;m&gt; different cells.
```

Example:

COMB DISTR,CUR+1 / DISTR=DISTRIBUTIONS,3,3
 Distributions of 3 into 3 cells: N[DISTR]=10

```
0 0 3
0 1 2
0 2 1
0 3 0
1 0 2
1 1 1
1 2 0
2 0 1
2 1 0
3 0 0
```

COMB D,L / D=DISTRIBUTIONS,<n>,<m>; MIN=<value or list of values>;
 MAX=<value or list of values>;
 lists distributions of <n> like elements into <m> different cells
 The cell frequencies must be between given MIN and MAX values.

Example:

COMB D,CUR+1 / D=DISTRIBUTIONS,80,3 MIN=20,25,30 MAX=23,28,33
 Distributions of 80 elements into 3 cells: N[D]=12

```
20 27 33
20 28 32
21 26 33
21 27 32
21 28 31
```

22 25 33
22 26 32
22 27 31
22 28 30
23 25 32
23 26 31
23 27 30

```
<A HREF="qmc1_02.html">C = Other forms of COMB</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">COMB N,L / N=INTEGERS,&lt;positions&gt;,&lt;base&gt;
lists integers in given &lt;base&gt; (as sequences of digits)
up to given &lt;positions&gt;.
Specification MOVE=&lt;c&gt; adds integer &lt;c&gt; to each digit.
SUM=&lt;integer&gt; accepts only cases with sum of digits = &lt;integer&gt;.

Example:
COMB N2,CUR+1 / N2=INTEGERS,3,2
Integers of 3 digits in base 2: N[N2]=8
0 0 0
0 0 1
0 1 0
0 1 1
1 0 0
1 0 1
1 1 0
1 1 1
```

```
<A HREF="qmc1_02.html">C = Other forms of COMB</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">COMB L,CUR+1 / L=LATTICE,n MIN=MIN1,MIN2,...,MINn MA
lists all points in an n-dimensional rectangular lattice where
the integer-valued coordinates Xi (i=1,2,...,n) are limited by MINi<=Xi<=MAXi.
Example:
COMB L,CUR+1 / L=LATTICE,3 MIN=0,1,2 MAX=1,2,4
Lattice points in 3 dimensions: N[L]=12
0 1 2
0 1 3
0 1 4
0 2 2
0 2 3
0 2 4
1 1 2
1 1 3
1 1 4
1 2 2
1 2 3
1 2 4

<A HREF="qmc1_02.html">C = Other forms of COMB</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">In all forms of COMB only the number of combinations is displayed
RESULTS=0 is given.
Example:
COMB P1,CUR+1 / P1=PARTITIONS,70,14 RESULTS=0
Partitions 14 of 70: N[P1]=290071
.....
COMB P2,CUR+1 / P2=PARTITIONS,70 MAX=14 RESULTS=0
Partitions of 70: N[P2]=1614987
.....
COMB P3,CUR+1 / P3=PARTITIONS,70 MAX=13 RESULTS=0
Partitions of 70: N[P3]=1324916
Note: difference N[P2]-N[P3]=290071 = N(P1) (Why?)
.....
By giving RESULTS=1 the list will be displayed but the first line
(header line containing N[P]) not.

```

```

    <A HREF="qmc1_02.html">C = Other forms of COMB</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">In types PERMUTATIONS and SUBSETS the default elements are
These elements can be replaced by other symbols by a specification
SYMBOLS=&lt;list_of_symbols&gt;.
Example:
COMB P,CUR+1 / P=SUBSETS,5,3 SYMBOLS=a,b,c,d,e
Subsets of size 3 of 5 elements: N[P]=10
a b c
a b d
a b e
a c d
a c e
a d e
b c d
b c e
b d e
c d e

```

```

    <A HREF="qmc1_02.html">C = Other forms of COMB</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">COMB operation can be used also for computing probabilities relative
a given multinomial distribution as shown by the following examples.

```

.....
Example 1:

Assume that in a random experiment there are 3 alternatives with probabilities PROB=1/2,1/4,1/4 (ratios of integers are permitted) and we want to compute the probability that 12 observations are distributed among these 3 alternatives so that frequencies are within limits given by min.values MIN=3,4,1 and max.values MAX=5,5,5

The permitted combinations are computed by
COMB D,CUR+1 / D=DISTRIBUTIONS,12,3

Distributions of 12 elements into 3 cells: N[D]=6 P=0.170511245727539

3 4 5 1.321792602539068e-002 (sum of prob.s)

3 5 4 1.321792602539068e-002

4 4 4 3.304481506347660e-002

4 5 3 2.643585205078131e-002

5 4 3 5.287170410156262e-002

5 5 2 3.172302246093759e-002

f(n):=fact(n) Checking the first case:

f(12)/(f(3)*f(4)*f(5))*(1/2)^3*(1/4)^4*(1/4)^5=0.01321792602539
.....

.....
Example 2:

If there is no need to list various alternatives, it is much faster to compute probabilities as follows:

MIN=0 MAX=10000 (Thus all possible combinations)

TIME COUNT START

COMB M,CUR+2 / M=MULTIN_PROB,10000,6

TIME COUNT END 250.410 (on 700 MHz Pentium)

Distributions of 10000 elements into 6 cells: P[M]=0.999999999606738
.....

Similarly:

MIN=900 MAX=1100

TIME COUNT START

COMB M,CUR+2 / M=MULTIN_PROB,6000,6

TIME COUNT END 0.450

Distributions of 6000 elements into 6 cells: P[M]=0.997014290654646
.....

Computation method on the next page!

Assume n trials with m equiprobable outcomes.

Let P(n,m,min,max) be the probability of getting all frequencies within the interval [min,max].

Then P(n,m)=P(n,m,min,max) is obtained from the recurrence

$$P(n,m) = \sum_{i=\min}^{\max} C(n,i) * (1/m)^i * (1-1/m)^{(n-i)} * P(n-i,m-1)$$

with initial conditions $P(n,m) = 0$, if $m * \min > n$ or $m * \max < n$,
 $P(n,1) = 1$.

If probabilities of m alternatives p1,p2,...,pm are not the same,
 \max

$$P(n,k) = \sum_{i=\min}^{\max} C(n,i) * q_i^i * (1-q_i)^{(n-i)} * P(n-i,k-1)$$

where $q_i = p_i / (p_1 + p_2 + \dots + p_k)$.

Example of this more general case on the next page!

.....
Example 3:

PROB=1/5,1/5,1/5,0.21,0.19

MIN=900 MAX=1100

TIME COUNT START

COMB M,CUR+2 / M=MULTIN_PROB,5000,5
TIME COUNT END 0.230
Distributions of 5000 elements into 5 cells: P[M]=0.928764087453283

.....
MIN=900,900,900,900,900 MAX=1100,1100,1100,1100,1100
PROB=1/5,1/5,1/5,0.21,0.19
TIME COUNT START
COMB D,CUR+2 / D=DISTRIBUTIONS,5000,5 RESULTS=0
TIME COUNT END 789.195
Distributions of 5000 elements into 5 cells: P=0.928764087453838
N[D]=977654751

Thus the recursive algorithm is almost 25000 times faster in this case!

.....
Example 4:

What is the probability that in 600 tosses of an unbiased dice all frequencies of numbers 1,2,3,4,5,6 remain within the interval [90,110]?

MIN=90,90,90,90,90,90
MAX=110,110,110,110,110,110
PROB=1/6,1/6,1/6,1/6,1/6,1/6
COMB D,CUR+1 / D=DISTRIBUTIONS,600,6 RESULTS=0
Distributions of 600 elements into 6 cells: N[D]=2248575 P=0.215946634850144

.....
When the distribution is discrete uniform, it is simpler and faster to compute the probability (by using a MULTIN specification) by:
COMB P,CUR+1 / P=PARTITIONS,600,6 MIN=90 MAX=110 MULTIN=2 RESULTS=0
Restricted partitions of 600: N[P]=5444 P=0.215946634850137 NM=2248575
NM=N[D] (due to MULTIN=2) is also computed. See also Partitions!

.....
The fastest solution is:

COMB M,CUR+1 / M=MULTIN_PROB,600,6 MIN=90 MAX=110
Distributions of 600 elements into 6 cells: P[M]=0.215946634850135

.....
Example 5: Varying limits and probabilities

MIN=450,180,100,50,44
MAX=560,270,170,80,88
PROB=1/2,1/4,1/8,1/16,1/16
TIME COUNT START
COMB M,CUR+2 / M=MULTIN_PROB,1024,5
TIME COUNT END 0.440 (366 MHz)
Distributions of 1024 elements into 5 cells: P[M]=0.808004563373524

.....
MIN=450,180,100,50,44
MAX=560,270,170,80,88
PROB=1/2,1/4,1/8,1/16,1/16
TIME COUNT START
COMB M,CUR+2 / M=DISTRIBUTIONS,1024,5 RESULTS=0
TIME COUNT END 11.810
Distributions of 1024 elements into 5 cells: N[M]=6784690 P=0.808004563373562

C = Other forms of COMB
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>

```

```

<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">EGYPT m/n,k
represents fraction m/n of positive integers as an Egyptian fraction
with k terms i.e. in the form
m/n=1/n(1)+1/n(2)+...+1/n(k)
where n(1)&lt;n(2)&lt;...&lt;n(k) and n(k) is as small as possible.
Examples:
EGYPT 1/2,5 / 1/2=1/6+1/9+1/10+1/15+1/18
EGYPT 1/1,6 / 1/1=1/3+1/4+1/6+1/10+1/12+1/15
EGYPT 5/121,3 / 5/121=1/33+1/121+1/363
EGYPT 2/11,3 / 2/11=1/10+1/15+1/66

```

A brute-force algorithm of Stewart (improved by SM) is used.

All solutions are saved in a text file given by a SAVE specification.
Possible n(i)-values can be limited by NMIN and NMAX specifications.

```

.....
Example: SAVE=EG.TXT NMAX=66
EGYPT 2/11,3 / 2/11=1/10+1/15+1/66
LOADP EG.TXT
Denominators of Egyptian fractions for 2/11:
7 42 66
8 24 66
9 18 66
10 15 66

```

Thus there are 4 different 'minimal' expansions of 2/11.
The primary solution of EGYPT is the one having smallest n(k-1) etc.
In most cases the 'minimal' expansion is unique.

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Geometric constructions and their accuracy (GEOM)

```

The principles and usage of the GEOM program are described in
http://www.survo.fi/papers/GeomAccu

Templates for using GEOM is found by activating
 LOAD <Survo>\U\D_GEOM / Pentagons
 LOAD <Survo>\U\D_GEOM2 / Approximate circle squaring
 The latter one works also in the freeware version Survo Editor 3.05+

```
<A HREF="qm1_01.html">M = More information on mathematical operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
```

```
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
```

```
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">INTREL <decimal_number>;L
tries to find an exact numeric expression for which <decimal_number>;
is an (accurate) approximation.
The PSLQ algorithm by Ferguson and Plouffe (1992) is used.
The main approach is to see <decimal_number>; as a root X of an
algebraic equation of nth degree
C0+C1*X+C2*X^2+...+Cn*X^n=0
with integer coefficients C0,C1,C2,...,Cn.
The maximum degree n is set by a specification DEGREE=n (n=1,2,...,20).
The accuracy of approximation is set by EPS, default EPS=1e-12 .
L is the first line for the results (default is CUR+1).
```

```
.....
Example: ACCURACY=16
sqrt(2)=1.4142135623731 DEGREE=2
INTREL 3.4142135623731
X=3.4142135623731 is a root of X^2-4*X+2=0
.....
```

By giving a specification CONSTANTS=<matrix_file>; values of the first column, say X1,X2,..., are used instead of powers of X.
 Example on the next page:

```
.....
Example:
MATRIX C
/// C
1 1
e 2.718281828459045
Pi 3.141592653589793

MAT SAVE C
x=5+2*3.141592653589793-3*exp(1)
x=3.128339821802451
.....
```

```
CONSTANTS=C
INTREL 3.128339821802451
```


Integer relation for X=3.128339821802451:

Constant	Coefficient
----------	-------------

X	1
---	---

1	-5
---	----

e	3
---	---

Pi	-2
----	----

1 = More about mathematical operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">

Additional operations and sucros on multivariate analysis

1 = Multivariate statistical operations

2 = Multivariate statistical sucros

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Multivariate statistical operations:

A = MAHAL Mahalanobis' distances etc.

B = CLASSI Classification of observations

C = RELIAB Reliabilities of factor images (by Kimmo Vehkalahti)

D = LSCAL Multidimensional least-squares scaling & related n

E = TRAN1 Transformation analysis with various restrictions

F = POSDIR Orientation of matrix columns to "positive" direction

```

<A HREF="qmm1_10.html">G = DIST    Dissimilarity matrices of observations based on various m
<A HREF="qmm1_11.html">H = DISTV    Dissimilarity matrices of variables based on various mea
<A HREF="qmm1_12.html">I = MNSIMUL    Creating multivariate normal samples by simulation</A>
<A HREF="qmm1_13.html">J = MNTEST    Testing multivariate normality</A>
<A HREF="qmm1_14.html">K = STATMSF    (with VALUES) empirical P values from simulated d
<A HREF="qmm1_15.html">L = HCLUSTER Hierachical cluster analysis (by Fredrik ˆberg)</A>
<A HREF="qmm1_16.html">M = MULTVAR    Variability measure for multivariate data</A>
<A HREF="qmm1_17.html">N = CORRMV    Means, std.devs, and correlations from incomplete da
<A HREF="qmm2_01.html">O = CORRTEST    Testing correlations by randomization principle</A>

<A HREF="qmr2_01.html">X = Multivariate statistical analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM</H1>
<P><PRE CLASS="HelpText">Multivariate statistical sucros:

/MNSIMUL      Creating multivariate normal samples by simulation
/COV ?        Covariance matrix from CORR.M and MSN.M
/MTEST-README Tests for multivariate normal samples
/PCOMPR ?     Principal components from correlation matrix
/PCOMPFCOV ?  Principal components from covariances
/FCOEFF ?     Factor score coefficients for orthogonal factors
/FTCOEFF ?    Factor score coefficients for oblique factors
/TRAN-README  Transformation analysis
/CANCORR ?    Canonical correlations (update)
/DISCRI ?     Multiple discriminant analysis (canonical variates)
/CSCAL ?      Classical multidimensional scaling
/SCREE ?      Scree test (graph) for principal components etc.(by KV)
/MSKEW ?      P values for Mardia's tests by simulation

<A HREF="qmm1_02.html">1 = More information on additional multivariate operations</A>
<A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">

```

```

<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  <A HREF="qmm1_02.html">1 = More information on additional multivariate operations</A>
  <A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MAHAL &lt;data&gt;,&lt;output_line&gt;
computes Mahalanobis distances as a variable activated by 'D'
and/or their cumulative probabilities according to
Chi^2 distribution activated by 'P'
from other active variables in &lt;data&gt;.

If the data is sorted by the 'P' or 'D' variable,
the 'P' variable plotted against (ORDER-0.5)/N should give
a straight line when the data is a sample from a multinormal
distribution.

  <A HREF="qmm1_02.html">1 = More information on additional multivariate operations</A>
  <A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```

</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">CLASSI &lt;data&gt;
classifies observations in Survo &lt;data&gt; to g groups
according to Mahalanobis distances and derived measures.
The groups are defined by CORR and NSN specifications
of the form
  CORR=CORR1,CORR2,...,CORRg
  MSN=MSN1,NSN2,...,MSNg
giving the correlation matrices and matrices of means and
standard deviations. These matrices are usually computed
by the CORR operation for g different groups with same
variables and transformed into corresponding matrices of
canonical discriminant functions (discriminators) with
lower dimensions by the /DISCRI (sucro) operation.
When discriminators are used as the basis for classifi-
cation (this is strongly recommended), the specification
  COEFF=DISCRLM
must be included since these coefficients transform the
original variables into discriminant scores.

The classification is based either on Mahalanobis distan-
ces or Bayes probabilities (assuming that the samples are
multivariate normal). The classification rules are
selected by activating variables in &lt;data&gt; as follows:
  D = Mahalanobis distances, equal covariances
  d = Mahalanobis distances, unequal covariances
  B = Bayes probabilities, equal covariances
  b = Bayes probabilities, unequal covariances
In B and b alternatives, numbers proportional to prior
probabilities are give by a specification
  PRIORS=P1,P2,...,Pg .
Default is PRIORS=N1,N2,...,Ng where Nk is # of observa-
tions in the k'th group (taken from the MSN file).

In alternative B, posterior measures used in
classification are computed as
  Pk*exp(-0.5*Dk^2)
where Dk^2 is the (squared) Mahalanobis distance.
In alternative b, the corresponding measure is
  Pk*exp(-0.5*Dk^2)/sqrt(det(Sk))
where Sk is the covariance matrix in group k.

All above rules can be used simultaneously by indicating
unique D,d,B,b variables.
Also posterior probabilities (or distances in cases D,d)
can be saved in g variables activated by P's.
This, however, is possible only for one of the alternatives
at a time. The precedence order is b,B,d,D.

<A HREF="qmm1_02.html">1 = More information on additional multivariate operations</A>
<A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
</HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Multidimensional least-squares scaling etc.

```

LSCAL <distance_matrix>,<initial_coordinates>,L

computes on the basis of a given $n \times n$ dissimilarity or <distance matrix> a configuration of n points in an m dimensional space. The distances of points in that configuration should be as close to the given distances as possible. <initial_coordinates> gives initial estimates of the configuration as a matrix file. # of columns in <initial_coordinates> gives the dimension m .

The result CSCAL.M of classical multidimensional scaling obtained by the sucro /CSCAL (or /CSCAL2 when n is very large ($m \geq 1000$) and m is small, typically $m=2$) is often a good choice for <initial_coordinates>.

The initial solution is improved iteratively by using the least squares (or other) criteria. Thus by default, the squared sum of differences between the true distances and distances given by estimated coordinates should be minimized. Since the object function generally has many local minima, several initial coordinates should be employed.

The squared sum of distance differences can be weighted by a $n \times n$ weight matrix given by WEIGHTS=<matrix_name>. For example, weights could be inverses of given distances. By default, weights are 1.

In the default case (no weights, least squares criterion, no additive constant) a conjugate gradient method is used. Otherwise Powell's method (without analytic gradient vector) is used.

Options for optimization:

METHOD=1 conjugate gradient method
METHOD=12 conjugate gradient method (weights $1/d^2$)
METHOD=13 conjugate gradient method (weights $1/d$)

METHOD=2 Powell's method
METHOD=3 polytope algorithm of Nelder and Mead

An additive constant C for transforming the original distances D -> $D+C$ can also be estimated by giving CONSTANT= C .

Missing values in the <distance matrix> are given as negative numbers.

Default metrics for distances is Euclidean. Another metrics is selected by METRICS= L_p where $p=1$ means city-block distance and $p=2$ Euclidean distance.

For general $p \geq 0$, corresponding Minkowski metrics is used.
METRICS=MAD and METRICS=ABS are equivalent to METRICS= L_1 .
METRICS=MAX implies maximum difference in coordinate values to be used as a distance.

The goodness-of-fit measure for comparing given and estimated distances is the ordinary least squares criterion. This can be replaced by a CRITERION specification with the same alternatives as METRICS. For example, CRITERION= L_2 is default. LSCAL gives its results as matrix files

LSCAL.M estimated configuration matrix,
 LSDIST.M reproduced distances.
 LSCAL.M is centered to the origin and rotated to principal axes.

By default, it is assumed that the distance matrix is symmetric.
 If it is not, set SYMMETRIC=0.

```
<A HREF="qmm1_02.html">1 = More information on additional multivariate operations</A>
<A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TRAN1 is a hybrid Survo module for investigations
in transformation analysis related to factor analysis.
```

Assuming that A and B are factor matrices of p variables
 and r factors,
 TRAN1 A,B,L0
 makes a transformation analysis from factor matrix A to B
 by minimizing $\|A * L - B\|^2$ with respect to L with certain
 restrictions.
 The optimal L is saved as a matrix file L1.M and it is
 found iteratively from an initial matrix L0.
 In most cases L1.M obtained by
 /TRAN-SYMMETR A,B
 is a good choice for L0.

Restrictions are given by specification RESTRICTION with
 following alternatives:

RESTRICTION=0 no restrictions which leads to original
 least squares solution.
 Faster alternative: /TRAN-LEASTSQR A,B
 RESTRICTION=1 (default) $\text{diag}[\text{inv}(L' L)] = I$,
 RESTRICTION=2 $\|E(A, B)\| = \|E(B, A)\|$ where
 $E(A, B) = A * L - B$ and $E(B, A) = B * \text{inv}(L) - A$,
 RESTRICTION=3 1 and 2 simultaneously,
 RESTRICTION=4 $\text{diag}[E(A, B) * E(A, B)'] = \text{diag}[E(B, A) * E(B, A)']$
 which seems to lead to the symmetric
 solution with an orthogonal L.
 Faster alternative: /TRAN-SYMMETR A,B

The solution is found iteratively by the polytope algo-
 rithm of Nelder and Mead by minimizing
 $f(L) = \|A * L - B\|^2 + \text{penalty} * \text{restriction}$
 The penalty coefficient is given by PENALTY. Default is
 PENALTY=10000.

```

<A HREF="qmm1_02.html">1 = More information on additional multivariate operations</A>
<A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">POSDIR &lt;matrix_file&gt;,&lt;matrix_file&gt;
alters the orientation of the columns of &lt;matrix_file&gt;
to positive direction by using &lt;matrix_file&gt;.
Possible values of &lt;matrix_file&gt; are 1,2,3:
1: (default) If sum of squares of negative elements exceeds
that of positive ones in current column, change signs.
2: If the maximum element in current column is negative,
change signs.
3: If most of the elements in current column are negative,
change signs.

No results are printed in the edit field.

<A HREF="qmm1_02.html">1 = More information on additional multivariate operations</A>
<A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">DIST &lt;data&gt;,&lt;matrix_file&gt;
computes a distance or dissimilarity matrix of active
observations from active variables.

```

There is another Survo module DISTV for a distance matrix of active variables.

A special form of DIST computes the distance of each observation to the closest of given center observations (see [DISTC](qmm2_03.html)?).

The results are saved in `<matrix_file>` with default extension .MAT .

If a string variable is activated by 'L', the 8 first characters of it are used as row and column labels in `<matrix_file>`.

Otherwise, if the first active variable is a string, it will serve as a label variable. Otherwise labels will be integers 1,2,...

`<matrix_file>` can be used as an input in /CSCAL and LSCAL operations, for example.

The dissimilarity measure used is selected by a MEASURE specification with following alternatives (see T.C.Cox & M.A.A.Cox: Multidimensional Scaling, Chapman & Hall p.10):

EUCLIDEAN, MAHALANOBIS, CITY_BLOCK,
MINKOWSKI(k) (k>0)
CANBERRA, BRAY_CURTIS, BHATTACHARYYA,
ANGULAR (Angular separation)
CORRELATION (1 - correlation)
BINARY (various measures for binary variables; see next page)

Three first letters are sufficient like MEASURE=MIN(2) which is the same as MEASURE=EUC . Also MEASURE=MIN(1) is the same as MEASURE=CITY .

The variables can be standardized by SCALING=YES .

The variables are also weighted by WEIGHTS=<vector_of_weights_as_matrix_file>.

The order of weights must be the same as the order of active variables in `<data>`.

In case MEASURE=BINARY various user-defined (dis)similarity measures for binary data are used.

By default each active variable is converted to a binary one by mapping values $X \leq 0$ to 0 and values $X > 0$ to 1.

This convention is overridden by giving a specification BINARY=C

Then values $X \leq C$ are mapped to 0 and values $X > C$ to 1.

An optional parameter R in BINARY=C,R exchanges the values 0 and 1.

Both of the above conventions can be overridden individually in any variable, say Z, by entering a specification Z=C or Z=C,R with the same interpretation as in the BINARY specification.

The actual (dis)similarity coefficient for binary data is entered as a specification COEFF=<function of a,b,c,d> where a,b,c,d are the frequencies in a 2x2 table

	1	0
1	a	b
0	c	d

for each pair of observations.

For example, $\text{COEFF} = 1 - (a+d)/(a+b+c+d)$ gives a dissimilarity measure which is the complement of a simple matching coefficient (default).

[1](qmm1_02.html) = More information on additional multivariate operations

[M](qmr2_01.html) = More information on multivariate analysis

More information on Survo from <http://www.survo>

!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<!--

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">DISTV &lt;data&gt;,&lt;matrix_file&gt;
computes a distance or (dis)similarity matrix of active variables (!)
for active observations.
There is another Survo module DIST for a distance matrix of active
observations.
```

The results are saved in <matrix_file> with default extension .MAT .

<matrix_file> can be used as an input in /CSCAL and LSCAL operations,
for example. In this case the matrix must consist of dissimilarities.

The (dis)similarity measure used is selected by a MEASURE specification
with following alternatives (see T.C.Cox & M.A.A.Cox: Multidimensional
Scaling, Chapman & Hall p.10):

EUCLIDEAN
CITY_BLOCK
MINKOWSKI(k) (k>0)
CORRELATION (1 - correlation)
BINARY (various measures for binary variables; see next page)

Three first letters are sufficient like MEASURE=MIN(2) which is the
same as MEASURE=EUC . Also MEASURE=MIN(1) is the same as MEASURE=CITY .

The variables can be standardized by SCALING=YES .
The observations are weighted by activating a weight variable by 'W'.

In case MEASURE=BINARY various user-defined (dis)similarity measures
for binary variables are used.

By default each active variable is converted to a binary one by mapping
values $X \leq 0$ to 0 and values $X > 0$ to 1.

This convention is overridden by giving a specification BINARY=C

Then values $X \leq C$ are mapped to 0 and values $X > C$ to 1.

An optional parameter R in BINARY=C,R exchanges the values 0 and 1.

Both of the above conventions can be overridden individually in any
variable, say Z, by entering a specification Z=C or Z=C,R with
the same interpretation as in the BINARY specification.

The actual (dis)similarity coefficient for binary variables is entered
as a specification COEFF=<function of a,b,c,d> where a,b,c,d are the
frequencies in a 2x2 table

X/Y	1	0
1	a	b
0	c	d

for each pair X,Y of variables.

For example, $\text{COEFF} = 1 - (a+d)/(a+b+c+d)$ gives a dissimilarity measure
which is the complement of a simple matching coefficient (default).

```
<A HREF="qmm1_02.html">1 = More information on additional multivariate operations</A>
<A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MNSIMUL &lt;corr_file&gt;,&lt;msn_file&gt;,&lt;data_file&gt;,N,
simulates multivariate normal distribution by generating N obser-
vations according to a given CORR file and MSN file (of means and
std.devs).

```

The simulated observations will be saved in <data_file>. If <data_file> already exists, its previous structure and contents will be destroyed.

If <msn_file> is given as *, means are assumed to be =0 and std.devs=1, i.e. standardized data will be produced.

When <ind> is 0, the covariance matrix S is computed from the given correlation matrix and standard deviations. Then S is decomposed into form $S=CC'$ by spectral decomposition. The data values are generated by the formula $X=C*U+M$ where U is multivariate $N(0,I)$ and M is the vector of means.

C is saved as a matrix file MNCOEFF.M on the temporary disk (tempdisk) of Survo. Similarly, M (if given) is saved as MNMEAN.M . Also a new data file <data_file> is created.

After these preparations MNSIMUL generates the N observations.

When <ind> is 1, the above preparations are omitted and N observations are generated directly by using ready-made MNCOEFF.M and MNMEAN.M files. Thus in simulation experiments where many samples from the same multivariate normal distribution are required, the first sample must be created by setting <ind> to 0.

Samples #2, #3, etc. can then be generated more quickly by setting <ind> to 1. For each sample, a different seed for (pseudo)random numbers must be used.

The random number generator and its seed number is selected by specification RND=rand(1041994), for example. Default is RND=rand(123456789).

Also INSEED and OUTSEED specifications are available (see RAND). The normal random deviates are computed by default by the Box-Muller method.

By specification TRANSFORM=PROBIT, an approximation of the inverse normal distribution is used instead. By this option (which is slightly slower) MNSIMUL generates exactly same values as the /MNSIMUL sucro.

The names of variables in <data_file> are the row labels of <corr_file>. By default each variable is of the numerical type 4.

The types can be changed by TYPES=<1,2,4 or 8> or by TYPES=<name_of_data_file>.

In the latter case the types are selected according to variables in another data file.

The size of the data file is minimal, i.e. no space for additional variables is reserved.

However, by NEWSPACE=<#_of_additional_bytes>,<#_of_additional_variables>; such additional space can be created for each observation.

Another form of MNSIMUL is

MNSIMUL <cov>,-,<data_file>;N,<ind>;

where <cov>; is the covariance matrix of the distribution to be simulated.

In this case it is assumed that means will be 0.

```
<A HREF="qmm1_02.html">1 = More information on additional multivariate operations</A>
<A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MNTEST <data>;<output_line>;
tests whether the active part of <data>; is a random sample from
a multivariate normal distribution.
```

By default the multivariate measures of skewness and kurtosis presented by Mardia (1970) are computed and asymptotic test statistics related to them as well as their P values are presented.

The test statistics are computed through principal components of the data. The actual dimension m of the distribution is determined by the sizes of eigenvalues. The proportion of the last accepted eigenvalue to the largest should exceed the value given by a specification EPS=<value>; (default is EPS=1e-10).

Since P values of Mardia's tests can be far from truth on small sample sizes, a sucro /MSKEW determines them by simulation.

By specification TEST=MAHAL,<k>;

Mahanobis' distances of each observation from the mean are computed after determining the true dimensionality (say m) of data (by EPS).

If data is a (large) sample from a multivariate normal distribution, these distances have an approximate χ^2 distribution with m degrees of freedom. This is tested by transforming the distances to uniform distribution on (0,1) by the distribution function of χ^2 and counting the # of observations in each of the <k>; (default 10) subintervals. The uniformity of this frequency distribution is tested by the X^2 test and by the Kolmogorov-Smirnov test.

By specification TEST=CUBE,<k>;

the data is mapped into a m-dimensional hypercube by computing principal components and transforming them into uniformly distributed values on (0,1). The dimension m is determined in the same way as in Mardia's

tests. Thus in large multivariate normal samples the transformed data values are independently and uniformly distributed in the hypercube.

For each observation, the maximum and minimum values (xmax and xmin) of m standardized (variance=1) principal component values are computed and the observation is classified in two ways. In the first classification, it belongs to class # $1 + \text{int}(k * F(x_{\max})^m)$ and in the second classification to class # $1 + \text{int}(k * F(-x_{\min})^m)$ where F is the distribution function of the normal distribution. This means that in both classifications the frequencies should be distributed uniformly in <k> classes (default is 10). Appropriate χ^2 test is performed on this basis. Also the Kolmogorov-Smirnov test is made on the max and min values of the transformed data.

```
<A HREF="qmm1_02.html">1 = More information on additional multivariate operations</A>
<A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM
<P><PRE CLASS="HelpText">STATMSF &lt;Survo_data&gt;;&lt;output_line&gt;;
LIMITS=&lt;low1&gt;;&lt;up1&gt;;&lt;up2&gt;;...
computes means, standard deviations, and frequency distributions
of active variables. Cases can be limited by IND and CASES specifications.
The frequencies are computed according to a classification given by the
LIMITS specification where &lt;low1&gt; is the lower limit of the first class 1
and &lt;up1&gt;;&lt;up2&gt;;... are the upper limits of the classes 1,2,...
The default setting is LIMITS=0,1,2,3,4,5 .

The results are displayed in a more compressed form than in
the STAT operation.

STATMSF &lt;Survo_data&gt; / TRESHOLDS=&lt;matrix_file&gt;;
where &lt;matrix_file&gt; is of the form
row label 1st column
variable_1 threshold_value_1
variable_2 threshold_value_2
...
computes relative frequencies of values exceeding threshold values
given as the first column of &lt;matrix_file&gt; for variables given
as row labels in &lt;matrix_file&gt; for active observations
in &lt;Survo_data&gt;.
The results are saved in a matrix file TAILFREQ.M .

<A HREF="qmm1_02.html">1 = More information on additional multivariate operations</A>
<A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">HCLUSTER &lt;input type="checkbox"> &lt;input type="checkbox"> / F. 7b

```

Performs hierarchical clustering of observations in the specified data or on a distance matrix.
HCLUSTER let you plot a dendrogram on CRT or a Postscript printer.

When data is used, the variable with the label should be activated with letter L, and the variables to compute the distances from with letter A. If no L activated variable is found, the first activated variable is used if it is of string type.
If no suitable label is found, the observation numbers are used as labels.
Note: the label variable must be of string (S) type.

The HCLUSTER module recognizes a distance matrix as input when the name ends with the .MAT extension.
(eg. DIST and DISTV modules by S.Mustonen are useful for making distance matrices.)

On next screen about various specifications.

Specification	Diffrent values	Abbreviation	Remarks
METHOD	SINGLE_LINKAGE	SIN or 1	(default)
	COMPLETE_LINKAGE	COM or 2	
	AVERAGE_LINKAGE	AVE or 3	
	WEIGHTED_AVERAGE	WAV or 4	
	CENTROID	CEN or 5	
	WEIGHTED_CENTROID	WCE OR 6	
	MINIMUM_VARIANCE	MIN or 7	Also called Wards method.
SAVEDIST	<matrix>		Default: no saving.
	<textfile>		With extension .TXT
DISTANCE	SQUARED_EUCLIDIAN	SQU or SQR or 1	(default)
	EUCLIDIAN	EUC or 2	
	CITY_BLOCK	CIT OR 3	
	CANBERRA_METRIC	CAN or 4	
TREEDATA	<datafile>		Default: #TREE#
			Used also for PS file.
RESULTS	0..10		Short output.
	>10		Long output.
PLOT	PS or POSTSCRIPT		Output for PostScript.
	PS,LANDSCAPE		Print format: Landscape

more specifications on next screen.

SCALING	YES (any value will do.)	Performs standardization of variables before com-
---------	----------------------------	---

WEIGHTS <weight matrix> Vector with weights.
 putting distances.
 zero mean, unit variance
 Survo matrix; 1 column
 m rows, in the same
 order as the activated
 variables.

examples on next screen.

HCLUSTER DECA,CUR+1 / METHOD=MINIMUM_VARIANCE SAVEDIST=MAT1
 The distance matrix is saved in matrix file MAT1.MAT. If n>90 then distances
 are saved as a text file MAT1.TXT

HCLUSTER D.MAT,CUR+1 / TREEDATA=C:TMPTREE1 RESULTS=0
 Performs cluster analysis based on distance matrix D. The data that contains
 the dendrogram is saved in data file TREE1.SVO in current datapath.
 Only the lines relevant for plotting the dendrogram are as output.
 Note that TREEDATA and SAVEDIST can include a path name.

HCLUSTER MYDATA,CUR+1 / DISTANCE=CITY PLOT=PS SAVEDIST=DIS1.TXT
 Uses method single linkage and the distances are CITY BLOCK measures.
 The dendrogram is 'printed' to a PostScript file. The name (and path)
 is the same as in TREEDATA but with the .PS extension.
 The distance matrix is saved as a textfile in DIS1.TXT (in datapath).
 Note that the distance matrix is not saved by default.

More about HCLUSTER on next screen.

The HCLUSTER module uses an agglomerative algorithm.
 Other distance measures can be used by making a
 distance matrix with the DIST module.

Note that HCLUSTER only work with dissimilarity measures.

Literature used for programming the HCLUSTER module:
 Anderberg Michael R. : Cluster Analysis for Applications, NY & London, 1973
 Jain Anil K. : Algorithms for Clustering Data, 1988
 Everitt Brian S. : Cluster Analysis, 1983

```
<A HREF="qmm1_02.html">1 = More information on additional multivariate operations</A>
<A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MULTVAR <covariance_matrix_S>
computes a variability measure Mvar(S) of S.Mustonen (1995).
```

By default, the stepwise method is used.

The exhaustive method is selected by METHOD=EXHAUSTIVE.

The accuracy parameter in Cholesky decompositions is set by EPS=eps (Default EPS=0.000001).

The optimally permuted covariance matrix is saved as a matrix file COVVAR.M.

Reference:

S. Mustonen: A measure for total variability
in multivariate normal distribution

Computational Statistics & Data Analysis (1997)

1 = More information on additional multivariate operations

M = More information on multivariate analysis

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">CORRMV <Survo_data>,L
computes means, standard deviations, and correlations from active
variables and observations by accepting also cases containing
missing values. The standard CORR module leaves out all incomplete
cases.

The default method (METHOD=1) is a simplified EM algorithm by S.Mustonen.

In this method the data set is first standardized (means=0 stddevs=1)

and the missing values are replaced by 0's.

Thereafter estimates for missing values are improved iteratively
by linear regressions where each variable is explained by all other
variables. In each iteration, old estimates of missing values are
replaced by the regression estimates.

In one iteration, all regression parameters are obtained simply by
updating the moment matrix of variables and by inverting it by the
Cholesky method.

Convergence of the process can be monitored by the mean squared
difference of consecutive estimates of missing values.

After ITER iterations (default ITER=20) the procedure is interrupted.

To obtain unbiased estimates for variances, in sums of squares each term
of a missing value is extended by the residual variance of the corres-
ponding regression model.

If the line for results (L) is given, the means, standard deviations,
and correlations are printed in the edit field from line L onwards.

If RESULTS=0 is given, only a summary of results is printed.

In any case the results are saved in matrix files MSN.M and CORR.M
as in CORR.

By default, missing values are not replaced by any estimates. However,
if a specification IMPUTE (or REPLACE) is given, missing values are

filled in.

By IMPUTE=REG they are replaced by their regression estimates. Please note that regression estimates of missing values are too well-adapted and the variability in the data is reduced. Thus, if means, standard deviations, and correlations were recomputed from the patched data, the variances would become smaller than those given by CORRMOV from incomplete data. Also correlations would be more biased.

By IMPUTE=REG+rand(123456789) missing values are replaced by $\text{reg.est} + u * s$ where s is the square root of the residual variance of the regression model in question and u is a standard normal variate obtained by using the pseudo-random number generator rand with seed 123456789. In this case means, std.devs and correlations recomputed from the patched data are less biased.

When METHOD=PAIRWISE is used, correlations are computed for non-missing pairs of observations. This may lead to more biased results than METHOD=1. Also the correlation matrix (CORR.M) may have negative eigenvalues (i.e. it is not positive definite or semidefinite). In METHOD=PAIRWISE the frequencies of observations for each pair of observations is saved as PAIRFREQ.M .

```
<A HREF="qmm1_02.html">1 = More information on additional multivariate operations</A>
<A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">CORRTEST DATA1(VAR1,VAR2),DATA2(VAR1,VAR2),L
tests the equality of correlation coefficients in two samples
and
CORRTEST DATA(VAR1,VAR2),L
tests whether the correlation coefficient in one sample is 0.
```

If only sample correlation coefficient(s) and sample size(s) are available, the following alternative forms of CORRTEST can be used:

CORRTEST TWO-SAMPLE,R1,N1,R2,N2,L
tests equality of correlation coefficients R1,R2 from samples of sizes N1,N2, respectively.

CORRTEST ONE-SAMPLE,R,N,R0,L
tests the hypothesis $R=R_0$ from a sample of size N .
Parameters can be given either as numeric constants or through specification like $R1=0.5679$.

In these alternatives the standard test based on Fisher's

z transformation is used. However, in the latter case when $R=0$ the standard t test is used.

CORRTEST DATA1(VAR1,VAR2),DATA2(VAR1,VAR2),L
for Survo data DATA1 and DATA2 (no IND, CASES, SELECT specifications are accepted; see [qa2_01.html](#))
COMPARE
compares correlation coefficients in two samples by using the test statistics $U = [\text{Fisher}(R_1, N_1) - \text{Fisher}(R_2, N_2)] / \sqrt{1/(N_1-3) + 1/(N_2-3)}$ where R_1 and R_2 are sample correlation coefficients, N_1 and N_2 sample sizes, and $\text{Fisher}(R, N) = 0.5 * \sqrt{N-3} * \log[(1+R)/(1-R)]$.
If the samples are from bivariate normal distributions with the same correlation coefficient, U is asymptotically $N(0,1)$ and this approximation is good already for rather small sample sizes.
However, in non-normal cases the normal approximation of U may be poor. Therefore the P value (one-sided test) is calculated also by simulation. Both data sets are standardized (means=0, std.devs=1) and these modified data sets are combined. From this data set of N_1+N_2 observations N_1 pairs of values are taken at random as 'sample' 1 and the other pairs form 'sample' 2. The U value of this randomized pair of samples is computed and the relative frequency of U 's exceeding the original U value is counted while repeating the randomization process.

Maximum number of replicates is given by **SIMUMAX** (default 10000000).
The seed number of the random number generator (either 'rand' or 'urand') is given by **RAND** (default **RAND=rand(123456789)**). See [qv3_01.html](#))
RAND
The process may be interrupted by pressing any key.
The results are displayed after each 100 replicates as a table of the form

N	P	Confidence interval (level=0.95)	
# of replicates	Estimate of P	lower limit	
s.e.	Standard error	upper limit	

The confidence level for P is set by **CONF=p** ($0.8 < p < 1$). Default is **CONF=0.95**

.....
Example:

DATA K1:(X,Y) 3,3 3,4 2,3 3,4 2,2 1,2 5,6 3,2 END
DATA K2:(X,Y) 3,2 5,4 5,2 3,1 2,2 3,4 4,4 2,4 3,2 2,3 END

CORRTEST K1(X,Y),K2(X,Y),CUR+1 / RAND=rand(19962)
Comparing correlation coefficients in 2 samples:
Sample 1: Data K1, Variables X,Y $N_1=8$ $R_1=0.83887$
Sample 2: Data K2, Variables X,Y $N_2=10$ $R_2=0.12069$
Test based on Fisher's z 1.87189 Normal approximation $P=0.0306107$

N	P	Confidence interval (0.95)	
5176600	0.06230228	0.06209407	lower limit
s.e. 0.00010623	0.06251050		upper limit

CORRTEST DATA(VAR1,VAR2),L
tests on the basis of the sample whether the correlation coefficient is 0.
The usage is otherwise similar to the two-sample version.
First the standard test based on the transformation to t distribution is performed.
In the randomized test the values of the second variable are randomly permuted in each replicate.
P values for both 1- and 2-sided tests are computed.

.....
DATA K1:(X,Y) 3,3 3,4 2,3 3,4 2,2 1,2 5,6 3,2 END

CORRTEST K1(X,Y),CUR+1 / RND=rand(19962) **SIMUMAX=1000000**
Testing hypothesis correlation coefficient = 0:
Sample: Data K1, Variables X,Y $N=8$ $R=0.83887$
Standard t test value 3.77492 $P=0.00461763$ (2-tailed $P=0.00923526$)

	1-tailed test	2-tailed test	
N	P	Conf.int. P	Conf.int. (0.95)
1000000	0.01772600	0.01746738	0.02131400 0.02103092 lower limit
s.e.	0.00013195	0.01798462	0.00014443 0.02159708 upper limit

```

<A NAME="AA"></A>
<A HREF="qmm1_02.html">1 = More information on optional multivariate operations</A>
<A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
<A HREF="qa1_01.html">T = More information on statistical tests</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Classical multidimensional scaling (Richardson 1938, Torgerson 1958)

/CSCAL D,m,CSCAL,CSEIGEN,CSCENT,CSDIST
makes classical MDS from a given distance matrix D.

Thus D is a n*n matrix of distances or dissimilarities of
n objects.
m gives the number of dimesions (scales) to be computed.

The results are saved in matrix files as follows:
                                default matrix name
Scale values (n*m)                CSCAL      CSCAL.M
Eigenvalues (1*n)                 CSEIGEN    CSEIGEN.M
Eigenvalues (percentages) (1*n)   CSCENT    CSCENT.M
Reproduced distances (n*n)        CSDIST     CSDIST.M

<A HREF="qmr2_12.html">M = More information on MDS</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">DIST &lt;data&gt;,CENTERS,CUR+1 / CENTER=&lt;list_of_cen
computes the minimal distance of each observation to the closest of the
observations given - by their numbers (indices) - in the CENTER
list.
The distances are computed by using variables activated by 'A's
and the distances are saved as a variable activated by 'D'.
The index of the center closest to an observation is saved as
a variable activated by 'G'.

```

This special form of DIST is used in the /CLARA sucro. See
/CLARA

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">QUANTA &lt;data&gt;,&lt;variable&gt;,k,L
estimates k quanta from the given data set of one variable.

```

Consider a data set x_1, x_2, \dots, x_n where each observation is
an approximate integral multiple of one of positive numbers
 q_1, q_2, \dots, q_k where typically $k=1$ or another small integer.

Our task is to estimate the values of quanta q_1, q_2, \dots, q_k on the
condition that each of them exceeds a certain minimum value q_{\min} .

D.G.Kendall has in his paper "Hunting quanta" (Royal Society of London.
Mathematical and Physical Sciences A 276, 231-266) proposed using a
"cosine quantogram" of the form

$$\phi(q) = \sqrt{2/n} \sum_{i=1}^n \cos(2\pi \cdot \text{eps}(i)/q) \quad (\text{Kendall})$$

where $0 \leq \text{eps}(i) < q$ is the remainder when x_i is divided by q .
The q -values of highest upward peaks of this function will be considered
as candidates for quanta.

Our idea is that the quanta are estimated by a selective, conditional
least squares method where the sum

$$ss(q_1, \dots, q_k) = \sum_{i=1}^n \min[g(x_i, q_1)^2, \dots, g(x_i, q_k)^2] \quad (\text{SLS})$$

where $g(x,q)$ is the least absolute remainder when x is divided by q , is to be minimized with respect of q_1, \dots, q_k on the condition that each q_i is at least q_{\min} .

The default method is SLS.

Then the permitted range of quanta is given by
RANGE=<lower_limit>(<step>)<upper_limit>;
and least possible value of a quant is given by
Q_MIN=<q_min>.

All combinations of values given by RANGE are used as starting values for q_1, \dots, q_k for a minimization process of $ss(q_1, \dots, q_k)$ and it is performed by Powell's conjugate gradient method.

By RES=<quant_number>,<residual>,<coeff>; three extra variables are given for saving corresponding information about the results for each case.

.....
Example:

DATA X: 3 6 7 9 12 14 15 18 21 24 27 28 30 33 35 END

RANGE=2(0.2)8 Q_MIN=2

QUANTA X,X,2,CUR+1

Data: X Variable: X N=15

ss=0

	quant	# matches
1	3.000000	11
2	3.500000	4

By specification METHOD=Kendall the cosine quantogram and its highest peaks are computed.

Then

RANGE=<lower_limit>(<step>)<upper_limit>;
gives values for which $\phi(q)$ is computed. The q and $\phi(q)$ values are save as a Survo data file COSQUANT and QUANTA creates a simple GLOT scheme for plotting the quantogram. Also the highest peaks exceeding a value given by SCORE_MIN will be listed.

.....
Example:

DATA X: 3 6 7 9 12 14 15 18 21 24 27 28 30 33 35 END

METHOD=Kendall RANGE=2(0.0001)8 SCORE_MIN=1.5

QUANTA X,X,0,CUR+1 / The third parameter has no meaning in this case.

Data: X Variable: X N=15

GLOT COSQUANT,quant,score / LINE=1 MODE=SVGA Plot the quantogram!

Peaks of Kendall's Cosine Quantogram:

quant	score
2.3350	1.5076
2.9950	3.2941

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System ">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">SIMPLEX S,M1,M2,M3,L

solves a linear programming problem presented by the matrix file S
with M1+M2+M3 constraints and lists the results from line L
(optional) onwards.

The ordinary simplex algorithm is used.

The solution vector and the values of the M1+M2 slack variables
will be given as results. These vectors are also saved in matrix files
SIMPLEX.M and SLACK.M, respectively.

The Simplex Output Table is saved as matrix file TSIMPLEX.M .

The algorithm has been taken from

Numerical Recipes by Press, Flannery, Teukolsky and Vetterling.

The structure of the problem is given on the next page:

The problem to be solved is:

Maximize

$$Z = A(0,1)*X1 + A(0,2)*X2 + \dots + A(0,N)*XN$$

subject to the primary constraints

$$X1 \geq 0, X2 \geq 0, \dots, XN \geq 0$$

and simultaneously subject to M=M1+M2+M3 additional constraints,

M1 of them of the form

$$A(I,1)*X1 + A(I,2)*X2 + \dots + A(I,N)*XN \leq B(I), B(I) \geq 0, I=1, \dots, M1$$

M2 of them of the form

$$A(I,1)*X1 + A(I,2)*X2 + \dots + A(I,N)*XN \geq B(I) \geq 0, I=M1+1, \dots, M1+M2$$

and M3 of them of the form

$$A(I,1)*X1 + A(I,2)*X2 + \dots + A(I,N)*XN = B(I) \geq 0, I=M1+M2+1, \dots, M$$

The matrix of coefficients S with M+1 rows and N+1 columns has the form

$$\begin{matrix} 0 & A(0,1) & A(0,2) & \dots & A(0,N) \\ B(1) & -A(1,1) & -A(1,2) & \dots & -A(1,N) \\ B(2) & -A(2,1) & -A(2,2) & \dots & -A(2,N) \\ \dots & \dots & \dots & \dots & \dots \\ B(M) & -A(M,1) & -A(M,2) & \dots & -A(M,N) \end{matrix}$$

and it must be saved in a MAT file before activating SIMPLEX.

Example 1:

Maximize $Z = X1 + X2 + 3*X3 - 0.5*X4$ with all the X's non-negative and

also with $X1 + 2*X3 \leq 740$

$$2*X2 - 7*X4 \leq 0$$

$$X2 - X3 + 2*X4 \geq 0.5$$

$$X1 + X2 + X3 + X4 = 9 \quad \text{We have } M1=2, M2=1, M3=1$$

This problem is described and solved by:

1 *

2 *MATRIX S

3 */// C X1 X2 X3 X4

4 *Z 0 1 1 3 -0.5

5 *Z1 740 -1 0 -2 0

6 *Z2 0 0 -2 0 7

7 *Z3 0.5 0 -1 1 -2

8 *Z4 9 -1 -1 -1 -1

9 *

10 *MAT SAVE S / Saving the matrix

11 *SIMPLEX S,2,1,1,12

12 *

Example 2:

B1 B2 B3 B4

Solving a two-person zero-sum game: A1 3 6 1 4

A2 5 2 4 2

A3 1 4 3 5

2 *MATRIX A

3 */// C A1 A2 A3 V

```

4 *C    0 0 0 0 1
5 *B1   0 3 5 1 -1
6 *B2   0 6 2 4 -1
7 *B3   0 1 4 3 -1
8 *B4   0 4 2 5 -1
9 *V    1 -1 -1 -1 0
10 *
11 *MAT SAVE A
12 *SIMPLEX A,4,0,1,END+2 / gives the optimal mixed strategy for player A
13 *MAT B=A' / *B~A' 5*6
14 *MAT DIM B /* rowB=5 colB=6
15 *MAT B(1,colB)=-1
16 *SIMPLEX B,0,3,1,END+2 / gives the optimal mixed strategy for player B

```

```

<A HREF="qm1_01.html">M = More information on mathematical operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Multiple precision computations:

```

Numerical computations can be performed at arbitrarily high precision by two ways:

```

<A HREF="qmp1_02.html">1 = Multiple precision editorial computing</A>
<A HREF="qmp1_04.html">2 = ARIT operations</A>

```

```

<A HREF="qmp1_05.html">3 = Algorithms used in multiprecision calculations</A>

```

```

<A HREF="qm1_03.html">A = More information on editorial computing</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>

```

</BODY>

```

</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  <A HREF="qmp1_01.html">P = More on multiprecision computations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ARIT operations

These operations provide another interface for multiprecision
computing in Survo.

Currently, best information is obtained by activating
LOAD &lt;Survo&gt;\U\D\LONGARIT / English version
LOAD &lt;Survo&gt;\U\D\PITKARIT / Finnish version

  <A HREF="qmp1_01.html">P = More on multiprecision computations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>

```



```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Algorithms used in multiprecision calculations

```

Calculations are done with floating point numbers in base 1000.
The number of significant (decimal) digits may be over one million
and the range of exponents is about (-20000000000,20000000000).
Thus very huge and tiny numbers can be represented:

```

.....
ACCURACY=1000,20
2^(2^1000)=0.3058075504150725262e1964555237
2^(-2^1000)=0.3270030444450113159e-1964555236
2^(2^1000)*2^(-2^1000)=0.999999999999999999

```

The multiplications with long numbers (over 400 digits) are performed
by using FFT (Fast Fourier Transformation) instead of the standard
'Schoolboy' scheme. The latter has computational complexity proportional
to n^2 while FFT multiplication is proportional to $n \cdot \log(n) \cdot \log(\log(n))$
only.

Divisions and square roots are calculated by Newton-Raphson iteration.
Various transcendental functions are computed either from their Taylor's
series expansions (after suitable transformations to speed up
convergence) or by the AGM (arithmetic-geometric mean) technique.

.....
Example: Natural logarithms

The logarithm of 10 is with ACCURACY=50

$\log(10)=0.23025850929940456840179914546843642076011014886287e1$

It is actually computed by the formula

$L(x,m):=\#PI/(2^m \cdot \text{agm}(1,4/x^m))$

giving

$L(10,26)=0.23025850929940456840179914546843642076011014886287e1$

.....
Above #PI is the universal constant =3.14159265... computed and saved
permanently in file <Survo>\U\SYS\#PI.NBR with at least 100000 digits
by the command

ARIT PI,#PI / ACCURACY=100000 .

Parameter m should exceed ACCURACY/2.

$\text{agm}(x,y)$ is the arithmetic-geometric mean of numbers x and y, i.e.
obtained as a limit of the following iteration:

Let $x(0)=x$, $y(0)=y$.

Iteration step from n to n+1:

$x(n+1)=[x(n)+y(n)]/2$ arithmetic mean

$y(n+1)=\text{sqrt}[x(n) \cdot y(n)]$ geometric mean

References:

David H. Bailey: A Portable High Performance Multiprecision Package.
RNR Technical Report RNR-90-022 (1993)

Richard P. Brent: Fast Multiple-Precision Evaluation of Elementary Functions.
Journal of the ACM, Vol.23, No.2, April 1976, pp.242-251.

Donald E. Knuth: The Art of Computer Programming, Vol.2.
Addison Wesley, 1981.

```

    <A HREF="qmp1_01.html">P = More on multiprecision computations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```

```

    <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
    -->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>

```

```

<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">/CONTFRAC X,n,&lt;accuracy>
calculates n+1 first terms a0,a1,...,an of the continued fraction
presentation

```

$$X = a_0 + \frac{1}{a_1 + \frac{1}{a_2 + \frac{1}{a_3 + \dots}}}$$

of a positive real number X using multiple precision editorial computing (see MULTIPLE?) with accuracy of <acc> significant decimal numbers. Default values are n=20, <acc>=1000. Also 10 first convergents (as ratios) are computed for X.

```

    <A HREF="qm1_01.html">A = More on mathematical operations</A>
    P = More on multiprecision computations
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```

```

    <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
    -->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>

```

```

<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&

```

<P><PRE CLASS="HelpText">A MAT chain can also be saved on disk as text file (by SAVEP, for example) and activated by a MATRUN command.

For example,

MATRUN PCOMP,X,3

executes a PCOMP chain with parameters X (name of data matrix) and

3 (number of principal components). PCOMP refers here to a text file

PCOMP.MTX which by default is located in the <Survo>\U\M subdirectory of Survo. In the PCOMP file notations %1,%2,... are used for parameters.

In the preceding example %1 will be replaced by X and %2 by 3.

You may get information on a particular MATRUN chain by activating MATRUN PCOMP?

The INDEX field in the <Survo>\U\M subdirectory lists all standard MATRUN chains. Many tasks related to multivariate statistical analysis and linear models may be carried out by these MATRUN chains.

In many cases, programming of MAT chains is not anymore the best way to make sequences of matrix operations.

The same tasks are accomplished simpler by sucros using MAT operations (see SUCRO?)

M = More information on matrix operations

S = More information on multivariate statistical operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText"> 1 = Grouping of observations by clustering

2 = Aggregating observations (FILE AGGRE)

3 = Grouping observations in bar charts (GROUPING specification)

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

```

<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Cluster analysis

    <A HREF="qmr1_04.html">1 = Statistical clustering by the Wilks' lambda criterion (CLUSTER)</A>
    <A HREF="qmm1_15.html">2 = Hierarchical methods (small data, dendrograms) (HCLUSTER)</A>
    <A HREF="qmr1_06.html">3 = Clustering by using medoids (DCLUSTER)</A>
    <A HREF="qmr1_06.html">4 = (Generalized) single linkage (large data) (DCLUSTER)</A>

    <A HREF="qmr2_01.html">M = More information on multivariate statistical operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">CLUSTER &lt;data_file&gt;,L
performs cluster analysis on the selected variables and observations
of the Survo &lt;data_file&gt;.
The clustering criterion is Wilks' lambda and the stepwise procedure
for efficient computation of lambda values is based on the algorithm
presented by Pekka Korhonen in his doctoral dissertation "A stepwise
procedure for multivariate clustering", Computing Centre, University
of Helsinki, Research Reports N:o 7, Helsinki 1979.
In the CLUSTER module, the dual procedure of Korhonen's stepwise
method is applied.
For general information on cluster analysis, see e.g.
M.R.Anderberg: "Cluster Analysis for Applications", Academic Press,
New York and London, 1973.

The active observations of &lt;data_file&gt; are defined by IND and CASES
specifications.
The variables used in the analysis are all active variables in
&lt;data_file&gt;, except those activated by 'G' or 'I'.

The stepwise clustering procedure is always based on some initial
grouping of observations. The user has to give the number (g) of clusters
by the GROUPS=g specification. GROUPS=2 is the default.
The initial grouping is given by a variable activated by 'I' and the
values of this variable must be integers 1,2,...,g. If the initial
grouping of observations is not given (no mask 'I' exists), a random
initial grouping based on uniform distribution over 1,2,...,g is applied
automatically.
The initial grouping (defined by the 'I' mask variable) can also be
incomplete (with missing values or values outside the permitted ones
1,2,...,g). In this case it is assumed that the user has indicated

```

at least one observation in each group. Then, the initial grouping will be selected on this basis by using the "nearest neighbour" principle in the standardized data matrix X (with the property $X'X=I$).

The main result of CLUSTER is the optimal clustering based on the Wilk's lambda criterion and it is saved in the first variable of <data_file> activated by 'G'.

If more 'G' variables exist, the CLUSTER module will save as many of the best solutions found, provided that a specification TRIALS=n where n is >1 is given.

The possibility for several trials is important in more complicated cases where different initial groupings may lead to different solutions.

Other options in CLUSTER:

There are no limits for the size of the data file. The highest number of variables and groups depends on the available memory space. However, it is seldom reasonable to use more than 10-20 variables in one cluster analysis.

To speed up the iterative process where the data values are scanned several times, CLUSTER saves the active part of the data set in a special file SURVO.CLU on the path of the temporary files (defined by the line tempdisk in SURVO.APU).

This file (path) can be replaced by another (on a RAM disk, for example) by giving a specification TEMPFILE=<filename>.

In randomizations for initial groupings, the seed number of the random number generator is selected according to current time.

To use a fixed generator (in order to have the possibility to repeat an experiment), a specification of the form SEED=<integer> can be given.

Example:

Two samples from bivariate normal distribution with different means but same covariance matrix are generated:

.....
FILE CREATE N2,32,10,64,7,100

FIELDS:

1 N 4 X

2 N 4 Y

END

VAR X,Y TO N2

X=if(ORDER<51)then(X1)else(X2) Y=if(ORDER<51)then(Y1)else(Y2)

X1=Z1 Y1=r*Z1+s*Z2 r=0.8 s=sqrt(1-r*r)

X2=Z1+2 Y2=r*Z1+s*Z2-2

Z1=probit(rnd(2)) Z2=probit(rnd(2))

.....
VAR G1:1,G2:1,G3:1 TO N2

G1=0 G2=0 G3=0

.....
(Continued on next page)

(Example continued)

The CLUSTER operation with 10 trials, 2 groups, and random number generator 2 gives two different solutions:

MASK=AAGGG TRIALS=10 GROUPS=2 SEED=2

CLUSTER N2,CUR+1

Stepwise cluster analysis by Wilks' Lambda criterion

Data N2 N=100

Variables: X, Y

Best clusterings found in 10 trials are saved as follows:

Lambda	freq	Grouping	var
--------	------	----------	-----

0.04496	6	G1	
---------	---	----	--

0.14945	4	G2	
---------	---	----	--

.....
The result can be checked by plotting the graph:

GPLOT N2,X,Y / HEADER=Samples_from_bivariate_normal_distributions
POINT=G1 (G2 gives the inferior clustering)

.....
C = More information on cluster analysis

M = More information on multivariate analysis

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText"> C = More information on cluster analysis

M = More information on multivariate analysis

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">DCLUSTER <data>,<distance_matrix>,L
performs cluster analysis by different methods.

By default it is done by means of 'medoids'.

This technique is presented by Kaufman and Rousseeuw in 1987.

See their book 'Finding Groups in Data' (Wiley 1990).

It seems to be more robust than the standard k-means method.

The computations in DCLUSTER are based entirely on a ready-computed
<distance_matrix> (obtained in Survo by the DIST operation, for
example) from Survo <data>.

The number of clusters is given by specification GROUPS.

Default is GROUPS=2. The group indices 1,2,... are saved in <data>.

as a variable given by mask 'G' and the (optional) 'silhouette'
as values of variable with mask 'S'.

The greatest possible number N of observations depends on the size of the central memory of the computer (N×N distance matrix has to be present). For example, in a 64MB memory N is about 2500. However, to large data (say, more than 1000 observations) the medoid method can be applied by taking random samples. This technique is supplied by the /CLARA sucro.

DCLUSTER <data>,<distance_matrix>,L
with specification METHOD=3 makes cluster analysis
by the single linkage (nearest neighbour) method.
The setup is otherwise similar as described above.
To avoid certain weaknesses of this method like
the chaining effect the distance between two groups
of sizes n1 and n2 is multiplied by
 $1 + \text{weight} * [\log_2(\min(n1, n2) + 1) - 1]$ (suggestion of S.M. 1998)
by using the specification WEIGHT=weight. Default is WEIGHT=0
(i.e. standard single linkage) but WEIGHT=1 is recommended.

In METHOD=3 an initial grouping 1,2,... (obtained by methoids)
can be given by (another) grouping variable given by
INIT=<name_of_variable>.

In practice, when the expected number of cluster is, say, 2 or 3
one may start by creating the medoid solution with, say, 10 groups
and then the final solution is found by METHOD=3 with WEIGHT=1
on the basis of this preliminary 10 group solution.

C = More information on cluster analysis
M = More information on multivariate analysis

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi
</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Multivariate statistical analysis in Survo

1 = General information

2 = Principal components (/PCOMPR, /PCOMPCOV)

3 = Factor analysis (FACTA, MATRUN PFACT, ROTATE)

4 = Correspondence analysis (CORRESP)

5 = Canonical correlations (CANON, /CANCORR, MATRUN CANON)

6 = Discriminant analysis (DISCR, /DISCRI)

7 = Cluster analysis (CLUSTER, HCLUSTER, DCLUSTER, /CLARA)

8 = Computing distance or dissimilarity measures (DIST, DISTV)

9 = Multidimensional scaling (/CSCAL, LSCAL)

P = Plotting multivariate data

A = Additional operations and sucros on multivariate analysis

D = Knowledge DISCOvery tools for Survo (R.Sund)

```

<A HREF="q21_01.html">S = More information on statistical analysis</A>
<A HREF="qmr1_01.html">M = MATRUN operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Many of the multivariate statistical operations are working under the
control of the Survo matrix interpreter.
Hence the input data sets have to be converted to matrix (MAT) files
before activating such an operation.
In many cases, also correlation matrices, factor matrices as well as
other intermediate results obtained as matrix files are used as input in
multivariate methods.

In addition to the normal textual output, the multivariate operations
give their main results as matrix files which then again may serve as
input in later operations.
Some of these output matrices consist of weighting coefficients
and are employed for computing various linear combinations of original
variables by the LINCO operation. Thus LINCO is the main link back to
data files.

<A HREF="qmr2_03.html">I = Input data sets for multivariate analysis</A>
<A HREF="q0e_06.html#MATRES">O = Output files (intermediate results in matrix form)</A>
<A HREF="qmr2_04.html">D = Converting matrices to Survo data files</A>
<A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>

```



```

<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">When original data (instead of correlations, for example) is needed
as input for a multivariate operation, it has to be converted (from
a data list, table or file) to a matrix file by the
MAT SAVE DATA &lt;Survo data&gt; TO &lt;MAT file&gt;
operation.
Observations and variables may be selected by the standard means of
Survo (i.e. by specifications IND, CASES, SELECT, VARS, MASK).

  <A HREF="qm3_03.html">D = MAT SAVE DATA operation</A>
  <A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Results obtained by matrix operations always a matrix files.
Any matrix file can then be copied back to a data file by a
FILE SAVE MAT &lt;matrix_file&gt; TO &lt;data_file&gt;
operation (inverse for MAT SAVE DATA operation).
Another (and more common) alternative is to let the matrix represent
a linear mapping of existing variables in a data file. Then the
LINCO operation for making linear combinations of variables should
be used.

  <A HREF="qv4_01.html">L = LINCO (for linear combinations of variables)</A>
  <A HREF="qm7_01.html">F = FILE SAVE MAT operation</A>
  <A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```

</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  See <A HREF="q04_15.html">INDEX</A> in the M subdirectory of Survo.
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Principal components analysis:

```

At first compute the correlation matrix CORR.M and the matrix of means and standard deviations MSN.M by the command
 CORR <data>;
 Then the principal components can be computed from the correlation matrix by the sucro command
 /PCOMPR CORR.M,MSN.M,m
 where m gives the number of principal components to be computed.

If the principal components are to be computed from the COVARIANCE matrix then the sucro command
 /PCOMPCOV CORR.M,MSN.M,m
 should be used.

More information is obtained by activating
 /PCOMPR ?
 /PCOMPCOV ?

```

  <A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">

```

```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Discriminant analysis:

```

```

    <A HREF="qw6_01.html">1 = DISCR operation (by M.Korhonen)</A>
    <A HREF="qmr2_08.html">2 = /DISCRI operation</A>
    <A HREF="qmm1_06.html">3 = Classifying of observations (CLASSI)</A>
    <A HREF="qkv0_05.html">4 = /DCONTOUR for plots of discriminant space (by K.Vehkalahti)</A>
    <A HREF="qmr2_01.html">M = More information on multivariate analysis</A>

```

For MATRUN DISCR, see INDEX in the M subdirectory of Survo

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Multiple dicriminant analysis by sucro /DISCRI:

```

At first compute the correlations as well as the means and the standard deviations for each group separately by the CORR command and rename the matrix files CORR.M and MSN.M by commands of type
 MAT Ri=CORR.M
 MAT Mi=MSN.M
 separately for each group i=1,2,...

Thereafter activate
 /DISCRI
 without parameters but with specifications
 CORR=R1,R2,R3,...
 MSN=M1,M2,M3,...

```

    <A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
  </PRE></P><HR>
  <DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

```

```

<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">CANON &lt;data&gt;,L
computes canonical correlations and variables for two sets of variables.
The first set (X variables) should be denoted by 'X' masks and the
second set (Y variables) by 'Y' masks.
IND and CASES specifications are allowed for selecting observations.

```

CANON gives the results from line L (optional) onwards. Furthermore the following matrix files are produced by CANON:

```

LCAN.M  vector of canonical correlations
XCAN.M  correlations of canonical variables with X variables
YCAN.M  correlations of canonical variables with Y variables
XCOEFF.M coefficients for the first set of canonical variables
YCOEFF.M coefficients for the second set of canonical variables

```

Values of canonical variables can be computed afterwards by using XCOEFF.M and YCOEFF.M in the LINCO operation.
For example, LINCO <data>,XCOEFF.M(C1,C2).

The calculations needed are based on orthogonalized data matrices (not on correlations).
For educational purposes (showing usage of MAT operations) also a sucro /CANCORR is available. To see its usage, activate /CANCORR without parameters.

Optionally confounding variables, whose effects on X and Y variables are removed by linear regression, may be included. Confounding variables are to be activated by 'Z'. All the results obtained then from CANON are related to the transformed X and Y data sets.

CANON creates several work matrices (names initiated by &). These are automatically deleted, unless RESULTS=100 is given. All the work matrices are on the current data disk.

The MATRUN operations CANON2 and CANON3 work on the same basis as CANON. See e.g.

MATRUN CANON2?

```

<A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```

</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">DISCO &lt;data&gt;,&lt;output line&gt; / Reijo Sund 200
Knowledge DISCOvery tools for Survo
Performs some data mining operations on active string
variables in &lt;data&gt;. The order of variable blocks must
be specified by BLOCKORDER=&lt;activation letters&gt; and the
operation method by METHOD=&lt;EXTRACT,REMAP,FIND&gt;. The upper
limit of different boolean items in variables can be given
by MAXITEMS=&lt;number of items&gt;.

```

EXTRACT-method scans through data and counts the occurrences of different items in variables. The items are written to a text file if the output file is specified by ITEMOUTFILE=<file>.

Using REMAP-method it is possible to "rename" the items in data. However, the original data is not altered - the name for output (text) file must be given by REMAPOUTFILE=<file>. The remapping rules - of the same form as EXTRACT-method's output - are specified by REMAPFILE=<file>.

FIND-method performs level-wise frequent itemset counting for boolean items (See e.g. Han & Kamber (2001): Data Mining: Concepts and Techniques, chap. 6). The minimum frequency threshold can be specified by MINFREQ=<threshold frequency>. The results are written to a text file if specification FREQOUTFILE=<file>. The ITEMOUTFILE-specification can be used as in EXTRACT-method.

```

    <A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Computing distance or dissimilarity measures
used in multidimensional scaling and cluster analysis,
for example.

    <A HREF="qmm1_10.html">1 = Distance matrix of active observations (DIST)</A>
    <A HREF="qmm1_11.html">2 = Distance matrix of active variables (DISTV)</A>
    <A HREF="qmr2_01.html">M = More information on multivariate analysis</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>

```

```

</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Multidimensional scaling:

  <A HREF="qmm2_02.html">1 = Classical multidimensional scaling (/CSCAL)</A>
  <A HREF="qmm1_07.html">2 = Least squares scaling (LSCAL)</A>
  <A HREF="qmm3_01.html">3 = Hunting quanta (QUANTA)</A>
  <A HREF="qmr2_01.html">M = More information on multivariate analysis</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Factor analysis:

  <A HREF="qmr3_02.html">G = General information</A>
  <A HREF="qmr3_03.html">S = Sucro /FACTOR for automatic solutions</A>

  <A HREF="q21_03.html">1 = Correlations (CORR)</A>
  <A HREF="qmr3_05.html">2 = Extraction of initial factors (FACTA, MATRUN PFACT)</A>
  <A HREF="qmr3_08.html">3 = Rotation (ROTATE)</A>
  <A HREF="qmr3_21.html">4 = Factor scores (/FCOEFF, /FTCOEFF, LINCO)</A>

  <A HREF="qkv3_01.html">5 = Reliability of factor images and measurement scales (RELIAB) /KMO</A>
  <A HREF="qmr3_22.html">6 = Transformation analysis (/TRAN-README)</A>

  <A HREF="qmr3_23.html">7 = Enhanced displays of factor matrices (/LOADFACT)</A>

  <A HREF="qmr2_01.html">M = More information on multivariate analysis</A>

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">  Factor analysis can be performed in following steps:

```

- 1) Compute the correlations of selected variables and observations by the CORR operation.
This gives the correlation matrix CORR.M and the matrix MSN.M of means and standard deviations.
The correlation matrix can be loaded by the sucro command /LOADCORR
The significant correlations are then highlighted.
More information by activating /LOADCORR ?
- 2) If you like to save these results more permanently, copy them by
MAT R=CORR.M
MAT M=MSN.M
for example.

Factor analysis (continued)

- 3) Initial solution:
Select the number of factors (say k) and activate
FACTA CORR.M,k,L
This gives the maximum likelihood solution as the factor matrix FACT.M with k factors. The result is written from line L onwards.

Another alternative is:
MATRUN PFACT,R,k
gives the principal axes solution as factor matrix PFACT.M .
The difference in estimated and computed communalities is displayed and the computed communalities are placed on the diagonal of R.
MATRUN PFACT,R,k can be reactivated several times until the process has converged.
The communalities and efficiencies of the factors can be computed afterwards by MATRUN SUM2,PFACT.M

Factor analysis (continued)

- 4) To rotate the maximum likelihood solution FACT.M (or the principal axes solution PFACT.M), activate
ROTATE FACT.M,k
This gives the Varimax solution AFACT.M and the corresponding rotation matrix TFACT.M with k factors.
Other methods (graphical rotation etc.) can be selected by the ROTATION specification (See ROTATE?).
The communalities and efficiencies of the factors can be computed

(also) afterwards by MATRUN SUM2,AFACT.M .

The (rotated) factor matrix is displayed in a more legible form by
/LOADFACT
More information by activating
/LOADFACT ?

Factor analysis (continued)

5) The factor scores are computed in two steps.

At first the factor score coefficients are computed by
/FCOEFF,AFACT.M,MSN.M .

This gives the matrix of coefficients FCOEFF.M .

If an oblique rotation has been used, the loadings for the factor
scores are computed by /FTCOEFF,AFACT.M,TFACT.M,MSN.M .

6) Finally, factor scores are obtained by

LINCO <data>,FCOEFF.M(F1,F2,...)

where <data> is the original (or corresponding) Survo data (file)
and F1,F2 are (possibly new) variables for factor scores.

Thereafter the factor scores can be analyzed like any other data
in Survo.

F = More information on factor analysis

M = More information on multivariate analysis

S = More information on statistical analysis

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">/FACTOR <data>

This survo performs the steps of factor analysis automatically by
using all active variables and observations in Survo data (file) <data>.

/FACTOR computes the correlations, determines a suitable number of

factors by inspecting the eigenvalues of the correlation matrix,

finds the initial solution by the maximum likelihood method, and

performs the factor rotation by the Varimax method.

By entering suitable specifications, selection of default settings can
be altered.

For more information on /FACTOR, activate it without parameters.

For example,

MASK=--AAAAAAAAAA ROTATION=OBLIMIN RESULTS=100

/FACTOR DECA

makes the analysis with 10 active variables of DECA. In rotation, the
oblique Oblimin solution is used and maximal amount of results is
given.

F = More information on Factor analysis


```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="qmr3_01.html">F = More information on Factor analysis
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Factor analysis: Extraction of initial factors
  <A HREF="qmr3_07.html">1 = Maximum likelihood solution (FACTA)</A>
  <A HREF="qmr3_07.html">2 = Unweighted least squares solution, Minres (FACTA with METHOD=GLS)
  <A HREF="qmr3_07.html">3 = Generalized least squares solution (FACTA with METHOD=GLS)
  <A HREF="qmr3_06.html">4 = Iterative least squares, Minres (MATRUN PFACT)</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>

```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">MATRUN PFACT,R,k
gives the principal axes solution as factor matrix PFACT.M .
The difference in estimated and computed communalities is displayed
and the computed communalities are placed on the diagonal of R.
MATRUN PFACT,R,k can be reactivated several times until
the process has converged.
The communalities and efficiencies of the factors can be computed
afterwards by MATRUN SUM2,PFACT.M
  <A HREF="qmr3_01.html">F = More information on Factor analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FACTA &lt;correlation_matrix>,&lt;number_of_factors>,L
computes the factor matrix according to the maximum likelihood (ML)
principle. The algorithm presented by K.G.J reskog is employed.
(See e.g. Chapter 7 in 'Statistical Methods for Digital Computers',
Volume III, edited by Enslein, Ralston and Wilf, Wiley 1977.)
Other estimation principles can be selected by
  METHOD=ULS (Unweighted Least Squares, corresponding to the Minres
              method of Harman or the MATRUN PFACT routine),
  METHOD=GLS (Generalized Least Squares).
Thus, the default is
  METHOD=ML (Maximum likelihood).

Appropriate statistics for testing the number of factors can be obtained
by giving the specification N=&lt;number of observations>,.
The results will be displayed from the (optional) line L onwards.
The factor matrix is saved in the matrix file FACT.M .

  <A HREF="qmr2_01.html">M = More information on multivariate methods</A>
  <A HREF="q21_01.html">S = More information on statistical analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--

```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ROTATE <factor_matrix>,<number_of_factors>;L / RC
with an optional ROTATION specification makes an orthogonal or oblique
factor rotation.

  <A HREF="qmr3_09.html">A = General information</A>
  <A HREF="qmr3_11.html">B = Varimax rotation (default)</A>
  <A HREF="qmr3_12.html">C = Jennrich's CLF rotation (orthogonal case)</A>
  <A HREF="qmr3_13.html">D = Jennrich's CLF rotation (oblique case)</A>
  <A HREF="qmr3_14.html">E = Jennrich's CLF rotation (orthogonal case, ENTROPY criterion)</A>
  <A HREF="qmr3_15.html">F = Graphical rotation (orthogonal and oblique)</A>
  <A HREF="qmr3_16.html">G = Cosine rotation (oblique)</A>
  <A HREF="qmr3_17.html">H = Oblimin rotation (oblique)</A>
  <A HREF="qmr3_18.html">I = Quartimax rotation (orthogonal)</A>
  <A HREF="qmr3_19.html">J = Quartimin rotation (oblique)</A>

  <A HREF="qmr3_20.html">W = Weights of variables</A>

  <A HREF="qmr3_01.html">M = More information on factor analysis</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
  <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
  <META NAME="Generator" CONTENT="SURVO MM">
  <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
  <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
  <META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
  <META NAME="Classification" CONTENT="help system">
  <META NAME="Keywords" CONTENT="Survo, help, hypertext">
  </HEAD>
  <BODY>
  <H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
  <P><PRE CLASS="HelpText">ROTATE <factor_matrix>,<number_of_factors>;L
  with an optional ROTATION specification makes an orthogonal or oblique
  factor rotation.
  The following results are obtained as matrix files:
    AFACT.M Rotated factor matrix A
    TFACT.M Rotation matrix T
    RFACT.M Factor correlation matrix R
```

If RESULTS<=70, only A will be written to the edit field (from line L).
Otherwise, also T and R are printed to the edit field.

In case of an orthogonal rotation, $A = F \cdot T$ ($F = \text{factor matrix}$) and in an oblique rotation $A = F \cdot \text{INV}(T)$.
 Optionally, an initial rotation matrix can be given by $T = \text{matrix_file}$.
 Thus results of automatic rotations can be used as starting points for a more subjective graphical solution.

[1](qmr3_08.html) = More information about ROTATE

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
    <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
    <META NAME="Generator" CONTENT="SURVO MM">
    <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
    <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
    <META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
    <META NAME="Classification" CONTENT="help system">
    <META NAME="Keywords" CONTENT="Survo, help, hypertext">
  </HEAD>
  <BODY>
    <H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
    <P><PRE CLASS="HelpText">
      <A HREF="qmr3_08.html">1 = More information about ROTATE</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
    <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
    <META NAME="Generator" CONTENT="SURVO MM">
    <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
    <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
    <META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
    <META NAME="Classification" CONTENT="help system">
    <META NAME="Keywords" CONTENT="Survo, help, hypertext">
  </HEAD>
  <BODY>
    <H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
    <P><PRE CLASS="HelpText">ROTATE <math>F \cdot T</math>, <math>F \cdot \text{INV}(T)</math>, L / ROTATE
    makes the standard orthogonal Varimax rotation.
    Reference:
    Kaiser, H. F. (1958). The varimax criterion for analytic rotation in
    factor analysis. Psychometrika, 23, 187-200.

    <A HREF="qmr3_08.html">1 = More information about ROTATE</A>

</PRE></P><HR>

```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ROTATE <math>\mathbf{L} = \mathbf{R} \mathbf{A} \mathbf{L}^T</math> / ROTATE
makes Jennrich's orthogonal CLF (Component Loss Function) rotation using
the Linear Right Constant (b) criterion. Default value of b is 0.3.
See
Jennrich, R.I. (2004). Rotation to simple loadings using component
loss functions: The orthogonal case. Psychometrika, 69, 257-273.
<A HREF="http://preprints.stat.ucla.edu/402/revision.pdf">http://preprints.stat.ucla.edu/402/revision

  <A HREF="qmr3_08.html">1 = More information about ROTATE</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ROTATE <math>\mathbf{L} = \mathbf{R} \mathbf{A} \mathbf{L}^T</math> / ROTATE
makes Jennrich's oblique (simple linear) CLF rotation, i.e.
the sum of absolute values of rotated loadings is minimized.
See
Jennrich, R.I. (2004). Rotation to simple loadings using component
loss functions: The oblique case. (To appear in Psychometrika)
<A HREF="http://preprints.stat.ucla.edu/403/revision5.pdf">http://preprints.stat.ucla.edu/403/revisio

  <A HREF="qmr3_08.html">1 = More information about ROTATE</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

```

```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ROTATE <math>\text{factor\_matrix}</math> L / ROTATE
makes Jennrich's orthogonal CLF rotation using the entropy criterion.
See
Jennrich, R.I. (2004). Rotation to simple loadings using component
loss functions: The orthogonal case. Psychometrika, 69, 257-273.
<A HREF="http://preprints.stat.ucla.edu/402/revision.pdf">http://preprints.stat.ucla.edu/402/revision
  <A HREF="qmr3_08.html">1 = More information about ROTATE</A>

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>
</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ROTATE <math>\text{factor\_matrix}</math> L / ROTATE
makes graphical rotations in a Survo graphics window.
Both orthogonal and oblique rotations can be performed as a sequence of
two-dimensional rotations.
Actions can be controlled either by the mouse or by the keyboard.

```

At first the orthogonal procedure is suggested and Varimax and Quartimax criteria can be used as an aid in selection of proper rotation angles.

When necessary, the user can proceed to the oblique case by 'O' and indicate the new positions of the selected axes stepwise by the mouse.

Rotation angles are indicated by the mouse.

Rotation takes place by 'R' or by clicking by the right-most mouse button.

The variables are shown as vectors (D) or as points (P) or

by their labels (L). 'D', 'P', and 'L' are on/off buttons.
 Next pair of axis is selected either by 'N' or by clicking the graph
 in any place close to the center.
 Graphical rotation is terminated by 'X' and cancelled by 'C'.

ROTATION=GRAPHICAL,<string_of_characters_OPLD>
 Graphical rotation with user-defined setting of options
 O,P,L,D described on the previous page.
 ROTATION=GRAPHICAL,LD is the default setting.

Options according to principles suggested by Lauri Tarkkonen:
 FSHOW=<matrix_file> gives a vector indicating which variables will
 be visible (value 1) and which will be invisible (value 0) in displays
 of the factor space. This feature makes displays clearer when the
 number of variables is high.

EXTERNAL=<matrix_file> gives loadings of external variables to be
 shown (in gray) in displays. Showing of external variables helps
 the user in selecting rotations to directions given by this extra
 information.

A setup including these options can be created by /EXTFACTA. See
 /EXTFACTA ?

[1](qmr3_08.html) = More information about ROTATE

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo.fi>

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">ROTATE <factor_matrix>,<#_of_factors>,L / ROTATI

makes the oblique Cosine rotation of Ahmavaara and Markkanen by
 Mustonen's determinant criterion and algorithm. Let r be the number of
 factors. The r new factor axes will coincide with the r most orthogonal
 original variables in the factor space. The solution is found by
 maximizing the 'volume' of the simplex spanned by r variables. Parameter
 min_h2 gives the lowest limit for the communality of a factor variable.
 Default is 0.3 .

The algorithm is described in

Mustonen, S. (1999). Matrix computations in Survo. Proceedings of the
 Eighth International Workshop on Matrices and Statistics, Department of
 Mathematical Sciences, University of Tampere.

http://www.survo.fi/papers/Matrix_computations_in_Survo.pdf

[1](qmr3_08.html) = More information about ROTATE

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo.fi>

</BODY>

```

</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ROTATE <math>\cos(\theta) = \frac{1}{\sqrt{2}}\sqrt{1 + \Delta}</math>
makes the direct Oblimin rotation (oblique) by Jennrich and Sampson
(Harman: Modern Factor Analysis, 2nd ed., pp.334-341).
Parameters Delta and Max_iter are optional.
Delta determines how oblique the factors will be.
Delta=0 (default) gives the most oblique factors.
On negative values of Delta, factors become more orthogonal.
Max_iter (default 30) gives the maximum number of iteration rounds.
Reference:
Jennrich, R.I. and Sampson, P.F. (1966). Rotation for simple loadings.
Psychometrika, 31, 313-323.
See also Harman: Modern Factor Analysis, 2nd ed., pp.334-341.

  <A HREF="qmr3_08.html">1 = More information about ROTATE</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ROTATE <math>\cos(\theta) = \frac{1}{\sqrt{2}}\sqrt{1 + \Delta}</math>
makes the orthogonal Quartimax rotation.
Reference:
Neuhaus, J. O. & Wrigley, C. (1954). The quartimax method: An analytical
approach to orthogonal simple structure. British Journal of Statistical
Psychology, 7, 81-91.

  <A HREF="qmr3_08.html">1 = More information about ROTATE</A>

```



```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">ROTATE <factor_matrix>,<#_of_factors>,L / ROTATION
makes the oblique Quartimin rotation.
Reference:
Carroll, John.B. (1953). An analytical solution for approximating
simple structure in factor analysis. Psychometrika, 18, 23-38.
See also Harman: Modern Factor Analysis, 2nd ed., pp. 318-324.

```

1 = More information about ROTATE

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">In certain rotation methods the original variables can be weighted
e.g. in order to give more importance to selected variables.
The weights are entered by the specification WEIGHTS=<matrix file>;
giving a column vector of weights.

```

The WEIGHTS specification is currently available in the three Jennrich's CLF rotations since any component loss function of the form

$$f(L) = \sum_{i,j} h[L(i,j)]$$

where $L(i,j)$'s are rotated loadings can be generalized to form

$$fw(L) = \sum_{i,j} w(i) * h[L(i,j)]$$

where $w(i)$'s are weights of variables. Default: All weights = 1.
The weighting option is not presented in Jennrich's papers.

[1](qmr3_08.html) = More information about ROTATE

More information on Survo from <http://www.survo.fi>

!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

META NAME="Generator" CONTENT="SURVO MM">

TITLE>SURVO MM Help System (web edition)</TITLE>

LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

META NAME="Description" CONTENT="SURVO MM Help System (web edition)</TITLE>

META NAME="Classification" CONTENT="help system">

META NAME="Keywords" CONTENT="Survo, help, hypertext">

H1>&

P><PRE CLASS="HelpText">Factor analysis: Factor scores

The factor scores are computed in two steps.

At first the factor score coefficients are computed by

/FCOEFF AFACT.M,MSN.M .

MSN.M is the matrix of means and stddevs obtained by CORR.

This gives the matrix of coefficients FCOEFF.M .

If an oblique rotation has been used, the loadings for the factor scores are computed by

/FTCOEFF AFACT.M,TFACT.M,MSN.M .

Finally, factor scores are obtained by

LINCO <data>,FCOEFF.M(F1,F2,...)

where <data> is the original (or corresponding) Survo data (file)

and F1,F2 are (possibly new) variables for factor scores.

Thereafter, the factor scores can be analyzed like any other data in Survo.

[F](qmr3_01.html) = More information on Factor analysis

More information on Survo from <http://www.survo.fi>

!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

META NAME="Generator" CONTENT="SURVO MM">

TITLE>SURVO MM Help System (web edition)</TITLE>

LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Transformation analysis for factor solutios: /TRAN sucro family

```

Computing transformation and residual matrices:
 /TRAN-LEASTSQ ? / Ahmavaara's original analysis
 /TRAN-SYMMETR ? / Mustonen's symmetric analysis

Computing standard errors of residuals by simulation:
 /TRAN-LSTRES / Ahmavaara's original analysis
 /TRAN-SYMTRES / Mustonen's symmetric analysis

Computing sums of squares of residuals for each variable
 in symmetric analysis by simulation:
 /TRAN-SYMTRESV / Sums of squares of residuals
 /TRAN-VARRES / P values of them estimated from simulated data

```

  <A HREF="qmr3_01.html">F = More information on Factor analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">/LOADFACT &lt;data_file&gt;,&lt;rotated_factor_matrix&gt;
writes the rotated factor matrix in the edit field according to
Lauri Tarkkonen's style by using the LOADM operation with
certain extra specifications (See <A HREF="qm3_05.html#LOADM2">LOADM2</A>? for more de
&lt;data_file&gt; is the original data file wherefrom the factor
analysis has been carried out. It is needed only for writing
longer descriptions of variables. Default is -1 (no data file).
&lt;rotated_factor_matrix&gt; is AFACT.M by default.

  <A HREF="qmr3_01.html">F = More information on Factor analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">CORRESP <data>,L
performs a correspondence analysis on a table (of frequencies) saved
as a Survo data set. The rows are the active observations (chosen by
IND, CASES, and SELECT specifications) and the columns are the variables
activated by 'A's.

```

The extent of results is determined by activating more variables by other mask characters. For example, the row coordinates are saved in variables activated by 'C's. The corresponding column coordinates are saved in a matrix file CR_COORD.M .

In summary, the results are selected as follows:

Mask Task	Matrix file for
C Row coordinates	CR_COORD.M Column coordinates
S Supplementary columns	CR_SUPPC.M Column coordinates
u U from SVD	CR_V.M V from SVD
	CR_EIGEN.M D^2 from SVD
a Absolute contributions	CR_CONTR.M for columnwise contributions
s Squared correlations	CR_CORR2.M for columnwise squared corr.s
r Residuals of the original table	
m Mass (one variable)	CR_MDIST.M 1st column
d Chi^2 distance	CR_MDIST.M 2nd column

Above, SVD stands for the singular value decomposition $A=UDV'$ of matrix $A=E_m*F*E_n$

where F is the original m x n matrix, E_m is a diagonal matrix with the inverse square roots of the row sums as diagonal elements and E_n is similarly related to the column sums.

Supplementary cases (rows) are indicated by a specification
 SUPPL_CASES=<variable>,<l.limit>,<u.limit>;

/CRPLOT <data>,<C1>,<C2>,<C_coord>,<S_coord>; / K.Vehka
 creates a correspondence plot of dimensions <C1> and <C2>; so that the
 information from <data> and two matrices are presented in the same
 coordinate system.

Reference:

Lebart, Morineau, Warwick: Multivariate Descriptive Statistical
 Analysis, (Wiley 1984)

See also MCORRESP? (Multiple Correspondence Analysis)

An example on the next page:

Example:

```

*Before plotting, activate the CORRESP operation below!
*HEADER=Fisher's_example:_Hair_and_eye_colors_of_children_in_Caithness,_Scotland
*GPLOT COLORS,C1,C2 / POINT=[RED],Color OUTFILE=A
*
*          SCALE=-1,0,1.5 MODE=VGA XDIV=179,380,80 YDIV=59,380,40
*
*.....
*GPLOT CR_COORD.M,C1,C2 / POINT=[BLUE],CASE HEADER= INFILE=A

```

```

*          SCALE=-1,0,1.5 MODE=VGA XDIV=179,380,80 YDIV=59,380,40
* .....
*DATA COLORS,A,B,N,M
M ----- AAA  AAA  AAA  CC.CC CC.CC rrrr rrrr rrrr rrrr aa.a aa.a ss.ss ss.ss mm.mm c
N Color  BLUE  LIGHT MEDIUM DARK   C1  C2  BL  LI  ME  DA  ABS1 ABS2  S1  S2
A Fair   326   688   343   98
* Red    38    116   84    48
* Medium 241   584   909   403
* Dark   110   188   412   681
B Black   3     4    26    85
*
*CORRESP COLORS,CUR+1
*
<A HREF="qmr2_01.html">M = More information on multivariate analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">Touch mode is entered by pressing the key TOUCH. Exit takes place by pressing the key EXIT.

```

In touch mode various computations are carried out by moving the cursor to touch any number in the edit field and the number is activated by pressing any of the keys +, -, *, or / which correspond to standard arithmetical operations. Several numbers can be activated in this way and the resulting numerical expression will appear at each stage on the bottom line of the screen.

To print the current result in the edit field, the cursor is moved to indicate the desired position and the key = is pressed.

In touch mode more numbers and text (in lower case) can be typed in the edit field.

Capital letters should be avoided, since a few of them have a special function in touch mode (as seen on the next page):

Control keys in touch mode:

HELP gives information while staying in touch mode.

S evaluates the current expression without printing.

C is used to enter constants (needed in touch chains).

F enters a format (like 123.1234) for the results printed by =

@ enters a function (sqrt,log,exp,sin,cos,tan,arctan,abs,int).

M saves the current result to any of the memory locations 0,1,2,...,9.

K gets a value from memory.

PREFIX 0 clears the current result to 0 without printing it.

Touch mode is also a general tool for calculation with numerical tables and for other repetitive computations in a form of touch chains.

A touch chain is defined in touch mode simply by performing the required

steps and letting the system to store them. In repetitive calculations only one typical iteration is performed as a model and the system can repeat it as many times there are numbers to touch.

To define a touch chain in touch mode, the key DISK is pressed. Then the steps needed for the chain or for one typical iteration are performed. To terminate the definition either EXIT is pressed (and the chain can be reactivated by ESC) or ESC is pressed which immediately leads to automatic repetitive execution of the touch chain. A repetitive chain can also later be activated by ESC.

Execution of a touch chain is automatically stopped when an edit line with 'E' in the control column is encountered. This enables computation of tables with a fixed number of lines.

In touch chains the following keys are often useful:

R (under definition) causes the steps of the chain already entered to be repeated as long there are numbers to touch.

P saves the current position of the cursor and later when P is pressed again the cursor returns to the position saved. Thereafter a new position may be indicated by P.

T saves the current touch chain on disk.

L loads a touch chain saved on disk by T.

After returning to editorial mode by ENTER, a touch chain saved by T can be loaded into the edit field by a TCHLOAD <file_name> command. A chain loaded in the edit field can be saved (after it has been edited) into a file by TCHSAVE <file_name> command.

Collecting data in a text file in touch mode

Numbers, words, characters and parts of edit lines can be collected in a selected text file as consecutive lines. If the text file already exists, new items are appended to it.

This procedure starts in touch mode by touching the (path)name of the text file by 'D'. If a space is touched by 'D', file TOUCH.TXT on the the current Survo data path is selected.

Thereafter items are selected as follows:

W saves the current word (or number) touched by the cursor,

B saves the current character,

E saves the current line to the right from the cursor.

A saves the current line to the left from the cursor.

To stop data collecting, press 'D' again or exit the touch mode by ENTER.

The text file thus created can be processed by other means of Survo. For example, it is loaded into the edit field by the LOADP command.

Defining a 'worm' in touch mode and moving it.

Any sequence of neighbouring characters in the edit field can be moved like a worm across the text and copied in another place.

To define a worm, move the cursor to touch the first character and press the WORDS (alt-F2) key. Move the cursor to touch all other characters belonging to the worm and press WORDS again.

The worm thus defined (and highlighted) is now moved by the arrow keys. Any time, when pressing '=' the current status of the worm will be written in the edit field. Exit the worm mode by the WORDS key. During the move the worm does not overwrite any text in the edit field although it may temporarily hide it. The worm can even override itself. Also shadow characters are moved and copied.

In worm mode, 'C' clears the screen, 'D' performs the display off/on

function, and 'S' shows the worm with proper shadow characters when it is moved. These options are useful in attaining visual effects when using the worm mode in sucros.

Collecting lines

This corresponds to the 'Collecting data' procedure described above but is simpler when copying edit lines in a new order is concerned. Thus when staying in touch mode a set of edit lines (actually parts of them to the right from the cursor) are selected simply by moving the cursor by arrow keys and pressing 'V'. All lines selected by 'V' are saved with their shadow lines in a temporary file (TCHLINES.TXT).

While still staying in touch mode the selected lines are printed to a new place (indicated by the cursor) simply by pressing '='. The lines are displayed in the order they have been selected thus providing 'sorting' lines of tables by hand, etc.

After exit from touch mode the contents of TCHLINES.TXT is still available. Hence when entering touch mode later, one may print its contents by touching an empty line by 'V', moving the cursor and pressing '='.

Collecting words

Words appearing in the current edit field can be collected in any order by pressing '+' (like adding numbers). The sequence of words collected appears on the bottom line in the form word1+word2+word3+... and this sequence is then displayed in the place selected by the user by pressing '=' in the form word1 word2 word3 ... The first word must begin by a letter; otherwise the entire sequence is interpreted as a sum of numbers.

```
<A HREF="qm1_01.html">M = More information on mathematical operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SURVO MM is the Windows version of Survo.
```

SURVO MM is compatible with SURVO 84C (and SURVO 98). Thus, in general, all operations, functions, and data structures (edit fields, data and matrix files), sucros etc. working in earlier Survo systems are valid in SURVO MM as

well.

```
<A HREF="qs1_02.html">1 = Technical structure of SURVO MM</A>
<A HREF="qs1_04.html">2 = Edit fields in SURVO MM</A>
<A HREF="qs1_05.html">3 = Data and matrix files in SURVO MM</A>
<A HREF="qs1_06.html">4 = Capacity of statistical operations</A>
<A HREF="qs1_07.html">5 = Sucros in SURVO MM</A>
<A HREF="q0c_10.html">6 = Using the mouse</A>
<A HREF="q111_02.html">7 = Screen graphics</A>
<A HREF="q0b_29.html">8 = Soft buttons</A>
<A HREF="qs1_08.html">9 = Using the Survo and Windows clipboards</A>
<A HREF="qs1_09.html">M = Multiple sessions</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">Technical structure of SURVO MM
```

SURVO MM is written in the C language using WIN32 API library functions. It works in Windows 95, 98, NT, 2000, Me, and XP, 7 and 8 environments. SURVO MM consists of a family of program modules. The main module is the SURVO MM editor which calls other modules as child processes when needed (according to the user's actions). The user has no need to know the internal structure of the system.

SURVO MM has been created directly by using the source code of the earlier version SURVO 98 as the basis. In typical statistical modules, for examples, only slight changes are needed. On the contrary, all routines handling the keyboard, screen and mouse have been rewritten using WIN32 functions.

The current number of SURVO MM modules (EXE files) is about 100. Typically one module contains the program code of several SURVO MM commands and operations. Furthermore there are about 700 other system files like sucros (Survo macros), files of the help system, drivers, etc.

```
<A HREF="qs1_01.html">S = More information about SURVO MM</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```


For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  <A HREF="qs1_01.html">S = More information about SURVO MM</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
```

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SURVO MM allows creating and saving of edit fields up to the capacity
of the central memory of the computer. For example, in a 128KB memory
it is possible to maintain edit fields of 500000 lines with 100 or
more columns. The maximum number of columns is 996 (10006 from ver.3)
but there is no (practical) upper limit for the number of lines.
Very large fields are needed only in special applications and temporary
situations; for example, when irregular text files (created elsewhere)
should be polished. In general, it is not wise to keep big data sets in
the edit field.
```

When an edit field does not exceed the capacity of SURVO 84C (about 60000 bytes), it is saved in SURVO MM (by the SAVE command) exactly in the same way as in SURVO 84C.

Large fields with more than 252 columns and/or too many lines are saved in a new form where only non-empty lines (with their line numbers and possible shadow lines) are stored. Also trailing blanks are omitted and thus much space is spared on the disk.

These SURVO MM edit files are in fact simple text files.

‘Over-sized’ edit files cannot be used in SURVO 84C as edit fields but they can be treated there as text files (by LOADP and SHOW).

An over-sized edit field is indicated by a red square almost at the end of the header line.

As an option (in dealing with certain system files) an over-sized edit field can be saved in the old SURVO 84C format by setting string "(84ED)" in the comment of the SAVE command on the first edit line. Example:

```
1 *SAVE BIGTEXT / over-sized field (84ED)
2 *
```

```
-----
9999 *
10000 * This is the last line!
```

This (84ED) option should be never used in standard applications since it creates very large files.

```
<A HREF="qs1_01.html">S = More information about SURVO MM</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO MM
<P><PRE CLASS="HelpText">Data files have the same structure as in SURVO 84C and 98.
Thus all data files (with the .SVO extension) created in SURVO 84C
are accepted in SURVO MM.
However, there is one important extension in SURVO MM: In data files
with very many fields (variables) SURVO MM permits long explanations
in names of fields. In SURVO 84C the total amount of text in these
names and other descriptions of fields is limited to 65500 bytes.

In SURVO 84C the maximum number of elements in a matrix was 8100, i.e.
90x90 is the largest allowed size for a square matrix. In SURVO MM
it is possible to operate with much larger matrices. For example,
In a 128MB memory one may handle 1000x1000 matrices by various MAT operations.
Again representations are identical in both systems.

<A HREF="qs1_01.html">S = More information about SURVO MM</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```

<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">In typical statistical operations (like LINREG and FACTA) the maxi
number of variables in SURVO 84C was at most 90.
In SURVO MM greatest permitted dimensions are much higher but depend
on the size of the central memory. In 128MB no substantial limits
will be encountered. For example, factor analysis can be made even
with 1000 variables.

  <A HREF="qs1_01.html">S = More information about SURVO MM</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Sucros made in SURVO 84C and 98 work similarly in SURVO MM
In fact, the regular collections of sucros located in the S and TUT
When a sucro is activated in SURVO MM, it is searched for in this order:

  1. Current data directory of SURVO MM (for example, D:\DEMO1)
  2. 'sucropath' defined in SURVO.APU of SURVO MM
  3. &lt;Survo&gt;\U\S (&lt;Survo&gt; is the main directory of SURVO MM.)
  4. &lt;Survo&gt;\U\TUT (This directory is not needed anymore.)
  5. &lt;Survo&gt;\S
  6. &lt;Survo&gt;\TUT

By the sucro command
/WHICH &lt;name_of_sucro&gt;
the current instance of a sucro is automatically detected.

  <A HREF="qs1_01.html">S = More information about SURVO MM</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">

```

```

<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Using the clipboard in SURVO MM

```

Survo has always had a 'clipboard' of its own. It is controlled by the BLOCK (alt-F4) key (See [BLOCK](q02_17.html)?) or by the mouse (See MOU

In SURVO MM (in versions 1.15+) a text block painted by the BLOCK key can also be copied to the Windows Clipboard directly by clicking the soft button c (copy).

The text in the clipboard is thereafter available for any other Windows program.

Correspondingly, any text appearing in in the Windows Clipboard can be pasted in the edit field to the place indicated by the cursor by double-clicking the soft button p (paste) or by the command PASTE.

If the insert mode (set by the INS key) is on, the text in the clipboard will be inserted between the current edit lines. If the insert mode is off, the clipboard text will be written over the possible current text.

From version 2.37 the Windows clipboard can be maintained by keys ctrl+ins (COPY), shift+ins (PASTE).

See also the COPY command (COPY2?)

More information on next pages:

Copying a text block to the Survo and Windows clipboards:

1. Press the BLOCK key (alt-F4).
2. Move (by the mouse or arrow keys) the cursor to the upper-left corner of the text block to be copied and press BLOCK again.
3. Move the cursor to the lower-right corner of the text block and press BLOCK still once. The block then appears in a painted form.
4. Click by the mouse the soft button c which copies the text into the clipboard or press ctrl+ins. A temporary message of the form
The text block is now copied to the clipboard!
confirms this fact and painting of the block disappears.

Thereafter the text block now copied to the Windows Clipboard is available also in other Windows programs in a normal way.

Note 1: The text in the clipboard does not contain shadow lines.

Note 2: However, at the same time the entire text block with shadows will be saved in the own clipboard of Survo and it can be copied later to any edit field directly by pressing the BLOCK key four times.

Pasting text from the Windows Clipboard to the edit field:

1. Move (by the mouse or the arrow keys) the cursor to the position wherefrom the text should start.
2. If you want that the text from the clipboard will not overwrite existing text, enter the insert mode by the INS key.
3. Paste the contents of the Windows Clipboard by the soft button p (double-click!) or press shift+ins.

Text from the clipboard can also be pasted by the following command
LOADW CLIPBOARD / SPLIT=SP
or by the key sucro P (by pressing three keys: F2 M P).

```

<A HREF="qs1_01.html">S = More information about SURVO MM</A>
</PRE></P><HR>

```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Several SURVO MM sessions may be running simultaneously.
Each session is initiated by clicking the SURVO MM icon.
Thus the user may type a research report in one session while another
copy of Survo is carrying out a long simulation experiment.

If you want to use this multisession property very heavily (many
Survos doing hard work automatically at the same time) it is good to set
session_tmp=1
in the SURVO.APU file.

By this setting each Survo session will have its own subdirectory for
temporary files and then there will be no confusion with those files
although concurrent Survo sessions are performing similar tasks.

For a temporary usage a "slave Survo" can be called by keys F2 M Z.
More information by activating
/Z ?

Temporary files:
Many Survo program modules are creating and using various temporary
files for saving intermediate results, for example.

Temporary files are saved in the directory
&lt;Survo&gt;\TMP (typically C:\Program Files\SURVO\TMP) or according to
etmpd=&lt;path&gt;
given in the SURVO.APU file.

To provide a separate subdirectory for temporary files in each Survo
session,
session_tmp=1
must be given in SURVO.APU.
Then these subdirectories are created by Survo and they are
&lt;Survo&gt;\TMP\A, &lt;Survo&gt;\TMP\B, etc. by default.
In this case the corresponding subdirectory is also removed when the
Survo session is terminated. However, if del_tmp=0 is given in
SURVO.APU, the subdirectory for temporary files is not removed.

  <A HREF="qs1_01.html">S = More information about SURVO MM</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Time series analysis
  <A HREF="qt2_05.html">A = Auto- and crosscorrelations</A>
  <A HREF="qt3_01.html">F = FORECAST operation</A>
  <A HREF="qt1_02.html">S = SER operations (moving averages, cumulative sums, etc.)</A>
  <A HREF="q24_01.html">E = AR and ARMA models by ESTIMATE</A>
  <A HREF="q13_01.html">P = Plotting</A>

Survival analysis
  <A HREF="qts_01.html">U = Survival analysis (SURVIVAL by Kim Huuhko)</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SER operations are like VAR operations, but they offer transformati
needed in management of time series.

```

The general form of a SER operation is

SER <new_series>=<operation>(<old_series>;P1,P2,...Pn) TO <data>;
 where <old_series>; and <new_series>; are variables in <data>;.

If <data>; is a data file (not a data matrix in the edit field),
 <new_series>; is created when necessary.

If a series of SER operations is activated, the extension TO <data>;
 is not required when the same (current) data file is used.

```

  <A HREF="qt1_03.html">M = Moving averages (operations MA,MAE)</A>
  <A HREF="qt2_01.html">D = Differences (D)</A>
  <A HREF="qt2_03.html">C = Cumulative sums (CUM)</A>
  <A HREF="qt1_04.html">S = Moving sums and linear combinations (MS)</A>
  <A HREF="qt2_04.html">X = Examples of SER operations</A>

```

```

<A HREF="qt1_01.html">T = More information on time series analysis</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SER Y=MA(X,&lt;weight_description&gt;) TO &lt;data&gt;
computes moving averages of X to Y according to &lt;weight_description&gt;.
&lt;weight_description&gt; can be any of the three alternatives:
1) List of weights
   SER Temp2=MA(Temp,1,2,3,0,0)
   i.e. Temp2[t]=1*Temp[t-2]+2*Temp[t-1]+3*Temp[t]+0*Temp[t+1]+0*Temp[t+1]
   or
   SER Temp3=MA(Temp,1,2,3,*) being equivalent to
   SER Temp3=MA(Temp,1,2,3,2,1) (symmetric weights)
   Number of weights must be uneven.
2) Name of a weight pattern
   SER TempS=MA(Temp,SPENCER)
   The weights for SPENCER must be given in the same edit field as
   SPENCER=-3,-6,-5,3,21,46,67,74,*
3) Weights for polynomial trends
   SER Temp4=MA(Temp,P3:21)
   fits a cubic (P3) to sets of 21 points.
   Generally Pp:m implies fitting of a polynomial of degree p
   with a span of m consecutive points.
   m must be an odd integer.
In all cases above, the sum of weights is scaled to 1.

SER Y=MAE(X,&lt;weight_description&gt;) TO &lt;data&gt;
works as MA, but provides trend values for the first and last m values
of the series as well.
MAE works only in the case of polynomial weights.

SER Y=MA(X,&lt;weight_description&gt;) TO &lt;data&gt; / PERIOD=s
works similarly, but uses values
..., X[t-3s], X[t-2s], X[t-s], X[t], X[t+s], X[t+2s], X[t+3s], ...
instead of
..., X[t-3], X[t-2], X[t-1], X[t], X[t+1], X[t+2], X[t+3], ...
The period s is given as an extra specification PERIOD=s.

Another way to enter the period s (say for s=3) is to use the operation
SER Y=MA3(X,&lt;weight_description&gt;) TO &lt;data&gt; .

SER Y=MAE(X,&lt;weight_description&gt;) TO &lt;data&gt; / PERIOD=s
provides smoothened values for the first and last observations as well
(in case of polynomial weights).
Alternative notation is Y=MAE3(X,... for s=3.

```

```

<A HREF="qt1_02.html">S = More information on SER operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&#160;
<P><PRE CLASS="HelpText">SER Y=MS(X,W1,W2,...,Wm) TO &lt;data>
computes linear combinations of lagged values of X as
Y[t]=W1*X[t-m+1]+W2*X[t-m+1]+...+Wm*X[t]
(without rescaling weights W1,...,Wm).
By giving one of the weights with a terminating 'T' (say WkT),
Y[t]=W1*X[t-k+1]+W2*X[t-k+2]+...+Wk*X[t]+...+Wm*X[t-k+m]
is computed.
For example,
SER Y=MS(X,1,-1,1T,-1) TO &lt;data>
computes Y[t]=X[t-2]-X[t-1]+X[t]-X[t+1]

<A HREF="qt1_02.html">S = More information on SER operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&#160;
<P><PRE CLASS="HelpText">SER &lt;new_series>=D(&lt;old_series>,L) TO &lt;data>
computes differences D(t)=X(t)-X(t-L) of X(t)=&lt;old_series>,.
If lag L=1, it may be omitted.

<A HREF="qt1_02.html">S = More information on SER operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>

```



```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="qt1_02.html">S = More information on SER operation
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SER <new_series>=CUM(<old_series>,L) TO <data>
computes the cumulative sum(s)
  Y(t)=X(t) for t=1,2,...,L
  Y(t)=Y(t-L)+X(t) for t=L+1,L+2,...
where Y(t)=<new_series>, X(t)=<old_series>.

  <A HREF="qt1_02.html">S = More information on SER operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>

```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> 11 *SER X1=MA(X,1,1,*) TO TEST / <B> Examples of SER op
12 *SER X2=MA(X,W3) TO TEST
13 *      W3=1,2,3,*
14 *SER X3=MAE(X,P2:5) TO TEST
15 *SER X4=MS(X,1,1,1T,1) TO TEST
16 *SER X5=CUM(X,2) TO TEST
17 *SER X6=D(X,3) TO TEST
18 *SER X7=MAE2(X,P1:3) TO TEST / with period 2
19 *DATA TEST,A,B,N,M
20 M 11 12 1.1 1.1 1.1 11.1 11.1 11.1 11.1
21 N T X X1 X2 X3 X4 X5 X6 X7
22 A 1 2 - - 1.6 - 2.0 - 2.7
23 * 2 3 3.3 - 3.8 - 3.0 - 4.2
24 * 3 5 4.7 4.3 5.0 16.0 7.0 - 3.7
25 * 4 6 5.0 4.6 5.6 18.0 9.0 4.0 3.7
26 * 5 4 4.0 3.8 4.2 17.0 11.0 1.0 3.3
27 * 6 2 2.3 2.8 1.9 13.0 11.0 -3.0 3.7
28 * 7 1 2.0 2.4 1.4 10.0 12.0 -5.0 3.3
29 * 8 3 3.0 - 2.5 11.0 14.0 -1.0 2.2
30 B 9 5 - - 5.2 - 17.0 3.0 3.8
  <A HREF="qt1_02.html">S = More information on SER operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">XCORR &lt;data&gt;,&lt;var1&gt;,&lt;var2&gt;,,L
computes auto- and crosscorrelations of variables &lt;var1&gt; and &lt;var2&gt;;
in &lt;data&gt;. If &lt;var2&gt;=&lt;var1&gt;, only autocorrelations of &lt;var1&gt; are
computed.
Observations can be limited by IND and CASES specifications.
The total span of active observations is always from the first
non-missing observation to the next missing observation. Thus the
observations to be processed are consecutive, unless otherwise stated by
IND or CASES.
The results are represented as a table from line L onwards.
The maximum lag is given as an extra specification MAXLAG=&lt;max_lag&gt;.
Default is MAXLAG=12.

  <A HREF="qt1_01.html">T = More information on time series analysis</A>
</PRE></P><HR>

```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">FORECAST &lt;data>,&lt;series>,&lt;predictor>,&lt;L
makes an automatic forecast of a time series by using a variant
of the Holt-Winters' seasonal forecast procedure.
(See for example, B.Abraham and J.Ledolter (1983). Statistical Methods
for Forecasting, Wiley.)

```

The period s of the series is given by PERIOD= s .

If the PERIOD specification is omitted, FORECAST tries to judge s from the data.

The active part of the observations in <data> is used for the estimation of the level, slope and seasonal components. The predicted values of <series> are saved in <predictor> for the estimation period plus one complete period (s observations) ahead. Number of forecast values may be changed by the AHEAD=<#_of_values> specification. A '-' as <predictor> rejects saving of forecast values. L (optional) is the first edit line for the results.

The type of the model is selected by the specification C=<type>,. Default is C=1 (additive seasonal). Another alternative is C=0 (multiplicative seasonal). In case $s=1$ both models correspond to Holt's double exponential smoothing procedure. Also values 0<C<1 may be tested, but then the time required for the estimation is much longer.

The three smoothing coefficients are selected by minimizing the mean square error of the one-step-ahead forecast errors. The initial values of the level, slope and seasonal parameters are obtained first by backforecasting on the data.

However, fixed values for the smoothing coefficients can also given by a specification of the form PAR= a_1,a_2,a_3 where a_1 =level coefficient, a_2 =seasonal coefficient and a_3 =slope coefficient. Each of them must be in the interval (0,1). For stable components the smoothing coefficients should be close to zero.

After estimation of the smoothing coefficients the outliers in data may be rejected on the basis of the forecast errors. Only one (the worst) outlier is rejected at a time by replacing the data value by the current forecast and the whole estimation process is repeated. The OUTLIERS= n,k specification gives n as the maximum number of such rejections and k as the threshold for an outlier. An observation is rejected (smoothed), if its forecast error exceeds k times the standard error. Default is OUTLIERS=3,2.5. By OUTLIERS=0 no outliers are considered.

In addition to the forecast also the components of the series may be saved in the original data (file) by entering certain masks.

The components and their mask symbols are:

Trend (level) T
Slope B
Seasonal S

Example:

```
.....
40 *DATA X: 1 2 5 4 2 3 4 5 3 4 5 6 4 5 6 7 5 6 5 10 6 7 8 9 END
41 *
42 *FORECAST X,X,-,43 / No specifications are given in this case
43 *Holt-Winters' Additive Seasonal Forecast: Data X, Variable X
44 *Period=4 obs. (judged from data) Estimation on observations 1-24
45 *Outliers:19,20,3 (+more to be found)
46 *MSE=0.025814 a(level)=-0.000 a(seasonal)=0.552 a(slope)=0.856
47 *Autocorrelations of residuals: r1=+0.00 r2=-0.04 r3=-0.05 r4=+0.04
48 *Obs.#    Forecast
49 * 25      6.9678
50 * 26      7.9678
51 * 27      9.0452
52 * 28      9.9920
53 *
```

```
.....
<A HREF="qt1_01.html">T = More information on time series analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
LOTTO-peliin liittyyvi toimintoja

<A HREF="qt1_02.html">1 = Lottorivien arvonta</A>
<A HREF="qt1_03.html">2 = Lottoon liittyyvi todenn k isyyksi </A>
<A HREF="qt1_04.html">3 = LOTTO-operaatio Loton pelaajan vaiheiden seuraamiseksi</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
```

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Satunnaisia Lottorivej voi arpoa Survossa mm. seuraavalla komento
MAT #SAMPLES LOTTO,39,7,12,rand(37952049)
MAT LOAD LOTTO,123,CUR+1
```

MAT #SAMPLES on tarkoitettu varsinaisesti umpim hk isten otosten poimintaan ilman takaisinpanoa ja nyt on kyseess vain tietty erikoistapaus.
MAT #SAMPLES LOTTO,39,7,12,rand(37952049)
arpoo numeroista 1,2,...,39 7 kpl. ja tekee sen 12 kertaa
k ytt en satunnaislukugeneraattorissa siemenlukua 37952049.
Siemenluku on syyt vaihtaa, jotta saisi "ikiomia" rivej .
Arvotut rivit tallentuvat Survon matriisitiedostoksi LOTTO.MAT,
jonka sis ll n saa poimituksi toimituskentt n komennolla
MAT LOAD LOTTO,123,CUR+1

Viking-lottoa voi harrastaa vastaavasti komennolla
MAT #SAMPLES VLOTTO,48,6,12,rand(37952049)

N iden keinojen tarkoituksena ei ole innostaa Survon k ytt ji
Loton peluuseen. P invastoin, tutustumalla erityisesti kohtaan
3 = LOTTO-operaatio Loton pelaajan vaiheiden seuraamiseksi
saa "incho"realistisemmän k sityksen pelin luonteesta.

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
```

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Suomessa pelataan Lottoa niin, ett n=39 numerosta arvotaan m=7 kp
Mahdollisten lottorivien m r on  $C(n,m)=15380937$  kpl.
Siis p voiton (7-oikein) saamisen todenn k isyys yhdell rivill
on  $1/C(n,m)=0.00000006501554$ 
Yleisesti todenn k isyys saada K numeroa oikein yhdell rivill on
 $P(K)=C(7,K)*C(32,7-K)/C(39,7)$ 
eli taulukoituna:
P(7)=0.00000006501554
P(6)=0.00001456348206
P(5)=0.00067720191559
```

P(4)=0.01128669859320
P(3)=0.08182856480070
P(2)=0.27494397773036
P(1)=0.41241596659553
P(0)=0.21883296186702

Lisä on kytös voittoluokka 6-oikein + lisä numero (3:sta), jonka todennäköisyys on $P_6 = P_7 * 7 * 3$ eli

$P_6 = 0.00000136532644$

Sellaisten lottorivien osuus, joissa on peräkkäisiä numeroita on

$1 - C(n-m+1, m) / C(n, m) = 0.72225047147648$

eli monille yllätyksellisesti yli 72 %.

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Esiintyy monenlaisia kysymyksiä siitä, miten moni pelaajalla on mahdollista voittaa, kuten Lottoa, perusteella voittoa.

Vaikuttaa siltä, että nuo voittomahdollisuudet arvioidaan todellista paremmiksi, vaikka tiedot näin ei ole todennäköisyys.

Lotossa voittoa perusteiden suhteellista osuutta suunnillesti

peliin (esim. 10 vuoden aikana) osallistuneiden keskuudessa

ei ole mahdollista selvittää haastattelututkimuksilla, sillä

se edellyttää, että lottoilijoilta tarkkaa kirjanpitoa toiminnastaan.

Kysymys lienee erittäin hankala ratkaista pelkillä teoreettisilla

laskelmilla. Tässä turvaututaan simulointiin eli mahdollisimman

monen, kuvitellun lottoilijan vaiheiden seuraamiseen ja tilastointiin.

Survon LOTTO-ohjelmassa kysytään tulevaisuutta mahdollisimman realistiset

arviot voittojen suuruuksien vaihtelusta voittoluokittain.

LOTTO olettaa kunkin pelaajan veikkaavan saman määrän (esim. 12) rivejä

52 kertaa kunkin tarkkailuvuonna.

On mahdollista seurata yksittäisen pelaajan tilannetta vaikka kierroksittain.

Kiinnostavinta on kuitenkin tarkastella suurta pelaajajoukkoa

ja hahmottaa mm. sitä, kuinka moni seuranta-aikana menestyy Lotossa

paremmin kuin sijoittamalla vastaavat panokset riskittömästi vaikkapa

pankkitilille.

LOTTO.L

seuraa Monte Carlo -menetelmällä (simuloimalla)

suunnillesti Lottoa vakiopanoksella pelaavan kohtaloa

halutulla aikavälillä.

L on lopullisten tulosten alkurivi. Jos L puuttuu, tulostetaan

toimituskentän seuraavasta rivistä eteenpäin.

LOTTO-operaatiota ohjataan seuraavilla toimenpiteillä :

V7=<alaraja>,<yläraja> Voittoluokan 7-oikein voittosumman rajat

V61=<alaraja>,<yläraja> Voittoluokan 6-oikein + lisänumero rajat

V6=<alaraja>,<yl raja> Voittoluokan 6-oikein voittosumman rajat
V5=<alaraja>,<yl raja> Voittoluokan 5-oikein voittosumman rajat
V4=<alaraja>,<yl raja> Voittoluokan 4-oikein voittosumman rajat
Jokainen voitto arvotaan tasajakauman mukaisesti ko. v leilt .

Lis t smennyksi seuraavalla sivulla:

Lis t smennyksi kuvattuna t ss oletusarvoineen:

Rivej /kierros=12
N ytt v li=1 vuotta Tulostaulukon n ytt v li
Vuosia=10 Pelin kokonaiskesto vuosina
V7_lopetus=0 Arvolla 1 peluu loppuu, jos saadaan 7-oikein.
Tauko=0 Ei taukoja. Tauko=1 keskeytt tilap isesti,
jokaisella n ytt v lill . Tauko=2 keskeytt
jokaisen kierroksen j lkeen.
Napilla ENTER askel eteenp in.
Napilla + jatkuvaan n ytt n eli Tauko=0.
Napilla . peli keskeytyy (jos Lottoajia=1)
Korkokanta=0 % Pelimaksuille ja -voitoille lasketaan korkoa.
RND=rand(123456789) (pseudo)satunnaislukugeneraattori siemenlukuineen
Lottoajia=1 Useamman pelaajan tapauksessa (Lottoajia>1)
tulokset talletetaan tekstitiedostoon LOTTO.TXT
Kultakin pelaajalta tallentuvat tiedot:
Nro Saldo N7 N61 N6 N5 N4
miss Saldo on yhteenlasketun voittosumman ja
pelimaksujen erotus ja N7 jne. voittojen
lukum r t voittoluokittain.

Esimerkki 1:

V7=220000,4500000 (vaihteluv li vuosilta 2001-2002)
V61=4600,82000 (6 + lis nro.)
V6=600,2700
V5=23,67
V4=7,15

Rivej /kierros=12
N ytt v li=5 vuotta Vuosia=5 V7_lopetus=1
Tauko=0
Korkokanta=5 %

LOTTO

(T m n LOTTO-komennon antama tulostaulukko seuraavalla sivulla)

Vuosia kulunut 5. Lottorivej veikattu 3120.

Kierroksia 260. Rivej kullakin kierroksella 12. Odotetut m r t

7 oikein	0 kpl	0.00 e	0.00020 kpl
6 oikein + lis nro.	0 kpl	0.00 e	0.00 kpl
6 oikein	1 kpl	1234.40 e	0.05 kpl
5 oikein	1 kpl	57.77 e	2.11 kpl
4 oikein	42 kpl	509.39 e	35.21 kpl
3 oikein	266 kpl		
2 oikein	829 kpl		
1 oikein	1320 kpl		
0 oikein	661 kpl		

1801.56 = voitot yhteens

Korko 5.00% 2109.92 = maksut yhteens

-308.36 = erotus

Esimerkki 2: Kokoava esimerkki voittamisen vaikeudesta

V7=220000,4500000 V61=4600,82000

V6=600,2700 V5=23,67 V4=7,15

Rivej /kierros=12 V7_lopetus=0

N ytt v li=10

Vuosia=10
Lottoajia=100000
Korko=5 %
LOTTO / T m vie aikaa 1.6 GHz:n koneella noin 40 minuuttia!
SHOW LOTTO.TXT / Tulokset Maksut: 4823.67

Kun siirret n ker tyt tiedot Survon datatiedostoon V esim. komennolla
FILE SAVE LOTTO.TXT TO V / NAMES=1 FIRST=2
voidaan analysoida tuloksia.

100000 lottoajaa siis pelasi 10 vuoden ajan 12 rivin viikkopanosella.
Kun korkokanta on 5 %, voitolle p si 858 eli 0.86 % pelaajista.
T ysosumia tuli 38 kpl ja niill ylsi ainakin 300000 e voitolle.
T m sopii hyvin yhteen odotetun t ysosumien m r n kanssa, joka on
 $100000 \cdot 10 \cdot 52 \cdot 12 / C(39, 7) = 40.5697 \dots$
Yli 1 milj.euron voiton korkoineen saavuttaneita oli 28 kpl.
Lis ksi $1489 - 858 = 631$ pelaajaa selvisi nimellisesti voitolle (Saldo>0).

Kaiken kaikkiaan yli 99 %:lle pelaajista lottoaminen oli
kannattamattomampaa kuin pelipanosten "riskit n sijoittaminen"
5 %:n korolla.

Suurimmat pelaajakohtaiset tappiot olivat luokkaa 8000 e (korko
mukaanlukien).

Korkotasolla ei ole sanottavaa vaikutusta pelin "tuloksellisuuteen".

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SURVIVAL &lt;data>,&lt;time-variable>,&lt;censoring-variable>
Programmed by K.Huuhko (last modification 17.10.2002)
Documentation R.Sund 11/2004
```

SURVIVAL-module is a package of techniques for non-parametric survival
analysis. The basic methods include Kaplan-Meier estimator, life table
estimator and three test statistics for similarity of survival curves:
log-rank, Wilcoxon and Tarone-Ware.

Time-variable is should be a variable containing time to event or time
to censoring, and censoring variable indicates whether the observation
is censored (value 0) or not (any other value). Without
METHOD-specification the module calculates the Kaplan-Meier estimator
and with specification METHOD=LT the life table estimator is calculated.
The results are written to the data file PLc0.SVO and plotting schema is
printed to the edit field.

For life table estimator specification INTERVAL can be used to define the width of time interval used in calculation. The life table is also printed to the edit field, if it contains fewer intervals than given with the specification LIMIT.

With the specification CLASS the name of classification variable can be given, where classification variable gets equivalent value for all observations belonging to some particular group. In that case analyses are done separately for each group (results saved for files PLc0,PLc1,...) and also test statistics for similarity of survival curves are calculated.

Using the specification CLASS=TREE a survival tree is calculated. The variables used in splitting must be marked with mask X. The calculation can be affected by using the specifications PENALTY, OBSLIMIT and TEST. PENALTY is a "nuisance" parameter which can get any value between 2 and 4. Four approximately corresponds to p-value 0.05, and smaller values allow also "less significant" splits. OBSLIMIT gives the minimum number of observations needed in the end nodes, i.e. how many observations is needed that a further split can be made for the node. The specification TEST determines the test statistics used in the tree construction: 1=log-rank, 2=Wilcoxon or 3=Tarone-Ware. After initial tree construction a specification NODES=<wanted number of terminal nodes> must be given, and the information concerning the binary survival tree is printed to the edit field. This information starts from the node one (whole data) and describes each split growing the tree to the left until the first end-node is reached (survival curve is estimated for each end-node and saved to the data file T<number of end-node>.SVO) and then climbing back up to the nearest right-split and so on. Typically a tree resulting in 2 to 8 end-nodes is sufficient.

Cautions:

The module can not handle MISSING(/negative?/wrong type???) -values.

With Kaplan-Meier and life table estimators the degrees of freedom (and therefore also p-values) are calculated incorrectly in cases of more than two classes.

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">Sucros in Survo
```

```
<A HREF="qtu6_01.html">S = Using ready-made sucros</A>
```

Creating and programming new sucros:

```
<A HREF="qtu1_02.html">1 = General information</A>
```

2 = Creating a sucro
 3 = Editing sucro programs (TUTLOAD, TUTSAVE)
 4 = Sucro memory (tutstack)
 5 = Code words and statements in sucro programs
 6 = Calling sucros from other sucros
 7 = Sucro paths
 8 = Error control in sucros

 C = More information on control operations

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
    <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
    <META NAME="Generator" CONTENT="SURVO MM">
    <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
    <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
    <META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
    <META NAME="Classification" CONTENT="help system">
    <META NAME="Keywords" CONTENT="Survo, help, hypertext">
  </HEAD>
  <BODY>
    <H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO MM
    <P><PRE CLASS="HelpText">General information on sucros
  
```

Any Survo session or a part of it can be saved in a special file (with extension .TUT) as a sucro by working in the tutorial mode. This file can be later activated and it imitates actions normally taken by the user.

A sucro file can be loaded to the edit field (TUTLOAD operation), edited and saved back to the sucro file (TUTSAVE operation). Then various extra comments, conditional statements, prompts for the user and time delays may be inserted, too. The sucros in Survo range from small macros to user-defined operations and large expert applications.

Originally, the tutorial mode was planned for making tutorials and therefore many technical terms still have 'TUT' as a distinctive part.

```

  <A HREF="qtu1_01.html">S = More information on sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
    <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
    <META NAME="Generator" CONTENT="SURVO MM">
    <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
    <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
  
```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  <A HREF="qtu1_01.html">S = More information on sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Sucros are created either by working under the tutorial mode or
by writing sucro programs by using a special sucro language.
In many applications both methods are combined. The sucro is first
generated in tutorial mode, then loaded to the edit field as sucro
program listing (by TUTLOAD command), then edited by adding new
statements or altering old ones, and finally saved back (by TUTSAVE
command).

  <A HREF="qtu1_05.html">1 = Working in tutorial mode</A>
  <A HREF="qtu1_06.html">2 = Writing sucro programs (TUTSAVE)</A>
  <A HREF="qtu1_01.html">S = More information on sucros</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Working in tutorial mode:

```

A sucro can be defined at any time when working with the Survo Editor. To initiate the process, the keys PREFIX and T are pressed which leads to a prompt

Sucro functions: S=Start definition, R=Run ?

appearing on the bottom line. After S has been pressed, another prompt

Define a sucro: Name of file ?

is displayed. The user selects a file name like LESSON1 (.TUT is the default extension) and thereafter the original situation on the screen (before PREFIX T) is restored.

After this point all the user's actions (key strokes) will be saved in the sucro file LESSON1.TUT until PREFIX T is pressed again and a prompt

Sucro functions: E=End of definition, C=Control codes, R=Repeat

is displayed. By selecting E the sucro file will be closed and the new sucro is ready for use. By R the new sucro will be repeated immediately.

The actions saved in a sucro file are automatically executed either by activating the command

/<name_of_sucro> (/LESSON1 , for example)

or by pressing PREFIX T and selecting alternative R=Run.

```
<A HREF="qtu1_08.html">A = Automatic recording of waiting times</A>
<A HREF="qtu1_06.html">W = Writing a sucro program</A>
<A HREF="qtu1_01.html">S = More information on sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">A sucro can be written in the edit field by using a special sucro language.
Below a tiny sucro program has been written and saved by a TUTSAVE command:
10 *
11 *TUTSAVE YEAR_
12 / This sucro inserts a new line and writes the current year on it.
13 / Insert new line and move the cursor to the beginning of the line:
14 *{ins line}{line start}
15 / Write and activate TIME command:
16 *TIME{act}
17 / Return to the beginning of the line and delete 25 first characters:
18 *{line start}{del 25}
19 / Current year is obtained and the sucro ends:
20 *{end}
```

Lines starting by /'s are merely comments. The actual program lines contain

text to be echoed and written to the edit as such (like TIME on line 16). There are also various control words and statements written in braces. A good way to learn more about sucro programming is to study existing sucros (in directories <Survo>\S and <Survo>\TUT, for example) by using the TUTLOAD command.

```
<A HREF="qtu1_01.html">S = More information on sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">To make the sucros more general, various enhancements may be added
by using TUTLOAD and TUTSAVE operations.
TUTLOAD <surcro file>
loads the sucro program from <surcro file> in the edit field below
the current line. The printable characters appear in that listing as
such, but the non-printable characters (like those corresponding to
various moves of the cursor, RETURN, arrow keys, HOME etc.) are coded
as special words given in braces. Thus HOME is {home} and RETURN (ENTER)
is {R}, for example.
When comparing to the description of the sucro code in the User's Guide
(1987), the notation style has been completely revised in order to make
sucro programs more readable. Nothing has been changed in the structure
and contents of .TUT files of the older Survo versions.
```

The code represented in the edit field can be edited freely by using the normal editorial functions. After editing, the code is saved back to a sucro file by editing TUTLOAD <file> to TUTSAVE <file> and by activating it. When editing sucros, various special codes may be added.

To spare disk space, related sucros can be saved in one .TUT file. Assume that the common file name should be ABCD.TUT . Then any sucro, say XYZ, written in the edit field is saved in this file by the command TUTSAVE ABCD-XYZ and loaded back to the edit field by the command TUTLOAD ABCD-XYZ . It can also be deleted from the file by TUTDEL ABCD-XYZ .

To see the names of sucros saved in ABCD.TUT, use the command TUTLOAD ABCD .

Warning: Never activate TUTSAVE ABCD since it destroys the true contents of the ABCD.TUT file.

Sucros in ABCD.TUT are called by their complete names, i.e. by commands like /ABCD-XYZ

Sucros belonging to the same sucro family (file), say ABCD, can call each other by commands of the form {load *-PART2} or {call *-PART2} where * is now interpreted as ABCD. This makes possible to alter the

family name (here ABCD) without making any changes in the members.

Instead of loading sucro program text into the edit field, it can be written in a text file by the command

TUTLOAD <file>,<text_file> .

The current Survo data path is default for the text file.

```
<A HREF="qtu1_01.html">S = More information on sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">Automatic recording of waiting times
```

When a sucro is created in tutorial mode also waiting times between consecutive key strokes can be recorded. Thus when running a sucro recorded in that way the rhythm of the original Survo session will be followed automatically. There is no need for additional {wait xx} statements in the sucro program.

To employ this feature one has to activate a sucro command
/WAITREC ON

before entering the tutorial mode.

To turn wait recording off

/WAITREC OFF

must be activated. The same things can be done by key stroke combinations {pre}LW and {pre}Lw or in sucro code {waitrec on} and {waitrec off}, correspondingly.

After /WAITREC ON is activated, TUTLOAD command lists statements like {wait 15} in a short form {15}.

```
<A HREF="qtu1_01.html">S = More information on sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Conditional statements of the sucro language are working with the
words and numbers in the sucro memory (tutstack). They refer to
labelled points in the program list by 'goto' statements or to other
sucros by 'load' statements.

  <A HREF="qtu2_02.html">1 = Labels, 'goto' and 'load' statements</A>
  <A HREF="qtu2_04.html">2 = 'if' statement</A>
  <A HREF="qtu2_05.html">3 = 'switch' statement</A>

  <A HREF="qtu3_01.html">C = More information on control words and statements in sucro program
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;";
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Labels are character strings in the beginning of edit lines having '+'
in the control column. Labels are referred to by the {goto &lt;label&gt;}
statement.

+ Part2: &lt;sucro code continued&gt;
          with '+' in the control column gives label 'Part2'.
          The colon ':' and the space after it belong to the
          label notation.

{goto Part2}    Go to the place indicated by label 'Part2'.

In many cases, it is wise to split a large sucro into several parts.
New sucro is linked during the run by a {load &lt;sucro&gt;} command:

{load Cont}    Continue with another sucro 'Cont'.
               The contents of the tutstack and other system
               parameters are preserved.

  <A HREF="qtu2_01.html">S = More information on conditional statements</A>
  <A HREF="qtu3_01.html">C = Code words and statements in sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  <A HREF="qtu2_01.html">S = More information on conditional statements</A>
  <A HREF="qtu3_01.html">C = Code words and statements in sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
</HTML>

```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">'if' statement:
Words and numbers in the tutstack are compared to each other and to constants
both as numbers and as strings by 'if' statements which are written
on edit lines having a '-' in the control column.
In string comparisons, the relational symbol must be given in inverted
commas.

```

The general form is

- if <condition> then goto <label>;
- or
- if <condition> then load <another_sucro>;

where <condition> is a relation between tutstack words and constants.
Also an augmented form with an 'else' clause is available.

Examples:

- if W1 '=' Tue then goto Tuesday
If W1 contains string "Tue", sucro will continue from label 'Tuesday'.
- if W2 < W3 then load EX1 else goto End
If number in W2 is less than number in W3, call another sucro EX1
else go to label 'End'.
- if Wstr '=' { } then goto A
- if Wstr '<'; {sp} then goto B

If Wstr is empty, goto 'A'. If Wstr is not a space character,
goto 'B'.

Permitted relational symbols are =, <, <=, >, >=, and <> .

In SURVO MM, numerical conditions in if statements of sucros can be more general:

Example:

```
/ def Wheight=W1 Wlength=W2
...
- if Wheight &gt; 2*Wlength then goto A
- if Wheight*Wlength = 4000 then goto B
- if 100/Wlength &gt; 0.7 then goto C else goto D
...
```

Thus on both sides of the condition, sums, differences, products, and ratios of two operands may appear.

```
<A HREF="qtu2_01.html">S = More information on conditional statements</A>
<A HREF="qtu3_01.html">C = Code words and statements in sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Several alternatives can be processed simultaneously by a 'switch'
statement:
Assume that current weekday has been obtained in W1 as one of the
abbreviations Sun,Mon,... The following part of a sucro writes
a proper sentence 'Today is Sunday.', etc.

Example:
11 *Today is
12 - switch W1
13 - case Sun: goto Sun
14 - case Mon: goto Mon
15 - case Tue: goto Tue
16 - case Wed: goto Wed
17 - case Thu: goto Thu
18 - case Fri: goto Fri
19 - case Sat: goto Sat
20 + Sun: Sunday{ goto End}
21 + Mon: Monday{ goto End}
22 + Tue: Tuesday{ goto End}
23 + Wed: Wednesday{ goto End}
23 + Thu: Thursday{ goto End}
25 + Fri: Friday{ goto End}
```

```
26 + Sat: Saturday{goto End}
27 + End: .{end}
```

```
<A HREF="qtu2_01.html">S = More information on conditional statements</A>
<A HREF="qtu3_01.html">C = Code words and statements in sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">User interaction in sucros:
```

Prompts for the user are presented by the 'prompt' and 'on key' statements.

```
<A HREF="qtu2_07.html">1 = 'prompt' statement</A>
<A HREF="qtu2_09.html">2 = 'on key' statement</A>
<A HREF="qtu2_10.html">3 = User interaction during Survo operations</A>
```

```
<A HREF="qtu3_01.html">C = More information on control words and statements in sucro program
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The 'prompt' statement in sucros has the general form (all lines are s
by '-' in the control column):
```

- prompt <Question text ?> { }
- default <default answer, text or tutstack word>
- answer <name of tutstack word for the answer (optional)>

- length <max. length of the answer>
- wait <max. waiting time in 0.1 seconds, integer or tutstack word>

The prompt line displays the text intended as a question.

The optional answer line gives the place of the answer in the tutstack.

If the answer line is missing, the answer is appended as the last word to the tutstack.

If the user gives no answer, the sucro waits until the time given on the wait line is over and accepts the default answer which also can be a tutstack word.

Although the question and the answer are displayed on the screen in the current context of the edit field, they are not permanently written into the edit field.

The prompt can be interrupted by the ESC key. Then the text '(break)' will appear as an answer.

Example:

This part of a sucro prompts the user to give his/her age and writes a sentence as a comment of the answer.

```

12 - prompt Your age ?           / question
13 - default 0                   / default answer
14 - answer W1                   / place for the answer
15 - length 3                     / length of the answer
16 - wait 1000                   / max. waiting time
17 - if W1 &lt; 3 then goto Too_young / comparing answer W1
18 - if W1 &gt; 99 then goto Too_old   / with 3 and 99
19 *{R}
20 *Your age is {print W1}. {goto End} / displaying answer
21 + Too_young: {R}
22 *Are you so young really? {goto End}
23 + Too_old: {R}
24 *Hard to believe that you are so old!
25 + End: {end}

```

```

<A HREF="qtu2_06.html">U = More information on user interaction</A>
<A HREF="qtu3_01.html">C = Code words and statements in sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;Help</H1>
<P><PRE CLASS="HelpText">
  <A HREF="qtu2_06.html">U = More information on user interaction</A>
  <A HREF="qtu3_01.html">C = Code words and statements in sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>

```

```

</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">'on key' statement makes possible to branch in a sucro according to
the key pressed by the user as shown in this example:

```

```

11 *Continue (Y/N) ?
12 - on key
13 - key N: goto End
14 - key n: goto End
15 - key Y: continue
16 - key y: continue
17 - wait 300
18 *{home}{erase}Thus we are continuing...

```

Here the sucro prompts the user to press one key by displaying

Continue (Y/N) ?_

If the user presses N or n, the sucro goes to label 'End'. If the user presses Y or y, the process continues from the first line (18) without a '-' in the control column.

The 'wait' line (17) indicates the maximum waiting time for the answer.

If any other key is pressed or no answer is given, the first case (N) is selected.

In the 'on key' statement, also the following special keys may be tested:

ENTER, RIGHT, LEFT, UP, DOWN, HOME, HELP, ESC, SP, COLON, INSERT, INS_LINE, DELETE, DEL_LINE, ERASE, NEXT, PREV, DISK, BACKSP, REF, MERGE, COPY, TAB, HELP, SRCH, ACTIV, MOVE, END, WORDS.

Also calling other sucros by 'load <sucro>' is permitted:

```

11 * A=Continuation{R}
12 * B=Alternative B{R}
13 * C=Alternative C{R}
14 *Select one of the alternatives A,B,C:
15 - on key
16 - key ENTER: continue
17 - key A: continue
18 - key B: goto B1
19 - key C: load CSUCRO
20 - wait 300
21 *{R}{erase}...

```

U = More information on user interaction

C = Code words and statements in sucros

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">User interaction during Survo operations

```

When a Survo operation involving user interaction (like FILE SHOW) is activated in a sucro, the sucro in question normally takes the responsibility of all actions of the user (like entering data values in FILE SHOW) during that operation.

However, in some applications, it is useful that the sucro stands still during such an operation thus letting the user to work on his/her own until the end of the operation. For example, one would like to create a data entry routine as a sucro using the FILE SHOW operation for actual data input as such. To enable this kind of user interaction in a sucro, the code word {interaction on} should be given in the sucro code before activating the operation in question by {act}. To resume the default working mode of sucros, the code word {interaction off} must be given after {act}.

Example:

```
FILE SHOW {print Wdata} {interaction on} {act} {interaction off}
```

```

  <A HREF="qtu2_06.html">U = More information on user interaction</A>
  <A HREF="qtu3_01.html">C = Code words and statements in sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Code words and statements in sucro programs:

  <A HREF="qtu3_02.html">1 = Simple key codes</A>
  <A HREF="qtu3_04.html">2 = Control words and commands</A>

```

3 = Useful key combinations in sucro control
 4 = Sucro memory (tutstack) operations
 5 = Conditional statements (if, goto, load, switch)
 6 = User interaction (prompt, on key)
 7 = Arithmetics and other internal operations in the sucro memory
 8 = Tutstack in touch mode
 S = General information on sucros

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Simple key codes in sucro programs:

{R}	ENTER key (also terminates a line in sucro listing)
{home}	HOME key
{pgdn}	Page Down key (next page)
{pgup}	Page Up key (previous page)
{erase}	ERASE (ctrl-END) key
{ins}	INSERT key
{del}	DELETE key {del3} same as {del}{del}{del}
{ins line}	Insert line key (alt-F9)
{del line}	Delete line key (alt-F10)
{act}	ESC key (activate Survo command)
{r}	right arrow {r3} same as {r}{r}{r}
{l}	left arrow {l3} same as {l}{l}{l}
{u}	up arrow {u3} same as {u}{u}{u}
{d}	down arrow {d3} same as {d}{d}{d}
{()}	characters { and }
{sp}	<space key>
{tab}	TAB key
{line end}	END key

Simple key codes in sucro programs:

(continued)

{help}	HELP key (F1)
{pre}	PREFIX key (F2)
{touch}	TOUCH key (F3)
{disk}	DISK key (F4)
{form}	FORM key (F5) {form3} same as {form}{form}{form}
{merge}	MERGE key (F6)
{ref}	REF key (F7)
{exit}	EXIT key (F8)
{soft_on}	SOFT BUTTONS key (alt-F1)
{words}	WORDS key (alt-F2)
{copy}	COPY key (alt-F3)
{block}	BLOCK key (alt-F4)

{search} SEARCH key (alt-F5)
 {file act} Survo data file activation (alt-F6)
 {code} CODE key (alt-F7)

```
<A HREF="qtu3_01.html">C = More information on control words in sucro programs</A>
<A HREF="qtu1_01.html">S = General information on sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  <A HREF="qtu3_01.html">C = More information on control words in sucro programs</A>
  <A HREF="qtu1_01.html">S = General information on sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Control words and commands in sucro programs:

{end}            terminates the program.
{init}           performs initialization of certain display parameters.
                 It guarantees, for example, that insert mode is not on,
                 the reference point is cancelled, the first column is
                 set to the point of return when ENTER is pressed, no
                 blocks and shadow lines are being defined, etc.
                 {init} neither affects the position of the cursor
                 nor changes the contents of the edit field.
{break off}      prevents the effects of keys . + and - used in the
                 sucro run for speed control and stopping.
```

Used in keyboard sucros.
 {break on} cancels the effect of {break off}.

{message} {message}<string>
 displays a message <string> on the bottom line.
 To cancel the message (this must be done always before
 normal termination of a sucro), use {message}@ .
 {message Wi} displays a message contained in Wi .

Control words and commands in sucro programs: (Continuation)

{message shadow <char>}
 sets the shadow character (color) used in messages.
 Default is {message shadow 1} (red).

{wait <time>} sets a wait of <time> in 0.1 seconds before continuing.
 {tempo <speed>} sets the basic speed of the sucro.
 Default is {tempo 2}. {tempo 1} is the fastest possible.
 {tempo -1} increases the speed by 1 and {tempo +1}
 slows it down by 1. Normally only these relative forms
 should be used.

{keys i} (i=0,1,2) indicates whether the labels of the keys
 'pressed' by the sucro are displayed.
 {keys 0} (default) no display
 {keys 1} key labels are displayed
 {keys 2} the user is requested to press the key dis-
 played before proceeding.

Control words and commands in sucro programs: (Continuation)

{next word} finds the next 'word' on the visible part of the current
 line.

{next col} works as {next word} but finds also words outside the visible
 part of the current line.

{ref set i} defines the current cursor/screen position as an
 additional reference point i (i=1,2,...,8).

{ref jump i} returns the cursor to the point defined by {ref set i}.

{ref del i} removes the additional reference point i.

{disp off} disables the screen. Text is written normally in
 the edit field but not shown on the screen.

{disp on} restores the normal screen display (also from graphics mode).

{disp reset} as {disp on} but does not set off the graphics mode.
 If no graphics has not been generated under display off mode,
 {disp reset} (faster alternative) is preferred to {disp on}.

{labels off} makes the line numbers and control characters invisible.

{labels on} restores the line numbers and control characters.

Control words and commands in sucro programs: (Continuation)

{paint on} words/chars saved by {save word} or {save char} are painted.

{paint off} exits painting mode.

{soft_on} makes the soft buttons below the main window visible.

{soft_off} makes the soft buttons below the main window invisible.

{play sound <WAV_file>} plays a sound file.

{play sound Wi} plays a sound file (name given in Wi).

C = More information on control words in sucro programs

S = General information on sucros

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"


```

"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Useful key combinations in sucro control:

{line start}  =
{pre}B        moves the cursor to the start of the line.

{next word}   =
{pre}W        finds the next 'word' on the current line.

{find &lt;char>} =
{pre}C&lt;char> finds the next occurrence of a character on the line.
{pre}J        continues an incomplete word automatically.
{pre}{pre}    moves the cursor to the end of visible part of the line.
{pre}{R}      selects the current column where to return by ENTER.
{pre}S        displays the shadow line / closes the shadow line.
{pre}P        picks the current character to be written by CODE key.
{pre}I        cancels the insert mode in typing.
{pre}D        cancels the reference point set by {ref} .

<A HREF="qtu3_01.html">C = More information on control words in sucro programs</A>
<A HREF="qtu1_01.html">S = General information on sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Sucro memory (tutstack)

```

All advanced operations in sucros (like conditional statements or prompts for the user) are based on the information collected in a special internal memory called a tutstack.

1 = General information
2 = TUTSTACK command
S = General information on sucros

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from
</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">The contents of the tutstack is always a string of the form
word1@word2@word3@...

Each substring corresponding to one item (word, number, or string in general) is terminated by '@'. These items are called in sucro programs by W1,W2,W3,... These names can be replaced by any names starting by 'W' by giving comment lines (/ in the control column) of the form

/ def Wdata=W1 Wvar1=W2 Wvar2=W3

In names, W must be followed by a letter. Other characters may be letters and digits.

When a sucro is activated with parameters (example: /TEST DATA1,X5,X9) the tutstack is initiated by the parameters (example: W1=DATA1, W2=X5, W3=X9). If no parameters are given, W1=(empty) .

The tutstack can also be initiated and examined by a TUTSTACK command. The maximum number of characters in the tutstack is 999.

The sucro language provides different statements for operating with the tutstack. Some of these statements save more words and numbers in the tutstack.

In the earlier versions of Survo, all the new items were saved at the end of the current tutstack ('stack' derives from this idea). Currently most of these statements have alternative forms replacing items also in the middle of the tutstack and these new forms should be preferred. For example, {stack word} puts the 'word' touched by the cursor at the end of the tutstack, but {save word W3} or {save word Wcheck} puts it in the place of W3 or Wcheck (defined by / def Wcheck=W3 , for example).

M = More information on the sucro memory

S = General information on sucros

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
  <A HREF="qtu4_01.html">M = More information on the sucro memory</A>
  <A HREF="qtu1_01.html">S = General information on sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
</HTML>

```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TUTSTACK &lt;new_tutstack&gt;
initiates the tutstack.
TUTSTACK (without any parameters)
displays the contents of the tutstack on the next edit line.

```

Example:

TUTSTACK 11@SURVO MM@Data1

initiates the tutstack with words W1=11, W2=SURVO MM, and W3=Data1.

Thereafter activating of TUTSTACK without parameters gives on the next line:

11@SURVO MM@Data1@ .

The TUTSTACK command is useful when testing new sucros. One can initiate and read it for further examination.

```

  <A HREF="qtu4_01.html">M = More information on the sucro memory</A>
  <A HREF="qtu1_01.html">S = General information on sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
</HTML>
<!--
  Created by using the PRINT operation of SURVO MM

```

For more information, see <http://www.survo.fi/>

<HEAD>

<META NAME="Generator" CONTENT="SURVO MM">

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Classification" CONTENT="help system">

</HEAD>

<H1>&

{stack char} saves the current character (touched by the cursor)
 at the end of the tutstack.

{stack word} saves the current word (touched by the cursor)
 at the end of the tutstack.

{next word} finds the next word on the current line. If the next word is not in the visible part of the line, the cursor is not moved.

Sucro memory (tutstack) operations: (continued)

{save cursor Wi,Wj} saves the number of the current edit line in Wi and the number of the current column in Wj.

{save corner Wi,Wj} saves the number of the first visible edit line in Wi and the number of the first visible column in Wj.

{save dim Wi,Wj} saves the number of lines of the current edit field in Wi and the number of columns in Wj.

Sucro memory (tutstack) operations: (continued)

{save line Wi} saves the current line from to the right from the cursor in Wi.

{save datapath Wi} saves the Survo data path in Wi.

saves the default data path given by edisk in SURVO.APU at the end of the tutstack.

{stack tempdisk} saves the path for temporary files in Survo operations given by tempdisk in SURVO.APU at the end of the tutstack.
 {stack systemdisk} saves the Survo system disk designation (typically C:) at the end of the tutstack.
 {save systemdisk Wi} saves the Survo system disk designation in Wi.
 {save systempath Wi} saves the Survo system path designation (typically C:\E\) in Wi.

Sucro memory (tutstack) operations: (continued)

{del stack} clears the entire tutstack.
 {del stack Wi} clears the tutstack from Wi onwards.
 {get key} appends the next key pressed by the user to the tutstack. In case of a special key. the tutstack is appended by 'SK' and the function of the key executed.
 {get key Wi} puts the next key pressed in Wi.
 {save time Wi} puts the current time (in milliseconds) elapsed from the start of the Survo session in Wi.

Sucro memory (tutstack) operations: (continued)

{save stack} saves the entire tutstack temporarily.
 {load stack} appends the tutstack saved by {save stack} to the end of the current tutstack. Thus, to replace the current tutstack by the saved one, use {del stack}{load stack} .
 {save stack <file>} saves the current tutstack in file <file> on the path of Survo temporary files (defined by tempdisk in SURVO.APU)
 {load stack <file>} replaces the current tutstack by the one saved earlier by {save stack <file>}. Please, note the difference to {load stack}; no {del stack} is needed.
 The file name <file> can be given literally as {save stack TEMP1} or through a tutstack member as {save stack W1} .
 {save field <file>} saves the current edit field on the disk. Default path is defined by tempdisk in SURVO.APU.

Sucro memory (tutstack) operations: (continued)

{print Wi} prints the contents of Wi in the edit field as a string.
 {write Wi} writes the contents of Wi in the edit field as a string.
 The 'write' command types text as if it were written by the user (i.e. insert and display modes, end of line, etc. are observed) while 'print' simply sets down text regardless of display status.
 {find Wi} finds the next occurrence of the first character of Wi on the current line.
 {find string Wi} finds the next occurrence of the string saved in Wi on the current line. Wi can be replaced by a literal string.
 Examples: {W4= TO }{find string W4} = Find " TO "
 {find string ABC} = Find "ABC"

Sucro memory (tutstack) operations: (continued)

{pre}l<key> appends the label of the key to the tutstack.
For example, {pre}l{home} appends 'HOME'.

{jump Wi,Wj,Wk} moves the cursor to line Wj and column Wk. The line Wi is displayed as the first visible one.
Each of Wi,Wj,Wk can be replaced by a constant integer.

{jump Wi,Wj,Wh,Wk} works as jump above but displays Wh as the first visible column.

Example: Save the cursor/edit field location by
{save cursor Wrow,Wcol}{save corner Wrow1,Wcol1} .
Return to this place by
{jump Wrow1,Wrow,Wcol1,Wcol} .

{save survo.apu Wi}
saves the pathname of the default SURVO.APU file in Wi.
{save survo2.apu Wi}
saves the pathname of the current SURVO.APU file in Wi.

Sucro memory (tutstack) operations: (continued)

{save system <system_word> Wi}
saves the system parameter defined by
<system_word> in the Survo system file SURVO.APU
in Wi.
Example: {save system accuracy W3}
saves the 'accuracy' parameter in W3.
{save spec <specification_word> Wi}
saves the value of the specification given in the
current edit field by <specification_word> in Wi.
If the specification doesn't exist, an empty
string {} is saved.
Example: {save spec DEVICE W4}
saves the current value of the DEVICE specification in W4.

{save spec2 Wj Wi} save the value of the specification word given
in the current edit field as the value of Wj
in Wi.

Sucro memory (tutstack) operations: (continued)

{save language Wi} saves the language of the current Survo version in Wi.
Wi=1: Finnish, Wi=2: English
{save survotype Wi} saves the type of the current Survo version in Wi.
Wi=1: SURVO 84C, Wi=2: SURVOS Wi=3: SURVO 98,MM

{load sucro Wi} continues with another sucro with name Wi.
{save insertmode Wi} saves 1 when insert mode is on, otherwise 0.
{save fieldtype Wi} saves 1 when the current edit field cannot be
used in SURVO 84C, otherwise 0 is saved.
{save dataname Wi} saves the name of current data file.
{save os Wi} saves the name of the operating system.
Current alternatives: NT, Win98, Win95
{save version Wi} saves the version number of the current SURVO MM.
{save winsize Wi,Wj} saves # of lines and # of columns of the Survo
main window.

C = More information on control words in sucro programs
S = General information on sucros
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Arithmetics and other internal operations in the tutstack:

```

Simple arithmetics can be performed with the words W1,W2,... in the tutstack. Permitted calculations are

```

{W3=W1}    W3 is a copy of the word in W1
{W3=W1+W2} W3 will be the sum of W1 and W2
{W3=W1-W2}{W3=W1*W2} similarly for subtraction and multiplication
{W3=W1/W2} W3 is the ratio of W1 and W2
{W3=W1%W2} W3 is the remainder in the division when W1 and W2 are integers

```

W1 and W2 above can be replaced by constants. Example: {W1=W1+1}
 Also {W1=<any string>} is permitted. The string must not include characters +-*/%&{ } @ . Examples: {W1=0} {W5=SURVO 84C}

Two words, say W1 and W2, can be concatenated to W3 by {W3=W1&W2}
 Example: {W1=SURVO}{W2= 84C}{W3=W1&W2} gives W3=SURVO 84C .

Example: Sucro PRIMES writes all the primes.

```

10 *
11 *TUTSAVE PRIMES
12 / def Wnumber=W1 Wfactor=W2 Wremainder=W3 Wsquare=W4
13 *{tempo 1}{R}
14 *SCRATCH {act}{home}2 3{Wnumber=1}
15 + A: {Wnumber=Wnumber+2}{Wfactor=1}
16 + B: {Wfactor=Wfactor+2}{Wremainder=Wnumber%Wfactor}
17 - if Wremainder = 0 then goto A
18 *{Wsquare=Wfactor*Wfactor}
19 - if Wsquare &lt; Wnumber then goto B
20 * {write Wnumber}{goto A}{end}
21 *
22 */PRIMES
23 *2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97
24 *101 103 107 109 113 127 131 137 139 149 etc.
25 *

```

```

<A HREF="qtu3_01.html">S = More information on sucro codes and statements</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->

```

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">When a sucro is called without a pathname, it will be looked for
in this order from directories
  1. current data path
  2. sucropath, given by sucropath=&lt;path&gt; in SURVO.APU
      (e.g. sucropath=D:\SUCROS\ )
  3. &lt;Survo&gt;\U\S\ (&lt;Survo&gt; is the main directory of SURVO MM.)
  4. &lt;Survo&gt;\U\TUT\
  5. &lt;Survo&gt;\S\
  6. &lt;Survo&gt;\TUT\
```

If the sucro does not exist in these directories, an error message
'Sucro <name> not found!' will be displayed.

By the sucro command
/WHICH <name_of_sucro>;
the current instance of a sucro is automatically detected.

```
<A HREF="qtu1_01.html">S = More information on sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
```

```
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The tutstack can also be initiated and updated in <B>touch mode</B>
touching words and lines in the edit field as follows:
```

W (in touch mode) activates the word touched by the cursor.
E (in touch mode) activates the line from the current position to right.
B (in touch mode) activates the current character.
! (in touch mode) initiates the tutstack with the word activated
by W,E,B or with the current arithmetic result.
; (in touch mode) adds similarly one word at the end of the tutstack.

```
<A HREF="qtu3_01.html">C = More information on sucro codes</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
```



```

</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Calling sucros from other sucros

```

In large sucro applications, many sucros are cooperating. Sucros can call other sucros in two different ways.

The sucros are either chained or nested. In the former case, one sucro is followed by another and there is no return to the first one (unless the second calls the first again). In the latter case, the second sucro is used as a subroutine and the calling sucro continues again after the second one has terminated normally.

1 = Chaining of sucros

2 = Nesting of sucros (calling another sucro as a subprogram)

S = More information on sucros in general

```

</PRE></P><HR>

```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>

```

```

</BODY>

```

```

</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

```

"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>

```

```

  <!--

```

```

    Created by using the PRINT operation of SURVO MM

```

```

    For more information, see http://www.survo.fi/

```

```

  -->

```

```

<HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

```

```

<META NAME="Generator" CONTENT="SURVO MM">

```

```

<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>

```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>

```

```

<META NAME="Classification" CONTENT="help system">

```

```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```

</HEAD>

```

```

<BODY>

```

```

<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&

```

```

<P><PRE CLASS="HelpText">Chaining of sucros

```

Another sucro is called as a continuation of the current one by the code word {load <sucro>} which may also appear (without braces) in conditional statements (if, switch, on key).

The new sucro continues exactly from the setup created by the previous one. Thus the tutstack, the cursor position and all other system attributes and parameters are preserved.

```

<A HREF="qtu5_04.html">C = More information on sucro calls</A>
<A HREF="qtu1_01.html">S = More information on sucros in general</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">
  <A HREF="qtu5_04.html">C = More information on sucro calls</A>
  <A HREF="qtu1_01.html">S = More information on sucros in general</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">Nesting of sucros

```

When a sucro is running it can call another sucro (say SUCRO2) as a subroutine either by activating it as a Survo command (/SUCRO2) or without any visible signs by certain special codes.

If another sucro is activated by a Survo command, the tutstack is lost and replaced by the parameters of the new sucro. Also the reference point (set by REF key) is cancelled.

Example:

```

11 *TUTSAVE S2 / This sucro is used as a subroutine.
12 *{R}Sucro S2 working...
13 *{W1=W1+W2}{end}
14 *
15 *TUTSAVE S1 / This sucro is the main program.

```

```

16 / Tutstack will contain 11@22@ :
17 *{init}{del stack}{W1=11}{W2=22}{R}Sucro S1 starts...{R}
18 / After calling S2, tutstack will be 25@11@ :
19 *{erase}/S2 25,{print W1}{act}
20 / The altered contents of W1 is printed:
21 *{R}{print W1}{end}
22 *
23 *If both sucros are saved, activation of /S1 gives:
24 */S1
25 *Sucro S1 starts...
26 *Sucro S2 working...
27 *36_

```

Another sucro (say SUCRO2) can be called as a subroutine also without any visible traces in the edit field either by the sucro code

```

{call SUCRO2}
or
{calls SUCRO2}

```

In the first case, the tutstack and the reference point are preserved but in the second case they are lost as in /SUCRO2{act}.

By the commands {save stack},{load stack},{save stack <file>},{load stack <file>} one can restore the original contents of the tutstack after the return from a subsucro.

A subsucro can call another subsucro and so on. Maximum number of nested sucros is 5. However, when chaining sucros, there are no limits.

```

<A HREF="qtu5_04.html">C = More information on sucro calls</A>
<A HREF="qtu1_01.html">S = More information on sucros in general</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">Error control in sucros:
Errors in applications using various Survo operations may have harmful
consequences in sucros.
For example, a sucro may try to operate on a non-existent data file
suggested by the user.
To overcome such failures, an automatic error recovery scheme has been
added. Whenever an error occurs, Survo gives an error message and
prompts to press any key). Such messages will be omitted in sucros.
Instead of an interrupt, the current contents of the sucro memory will
be replaced by
ERR@&lt;error_no.&gt;@&lt;name_of_operation&gt;@&lt;error_message&gt;
and a special error handler SURVOERR.TUT (in &lt;Survo&gt;\S) is called to display

```

the error message on the bottom line and the current job is terminated. In any sucro application, this error handler sucro can be replaced by another, possibly giving a chance for the user to correct his/her actions before trying again. To override the default error handler sucro (SURVOERR), give the code word {error handler <name_of_sucro>} and your own routine will take the responsibility for the consequences.

In the current Survo version, only a limited set of Survo operations is employing the new error recovery scheme. Such operations are FILE SHOW,CORR,LINREG,FACTA.

```
<A HREF="qtu1_01.html">S = More information on sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Using ready-made sucros
```

When working with the Survo Editor, sucros are called normally by activating the name of the sucro with a '/' in front of the name and a list of parameters after the name. Thus a typical sucro call is

```
/SUCRO1 DATA3,VAR5
```

Since sucros are not regular Survo operations, their functions are not usually described in this inquiry system. However, a common practice is that a sucro gives information on itself by activating it without parameters or with a '?' as the only parameter. Thus

```
/SUCRO1 ?
```

should tell about the functions of sucro SUCRO1. This information will be written in the edit field and it may overwrite text below the current line.

```
<A HREF="qtu6_02.html">1 = Different types of sucros</A>
<A HREF="qtu5_02.html">2 = Sucro paths</A>
<A HREF="qtu1_01.html">S = More information on sucros</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Different types of sucros

```

The range of sucros and their applications is wide. The smallest ones are like ordinary macros and they simplify tasks and key sequences needed repeatedly. The largest sucros are either teaching programs (this was the main application originally) or specialized expert applications combining Survo operations and other activities conditionally, giving prompts for the user, and writing complete reports with text, tables and graphical illustrations automatically from the data at hand. In all categories of applications, sucros lessen the need for making actual computer programs.

Use of certain types of sucros is described separately:

```

<A HREF="qtu6_03.html">1 = Teaching programs</A>
<A HREF="qtu6_04.html">2 = Key sucros</A>
<A HREF="qtu6_05.html">3 = Keyboard sucros</A>

```

```

<A HREF="qtu6_01.html">S = More information on ready-made sucros</A>

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--

```

```

Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Teaching programs

```

In sucros made for teaching of Survo functions or for teaching of various Survo applications, it is important to control the pace of the process. Since such teaching programs present real activities, it should always be possible for the user to interrupt the run and continue on his/her own from the setup generated by the sucro so far.

Thus any sucro (made for teaching) can be stopped by pressing the '.' key. A temporary interrupt is achieved by the space bar. Another press of the space bar makes the sucro to continue. To slow down the speed, the '-' key is pressed (a couple of times). The original speed is resumed by pressing '+' equally many times. Many teaching programs have their own internal speed control and there

should be no urgent need for using the '+' and '-' keys.

The basic speed of a teaching program can be set more accurately by the `sucro` command
`/WAITSET <slowness_parameter>`;
where the default value is 10.

Interrupts and sound signals in sucros:
A teaching program can be temporarily interrupted by pressing ','.
During interruption it is possible to scroll the current edit field and activate various operations (but not sucros!).
Thereafter the teaching program may be continued from the interrupt position by pressing keys F2 and ','.

Any sound signal can be activated during a sucro by `PLAY SOUND` commands.

Certain acoustic warnings and signals are automatically specified by a line 'tut_sounds' in `SURVO.APU`.

'tutsound' gives a list consisting of names of 3 sound (VAW) files
`tut_sounds=<sound1>,<sound2>,<sound3>`;
where

<sound1> is heard when the user hits a wrong key when pressing of a particular key is prompted by the tutorial,
<sound2> indicates that an interrupt takes place (when the user has pressed the ',' key),
<sound3> tells that user has pressed keys F2 and ',' in order to let the tutorial to be continued.

All sound files must be located in the <Survo>\U\SND directory.

The current default setting is
`tut_sounds=PROTECT,CARBRAKE,DRIVEBY`

Different types of sucros

The range of sucros and their applications is wide. The smallest ones are like ordinary macros and they simplify tasks and key sequences needed repeatedly. The largest sucros are either teaching programs (this was the main application originally) or specialized expert applications combining Survo operations and other activities conditionally, giving prompts for the user, and writing complete reports with text, tables and graphical illustrations automatically from the data at hand. In all categories of applications, sucros lessen the need for making actual computer programs.

Use of certain types of sucros is described separately:

1 = Teaching programs

2 = Key sucros

3 = Keyboard sucros

S = More information on ready-made sucros

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

```

<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Key sucros

```

Sucros having one-letter names are called key sucros because instead of normal activation (by /X for example) a sucro X can also be called without visible traces by the key combination PREFIX M X
Typical macros of Survo have been made as key sucros. For example, sucro X changes the position of the current word by the next one on the same line. In such a task it is important to invoke the action without typing any command.

A list of key sucros and other sucro tools is obtained by activating the sucro
/SUCROS

Another set of key sucros having names #X (X=any letter) but called by the key combination
PREFIX N X
are reserved for users' own applications.

Different types of sucros

The range of sucros and their applications is wide. The smallest ones are like ordinary macros and they simplify tasks and key sequences needed repeatedly. The largest sucros are either teaching programs (this was the main application originally) or specialized expert applications combining Survo operations and other activities conditionally, giving prompts for the user, and writing complete reports with text, tables and graphical illustrations automatically from the data at hand. In all categories of applications, sucros lessen the need for making actual computer programs.

Use of certain types of sucros is described separately:

```

<A HREF="qtu6_03.html">1 = Teaching programs</A>
<A HREF="qtu6_04.html">2 = Key sucros</A>
<A HREF="qtu6_05.html">3 = Keyboard sucros</A>

```

```

<A HREF="qtu6_01.html">S = More information on ready-made sucros</A>

```

```

</PRE></P><HR>

```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">

```

```

</BODY>

```

```

</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>

```

```

<!--

```

```

    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/

```

```

-->

```

```

<HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

```

```

<META NAME="Generator" CONTENT="SURVO MM">

```

```

<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>

```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>

```

```

<META NAME="Classification" CONTENT="help system">

```

```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```

</HEAD>

```

```

<BODY>

```

<H1>&
<P><PRE CLASS="HelpText">Keyboard sucros

The functions of selected keys can be redefined by the sucro technique.
It is possible to alter the tasks of all regular typewriter keys.

When a keyboard sucro is activated, it normally gives a message (on the bottom line) about the changes of the keyboard functions.
The keyboard sucro is terminated usually by the '#' key and then normal keyboard functions are resumed.

Standard keyboard sucros have been created, for example, for typing shadow characters (/S), for typing box graphics characters (/BOX), and for writing sucro code (/SUCRO).
A list of keyboard sucros and other sucro tools is obtained by activating the sucro
/SUCROS

Different types of sucros

The range of sucros and their applications is wide. The smallest ones are like ordinary macros and they simplify tasks and key sequences needed repeatedly. The largest sucros are either teaching programs (this was the main application originally) or specialized expert applications combining Survo operations and other activities conditionally, giving prompts for the user, and writing complete reports with text, tables and graphical illustrations automatically from the data at hand.
In all categories of applications, sucros lessen the need for making actual computer programs.

Use of certain types of sucros is described separately:

1 = Teaching programs
2 = Key sucros
3 = Keyboard sucros

S = More information on ready-made sucros

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from
</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Generalised Linear Models (GLM):

1 = TABFIT for data in multiway tables

2 = GENREG for general cases

3 = Logistic regression analysis by GENREG

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>


```

</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TABFIT &lt;table&gt;,&lt;name of model&gt;,L
estimates the parameters of a log-linear model for frequency data
given as a multiway table (F table) or
estimates the parameters of an ANOVA model for data
given as a multiway table (X table).

```

Both types of TABFIT models are special cases of GLM (generalized linear models) and treated here by the same program.

The type of the multiway table (F or X) is given as the last parameter of the TABLE definition for <table>. It specifies whether a log-linear model (with the log link) or a classical ANOVA model (with the identity link) is estimated.

TABFIT <table>,<name of model>,L

Parameter L is optional and gives the first line for the results in the edit field.

The model to be fitted has to be defined by a MODEL specification typed on any two consecutive lines in the edit field as follows:

MODEL <name of model>;

<list of terms to be fitted>;

<table> has to be written in the edit field and it has to be defined by a TABLE specification. The structure of <table> is that of tables produced by the TAB operation (See TAB?). Thus, multiway tables computed by TAB can be used as input for TABFIT without any changes.

Each term in the model may consist either of one (main effect) or several (interaction between factors) factors.

The factors are notated by the initials of the classifier names in the table.

The model is given on two consecutive edit lines in the form:

MODEL <name of the model>;

<list of the terms to be fitted>;

The terms to be fitted are separated by a '+' operator. If the term is an interaction term of two or several classifiers, the factors must be separated by '.'. For example, A.B represents an interaction of A and B. Also a '*' operator can be used:

For example, A*B=A+B+A.B

A*B*C=A+B+C+A.B+A.C+B.C+A.B.C

The user can remove any existing term from the model by operator '-':

For example, A*B*C-A.B.C=A+B+C+A.B+A.C+B.C

The constant term is given as '1'.

Thus a typical model definition is

MODEL M1

1+S+B*K

where S,B and K are initials of classifiers of the multiway table.

The extent of results given by TABFIT is controlled by the RESULTS specification.

If RESULTS=0, only minimal information (i.e. deviance, degrees of freedom and structure of the model) is printed.

Otherwise also the estimates of the parameters and their standard errors are given.

Furthermore, if a value >70 (like RESULTS=100) is given, the fitted values are displayed as a new multiway table having the same structure as the original table.

In all cases, the design matrix generated by TABFIT is saved as a matrix file XTAB.M and the covariance estimates of parameters as a matrix file PCOV.M on the current data disk.

```
<A HREF="qu2_01.html">T = More information on table management</A>
<A HREF="q21_01.html">S = More information on statistical analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">TABTEST &lt;table_of_frequencies>;L
performs various tests for independence etc. by simulation
for a two-dimensional table of frequencies. The table is
given in edit field in the form used by the TAB operations.
The table can be also given in a simpler form without any labels:
TABLE TEST / Example (An empty line indicates the end of the table.)
7 2 0
3 1 5
```

Different assumptions about the stochastic structure of the table are determined by a FIX specification with following alternatives:

- FIX=Fisher Both row and column margins fixed (exact test)
- FIX=RC Both row and column margins fixed
- FIX=C Column margins (vertical sums) fixed
- FIX=R Row margins (horizontal sums) fixed
- FIX=N No fixed margins, only the grand total fixed
- FIX=F(i,j) Element of row i and column j fixed
- FIX=FIT Goodness of fit test for an $n \times 2$ table

The test statistics used in simulation is selected by a TEST specification:

TEST=X² is the common Pearson's chi-square statistics: $\sum (O-E)^2/E$.

TEST=G² is the likelihood statistics: $\sum -2 \cdot O \cdot \log(O/E)$.

TEST=PROB is the probability of the simulated table. The unknown margin probabilities are replaced by simulated relative frequencies. We call this 'Probability statistics'.

In case FIX=Fisher, TEST=PROB is always selected.
In other cases TEST=X² is default.

Maximum number of replicates is given by SIMUMAX (default 10000000).
The seed number of the random number generator (either 'rand' or 'urand')
is given by RAND (default RAND=rand(12345). See qv3_01.html>RAND? .
The process may be interrupted by pressing any key.

The results are displayed after each 100 replicates as a table of the form

N	P	Confidence interval (level=0.95)
# of replicates	Estimate of P	lower limit
s.e. Standard error		upper limit

The confidence level for P is set by CONF=p (0.8<p<1). Default is CONF=0.95

The two-way table is also saved as a matrix by using the specification

MATRIX=<name_of_a_matrix_file> , say, MATRIX=T .

This matrix can be analyzed further, for example, by the sucro command
/X2

which computes various derived tables as matrices such as the expected
frequencies and decomposition of the X² statistics in cells and
margins.

Example:

TABLE T / This 2x2 table is tested with default settings.

7 2

1 4

TABTEST T,CUR+1

[G = Goodness of fit test for an n x 2 table](qu1_04.html)

[T = More information on TAB operations](q22_02.html)

[S = More information on statistical tests](qa1_01.html)

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo>

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Goodness of fit test for an n x 2 table

TABTEST &table>,L / FIX=FIT

computes the Pearson goodness of fit test for an n x 2 table of

integers. In the first column the observed frequencies

and in the second column integers proportional to the expected
frequencies are given.

After the common Chi-squared approximation for P is obtained
the P value is also computed by simulation according to the same
principle as in other forms of TABTEST.

```

    <A HREF="qu1_03.html">T = More information about TABTEST</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Management and editing of multiway tables

  <A HREF="qu2_09.html">G = General structure of multiway tables</A>
  <A HREF="qu2_02.html">S = Change the number of row classifiers (TABS)</A>
  <A HREF="qu2_03.html">M = Change positions of two classifiers (TABM)</A>
  <A HREF="qu2_04.html">I = Change positions of two classes of a classifier (TABI)</A>
  <A HREF="qu2_05.html">D = Delete a classifier (collapsing) (TABD)</A>
  <A HREF="qu2_06.html">J = Combine two classes of a classifier (TABJ)</A>
  <A HREF="qu2_07.html">A = Arithmetical operations on elements of multiway tables</A>
  <A HREF="qu2_10.html">B = Structure of a multiway table (TABDIM)</A>

  <A HREF="q22_01.html">T = Computing multiway frequency tables (TAB)</A>
  <A HREF="qu1_02.html">F = Analysis of multiway tables (TABFIT)</A>
  <A HREF="q21_01.html">X = More information on data analysis</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">http://www.survo.fi/
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TABS &lt;table>;K,L
displays &lt;table> with K row classifiers (K=0,1,2,...,n).
L is the first output line in the edit field and the name of the new
table is &lt;name of the old table>;+'S'.

```

```

<A HREF="qu2_01.html">T = More information on TAB operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TABM &lt;table>,A,B,L
changes the positions of the classifiers A and B.
L is the first output line in the edit field and the name of the new
table is &lt;name of the old table>+'M'.

```

```

<A HREF="qu2_01.html">T = More information on TAB operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TAB1 &lt;table>,C,C1,C2,L
changes the positions of classes C1 and C2 for classifier C.
L is the first output line in the edit field and the name of the new
table is &lt;name of the old table>+'I'.

```

```

<A HREF="qu2_01.html">T = More information on TAB operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TABD &lt;table&gt;,C,L
deletes classifier C.
In a <B>frequency table</B> the elements of the modified table are the
marginal sums of C-classification; In this case TABD means collapsing
over classifier C and the results is an (n-1)-dimensional table.
In a <B>data table</B> the C-classification will be changed to N-classifi-
cation where the C-class names are replaced by indices 1,2,...
The modified table is still n-dimensional and has the old structure
and contents; only the name C is replaced by N.
If TABD is applied to a data table which already includes an N-classi-
fication, the C-classification will be united to the N-classification
and now the dimension of the table decreases by 1 but the number of
elements remains the same.

  <A HREF="qu2_01.html">T = More information on TAB operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
  <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
  <META NAME="Generator" CONTENT="SURVO MM">
  <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
  <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
  <META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
  <META NAME="Classification" CONTENT="help system">
  <META NAME="Keywords" CONTENT="Survo, help, hypertext">
  </HEAD>
  <BODY>
  <H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
  <P><PRE CLASS="HelpText">TABJ &lt;F-table&gt;,C,C1,C2,C0,L
combines (in a frequency table) the classes C1 and C2 of the classifier
C and calls the combined class by name C0. The class C0 takes the
position of C1 and C2-class will be cancelled.

  <A HREF="qu2_01.html">T = More information on TAB operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```

```

<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TAB+ &lt;table1&gt;,&lt;table2&gt;,,L
makes a new multiway table whose elements are sums of corresponding
elements in tables &lt;table1&gt; and &lt;table2&gt;. Tables concerned must have
the same structure.
Operations
TAB- &lt;table1&gt;,&lt;table2&gt;,,L
TAB* &lt;table1&gt;,&lt;table2&gt;,,L
TAB/ &lt;table1&gt;,&lt;table2&gt;,,L
compute differences, products and ratios of elements.
In all above operations &lt;table2&gt; may be replaced by a constant value.
For example, TAB/ SAMPLE1,100,23 divides all the elements of table
SAMPLE1 by 100, writes the modified table from line 23 onwards
and labels it as TABLE SAMPLE1/.

  <A HREF="qu2_01.html">T = More information on TAB operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
  <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
  <META NAME="Generator" CONTENT="SURVO MM">
  <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
  <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
  <META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
  <META NAME="Classification" CONTENT="help system">
  <META NAME="Keywords" CONTENT="Survo, help, hypertext">
  </HEAD>
  <BODY>
  <H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
  <P><PRE CLASS="HelpText">
    <A HREF="qu2_01.html">T = More information on TAB operations</A>
  </PRE></P><HR>
  <DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
  </BODY>
  </HTML>
  <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">
  <HTML>
    <!--
      Created by using the PRINT operation of SURVO MM
      For more information, see http://www.survo.fi/
    -->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Multiway tables consisting of frequencies or data values can be repre
sented in the edit field in the following way:

```

```

3 *
4 *TABLE TEST,5,11,F
5 *      A A1      A2      A3
6 *      B B1 B2 B3 B1 B2 B3 B1 B2 B3
7 * C   D   **
8 * C1 D1    1  5  9 13 17 21 25 29 33
9 *    D2    2  6 10 14 18 22 26 30 34
10 * C2 D1    3  7 11 15 19 23 27 31 35
11 *    D2    4  8 12 16 20 24 28 32 36
12 *

```

Above a 4-dimensional (3x3x2x2) table is written on edit lines 5-11.
The TABLE line (4) gives the name (TEST), lines (5,11) and type (F).
This table has two row classifiers (C,D) and two column classifiers (A,B).
Frequency tables are of type F and data tables of type X.
Input and output tables of TAB operations have this structure.

```

<A HREF="qu2_01.html">T = More information on TAB operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TABDIM &lt;table&gt;
writes after the command information about the table in the form
TABDIM &lt;table&gt; / nc nrc type names_of_classifiers
where nc=# of classifiers, nrc=# of column classifiers,
type=F or X.

```

```

<A HREF="qu2_01.html">T = More information on TAB operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>

```



```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)&nbsp;help&nbsp;system">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">GENREG &lt;data>L
```

```
estimates a generalized linear model (GLM) defined by ERROR and LINK speci-
fications from a Survo data where the dependent variate is acti-
vated by Y and the covariates by X's. IND and CASES specifications
are used for selection of observations.
```

```
The theory of GLM's is described in 'Generalized Linear Models' by
P.McCullagh and J.A.Nelder (Chapman and Hill 1983).
```

```
Variables for the model and for results are selected by masks as follows:
```

```
Y dependent variate (only one Y allowed)
```

```
X covariate (also the constant term must be specified by X)
```

```
R for output of scaled Pearson residuals (optional)
```

```
P for predicted values of Y (optional)
```

```
N number of trials in ERROR=Binomial (Y is number of successes)
```

```
<A HREF="qu3_02.html">E = ERROR specification</A>
```

```
<A HREF="qu3_03.html">L = LINK specification</A>
```

```
<A HREF="qu3_05.html">P = Printout of results</A>
```

```
<A HREF="qu3_04.html">T = Using TABFIT as a preparatory operation for GENREG</A>
```

```
<A HREF="q21_01.html">S = General information on statistical operations</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi/">
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)&nbsp;help&nbsp;system">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">Possible error structures in GENREG are
```

```
ERROR=Normal (LINK=Identity)
```

```
ERROR=Poisson (LINK=Log)
```

```
ERROR=Binomial (LINK=Logit)
```

```
ERROR=Gamma (LINK=Reciprocal)
```

The default (canonical) links are in parentheses.

```
<A HREF="qu3_03.html">L = LINK specification</A>
<A HREF="qu3_06.html">R = Logistic regression</A>
<A HREF="qu3_01.html">G = More information on GENREG</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The link function is given by any of the following alternatives:
  LINK=Identity          (default in ERROR=Normal)
  LINK=Log               (default in ERROR=Poisson)
  LINK=Logit             (default in ERROR=Binomial)
  LINK=Reciprocal        (default in ERROR=Gamma)
  LINK=Probit            (N variable must be given)
  LINK=Complementary_log-log (N variable must be given)
  LINK=Square_root
  LINK=Exponent,alpha    (x^alpha power transformation)

  <A HREF="qu3_02.html">E = ERROR specification</A>
  <A HREF="qu3_01.html">G = More information on GENREG</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The TABFIT operation generates, as a by-product, the design matrix
extended by the dependent variate and the external weight function
according to the current model. This matrix is saved (even in saturated
cases) as a matrix file XTAB.M .
```

The matrix file XTAB.M as such (or more conveniently, its transform to a data file by FILE SAVE MAT operation) can be used as an input data set for GENREG. Data for various models including factors and their interactions can be organized easily by this procedure.

```

    <A HREF="qu1_02.html">T = TABFIT operation</A>
    <A HREF="qu3_01.html">G = More information on GENREG</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The extent of results given by GENREG is controlled by the RESULTS
specification.
If RESULTS=0, only minimal information (i.e. deviance, degrees of freedom,
the error structure, and the link) is printed.
Otherwise also the estimates of the parameters and their standard errors
are given.

```

In any case, the covariance estimates of parameters are saved as a matrix file PCOV.M on the current data disk.

Similarly, the estimates of the parameters are saved in GENREG.M .

```

    <A HREF="qu3_01.html">G = More information on GENREG</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">To run logistic regression (with a binary dependent variable Y) define
constant variable, say I, (with all values =1) with mask 'N' and

```

activate

GENREG <data>,L / ERROR=Binomial .

To have a constant term included, define another constant variable,
say C=1 with mask 'X' as other independent variables.

The most convenient way of applying GENREG in logistic regression is
provided by the /LOGREG sucro (made by Kimmo Vehkalahti).

```
<A HREF="qu3_01.html">G = More information on GENREG</A>
<A HREF="qkv0_09.html">L = /LOGREG</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM
<P><PRE CLASS="HelpText">Transformation of variables in Survo data sets:

VAR operation:
<A HREF="qv1_02.html">1 = Simple transformations (type 1)</A>
<A HREF="qv1_03.html">2 = Composite transformations (type 2)</A>
<A HREF="qv2_02.html">3 = Lags and leads in transformations</A>
<A HREF="qv3_01.html">4 = Generating random variates</A>
<A HREF="qv3_03.html">5 = Special transformations (#RANK,#NORMAL,#STD,etc.)</A>
<A HREF="qv1_04.html">6 = Using additional data sets (or matrices) in the VAR operation</A>
<A HREF="qv2_04.html">7 = Transformation of string variables</A>
Other operations:
<A HREF="qv2_05.html">V = VARSTAT operation</A>
<A HREF="qv3_04.html">T = Same transformation for many variables simultaneously (TRANSFORM)</A>
<A HREF="qv4_02.html">C = Classified variables (CLASSIFY)</A>
<A HREF="qv4_01.html">L = Linear combinations of variables (LINCO)</A>
<A HREF="qv5_01.html">S = Smoothing of data (SMOOTH)</A>
<A HREF="qt1_02.html">M = Moving averages, cumulative sums, etc. (SER)</A>
<A HREF="qv5_02.html">P = Products of powers (POWERS)</A>
<A HREF="qf6_13.html">F = Code conversions of string fields in data files (FILE CONVERT)</A>
<A HREF="qf1_01.html">D = More information on data management</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">VAR &lt;variable>=&lt;expression>; TO &lt;data in data file>
is an operation setting values for a numeric &lt;variable>; in &lt;data file>;
as a function of other variables according to &lt;expression>;.
&lt;variable>; may be defined earlier (by FILE CREATE or FILE UPDATE) or it
may be a new one. In case of a new variable, its type may be given in the
form &lt;variable>;&lt;type>=&lt;expression>; where &lt;type> is 1,2,4 or 8.
&lt;variable>;4 is default.
Also &lt;variable>;S&lt;len>=&lt;expression>; is permitted for new string variables.
&lt;expression>; may be any function of variables in &lt;data>; and written
according to the rules of editorial computing (see <A HREF="qm1_03.html">ARIT</A>?).
Examples:
VAR Sum=Test1+2*Test2 TO DATA1
VAR Lincome=log(Income) TO ECON
VAR Number:2=ORDER TO FILE_A / 'Number' will be a two-byte variable
In the last example ORDER is a predefined variable whose value is the
number (1,2,...) of the current observation. Likewise predefined
variables N=number of observations, MISSING (missing value) and
RND=random value in (0,1) can be used in &lt;expression>;.

<A HREF="qv1_01.html">V = More information on VAR operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">VAR &lt;list of variables>; TO &lt;data>;
with transformation statements written in the same edit field and
defining values for the variables in the list specifies
simultaneously several transformations and definitions of variables
as functions of other ones.
If a variable in the &lt;list of variables>; does not exist, it will be
automatically created provided that there is enough space in &lt;data>;.

Example: (Data RECTANGLS includes variables 'Width' and 'Height')
VAR Area,Diagonal TO RECTANGLS
Area=Width*Height
Diagonal=sqrt(Width^2+Height^2)

```

Conditional statements may appear as follows:

```
VAR Ageclass:1 TO SAMPLE_3 / 'Ageclass' will be a new one-byte variable
  Ageclass=if(Age<26)then(1)else(A2)
  A2=if(Age<=60)then(2)else(3)
```

To avoid confusions, it is advisable to protect all those variables whose values must not be altered.

```
<A HREF="qv1_01.html">V = More information on VAR operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM
<P><PRE CLASS="HelpText">Fields from other Survo data sets can be used as input information
in VAR transformations. Other data sets to be employed in VAR must be
given as a specification
  INDATA=&lt;data_1&gt;;&lt;data_2&gt;;...
where &lt;data_1&gt;;&lt;data_2&gt;;... are Survo data sets of any type. Number of
them is limited to 12.
```

A field in <data_i> is denoted by Di:<fieldname>; i=1,2,...
Also lags and leads can be indicated in brackets [].

Example:

```
VAR Change=Price-D1:Price TO DAT87 / INDATA=DAT86
computes 'Change' to data DAT87 as a difference of 'Price' in DAT87
and DAT86.
```

```
<A HREF="qv1_05.html">M = Matrix files in VAR operation</A>
<A HREF="qv1_01.html">V = More information on VAR operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
```

```

<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Matrix files in VAR operation

```

Either constants or data values saved as vectors or matrices in matrix files (with extension .MAT) can be referred to in the VAR operation. This is done by MAT_A(i,j) functions giving the value of the element on the i'th row and j'th column of a matrix A saved as A.MAT before the VAR operation is activated. Name 'A' can be replaced by any other of max. 8 characters. In one VAR operation 20 different matrices can be used simultaneously in this way. Each matrix is loaded in the memory when it is called for the first time by any of the MAT_ functions. If the matrix consists of one column or row, a MAT_ function can be written with only one argument as MAT_A(i).

Example 1: Sampling with replacement

Assume that we have a 'population' of 10000 observations described by 3 variables X1,X2,X3 in a Survo data file DATA3 and we want to have a sample with replacement of 500 observations as a new data file SAMPLE3.

MAT SAVE DATA DATA3 TO D3 / Saving data to a matrix file D3

```

.....
FILE CREATE SAMPLE3,12,3 / Creating a new file for the sample
FIELDS:
1 N 4 X1
2 N 4 X2
3 N 4 X3
END
FILE INIT SAMPLE3,500 / 500 missing observations
.....
VAR X1,X2,X3 TO SAMPLE3 / Making the sample
i=int(10000*rand(1998))+1 / Random integer 1,2,...,10000
X1=MAT_D3(i,1) X2=MAT_D3(i,2) X3=MAT_D3(i,3)

```

Another example on the next pages!

Example 2:

Variable S is defined as a function of x as a sum

$$S = a_1 \exp(-b_1 x) + a_2 \exp(-b_2 x) + \dots + a_{20} \exp(-b_{20} x)$$

where a's and b's are constants and x a variable in a Survo data D.

Assume that constants a1,...,a20 are saved in a matrix file A and constants b1,...,b20 in matrix file B.

.....
Then S will be computed by

```

VAR S=for(i=1)to(20)sum(a(i)*exp(-b(i)*x)) TO D
a(i):=MAT_A(i)
b(i):=MAT_B(i) .

```

Definition of temporary functions a() and b() enables writing the formula in a more readable form.

Numerical example on the next page!

.....
An alternative:

If a's and b's are the two (first) columns in a matrix C, the temporary functions a() and b() would be expressed as
a(i):=MAT_C(i,1) b(i):=MAT_C(i,2) .

.....

Numerical example (with coefficients selected at random):

```
*MAT A=ZER(20,1)
```

```

*MAT B=ZER(20,1)
*MAT #TRANSFORM A BY 10*rand(1998) / a's uniform in (0,10)
*MAT #TRANSFORM B BY rand(1999) / b's uniform in (0,1)
*a(i):=MAT_A(i) b(i):=MAT_B(i)
*VAR S=for(i=1)to(20)sum(a(i)*exp(-b(i)*x)) TO D
*
*DATA D,A,A+5,A-1,A-2
* 11 11.11111
* x S
A 1 46.76749
* 2 29.58383
* 3 20.09316
* 4 14.53685
* 5 11.09308
* 6 8.84248
*
*
<A HREF="qv1_01.html">V = More information on VAR operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="qv2_02.html">1 = lags and leads in transformations of
<A HREF="q13_02.html">2 = LAG specification in PLOT operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Variables with lags and leads are available in all types of the VAR of

```


ation using the following notation:

# of observation	value of variable	SERIES
current - 2		SERIES[-2]
current - 1		SERIES[-1]
current		SERIES (=SERIES[0])
current + 1		SERIES[+1]
current + 2		SERIES[+2]

Examples:

```
VAR MEAN3,DIFF TO TEST2
MEAN3=(SER1[-1]+SER1+SER1[+1])/3
DIFF=SER1-SER1[-1]
END
```

```
VAR Fibo,Ratio TO GOLDEN
Fibo=if(ORDER<3)then(1)else(Fibo[-1]+Fibo[-2])
Ratio=if(ORDER<2)then(MISSING)else(Fibo/Fibo[-1])
END
```

```
<A HREF="qv1_01.html">V = More information on VAR operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"> <A HREF="qv2_01.html">1 = String variables in data files</A>
<A HREF="qv2_04.html">2 = Transformation of string variables</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

<P><PRE CLASS="HelpText">If a string variable holds numerical information, it can be treated like numerical variables in numerical transformations (by the VAR operation.)

To modify true textual information in string variables, a VAR operation of the form

VAR str(U,p,len)=str(V1,p1,len1)&str(V2,p2,len2)&... TO &data&; where U,V1,V2,... are string variables, is available.

Above, str(U,p,len) means a partial string of U starting from position 'p' and having length of 'len' bytes. Alternative notations are str(U) (the whole string field), str(U,p) (the whole field from 'p' onwards). '&' means concatenation (chaining) of the strings.

On the right hand side also constant strings of the form "ABC" can appear. (Examples are given on the next page.)

pos(S,p,string) is a useful auxiliary function giving the position of 'string' in the string variable S after the 'p'th position.

pos(S,string) is the same as pos(S,1,string) .

For example, if S is "ABC:123:X", then pos(S,:)=4, pos(S,5,:)=8, pos(S,Z)=0 .

Conditional VAR statements of the form

VAR Var1=if(str(...)=str(...))then(value1)else(value2) TO DATA1 are allowed. Also <,>,<,> etc. are possible as relational symbols. Also string fields with lags and leads are permitted.

For example,

VAR S=if(str(X[-1],1,2)=str(X,1,2))then(1)else(0) TO DATA1 gives S=1 when the 2 first characters of X are same in the previous record and S=0 otherwise.

Trailing blanks in string concatenation:

In string expression of the form str(A)&str(B)&str(C) trailing blanks are included.

To remove such blanks, 'connector' '|' is used in place of '&';.

Thus if str(A)="AA ", str(B)="BBB ", str(C)="anything", str(A)&str(B)&str(C)="AA BBB anything" but str(A)|str(B)|sp&str(C)="AABBB anything" (sp denotes one blank).

Examples: (See, what are the effects of the VAR operations below.)

```
*
*DATA TEST,A,B,N,M
M AAAAAA AAAAAAAA AAAA AAAAAAAA A A AA
N Code1 Code2 Year1 Code3 len D LagY
A 281037 AB/1967 1937 1967:AB 7 0
* 170667 A/1978 1967 1978:A 6 0 37
* 120659 ACD/1977 1959 1977:ACD 8 0 67
B 190939 D/1989 1939 1989:D 6 1 59
*
* 39
*VAR str(Year1)="19"&str(Code1,5) TO TEST
*VAR str(Code3)=str(Code2,pos1+1,4)&":"&str(Code2,1,pos1-1) TO TEST
*
* pos1=pos(Code2,/)
*VAR len=pos(Code2,sp)-1 TO TEST
*
* sp (or space) is the notation for the 'space' character.
*
* comma is the notation for ',' .
*VAR D=if(str(Code2,1,1)="D")then(1)else(0) TO TEST / conditional statement
*VAR str(LagY[+1])=str(Year1,3,2) TO TEST / lags and leads allowed
*
```

.....

VAR str(var2)=split(var1,<len>,<char>)

splits a string in var1 so that spaces between 'words' are replaced by <char> so that the length of each substring is at most <len> bytes. except for 'words' longer than <len> bytes.

Example: VARSTR(str2)=split(var1,8,) converts var1="This is a long string" into form

var2="This is|a long|string|".

```
<A HREF="qv1_01.html">V = More information on VAR operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">VARSTAT <data>; Y,<rule>;
computes a derived variable Y from active variables (say X1,X2,...,Xm)
for active observations in <data>; according to a given <rule>;.
```

Rules available are:

VARSTAT <data>; Y,SUM	$Y = X_1 + X_2 + \dots$
VARSTAT <data>; Y,SUM,p	$Y = X_1^p + X_2^p + \dots$
VARSTAT <data>; Y,MEAN	$Y = (X_1 + X_2 + \dots) / m$
VARSTAT <data>; Y,MEAN,p	$Y = ((X_1^p + X_2^p + \dots) / m)^{1/p}$
VARSTAT <data>; Y,MEDIAN	$Y = \text{median}(X_1, X_2, \dots)$
VARSTAT <data>; Y,STDDEV	$Y = \text{stddev}(X_1, X_2, \dots)$
VARSTAT <data>; Y,MAX	$Y = \max(X_1, X_2, \dots)$
VARSTAT <data>; Y,MIN	$Y = \min(X_1, X_2, \dots)$
VARSTAT <data>; Y,RANGE	$Y = \max - \min$
VARSTAT <data>; Y,#MISS	$Y = \text{\# of missing values}$
VARSTAT <data>; Y,#N	$Y = \text{\# of non-missing values}$
VARSTAT <data>; Y,#VAL,A	$Y = \text{\# of values } X=A \text{ (A is a constant)}$
VARSTAT <data>; Y,#VAL,A,B	$Y = \text{\# of values } A \leq X \leq B \text{ (A and B constants)}$

Other forms of VARSTAT are described on next pages.

To compute several Y variables (say Y1,Y2,...) with different rules for the same X1,X2,..., another form of VARSTAT with a VARSTAT specification is

```
VARSTAT <data>; / VARSTAT=Y1,Y2,...
Y1=<rule1>; Y2=<rule2>; ...
```

For example, the mean and the standard deviation in each active observation are computed as variables M1 and S1 by

```
VARSTAT <data>; / VARSTAT=M1,S1 M1=MEAN S1=STDDEV
```

VARSTAT <data>;*,<rule>;
makes a collective transformation for all active variables. The original values are overwritten in this form of VARSTAT.

Alternative rules:

VARSTAT <data>;*,DIVSUM,100	$X_i = 100 * X_i / \text{SUM} \quad i=1,2,\dots,m$
VARSTAT <data>;*,DIVMAX,100	$X_i = 100 * X_i / \text{MAX}$
VARSTAT <data>;*,NORM,p,C	Normalize: $X_1^p + X_2^p + \dots = C$
VARSTAT <data>;*,CENTER	$X_i = X_i - \text{mean}$
VARSTAT <data>;*,STANDARD	$X_i = (X_i - \text{mean}) / \text{stddev}$

VARSTAT <data>,<var>,<div>	Xi=Xi/<var>
VARSTAT <data>,<var>,<mlt>	Xi=Xi*<var>
VARSTAT <data>,<var>,<add>	Xi=Xi+<var>
VARSTAT <data>,<var>,<sub>	Xi=Xi-<var>
VARSTAT <data>,<var>,<sort>	Sort in ascending order

Example:

```
*VARSTAT TEST,<div> / Activate these two VARSTAT lines!
*VARSTAT TEST,<sum>
*VARS=X1,X2,X3
*DATA TEST,A,B,N,M
N X1  X2  X3    Sum
M AA.AA AA.AA AA.AA 111.111
A 6    -    1
* 6    3    5
* -    1    7
* 8    1    0
B 6    2    2
*
*
```

A = Some special forms of VARSTAT
 V = More information on transformations

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
  <HEAD>
    <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
    <META NAME="Generator" CONTENT="SURVO MM">
    <TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
    <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
    <META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
    <META NAME="Classification" CONTENT="help system">
    <META NAME="Keywords" CONTENT="Survo, help, hypertext">
  </HEAD>
  <BODY>
    <H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM
    <P><PRE CLASS="HelpText">Special forms of VARSTAT
```

VARSTAT <data>,<var>,<first> / L=val1,val2,...
 finds the first occurrence of values listed by L in each record
 and saves the position (# of variable) wherefrom the sought sequence
 starts as variable Y. For example, if L=0,1,0,1 and we have a
 record 1 1 0 1 1 0 1 0 1 1 0 0 1 0 1 1 1 ..., Y will be 6.

VARSTAT <data>,<var>,<last> / L=val1,val2,...
 respectively finds the last occurrence of a list of values. In the
 example above Y would be 12.

Both in FIRST and LAST missing values in the list are notated by '-'.
 If the sequence of values given by L is not found at all in a certain
 record, the code of a missing value is saved in Y.

Special forms of VARSTAT (continuation)

VARSTAT <data>,Y,#SEQ,L / L=val1,val2,...

finds the number of sequences of values listed by L in each record.

For example, if L=1,0,1 and we have a record

1 1 0 1 1 0 1 0 1 1 0 0 1 0 1 0 1, Y will be 3.

^ ^ ^ <- starting positions of 1,0,1

If specification OVERLAP=1 is given, also overlapping sequences are counted.

In this case in the example

1 1 0 1 1 0 1 0 1 1 0 0 1 0 1 0 1 Y will be 5.

^ ^ ^ ^ ^

VARSTAT <data>,Y,#RUN,L / L=val1,val2,...

finds the number of runs of values listed by L in each record.

For example, if L=1,2 and we have a record

1 1 1 0 2 1 2 0 0 2 2 0 1, Y will be 4

^ ^ ^ ^ <- starting positions of the runs

Special forms of VARSTAT (continuation)

VARSTAT <data>,Y,CYCLEN

computes the length of the shortest cycle of values which generates the current record of active variables.

Example:

```
*DATA C12,a,a+4,n,m
m 1 1 1 1 1 1 1 1 1 1 1 1 1 1
n A B C D E F G H I J K L X
a 1 2 5 1 2 5 1 2 5 1 2 5 3
* 4 7 4 7 4 7 4 7 4 7 4 7 2
* 9 9 9 9 9 9 9 9 9 9 9 9 1
* 1 2 3 4 1 2 1 2 3 4 1 2 6
* 1 2 1 2 1 2 1 2 1 2 1 1 12
*
*MASK=AAAAAAAAAAAA
*VARSTAT C12,X,CYCLEN / gives cycle lengths of A,B,...,K,L as X
*
```

Special forms of VARSTAT (continuation)

VARSTAT <data>,Y,#MODEVAL

computes # of values (frequency) of the most common value in the current record.

For example, in the case

1 3 2 3 2 2 1 1 3 3 3 3

#MODEVAL gives 6 since the mode (3) has 6 occurrences.

V = More information on VARSTAT

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Various random variates may be generated by the VAR operation by
of the statistical library functions of editorial computing. (See <A HREF="qm1_03.html">ARIT</A>
To generate a random value from a distribution with the inverse distri-
bution function G(), use G(rnd(0)) in the VAR operation.
For example, standard normal random variates are obtained by
N.G(0,1,rnd(0)) or faster by probit(rnd(0)). Other alternatives are:
BIN.G(n,p,rnd(0))    binomial distribution Bin(n,p)
Poisson.G(a,x)       Poisson distribution Poisson(a)
t.G(n,rnd(0))        t distribution with n degrees of freedom
CHI2.G(n,rnd(0))     Chi-square distribution with n degrees of freedom
F.G(m,n,rnd(0))     F distribution with m,n degrees of freedom

For serious applications the alternative random number generator rand()
is recommended instead of rnd().

<A HREF="qv3_02.html">R = Alternative random number generators</A>
<A HREF="qv1_01.html">V = More information on VAR operation</A>
<A HREF="qmm1_12.html">M = MNSIMUL for fast generation of multivariate normal samples</A>
<A HREF="qv3_04.html">T = TRANSFORM &lt;data> BY #UNIFORM(a,b)</A>
<A HREF="qv3_06.html">X = RNDTEST for testing sequences of random numbers</A>

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The rnd() function is adopted as such as the Microsoft C Library
function rand. It is based on a mixed congruential algorithm
    U(n)=214013U(n-1)+2531011 mod 2^31 .
According to certain empirical tests with an optional RNDTEST operation
of Survo, these numbers are rather good but not as good as those
generated by the rand() function described below.

rand(n) where 1<=n<=2^32-1=4294967295 generates random numbers
according to a Combined Tausworthe generator presented by Shu Tetsuoka
and Pierre L'Ecuyer (ACM Transactions on Modelling and Computer Simulation,
Vol.1, No.2, 1991). The first one of the proposed three generators is
implemented as rand().
The period length of rand() is about 10^18. In more serious simulation
experiments where several long non-overlapping series of random numbers
are to be guaranteed, special INSEED and OUTSEED specifications are

```

available in VAR. The OUTSEED=<seed_number_file> specification saves the last two seed numbers used by rand(). To continue from this point onwards in a new experiment, enter these seed numbers by a corresponding INSEED=<seed_number_file> specification. When INSEED is given, the parameter n in rand(n) has no importance.

Another alternative is the urand() function which corresponds to the classical prime modulus multiplicative linear congruential generator

$$U(n)=16807*U(n-1) \bmod 2^{31}-1$$

suggested by Lewis, Goodman and Miller in 1969 and praised by Park and Miller as a minimal standard generator (see their paper "Random number generators: good ones are hard to find" in Communications of ACM, October 1988).

The period length is only $2^{31}-1=2147483647$ ($2 \cdot 10^9$).

A new alternative is the mrand() function using the Mersenne Twister algorithm by Takuji Nishimura and Makoto Matsumoto (1998, modified 2002). It has a huge period $2^{19937}-1$ (a Mersenne prime), i.e. about 10^{6000} .

Currently mrand() is available in operations VAR, TRANSFORM BY #UNIFORM, MAT #TRANSFORM, MNSIMUL.

```
<A HREF="qv1_01.html">V = More information on VAR operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">VAR <y_variable>=<function>(<expression>)<br>
makes various special transformations of <expression> to <y_variable>.
In most cases <expression> is simply a variable.
The following <functions> are available:
  #RANK (ranks of values, tied observations with average rank)
  #NRANK (ranks of values, tied observations with lowest rank)
  #NORMAL (normalized values with original mean and variance)
  #STD (standardized values with mean=0, std.dev=1)
  #CENTER (centered values with mean=0)
  #PROPORTION (values divided by their total sum)
  #PERCENT (100 times values divided by their total sum)
  #TRUNCP (outliers specified by P are replaced by missing values)
  #WINSP (outliers specified by P are replaced by border values)
  #TRUNCL (outliers specified by LEVEL are replaced by missing values)
  #WINSL (outliers specified by LEVEL are replaced by border values)
```

In #TRUNCP and #WINSP 100(1-P)% of the observations are considered outliers. P is given by the specification P=<value> and default is 0.95. In #TRUNCL and #WINSL an observation X is an outlier if

$\text{abs}(X - \text{mean}) \times \text{level} \times \text{stddev}$.

Level is given by the specification `LEVEL=<level>`; and default is 1.96.

For example,

`VAR Y=#PERCENT(X) TO DATA1` / gives Y values as $100 \times X / \text{Sum_of_X's}$

`VAR Y=#NORMAL(X) TO DATA1` / computes normalized X values as variable Y.

```
<A HREF="qv1_01.html">V = More information on VAR operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">TRANSFORM <data> BY <function of X>;
transforms all the active variables and observations (possibly limited
by MASK, IND and CASES specifications) by <function of X>; where X
refers to one of the active variables in turn.
```

TRANSFORM accepts the same functions as VAR. Thus functions `sqrt`, `log`, `exp`, `sin`, `cos`, `tan`, `atn`, `abs`, `int`, `probit`, and `rnd` are available.

The 'if' structure is allowed:

For example,

`TRANSFORM DATA1 BY if(X=9)then(MISSING)else(X)`

replaces all values '9' in active variables by missing values.

Library functions and the control statement 'for' are not accepted.

Although the same transformations can be made by VAR for each variable separately, use of TRANSFORM saves time and effort in systematic modifications of data values.

For example,

`TRANSFORM YEAR88 BY log(X)`

replaces data values in data YEAR88 by their natural logarithms.

The transformed values can be saved as other (possibly new) variables by using TRANSFORM in an extended form

`TRANSFORM <data> BY <function of X>; AS <letter>;<type>;`
where <letter> is a character to be placed in front of each transformed variable. The extension :<type>; where <type> is 1,2,4 or 8 is optional and gives the type of new numerical variables. Default is 4.

For example,

`TRANSFORM YEAR88 BY log(X) AS L`

`VARs=Sales,Costs`

makes the logarithms of variables Sales and Costs as (new) variables LSales and LCosts.

Also extra variables may be used in the transformation.

In order to speed up the process, in such cases a specification `MODE=2` should be entered.

Example: "Proportions of events of Decathlon in percentages"
 >COPY <Survo>\U\D\DECA.SVO TEST.SVO
 MASK=--AAAAAAAAAA--
 MODE=2
 TRANSFORM TEST BY 1000*X/Points
 FILE SHOW TEST

The active variables and observations can be centered and standardised
 by
 TRANSFORM <data> BY CENTERING
 and
 TRANSFORM <data> BY STANDARDISING (or STD),
 respectively.

TRANSFORM <data> BY #UNIFORM(a,b)
 generates values from a uniform distribution on interval (a,b).
 For continuous variables (types 4,8) values will be from a continuous
 uniform distribution on (a,b).
 For discrete variables (types 1,2) values will be from a discrete
 uniform distribution with values a, a+1, a+2,..., b-1 .
 In huge datasets this alternative is many times faster than
 TRANSFORM <data> BY (b-a)*rand(seed)+a
 The pseudo-random number generator and its seed number can be selected by
 a RND specification. Example: RND=rand(1998115)

TRANSFORM <data> BY #LINEAR(a,b) makes linear transform
 TRANSFORM <data> BY #DISTR(P)
 makes random values from a discrete distribution.
 The values (in ascending order) and probabilities
 are given as a matrix file P of two columns.

In all applications of TRANSFORM where variables are transformed
 'in place' it is worthwhile to notice that transformations leading
 to decimal values (like log(X)) may be inaccurate in case of integer-
 valued variables (of type 1 or 2). In such a situation one should
 take a list of all active variables into the edit field by FILE STATUS,
 change types 1 and 2 to either 4 or 8, create (FILE CREATE) a new data
 file with this list of variables and copy (FILE COPY) the original data
 to this new data file. Transformations can then be made in the new data
 file.

M = Simulation of Markov chains by TRANSFORM
 V = More information on transformations
 </PRE></P><HR>
 <DIV CLASS="Details"><SMALL>More information on Survo from
 </BODY>
 </HTML>
 <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
 "http://www.w3.org/TR/html4/loose.dtd">
 <HTML>
 <!--
 Created by using the PRINT operation of SURVO MM
 For more information, see http://www.survo.fi/
 -->
 <HEAD>
 <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
 <META NAME="Generator" CONTENT="SURVO MM">
 <TITLE>SURVO MM Help System (web edition)</TITLE>
 <LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
 <META NAME="Description" CONTENT="SURVO MM Help System (web edition)</META>
 <META NAME="Classification" CONTENT="help system">
 <META NAME="Keywords" CONTENT="Survo, help, hypertext">
 </HEAD>
 <BODY>
 <H1>
 <P><PRE CLASS="HelpText">Simulation of Markov chains by TRANSFORM

TRANSFORM <data> BY #MARKOV(P)
 makes random values according to a Markov chain.
 Each observation (variables X1,X2,...,Xm)
 will contain one realization of the chain
 and starts from state given by START=i (i=1,2,...).
 Default is START=1.
 The transition probabilities are given as
 a square matrix P.

TRANSFORM <data> BY #MARKOV(P,<var>,<n>)
 works as the previous operation but only
 saves the state of the chain in <var>;
 after <n> steps.

Also Markov chains of degrees 2,3,...,8 can be simulated by the two
 TRANSFORM operations above. Then the P matrix has dimensions m^k ,
 $k=2,3,...,8$. The start state is in these cases always the first one.
 See an example on the next page!

.....
 Example: Simulation of a 3-state Markov chain of degree 2:

MATRIX P93

```
///  A  B  C
AA   0.6 0.4 0
AB   0   1   0
AC   0.2 0.2 0.6
BA   0.6 0.2 0.2
BB   0.2 0.2 0.6
BC   0.2 0.2 0.6
CA   1   0   0
CB   0   0   1
CC   0   0   1 / This is a final state!
```

MAT SAVE P93

```
FILE MAKE TEST,30,1000,L,S / Space for 1000 chains of length 30
TRANSFORM TEST BY #MARKOV(P93) / Generating the chains RND=1111
FILE LOAD -TEST / DELIMITER=NULL / Loading the chains (3 first shown)
ABBCAABBAABBAABBAABBBCCCCCCCC
AAAABBBAAAABBACCCCCCCCCCCCCCCCC
BBABBAABBAABBCBCBCBCCCCCCCCCCCC
```

```
<A HREF="qm10_01.html">M = More information on Markov chains</A>
<A HREF="qv1_01.html">V = More information on transformations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
```

<H1>&
<P><PRE CLASS="HelpText">RNDTEST <SURVO_data>,<variable>,<output_line&
makes empirical statistical tests on a series of numbers supposed to
form a random sample from a uniform distribution in the interval (0,1).

Most of these tests are explained in Volume 2 of "The Art of Programming"
by Donald E. Knuth.

The main application of RNDTEST is testing of various random number
generators.

A standard set of tests is performed without any extra specification.
However, If RESULTS=0, no test is performed without explicit specifica-
tions. To select tests in a more detailed form, following specifications
can be given.

RNDTEST: specifications

SUBSAMPLES=<size>,<# of classes>

The sample is divided systematically in subsamples of given <size>
and their uniformity is tested by the standard Chi²-test by divi-
ding the interval (0,1) in <# of classes>.

Also tests for mean=0.5 as well for the minimum and maximum values
in subsamples are made.

Default is SUBSAMPLES=0 (i.e. this test is omitted).

FREQUENCIES=<# of classes>,<lower limit>,<upper limit>

The uniformity of the total sample is tested by the Chi²-test.

Default: FREQUENCIES=10,0,1

MAXLAG=<largest_lag>

The autocorrelations of the series are computed up to the given
maximum lag. Default: MAXLAG=10

RNDTEST: specifications

GAPTEST=<lower_limit>,<upper_limit>,<max.gap>

The lengths of gaps between occurrences of values in the given range
are computed. Default: GAPTEST=0,0.5,10

PERMTEST=<# of consecutive numbers (3,4,5,6 or 7)>

Frequencies of different permutations of relative orderings are computed.

Default: PERMTEST=4

POKER=<# of obs.>,<# of classes>,<lower limit>,<upper_limit>

Default: POKER=5,5,0,1

COUPON=<# of classes>,<max_len>,<lower limit>,<upper limit>

Coupon collector's test Default: COUPON=5,20,0,1

Certain run tests are performed in any case.

R = Simulation and random numbers

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see http://www.survo.fi/

-->

<HEAD>

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>

```

```

<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">LINCO &lt;data&gt;,&lt;matrix_of_coefficients&gt;
computes and saves linear combinations of variables in &lt;data&gt; into
the same data (file). &lt;matrix_of_coefficients&gt; is a standard MAT
file with following properties:

```

The names of variables to be used in linear combinations are the row labels (8 first characters will be matched) of the matrix.

An additive constant must be indicated by row label 'constant' or '._'.

The names of the linear combinations are the column labels of the matrix. New variables (of 4 bytes) are created when necessary.

Lagged variables may be used by giving in the matrix an extra column with label '#lag' and with integer elements. In this column negative values refer to lags and positive to leads.

LINCO will be an important auxiliary operation when computing various derived variables in linear models, multivariate analysis, etc. Several statistical modules generate their own matrices of coefficients to be used in LINCO. For example, LINREG gives the regression coefficients (REG.M) to be used in computing predicted values of the model (See also [OUTCNTRL](http://www.survo.fi/q0e_01.html)?).

```

Example: 11 *          w=1/5
          12 *MATRIX MOV5
          13 *///      %2 #lag
          14 *%1      w  -2
          15 *%1      w  -1
          16 *%1      w   0
          17 *%1      w   1
          18 *%1      w   2
          19 *
          20 *MAT SAVE MOV5
          21 *LINCO DATA1,MOV5(Temp,Ave5)

```

LINCO on line 21 computes and saves a five term moving average 'Ave5' of variable 'Temp' in data 'DATA1'. The matrix of coefficients 'MOV5' has to be saved by MAT SAVE MOV5 on line 20 before activating LINCO. The matrix of coefficients may have replaceable parameters %1,%2,... as column and row labels, too. In this example MOV5(Temp,Ave5) means that %1 will be replaced by 'Temp' and %2 by 'Ave5'. Hence, the same matrix may be used for different applications.

```

<A HREF="qv1_01.html">V = More information on transformations (VAR)</A>
<A HREF="q0e_06.html#MATRES">O = Output matrices (giving coefficients)</A>
<A HREF="q21_01.html">S = More information on statistical operations</A>

```

```

</PRE></P><HR>

```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">

```

```

</BODY>

```

```

</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

```

"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>

```

```

<!--

```

```

Created by using the PRINT operation of SURVO MM

```

```

For more information, see http://www.survo.fi/

```

```

-->

```

```

<HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">CLASSIFY <data>;<classification>;<input_variable>;
computes the values of <output_variable>; as a function of <input_
variable>; in Survo <data>; according to a given <classification>;.

```

Specifications IND and CASES can be used for selecting observations.

```

<classification>; has to be defined in the following form:
CLASSIFICATION <classification>;
<values_of_input_variable>;: <value_of_output_variable>;
<values_of_input_variable>;: <value_of_output_variable>;
...
END

```

<input_variable>; and <output_variable>; can be numeric or string variables. If <output_variable>; does not exist, a new variable will be automatically created.

Examples on classification rules:

CLASSIFICATION NUMBERS

1,3,5,7,9: odd

0,2,4,6,8: even

OTHERS: SAME

END

maps values 1,3,5,7 and 9 to 'odd' and 0,2,4,6 and 8 to 'even'.

Other values (OTHERS) will be the same (SAME).

CLASSIFICATION C1

0,99,MISSING: MISSING

11 - 20: 1

21 - 40: 2

OTHERS: 3

END

classifies values 0,99 and missing values of <input_variable>; as missing values, values from 11 to 20 as 1, values from 21 to 40 as 2 and all other values as 3.

Examples (continued):

Special features when the source field is a string:

CLASSIFICATION C2

M1,M2,M31: A

M3 - M6: B

M7: C

END

maps values of a string variable. For example, M315 -> A, but M302 -> B.

Thus if the alternatives overlap, the first valid case is selected.

To indicate space characters in the CLASSIFICATION list, any character (say _) can be selected by entering a specification SPACE=_ .

Then, for example,

CLASSIFICATION C3

_: 0

A_,_A_,_A: 1

AA_,_A_,_AA: 2

AAA: 3

END

gives the number of 'A's in a three-character string field. The true values of that string field are assumed to be

" ", "A ", " A ", " A ", "AA ", "A A", " AA", "AAA".

Wild characters are accepted by giving a specification WILD=? .

For example, the line

A?: 1

in the CLASSIFICATION list implies that any three letter string starting with A is mapped to 1.

Similarly, partial matches are indicated by giving a specification PARTIAL=*

Then, for example, the line

*DOS: 2

in the CLASSIFICATION list maps all cases where DOS appears as a substring to 2.

Alternatives for OTHERS in the CLASSIFICATION list are

value of <output_variable>
OTHERS: MISSING missing value
OTHERS: SAME equal to <input_variable>
OTHERS: NO_CHANGE remains unchanged

```
<A HREF="qv1_01.html">V = More information on transformations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">SMOOTH <data>,<series>,<smoothened_series>,<
smoothes <series> in <data> using a technique based on FFT
(Fast Fourier Transformation) with a window whose full width is of
order <width> neighboring points and saves the smoothened values as
<smoothened_series>.
```

SMOOTH can be used for smoothing any variable Y in relation to another variable X by first sorting the data by X and then applying SMOOTH for Y.

Numerical method:

SMOOTH removes any linear trend and uses then FFT to low-pass filter the data. The linear trend is reinserted at the end.

<width> gives the "amount of smoothing", specified as the number of points over which the data should be smoothened (not necessarily an integer). Zero gives no smoothing at all. The results of SMOOTH are generally in accord with the notion "draw a smooth curve through these scattered points".

Reference: "Numerical Recipes" (1987) by Press, Flannery, Teukolsky, and Vetterling

V = More information on transformations
S = More information on statistical operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi
</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">POWERS <data> / POW_VARS=<List_of_variables>; I
computes all possible products of powers up to degree <d>;
of variables in POW_VARS as (new) variables.

Since the number of new variables may be high, the scope of the
data file must often be extended by FILE EXPAND operation before using
POWERS.

Example:

POWERS D2 / POW_VARS=Height(H),Weight(W) DEGREE=3
creates and computes variables H2, H1W1, W2, H3, H2W1, H1W2, W3
where, for example, H2W1 is Height^2*Weight.

The types of new variables are given by TYPE=<1|2|4|8>; (default is 8).

The maximum # of power variables is 10 and the maximum degree is 20.

Too long names (over 8 characters) like A1B2C3D4F5 are presented as
X12345. Actual expressions like A^3*B^2*C are given as extensions of
names.

POWERS is a tool for generating variables for polynomial regression
analysis and its generalizations (to be computed by LINREG, for
example).

1 = Transformation of variables in Survo data sets

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from http://www.survo.fi
</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

```

<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">In the ANalysis Of VAriance we are interested in the mutual depend
of a dependent variable with interval scale and independent variables
with nominal scale. In the analysis of covariance a part of the
independent variables are at the interval scale. Usually the following
assumptions are made: The observational errors are independently and
normally distributed with equal variances.

```

With the ANOVA operation you may analyse a quite large range of variance and covariance models. The general form of the ANOVA operation is

```

ANOVA &lt;data&gt;;L
DEPENDENT=&lt;list of dependent variables&gt;;
&lt;definitions for the grouping variables&gt;;
&lt;list of covariates&gt;;
&lt;definitions for analyses and tests to be performed&gt;;

```

The parameter L (optional) gives the starting line for the results in the edit field. At least one dependent variable must be given. An example of the specifications for a two-way fixed effects analysis of variance model:

```

ANOVA IEADATA,30
DEPENDENT=KNOWLDGE
GROUPING=ATTITUDE,SEX
ATTITUDE=1(Best),2(Same),3(Worst) SEX=1(Boys),2(Girls)

```

Means and deviations will be automatically printed in one-sample and one-way analysis of variance. In other analyses means and correlations are printed only if PRINTOUT=MEANS is specified.

Further information:

```

<A HREF="qw1_02.html">1 = Definitions for grouping variables</A>
<A HREF="qw4_01.html">2 = One-sample tests</A>
<A HREF="qw4_02.html">3 = One-way analysis of variance, multiple comparisons of means</A>
<A HREF="qw2_01.html">4 = Analysis of variance for multiple factors</A>
<A HREF="qw3_01.html">5 = Analysis of covariance</A>
<A HREF="qw3_03.html">6 = Multivariate analysis of variance and covariance</A>
<A HREF="qw4_03.html">7 = Multivariate analysis of repeated measurements</A>
<A HREF="qw1_03.html">8 = Performing analyses in subgroups</A>
<A HREF="qw2_04.html">9 = Forming combined grouping variables</A>
<A HREF="qw1_04.html">I = Input in other forms (not data)</A>
<A HREF="q21_01.html">D = More on data analysis</A>
</PRE></P><HR>

```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>

```

```

<!--

```

```

Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/

```

```

-->

```

```

<HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

```

```

<META NAME="Generator" CONTENT="SURVO MM">

```

```

<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>

```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(

```

```

<META NAME="Classification" CONTENT="help system">

```

```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```

</HEAD>

```

```

<BODY>

```



```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The grouping variables are given by the GROUPING parameter:
GROUPING=&lt;gr.vble1&gt;,&lt;gr.vble2&gt;, ...
```

For each grouping variable the grouping structure may be given in the form

```
&lt;gr.vble&gt;=value1(label1),value2(label2), ...
```

The labels given in parenthesis are optional. If the grouping values are given in ascending order then they are considered as cutpoints for forming groups, e.g.

```
KNOWLDGE=20,50,80,110,140
```

Values greater than the last cutpoint are treated as missing values.

The list above could be shortened by the notation 20(30)140.

You can use string variables as grouping variables. The grouping structure of a string variable is given in the form

```
&lt;gr.vble&gt;=symbol1,symbol2, ...
```

Note that only the first 8 characters of a string variable are significant.

If the grouping structure of a grouping variable is not given then the all existing values of that variable are used.

Theoretically at most 6 grouping variables may be given. The maximum number of groups for each grouping variable is 32 (can be altered by the parameter setting MAXNCL=<new limit>). In practice these values are considerably limited by the space available. The space requirement is appr. proportional to the product of the number of classes.

```
<A HREF="qw1_01.html">A = More information on ANOVA operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">All analyses may be performed in subgroups defined by one or
more variables defined by the parameter SPLIT, e.g.
```

```
ANOVA IEADATA,20
```

```
DEPENDENT=Knowldge
```

```
GROUPING=Attitude SPLIT=Sex Sex=1(Boys),2(Girls)
```

```
METHOD=ONEWAY
```

The structure of the variables given in SPLIT may be defined exactly in the same way as for variables in GROUPING.

Further information:

```
<A HREF="qw1_02.html">1 = Definitions for grouping (and SPLIT-) variables</A>
```

```

        <A HREF="qw1_01.html">A = More information on ANOVA operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The starting point of the ANOVA operation is always data. Input
in other forms may be used in ANOVAS operation. E.g.
    ANOVAS IEAMEANS,END+2
    CELLN=Nofobs CELLM=Knowmean CELLD=Knowdev
    GROUPING=Attitude,SEX
where the SURVO data file IEAMEANS contains group means, deviations
and numbers of observations in the groups defined by the two
grouping variables. The input may contain cell sums (CELLS) instead
of cell means. Correspondingly, the input may contain variances
(CELLV) or sum of squares (CELLSS) instead of deviations. If the
sample sizes are equal then the common sample size may be given
by the SMPLSIZE statement. Further, if methods for homogeneous
group variances are used only, then it is sufficient to give
the estimate of error variance (EVAR) and its degrees of freedoms
(DF) instead of deviations.
c
Further information:
    <A HREF="qw1_01.html">A = More information on ANOVA operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">In the multiple-way analysis of variance we explain the variation
of a dependent variable by two ore more variables with nominal scale,

```

i.e. by grouping variables. The grouping variables are given by the GROUPING parameter followed by the definition of their grouping structure (not obligatory).

The main effects and interactions of the grouping variables to be included in the model are defined by the INCLUDED and/or EXCLUDED parameters. The grouping variables are referenced by their initials, which should be unique. The default model is always the model with all possible interactions.

The following example defines a three-way fixed effects analysis of variance model with three main effects and interaction AS:

```
ANOVA IEADATA,20
DEPENDENT=KNOWLDGE
GROUPING=ATTITUDE,SEX,GRADE
ATTITUDE=1,2,3 SEX=1,2 GRADE=1,2,3
INCLUDED=AS,G
```

Further information:

```
<A HREF="qw1_02.html">1 = More on definitions for grouping variables</A>
<A HREF="qw2_02.html">2 = More on main effects and interactions to be included in the model<
<A HREF="qw2_05.html">3 = Different methods of forming hypotheses</A>
<A HREF="qw2_06.html">4 = Error terms transformed or assigned by the user</A>
<A HREF="qw2_03.html">R = Random effects and mixed models</A>
<A HREF="qw3_02.html">E = Estimates of the effects, computing residual and predicted values</
<A HREF="q27_01.html">A = More on ANOVA operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The MAIN EFFECTS and INTERACTIONS of the grouping variabl
included in the model are given by the INCLUDED parameter. The
grouping variables are referenced by their initials, which should
be unique. Only hierarchic models may be formed by ANOVA operation,
i.e. if an interaction term is included in the model then all
lower order interactions included in it are added in the model, too.
For example the two definitions
INCLUDED=A,B,AB INCLUDED=AB
yield the same model. Sometimes, it is easier to specify those
interactions excluded from the model by the parameter EXCLUDED. If
an interaction is excluded from the model then it follows that
all higher order interactions, which include that interaction, are
excluded also, e.g. in a three-way model the definitions
EXCLUDED=AB EXCLUDED=AB,ABC
yield the same model. If both the parameters are used in the same
time then interactions are first included and second excluded. The
default model is always model with all possible interactions.
```

Further information:

[1](#) = More on definitions for grouping variables
[2](#) = More on analysis of variance for multiple factors
[3](#) = More on analysis of covariance
[4](#) = More on ANOVA operations

More information on Survo from <http://www.survo.fi>

!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<!--

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">If in the analysis of variance the numbers of observations in the cells defined by the grouping variables are equal then also random effects mixed models are possible. Those grouping variables, whose effects on the dependent variable are regarded as random, are given by the parameter RANDOM, e.g.

ANOVA IEADATA,30

DEPENDENT=WEIGHT

GROUPING=MICE,FOOD

MICE=1(1)4 FOOD=1,2,3

INCLUDED=MF RANDOM=MICE METHOD=TWOWAY

where the main effect of MICE is regarded as random and FOOD as fixed.
Their interaction is regarded as random.

Further information:

[1](#) = More on definitions of the grouping structure

[2](#) = More on analysis of variance for multiple factors

[4](#) = More on ANOVA operations

More information on Survo from <http://www.survo.fi>

!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<!--

Created by using the PRINT operation of SURVO MM
For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">If you have specified analysis which has less ways than the number
of grouping variables given in GROUPING then the outermost grouping
variables will be combined into one new grouping variable. This
feature is useful, e.g. in a two-way analysis if you have decided
that the interaction of the two factors on the dependent variable
is significant:
    ANOVA IEADATA,25
    DEPENDENT=Knowldge GROUPING=Attitude,Sex
    Attitude=1,2,3 Sex=1,2 METHOD=Tukey(s)
The six means of the combined variable A*S will be examined by
the Tukey-Kramer method. The combined variable will be named
by the initials of the original grouping variables.
    <A HREF="qw1_01.html">A = More on ANOVA operatiuons</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">In the case of unequal sample sizes there are no uniformly best
way to form hypotheses. Therefore, the user may select one of
the three choices in the ANOVA operation:

- If HFORM=0 is specified then tests are based on sequential sums
of squares.
- If HFORM=1 is specified then hypotheses are chained according
to the "natural testing order" of the effects (default).
- If HFORM=2 is specified then tests are formed using sigma-
restricted models (regression method).

Further information:
    <A HREF="qw2_01.html">V = More on analysis of variance for multiple factors</A>
    <A HREF="qw3_01.html">C = More on analysis of covariance</A>
    <A HREF="qw1_01.html">A = More on ANOVA operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">If both multi-way and one-way analyses are requested in the same
ANOVA operation then the error mean square used in multi-way
univariate analysis is automatically transformed to one-way
analyses (e.g. multiple comparison of means), e.g.
  ANOVA IEADATA,END+2
  DEPENDENT=KNowlge
  GROUPING=Attitude,Sex
  MEANS=A,S,AS METHOD=Tukey(s)
The families for multiple comparisons are defined by MEANS statement
using the initials of grouping variables.

```

If the design involves several sizes of experimental units then several error terms are needed. Therefore, the user has the possibility to define by the EMS statement which mean squares form the error term while a specific main effect or interaction is tested, e.g.

```

EMS=A[AB],C[AC+ABC]
states that the interaction AB is used as the error term while
the main effects of A are tested. When the main effects of C are
tested then the error term is formed from interactions AC and ABC.
If one-way analyses are performed at the same time, these error
terms are automatically used in those analyses.

```

Further information:

```

<A HREF="qw2_01.html">V = More on analysis of variance for multiple factors</A>
<A HREF="qw3_01.html">C = More on analysis of covariance</A>
<A HREF="qw1_01.html">A = More on ANOVA operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->

```

```

<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">In the analysis of covariance a part of the independent variables are
at nominal scale (grouping variables), the others being at interval
scale (covariates). The grouping variables are given by the GROUPING
parameter followed by the definition of their grouping structure.
The covariates are defined by the COVARIATES parameter.

```

The main effects and interactions of the grouping variables to be included in the model are defined by the INCLUDED and/or EXCLUDED parameters. The grouping variables are referenced by their initials. The default model is always the model with all possible interactions.

A two-way fixed effects analysis of covariance example:

```
ANOVA IEADATA,30
DEPENDENT=KNOWLDGE
GROUPING=ATTITUDE,SEX
ATTITUDE=1,2,3 SEX=1,2
COVARIATES=MENTALPR,APPLICAT
```

If not otherwise stated the regression coefficients of covariates are estimated in the total group. If the equality of within-groups regression coefficients cannot be assumed then the groups, where separate estimates are wanted, are defined by the parameter SLOPES, e.g. SLOPES=SEX and SLOPES=ATTITUDE,SEX. The latter would produce different estimates in the 3 x 2 groups.

Further information:

```
<A HREF="qw1_02.html">1 = More on definitions for grouping variables</A>
<A HREF="qw2_02.html">2 = More on main effects and interactions to be included in the model<
<A HREF="qw2_05.html">3 = Methods of forming hypotheses</A>
<A HREF="qw2_06.html">4 = Error terms transferred or assigned by the user</A>
<A HREF="qw3_02.html">E = Estimates of the effects, computing residual and predicted values</
<A HREF="qw1_01.html">A = More on ANOVA operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The models in analysis of variance and covariance are not of full ran
Therefore, if estimates of the effects are wanted, constraints on the
estimates must be given. Two kinds of constraints may be given by the
parameter CONSTRAINTS:
```

- 1 The estimates of a main effect or an interaction is constrained to zero.
- 2 The weighted sum of estimates of a main effect or an interaction is constrained to zero, using sample sizes as weights.

If the sample sizes are unequal then estimates can be obtained only for main effects and two-terms interactions.

The predicted values of the dependent variable and/or residuals may be saved in the data file. The name of the predicted variable is

given by the parameter PREDICTED and the name of the residual variable by RESIDUAL, e.g.

PREDICTED=ESTKNOWL RESIDUAL=RESKNOWL

Note that the residuals or predicted values may be saved only in a data file not in the edit field.

Further information:

```
<A HREF="qw1_02.html">1 = More on definitions for grouping variables</A>
<A HREF="qw2_01.html">2 = More on analysis of variance for multiple factors</A>
<A HREF="qw3_01.html">C = More on analysis of covariance</A>
<A HREF="q27_01.html">A = More on ANOVA operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM
<P><PRE CLASS="HelpText">The effect of grouping variables on several dependent variables may
be examined by the multivariate analysis of variance. The dependent
variables are given by the parameter DEPENDENT. The grouping
variables are defined in the same way as in the univariate case, e.g.
ANOVA IEADATA,20
DEPENDENT=Knowldge,Comprehn,Applicat,Mentalpr
GROUPING=Attitude,Sex Sex=1(Boys),2(Girls)
The interactions in the model may be defined by parameters
INCLUDED or EXCLUDED as in univariate case. There are two ways
in which hypotheses may formed depending on parameter HFORM:

HFORM=0: main effect A is tested after the main effect S
is included in the model, interaction AS is ignored
HFORM=1: instead of testing main effect A alone, the interaction
AS is included in the hypothesis as in the univariate case
(DEFAULT).

Predicted values of dependent variables or residuals cannot be
computed or saved yet!

Further information:
<A HREF="qw1_02.html">1 = More on definitions of grouping variables</A>
<A HREF="qw2_02.html">2 = More on main effects and interactions in the model</A>
<A HREF="qw3_04.html">M = Multiple comparisons of mean vectors</A>
<A HREF="qw4_03.html">G = Multivariate analysis of repeated measures</A>
<A HREF="qw1_01.html">A = More on ANOVA operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```



```

<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">Multiple comparisons of means vectors may be done by the Roy's
largest root method, e. g.
ANOVA IEADATA,20
DEPENDENT=Knowledge,Applicat,Mentalpr,Comprehn
GROUPING=Attitude METHOD=LROOT(s)
where the letter S indicates that the significance levels for the
test statistics are printed too. Simultaneous confidence intervals
may be obtained if the wanted significance level is given instead
of the letter S, e.g. LROOT(0.10). The program uses Pillai's
approximation for the distribution of largest root of a multivariate
beta matrix. Thus large significance levels (e.g. >0.20) should
not be used. Further, for some degrees of freedoms the confidence
intervals or significance levels printed seems to be too small (0-1 %).

Further information:
  <A HREF="qw3_03.html">M = Multivariate analysis of variance (usual MANOVA model)</A>
  <A HREF="qw4_03.html">G = Multivariate analysis of repeated measurements</A>
  <A HREF="qw1_01.html">A = More on ANOVA operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">A sample mean may be compared to a known theoretical constant by
usual t test, e.g.
ANOVA IEADATA,30
DEPENDENT=KNOWLDGE
METHOD=TONESMPL(s) CONSTANT=50
The default value for the constant is 0. Confidence interval for
the mean of the dependent variable is obtained if the desired
significance level is given as the option, e.g. METHOD=TONESMPL(0.05).

```

The equality of the means of two dependent variables may be tested by the paired t test (2 dependent samples), e.g.

```
DEPENDENT=KNOWLDGE,APPLICAT
METHOD=TPAIRED(S)
```

where option S will cause the printout of the p-values corresponding to the test statistics. If there are more than two variables then tests are performed for all pairs of variables.

The t test for two dependent samples is a special case of one-sample repeated measurements, where each of the n subjects are measured at p treatment levels. Usually, the independence of the errors at the p levels of the same subject cannot be assumed. The p treatment levels (mutually dependent var.) are given by the DEPENDENT parameter, e. g.

```
DEPENDENT=KNOWLDGE,APPLICAT,MENTALPR,COMPREHN
```

The overall test that the means of the four variables are equal, is performed automatically because there are more than two variables.

```
<A HREF="qw4_03.html">G = Analysis of repeated measurements when you have both</A>
  between and within subjects factors
<A HREF="qw3_03.html">M = Multivariate analysis of (co)variance</A>
<A HREF="qw1_01.html">A = More information on ANOVA operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
  "http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The equality of several means may be tested by the F-test in one-way
analysis of variance with or without assuming equal group variances.
Both tests are automatically produced. An example of the definitions
in the ANOVA operation:

ANOVA IEADATA,30
DEPENDENT=KNOWLDGE GROUPING=ATTITUDE
ATTITUDE=1(Best),2(Same),3(Worst)
METHOD=ONEWAY
```

Multiple comparisons of means may be performed either by using comparisonwise (t tests) or experimentwise significance levels. The names of selected methods are given by the parameter METHOD:

TTESTS pairwise t-tests both for equal and unequal group variances.

TUKEY Tukey's (equal sample sizes) or Tukey-Kramer's (unequal sample sizes) method. Equal population variances assumed. The latter method can be used only in pairwise mean comparisons.

T3 T3 method for both equal and unequal group variances. Pairwise

- mean comparisons only.
- BF Brown and Forsythe's method for both equal and unequal group variances. Pairwise mean comparisons as well general contrasts of means.
- SCHEFFE Scheffe's method for equal group variances. Pairwise mean comparisons and general contrasts of means.
- GABRIEL Gabriel's approximative method for equal group variances. Usage as Scheffe's method.
- NK Newman-Keul's procedure, the desired significance level must be given as the option, equal sample sizes only, only significance tests.
- TWELSCH Newman-Keul's or Dunacn's procedure with Tukey-Welsch specification, the significance level must be given, only significance tests.

If the letter S is given in parenthesis after the name of the method e.g. TUKEY(S) then the p-values corresp. to the test statistics are given too. Instead of significance tests you may ask for simultaneous confidence intervals by giving the wanted significance level in parenthesis, e.g. TUKEY(0.05). For t-tests (parameter TTESTS) no confidence intervals may be produced.

If only pairwise mean comparisons are wanted then the form of contrasts need not be defined. Otherwise the form of contrasts must be specified by the parameters PAIRWISE, CLEVEL, FGROU and SGROU (Not available for NK and TWELSCH):

- CLEVEL If CLEVEL=i is specified then contrasts of means of the form (1,k-1,0), ..., (i,k-i,0) will be tested, where k is the total number of group means ($k > i$). Notation (i,k-i,0) refer to those comparisons where the mean of i group means is compared with the mean of other k-i means and no group is ignored.
- FGROU Testing a contrasts specified by FGROU and SGROU. With parameter FGROU the group values/labels of the first set of group means are given. The second set is specified by SGROU. Groups not specified by the parameters FGROU and SGROU are ignored.
- PAIRWISE If both pairwise and more general contrasts are to be tested then specify PAIRWISE=1.

Further information:

[1](http://www.survo.fi/qw1_02.html) = More on the definitions of the grouping structure

[M](http://www.survo.fi/qw3_04.html) = Multivariate multiple comparisons

[A](http://www.survo.fi/qw1_01.html) = More on ANOVA operations

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo.fi>

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&
<P><PRE CLASS="HelpText">

Repeated measurements design involve one or more treatments on the same subject. Usually we cannot assume the observational errors to be independent of each other. Using multivariate approach we can avoid the restrictive assumptions of the usual univariate mixed model. Example, two within subjects factors and one between subjects (grouping) factor:

```
ANOVA TIMM,20
DEPENDENT=Y11,Y12,Y13,Y21,Y22,Y23,Y31,Y32,Y33
GROUPING=Group Group=1,2
WITHIN=C,B WLEVELS=3,3
```

where the values of the variate measured on several conditions (combination of the two treatments) are given as dependent variables. The order of a dependent variable defines the treatment combination. First variable referred in WITHIN and WLEVELS indicates the treatment which is changed fastest. In the example, the first number in the name tells the treatment B and the latter the treatment C (which values change fastest).

The parameter HFORM has the same effect on between factors as in usual MANOVA model. When an interaction consisting only of one type of factors is tested, we can either assume that the effects of within and between factors do not interact (PARALL=1) or we can do tests without that assumption (PARALL=0). When we testing an interaction involving both types (e.g. CG in the example) then all higher order interactions of within factors are assumed to be zero (BCG in the example). Setting PARALL=1 is the same that we assume that profiles for each group have the same shape.

At this moment you must have at least one between (grouping) factor, if you have more than one within factors. The overall parallelism (in the example H:GC & GB & GCB = 0) may be tested as follows:

```
ANOVA TIMM,20
DEPENDENT=Y11,Y12,Y13,Y21,Y22,Y23,Y31,Y32,Y33
GROUPING=Group WITHIN=Combined WLEVELS=9
```

In multivariate repeated measurements situation several variates are observed repeatedly over several experimental conditions. E. g.

```
ANOVA MANDIBLE,20
DEPENDENT=SOR1,ANS1,PAL1,SOR2,ANS2,PAL2,SOR3,ANS3,PAL3
GROUPING=Group WITHIN=Activatr WLEVELS=3
```

Remark that the values of variates measured on the same treatment combination must be given in sequence and in the same order for each treatment combination.

Note: No covariates accepted in repeated measurements yet!

Further information:

```
<A HREF="qw3_03.html">M = Multivariate analysis of (co)variance</A>
<A HREF="qw1_01.html">A = More on ANOVA operations</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
```

```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">
M.Korhonen 1992
<STRONG>With the MTAB operation you can construct a quite large range of </STRONG>
<STRONG>tables for frequencies, means and other descriptive statistics</STRONG>.

```

The general form of the MTAB operation is

```

MTAB &lt;data&gt;;L
VARIABLES or IVARIABLES=&lt;list of object variables&gt;;
GROUPING=&lt;list of grouping variables&gt;;
&lt;definitions for grouping variables&gt;;
COL=&lt;column layout&gt;; ROW=&lt;row layout&gt;;
OPTIONS=&lt;options for statistics&gt;;

```

The parameter L (optional) gives the starting line for the results in the edit field. Variables, for which means or other statistics are to be computed, are listed in VARIABLES or IVARIABLES specification. The latter is used for dichotomous object variables. The GROUPING specification defines variables that are used as grouping (class) variables. The final layout of the tables may be defined by COL and ROW specifications.

MTAB operation

Further information:

```

<A HREF="qw5_02.html">1 = Using default layout (COL AND ROW specif. missing)</A>
<A HREF="qw5_05.html">2 = ROW and COL specifications</A>
<A HREF="qw5_03.html">3 = Definition of the grouping structure</A>
<A HREF="qw5_04.html">4 = OPTIONS specification (statistics, total classes)</A>
<A HREF="qw5_06.html">5 = printing formats and column widths</A>
<A HREF="qw5_07.html">6 = dichotomous object variables (IVARIABLES specification)</A>
<A HREF="q21_01.html">D = More on data analysis</A>

```

```

</PRE></P><HR>

```

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

```

```

</BODY>

```

```

</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

```

```

"http://www.w3.org/TR/html4/loose.dtd">

```

```

<HTML>

```

```

<!--

```

```

Created by using the PRINT operation of SURVO MM

```

```

For more information, see http://www.survo.fi/

```

```

-->

```

```

<HEAD>

```

```

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

```

```

<META NAME="Generator" CONTENT="SURVO MM">

```

```

<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>

```

```

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

```

```

<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(

```

```

<META NAME="Classification" CONTENT="help system">

```

```

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

```

</HEAD>

```

```

<BODY>

```

```

<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&

```

```

<P><PRE CLASS="HelpText">If COL and ROW specifications are missing then the following

```

```

<STRONG>default layouts</STRONG> are used:

```

If there are at most one object variable then the first grouping variable is treated as a column variable and the second grouping variable as a row variable. All other grouping variables are considered as background variables.

If there are more than one object variable then the object variables define the columns and the first grouping variable the rows. The other

grouping variables are handled as background variables, i.e one table is produced for each combination of the values of the background variables.

Example: Computing a two-way table for means, deviations and cell frequencies using default layout:

```
MTAB IEADATA,END+2
VARIABLES=Knowlodge
GROUPING=Attitude,Sex
```

The table produced by the MTAB operation:

Means, Deviations and Frequencies

		Attitude 1.000	Attitude 2.000	Attitude 3.000	Attitude Total
		Knowlodge	Knowlodge	Knowlodge	Knowlodge
Sex					
1.000	M	93.000	73.579	56.636	74.162
	D	35.162	34.096	32.825	35.065
	N	12	57	11	80
2.000	M	60.400	70.674	52.211	64.929
	D	25.813	28.191	32.259	29.940
	N	5	46	19	70
Total	M	83.412	72.282	53.833	69.853
	D	35.370	31.480	31.971	32.991
	N	17	103	30	150

Further information:

```
<A HREF="qw5_01.html">M = More information on MTAB operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">The grouping variables are given by the GROUPING (CLASS) parameter.
GROUPING=<gr.vble1>,<gr.vble2>,...
For each grouping variable the grouping structure may be given in the
form
<gr.vble>=value1(label1),value2(label2), ...
The labels given in parenthesis are optional. If the grouping values
are given in ascending order then they are considered as cutpoints
for forming groups, e.g.
KNOWLDGE=20,50,80,110,140
```

Values greater than the last cutpoint are treated as missing values.
The list above could be shortened by the notation 20(30)140.

You can use string variables as grouping variables. The grouping structure of a string variable is given in the form

<gr.vble>=symbol1,symbol2, ...

The first 32 characters of a string variable are significant.

If the grouping structure of a grouping variable is not given then the all existing values of that variable are used.

Theoretically at most 8 grouping variables may be given. The maximum number of groups for each grouping variable is 32 (can be altered by the parameter setting MAXNCL=<new limit>). The space requirement is appr. proportional to the product of the number of groups.

Nested grouping variables

In some situations one wants to use grouping variables that are nested. The nesting is indicated by brackets, e.g.

GROUPING=City[State]

By using the notation a lot of empty lines or columns in the output table are avoided, because each city may belong only to one state.

There may be several steps in the nesting hierarchy (at most 6 grouping variables):

GROUPING=Subcity[City[State]]

At this moment the **grouping structure** of nested grouping variables **cannot be given**. The program will search the existing combinations of values of nesting variables and uses all combinations found.

The default maximum for the number of combinations of values is 64, which may be altered by MAXNEST=<new value>.

```
<A HREF="qw5_01.html">M = More information on the MTAB operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The default printout consists of means, deviations and frequencies.
If no object variables are given by the VARIABLES specification
then the default printout consists of frequencies. Further, row
row and column totals are included in the printout.
```

The following statistics can be requested by the **OPTIONS** specification:

MEANS means
SUMS sums
DEVS deviations

SEM standard errors of means
 F cell frequencies
 MIN minimum values
 MAX maximum values
 CCF columnwise cumulative frequencies
 CRF rowwise cumulative frequencies
 CCS columnwise cumulative sums
 CRS rowwise cumulative sums
 C%F column percentages of frequencies
 R%F row percentages of frequencies
 T%F table percentages of frequencies
 %F "total" percentages of frequencies
 C%S column percentages of sums
 R%S row percentages of sums
 T%S table percentages of sums
 %S "total" percentages of sums
 CC%F cumulative column percentages of frequencies
 CR%F cumulative row percentages of frequencies
 CC%S cumulative column percentages of sums
 CR%S cumulative row percentages of sums

If any of the statistics are given in the OPTIONS specification then only those statistics are printed (in the given order).

The presence of row and column totals may be altered by the key words: COLTOTALS (include column totals), ROWTOTALS (include row totals), NOTOTALS (neither row nor column totals). Again, if any of these three options are given, then only the given options are valid. For nested grouping variables the subtotals are computed only for the topmost variable in the hierarchy.

Further information:

```
<A HREF="qw5_01.html">M = More information on the MTAB operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText">With the ROW and COL specifications you can design your tables.
The expressions given in the specifications include names of
object and/or grouping variables as elements and operators,
which define how the elements are used. Only variables defined
in VARIABLES, IVARIABLES or GROUPING specifications may be used
The following operations are available:
```

* cross variables, e.g. A*B
 , concatenate variables, e.g. A,B,C

() control the order of the other two operations, e.g. A*(B,C)

You can cross grouping variables with object variables or with other grouping variables. Suppose that A and B are grouping variables and Y is an object variable. Specification A*B means that the values of B are nested within the levels of A:

A1 A1 A1 A2 A2 A2
B1 B2 B3 B1 B2 B3

Specification A*Y declares that statistics for the object variable Y are requested for each group of A.

If A,B is specified then the levels of A are formed first and the levels of B after that:

A1 A2 B1 B2 B3

Grouping variables may appear both in COL and ROW specifications, but object variables only in either of them. If object variables are given in COL specification then different cell statistics are printed in different rows. If object variables are defined in ROW specification then different statistics are represented each by their own column.

Parenthesis may be used to define the order of the operations. If A is a grouping variables and X and Y are object variables, then specification

COL=A*(X,Y)

defines that first means of the two variables are represented for the first group of A and after that for the second group of A. If we want the means of variable X to be represented first for all groups, we define

COL=A*X,A*Y

Especially the use of col specification is limited by the number of columns available. By default, the table is split into subtables so that the line length of the edit field is not exceeded. The maximum number of columns in one (sub)table may be decreased by MAXCOLS=<n of columns>.

Examples ...

Two simple examples describing the difference of COL and ROW specifications:

MTAB IEADATA,178
VARIABLES=Knowldge
GROUPING=Attitude
COL=Attitude*Knowldge

Means, Deviations and Frequencies

Attitude Attitude Attitude Attitude
1.000 2.000 3.000 Total
Knowldge Knowldge Knowldge Knowldge

M 83.412 72.282 53.833 69.853
D 35.370 31.480 31.971 32.991
N 17 103 30 150

MTAB IEADATA,193
VARIABLES=Knowldge
GROUPING=Attitude
ROW=Attitude*Knowldge

Means, Deviations and Frequencies

Knowldge

		Means	St.d.	N of obs
Attitude				
1.000	Knowldge	83.412	35.370	17
2.000	Knowldge	72.282	31.480	103
3.000	Knowldge	53.833	31.971	30
Total	Knowldge	69.853	32.991	150

Example: Three grouping variables and three object variables:

MTAB IEADATA,229

VARIABLES=Knowldge,Applicat,Mentalpr

GROUPING=Attitude,Sex,Grade

COL=S*(K,App,M) variable names in COL and ROW may be

ROW=G*Att shortened as long they are unique

Means, Deviations and Frequencies

Subtable 1

		Sex	Sex	Sex	Sex	Sex		
		1.000	1.000	1.000	2.000	2.000		
		Knowldge	Applicat	Mentalpr	Knowldge	Applicat		
Grade	Attitude							
7.000	1.000	M	72.667	56.000	12.333	83.000	45.000	
		D	26.577	12.767	19.140	-	-	
		N	3	3	3	1	1	
	2.000	M	57.167	43.792	17.833	64.500	30.917	
		D	29.660	26.231	16.177	20.690	17.814	
		N	24	24	24	12	12	

etc. ...

If both ROW and COL specifications are used but all grouping variables are not used in those definitions, then the unreferred grouping variables are treated as background variables. Results are given for each combination of the values of the background variables.

Further information:

M = More information on the MTAB operation

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">By default, the column width to represent the requested statistics is 8 characters. The adjacent columns are separated by one character.

The number of decimals used for e.g. means depends on the maximum value of that variable. If sums are requested then the number of decimals used is determined by the product of the maximum value and the number of observations. For numerical grouping variables the same

8 char. column width is used. For string grouping variables used as row variables the length of the string variable (if greater than 8) defines the column width used. If the grouping structure of a string variable is searched by the program then the found actual maximum length is used.

This default behaviour may be overridden by giving the printing formats of object variables and/or grouping variables, e.g.

```
VARIABLES=Knowledge(#####.#),Applicat(1234.12345)
GROUPING=Sex(#####),Grade(12345)
```

The number of decimals given in the format concerns means, sums, deviations, standard errors of means, minimum and maximum values. The column width defined by the format concerns frequencies and percentages too. Depending on the defined column width percentages are printed with 2, 1 or no decimals (if the column width is at least 6 then two decimals are given). This default behaviour of printing percentages may be altered by specifying the number of decimals used by PCTDEC. The given number (0-5) must agree with the column width in use.

In general column width can vary from 4 to 32.

Further information:

```
<A HREF="qw5_01.html">M = More information on the MTAB operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText"><STRONG>Dichotomous object variables </STRONG>
```

If you want to tabulate some grouping variables with a group of dichotomous variables (one at a time) then a lot of space can be saved by using IVARIABLES specification for these dichotomous variables, e.g.

```
GROUPING=CAR
```

```
IVARIABLES=Featr1,Featr2,Featr3,Featr4,Featr5,Featr6
Featr4=2 Featr5=10,99 Featr6=USA
```

By default the program assumes that the interesting value of a dichotomous object variable is 1, which is tabulated against all other values considered as one group. Only the results for that interesting group are given. The user may define other interesting values by the following form:

<variable name>=<min,max> or <string>;

If necessary the maximum number of object variables may be

altered by MAXVBLS=<new limit>; definition.

Note! The VARIABLES and IVARIABLES specifications may not be used at the same time.

Further information:

M = More information on the MTAB operation

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">DISCR <data>;L / M.Korhonen

Discriminant analysis:

In the discriminant analysis the observations (cases) are divided into groups according to the values of a grouping variable. The grouping variable may be at nominal scale or it has comparatively few distinct values. The purpose of the analysis is to find such classification functions that best characterize the differences between the groups. These functions, which are linear combinations of the original variables, are used for classifying new cases too.

The discriminant analysis usually has the following two phases:

(1) First the classification functions and tests associated with them are computed.

(2) Second the cases of the original or another data are classified according to these functions.

The analysis is succesful if few cases of the original data are classified into wrong groups. However, we can get optimistic results when classification function is used to classify the same cases that were used to compute it. This bias may be reduced by using cross validation in the classification or another data with known groups. The classification may base on the classification functions obtained from the discriminant analysis or on the original observations.

The general form of the DISCR operation is the following:

DISCR <data>;L

<the definition of the variables in the model>;

<options for the printout and methods used>;

The variables used for forming the classification (discriminant) functions may be defined either by the VARIABLES specification or they can be pointed by masks X or A.

Correspondingly, the grouping variable may be defined by the

GROUPING specification or by mask G. The grouping structure of the grouping variable is given in the same way as in ANOVA and MEANS operations. If the structure is not given then the program will examine the values of the grouping variable from the data file and uses all distinct values found (which means one extra pass through the data). Example:

```
DISCR FISHER,END+2
VARIABLES=sepalw,sepalw,petallen,petalw
GROUPING=iristype iristype=1(setosa),2(versicol),3(virginic)
RESULTS=CROSS
```

The option CROSS in the RESULTS specification causes the printout of the within and between groups crossproducts matrices. Alternatively, covariances (COVA) or correlations (CORR) may be printed.

Further information:

```
<A HREF="qw6_03.html">1 = Definitions for grouping variables</A>
<A HREF="qw6_02.html">2 = Classification of the cases</A>
<A HREF="q21_01.html">D = More on data analysis</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">THE CLASSIFICATION ANALYSIS
```

(1) The classification method used is selected by the METHOD specification:

```
METHOD=CLASSIC (default)
METHOD=BAYES
METHOD=MAHAL classification based on the Mahalanobis distance only
```

(2) The classification may be performed by using the classification functions based on the discriminant analysis (DSPACE=1, default) or on the original data (DSPACE=2).

(3) The group covariance matrices may be assumed to be equal (default) or the classification may be done without that assumption (METHOD=UNEQC).

By combining these three features several formulas for forming the classification scores can be obtained. By default, the prior probability that a case belongs to a group is assumed to be proportional to the sample size. The user may give his own prior probabilities by the PRIOR specification, e.g. PRIORS=0.25,0.5,0.25.

The program classifies each case into the group with the highest

posterior probability. By default, the results are presented in a summary table. Casewise classification results may be obtained by the LIST specification. For each case the printout contains the Mahalanobis distances and posterior probabilities for belonging to each group:

LIST=ALL All observations

LIST=INCORR Only missclassified observations are reported

LIST=i,j The printout starts from i'th observation and ends with the j'th observation.

The scores of the discriminant functions for each case may be saved in the Survo data file by giving the names of these new variables in the CANONICAL specification or they can be pointed by masks C. The number of these canonical variables is $\min(g-1, p)$, where g is the number of groups and p is the number of variables used for forming the functions. Only the named canonical variables are saved. The predicted group may be saved in the Survo data file by the PREDICTED specification or by mask P.

If the same data is used for computing the classification functions and for classifying the cases, then the classification results may be too optimistic. This may be avoided either by using another data for classification or by using cross validation methods. The use of another data file is pointed by the CLFDATA specification, e.g.

```
DISCR FISHER1,END+2
```

```
VARIABLES=sepallen,sepalw,petallen,petalw
```

```
GROUPING=iristype iristype=1(setosa),2(versicol),3(virginic)
```

```
PREDICTED=prediris
```

```
CLFDATA=fisher2
```

```
CANONICAL=Cano1,Cano2
```

Note! The new canonical variables Cano1 and Cano2 are saved in both Survo data files. The predicted group in the data file fisher2 only.

The cross validation method is used if option CROSSV is stated in the METHOD parameter and it may be used only if DSPACE=2. In cross validation, when a case is to be classified the effect of this case is removed from the classification formulas.

Further information:

1 = Definitions for grouping variables

A = More on the discriminant analysis

D = More on data analysis

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System ">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

```

</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText">The grouping variable is given by the GROUPING parameter:
    GROUPING=&lt;gr.vble1&gt;
or it can be pointed by the mask G. The grouping structure of the
grouping variable may be given in the form
    &lt;gr.vble&gt;=value1(label1),value2(label2), ...
The labels given in parenthesis are optional. If the grouping values
are given in ascending order then they are considered as cutpoints
for forming groups, e.g.
    KNOWLDGE=20,50,80,110,140
Values greater than the last cutpoint are treated as missing values.
The list above could be shortened by the notation 20(30)140.

```

You can use string variables as grouping variables. The grouping structure of a string variable is given in the form

```
&lt;gr.vble&gt;=symbol1,symbol2, ...
```

Note that only the first 8 characters of a string variable are significant.

If the grouping structure of the grouping variable is not given then all existing values of that variable are used.

The maximum number of groups is 32 (can be altered by the parameter setting MAXNCL=<new limit>). The capacity of the program is mainly limited by the requirement

$$g*(p+1)*p/2 \leq 64000$$

where q is the number groups and p is the number of variables used for forming the classification functions.

```

<A HREF="qw6_01.html">A = More information on the DISCR operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"><B>The FEDIT operation</B> written by Markku Korhonen (HUCO)

```

The function of the FEDIT operation is to display values in a SURVO 84C data file on forms. The old values can be edited or new values can be entered in the data file, too.

Further information:

```

<A HREF="qw71_02.html">1 = Introduction</A>
<A HREF="qw71_03.html">2 = Fields on forms</A>

```

[3 = Options in the FEDIT operation](qw71_04.html)
[4 = Validity checks of field values \(FEDIT and MFEDIT\)](qw7_05.html)
[5 = Designing the forms in FEDIT](qw71_05.html)
[6 = Conditional forms](qw71_06.html)
[7 = The FEDIT keyboard](qw71_07.html)
[8 = Transformations in FEDIT and MFEDIT](qw7_07.html)

[D = More on data analysis](q21_01.html)
[E = More information on SURVO 84 EDITOR](q01_02.html)

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <http://www.survo.fi>

</BODY>

</HTML>

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<HTML>

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

<HEAD>

<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

<META NAME="Generator" CONTENT="SURVO MM">

<TITLE>SURVO MM Help System (web edition)</TITLE>

<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">

<META NAME="Description" CONTENT="SURVO MM Help System (web edition)">

<META NAME="Classification" CONTENT="help system">

<META NAME="Keywords" CONTENT="Survo, help, hypertext">

</HEAD>

<BODY>

<H1>&

<P><PRE CLASS="HelpText">Introduction

The function of the FEDIT operation is to display values in a SURVO 84C data file on forms. The old values can be edited or new values can be entered in the data file, too. The size of a form is not limited by the size of the screen. Several forms may correspond to one observation in the Survo data file. One can set conditions for displaying a form. If the conditions are not met, then the form is skipped. When new values are entered then FEDIT automatically checks that the values are not in contradiction with the type of field. Additional validity checks may be defined, e.g. by listing valid values for some fields.

The following example clarifies the idea of the form design. A questionnaire starts as follows:

<CODE>

Company:

Contact person:

Address:

Telefon: Telefax:

etc ...

</CODE>

The questionnaire is completed by assigning each field to a variable in the data file:

<CODE>

Company: &Company

Contact person: &Contname

Address: &Address

Telephone: &Tel Telefax: &Fax

etc ...

</CODE>

The form of the FEDIT operation is

FEDIT <Survo data file>,<form file>
<options>;

The SURVO 84C data file

If the Survo data file exists, then FEDIT uses it. If the Survo data file does not exist, then FEDIT creates a new one by using the information in the form file.

The **form** **file**

The form file is an ASCII text file. Its maximum record length is 253 characters. The form file can be created, for example, by the SAVEP operation of SURVO 84C. If the form file does not exist, then a default form file can be created on the basis of the information on variables saved in the SURVO data file.

Options

The option CAPS equates the lowercase letters with capitals. Other options are needed very rarely, e.g. for increasing the maximum number of selection fields.

Fields on the forms

Two types of fields may exist on forms:

- (1) Standard fields.
- (2) Selection fields.

The size of a form

If the form file exists, then FEDIT estimates the number of columns and rows needed on the basis of the information given by the form file. The form having the maximum width defines the width used for all forms. However, at least 50 columns are used. The length of a form may vary.

[M = More information on FEDIT operation](#)

[More information on Survo from](#)

DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<!--

Created by using the PRINT operation of SURVO MM

For more information, see <http://www.survo.fi/>

-->

[Content-Type](#) [text/html; charset=iso-8859-1](#)

[Generator](#) [SURVO MM](#)

[SURVO](#) [MM](#) [Help](#) [System](#) [\(web](#) [edition\)](#)

[LINK REL="stylesheet" HREF="q.css" TYPE="text/css"](#)

[Description](#) [SURVO](#) [MM](#) [Help](#) [System](#) [\(](#)

[Classification](#) [help system](#)

[Keywords](#) [Survo, help, hypertext](#)

[H1](#) [IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO](#) [MM](#) [&](#)

[PRE CLASS="HelpText"](#) **Fields on forms**: There are two kind of field

(1) standard fields and

(2) **selection fields**.

In standard fields, each field corresponds to a variable in a Survo data file. The desired value of the variable is written on the field. The field length is defined by the type of the variable.

In the case of selection fields, the alternatives for values of a (group of) variable(s) are written on the form. The user selects one or more of the alternatives by pressing the Return key. The number of selections in a selection group equals to the number of variables in the Survo data file assigned to this selection group. Free selection fields may be used for those situations where all possible choices cannot be written out.

```
<A HREF="qw71_01.html">M = More information on FEDIT operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText"><PRE><CODE><STRONG>Options in the FEDIT operation</STRONG>
</PRE></P>
```

The option FIRSTOBS defines the starting observation. By default, FEDIT assumes that new observations will be entered.

If the form file doesn't exist or the program fails to estimate the form width, the maximum size of a form may be given by the MAXCOLS and MAXROWS options. MAXCOLS defines the number of the ordinary columns in a form (max. 253). If the form file does not exist, then the default size is 78. Two additional columns are needed for the frame. The maximum number of the ordinary rows in the form is given by the MAXROWS option. If the form file does not exist, then the default is 60 rows. The values given by the options MAXCOLS and MAXROWS must meet the requirement:

$$(\text{maxcols}+3)*(\text{maxrows}+2) \leq 32766$$

The option CAPS defines the default behaviour when small letters are entered. If CAPS=1 is stated, then lower case letters are changed to capital ones if not otherwise stated in the RESTR statement.

By the option INTDEF one can define the default display length of the integer variable in the form. This default value can be overridden for given variables by an INT statement.

The program estimates the maximum number of selection groups in one form. If the form file does not exist, then the default maximum number of selection groups is 50. The user may give this maximum value by the option MAXGROUPS. The option MAXCHOICES defines the maximum number of alternatives in one selection group (default 50).

The maximum number of standard fields plus the number of selection

fields in selection groups is 300. This upper limit cannot be increased.
The FEDIT operation can be used with Survo data files having 1200 variables at most!

```
<A HREF="qw71_01.html">M = More information on FEDIT operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"><STRONG>Designing forms in FEDIT</STRONG>
```

The form definitions are given by the form file. The SURVO 84C editor can be used to create it (use the SAVEP operation). FEDIT is able to generate a default form file if all necessary variables are already defined in the Survo data file. Then you can load (use LOADP) the created file in the edit field for further editing.

The principle is that the forms are written in the form file as they should be displayed to the user. The program adds frames around the form. The fields on forms are denoted in a predetermined way. Besides the definition of the ordinary form, conditions for displaying the form as well field checks may be defined. These functions require additional statements before or after the ordinary form. The structure of the definitions is the following (obligatory statements are shown by bold letters):

```
<STRONG>FORM(the name of the form):</STRONG>
COND: &lt;conditions for the usage of this form>
ENCOND;
STRING: &lt;names and lengths of string variables>;
REAL: &lt;names and display lengths of real variables>;
INT: &lt;names and display lengths of integer variables>;
SELECT:
  &lt; definition of variables corresponding each (multi)selection group>;
ENDSELECT;
<STRONG>TEXT:</STRONG>
  &lt;definition of the ordinary form>;
<STRONG>ENDTEXT:</STRONG>
RESTR:
  &lt;definition of valid variable values>;
ENDRESTR;
<STRONG>ENDFORM; </STRONG>

<STRONG>FORM(</STRONG>the name of the next form):
...
<STRONG>ENDFORM; </STRONG>
..
<STRONG>ENDOFFILE;</STRONG>
```

An example with one form only:

FORM(Flats):

STRING: City(9),Subcity(12),Seller(16),Sauna(1),Type(8),Kitchen(2);

REAL: Area(5), Dist1(5), Dist2(5);

TEXT:

City: &City

Subsection: &Subcity

Type of the flat: &Type Number of rooms: &Rooms

Kitchen/Kitchenette (K/KN): &Kitchen

Sauna (S=yes/E=no): &Sauna

Area of the flat: &Area

Selling price: &Price

Debt: &Debt Completion year of the flat: &Year

Seller: &Seller

Distance from centre of Helsinki to nearest railway station: &Dist1

Distance from flat to nearest railway station: &Dist2

ENDTEXT;

ENDFORM;

ENDOFFILE;

STRING and REAL statements are necessary on does not exist. The maximum length of a field (in characters) is given in parentheses after the corresponding variable name. The values of variables Area, Dist1 and Dist2 may have decimals, so they are as real variables. The numbers in parentheses concern the field length in the form. If the corresponding variable does not exist in the Survo data file, then it is created as a 4 byte numeric variable. For string variables, the given lengths are used if the variable is a new one. The display length of integer variables can be defined by the INT statements in the same way. New integer variables are created as one or two byte variables depending on the given length.

New variables (not existing in the Survo data file) not mentioned in STRING, REAL or INT statements are assumed to be integers and two bytes are reserved for each of them in the Survo data file (however, if the default display length of an integer variable is defined to be one by the option INTDEF, then only one byte is reserved). For old variables, the information saved in the Survo data file is used to define the field length.

The ordinary form is defined by the lines between the key words TEXT and ENDTEXT. The left margin of a standard field character & followed by the variable name. The length of the field is defined by the length of the variable. A one byte numeric variable may vary between 0 and 254, so a field length of 3 is used for it. Correspondingly for a two byte numeric variable a field length of 6 is used (values from -32768 to 32766). For real types of numeric variables a default field of length 7 (4 byte variable) or 14 (8 byte variable) is used. The field length of a string variable is the maximum length of the variable defined in the Survo data file if the length is not given in the STRING statement.

A form with selection fields:

FORM(F3):

STRING: Dmost1(12),Dmost2(12),Dmost3(12);

SELECT: @F1 3 TO Dmost1,Dmost2,Dmost3;

ENDSELECT;

TEXT:

3. Which are the three most important export countries for your company?

Select the countries in the order of importance:

@F1<Sweden>;

@F1<Norway>;

@F1<Denamrk>;

@F1<Germany>;

@F1<England>;

@F1<France>;

@F1<Russia>;

@F1<Italy>;

```
@F1<Spain>      @F1<?>
@F1<Japan>       @F1<?>
@F1<United States> @F1<?>
```

```
ENDTEXT;
ENDFORM;
ENDOFFILE;
```

If the form includes `selection` `fields`, then a `SELECT` is needed to declare the names for the variables, where the selected values will be saved. The statement starts with a symbol of the selection group. The symbol must start with the character `@` and it must be a short name. A form may involve several groups of selection fields. Therefore, the groups are identified by a symbol. The name of the selection group is followed by the number of selections allowed. In the example, the user may choose 3 countries. The selections are saved in the order they have been done. The SELECT statement ends with the key word ENDSELECT.

In the TEXT statement, a selection field starts with the symbol of the corresponding selection group and the corresponding value to be saved is given between the characters `<` and `>`. Free selection fields are given by `<?>`. The field length of a selection field is defined by the type of the corresponding variable.

```
<A HREF="qw71_01.html">M = More information on FEDIT operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
  Created by using the PRINT operation of SURVO MM
  For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;SURVO&nbsp;MM
<P><PRE CLASS="HelpText">Conditional forms
```

The conditions for displaying a form are defined by logical statements given between COND and ENDCOND statements. Logical statements have the structure:

```
<logical statement> AND <logical statement> AND ...;
or
<logical statement> OR <logical statement> OR ...;
```

Examples:

```
COND: City='HELSINKI' ENDCOND;
COND: Year=1991 AND Rooms>3 ENDCOND;
COND: City <> 'ESPOO' AND Area<=90 ENDCOND;
COND: Vble1<Vble2 OR Vble1=0 ENDCOND;
The <STRONG>relational operators</STRONG> in the COND statements are:
```

> "greater than"
 >= "greater than or equal to"
 = "equal to"
 <= "less than or equal to"
 < "less than"
 <> "not equal"
 != "-"-

```

<A HREF="qw71_01.html">M = More information on FEDIT operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi"
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText"><STRONG>The FEDIT keyboard</STRONG>
  
```

The cursor moves from one field to another field on a form from left to right and from top to bottom. However, the fields belonging to the same selection group are passed before other fields. The location of the first field in a selection group defines the order of that group compared to other fields or groups.

The following list summarizes the special keys used in FEDIT. Note that some keys have slightly different meanings in standard and selection fields.

Cursor Right Standard fields: Moves the cursor one character to the right in the field or to the next field if the right margin of the field is exceeded.

Selection fields: Moves the cursor to the next selection field.

Cursor Down Moves the cursor to the next standard or selection field in the form.

Cursor Left Standard fields: Moves the cursor one character to the left in the field, or to the previous field if the left margin of the field is exceeded.

Selection fields: Moves the cursor to the previous selection field.

Cursor up Moves the cursor to the previous field in the form.

PgDn The cursor is moved down by "one page" in the form, to the next form or to the next observation. If selection fields in one group extend over several pages, moving is done done within the same group.

PgUp The cursor is moved up by "one page" in the same form or to the previous form. If the cursor is on the first page of the first form, then PgUp moves the cursor in the first

form of the previous observation. If the cursor is in a "long" selection group, moving is done within the same group.

Ctrl PgDn The cursor is moved to the first form of the next observation.

Ctrl PgUp The cursor is moved to the first form of the previous observation.

HOME The cursor is moved to the first field on the current form.

END The cursor is moved to that last field on the current form.

INS Insert/overwrite mode toggle.

DEL Standard fields: Deletes character at the cursor.
Selection fields: Deletes the selection at the cursor. All lower order selections are deleted too. E.g. if the first selection is deleted, then all other selections will be deleted, too.

ESC Interrupts the selection in one group (without entering the maximum number of selections).

BACKSPACE First the character to the left of the cursor is erased and then the cursor is moved one character to the left.

ALT F5 Searches for a value of the variable indicated by the cursor or moves to the given observation defined by its sequence number. An old search may be repeated by using the Cursor Up key (the last 9 searches are saved).

ALT F9 Inserts observations after the current observation.

ALT F10 Deletes observations including the current observation.

F2 - P The current form is copied in the edit field.

F1 Help for keys. The content of the help window depends on the type of the field indicated by the cursor.

F8 Exit

```
<A HREF="qw71_01.html">M = More information on FEDIT operation</A>
```

```
</PRE></P><HR>
```

```
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
```

```
</BODY>
```

```
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
```

```
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText"><B>The MFCOPY operation</B> written by Markku Korhonen (H
```

With the MFCOPY operation several related Survo data files can be combined into one new Survo data file. The relation between Survo data files is indicated by key variables exactly in the same way as in the MFEDIT operation.

The form of the MFCOPY operation is

```
MFCOPY <output Survo data file>
FILE1=<Survo data file>(<list of keys>)
FILE2=<Survo data file>(<list of keys>)
...
<subset definitions>
<options>
```

<Survo data files>

Input Survo data files are given in the order defined by their hierarchy (if one exists) exactly as in the MFEDIT operation. After the name of the data file the keys defining the relation between files are given in parentheses in such an order that the primary keys are given first. Up to 7 input Survo data files can be defined by the FILEn specifications. They can have up to 10 different key variables.

All active variables are copied into the new Survo data file. However, the key variables are copied only once. The names of active non-key variables must be unique. The output Survo data file is created automatically.

Example:

```
MFCOPY Combined
FILE1=Society(Scode)
FILE2=Persons(Personid)
FILE3=Members(Scode,Personid)
```

If an observation in the **<Members>** file has no counterpart, for instance, in the Society file, then the corresponding fields in the output file are filled with missing values. For each input file an indicator variable can be created in the output file. The names for the indicator variables are given by the INDn specifications, e.g. cations, e.g.

```
IND1=Isociety IND2=Ipersons
Subset definitions
```

A subset of observations can be selected with the following kind of specifications depending on the type of the variable. For numeric variables one can define limits for variable values:

```
<variable name>=<lower limit>,<upper limit>;
```

The default value for the upper limit is the lower limit. If one wants to exclude observations between a certain range, then a prefix operator ^ ("not") can be used.

For string variables the restrictions have the form:

```
<variable name>=<string 1>,<string 2>, ...
```

The strings are given without apostrophes. If a string ends with an asterisk (*), only the given characters are taken in account when strings are compared. If several strings are listed in a specification, the OR operation is applied (string 1 OR string 2 OR ...). If a prefix operator is placed in front of the first string, then the list consists of unwanted strings.

Note that missing values result always to a false condition. There can be up to 20 specifications. An observation is written to the output file only if it meets all conditions given by the different specifications.

<Example 3.2:> Consider the previous example. The user wants that the

output Survo data file contains only those persons, who are members of the society 051, whose member type is neither R nor R+, who were born in the years 1962-1992 and who have in their address a postal code which starts with a zero (variable `Zip` is a string variable).

```
MFCOPY Combined
FILE1=Society(Scode)
FILE2=Persons(Personid)
FILE3=Members(Scode,Personid)
Scode=051 Brthyear=1962,1992
Memtype=^R,R+ Zip=0*
```

The order of observations

The observations are written in the output file either in the order defined by the keys of the file which is lowermost in the hierarchy (`Members` in the previous example), or in the order of appearance in that file. The latter is chosen if `ORDER=ORIG` is specified. If there is not enough memory for sort indices for the files, then the original order is used.

[D = More on data analysis](#)
[E = More information on SURVO 84 EDITOR](#)

```
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<HTML>
```

```
<!--
```

```
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
```

```
-->
```

```
<HEAD>
```

```
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
```

```
<META NAME="Generator" CONTENT="SURVO MM">
```

```
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
```

```
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
```

```
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)">
```

```
<META NAME="Classification" CONTENT="help system">
```

```
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
```

```
</HEAD>
```

```
<BODY>
```

```
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
```

```
<P><PRE CLASS="HelpText">The MFEDIT keyboard
```

```
r
```

The cursor moves from one field to another field on a form from left to right and from top to bottom within one subform. However, the fields belonging to the same selection group are passed before other fields. The location of the first field in a selection group defines the order of that group compared to other fields or groups.

The following list summarizes the special keys used in MFEDIT. Note that some keys have slightly different meanings in standard and selection fields.

Cursor Right Standard fields: Moves the cursor one character to the right in the field or to the next field if the right margin of the field is exceeded.

Selection fields: Moves the cursor to the next selection field.

Cursor Down Moves the cursor to the next standard or selection field in the subform.

Cursor Left Standard fields: Moves the cursor one character to the left in the field, or to the previous field if the left margin of the field is exceeded.

Selection fields: Moves the cursor to the previous selection field.

Cursor Up Moves the cursor to the previous field in the subform.

PgDn The cursor is moved down by "one page" in the form, to the next form or to the next observation.
If selection fields in one group extend over several pages, moving is done within the same group.

PgUp The cursor is moved up by "one page" in the same form or to the previous form. If the cursor is on the first page of the first form, then PgUp moves the cursor in the first form of the previous observation. If the cursor is in a "long" selection group, moving is done within the same group.

Ctrl PgDn The cursor is moved to the beginning of the first form or to the reference field (defined by F2-R) of the next observation.

Ctrl PgUp The cursor is moved to the first form or to the reference field of the previous observation.

HOME The cursor is moved to the first field on the curr. form

END The cursor is moved to that last field on the curr. form

Ctrl Home First observation (beginning of the first form)

Ctrl End Last observation (end of the last form)

INS Insert/overwrite mode toggle.

DEL Standard fields: Deletes character at the cursor.
Selection fields: Deletes the selection at the cursor. All lower order selections are deleted too. E.g. if the first selection is deleted, then all other selections will be deleted, too.

ESC Interrupts the selection in one group (without entering the maximum number of selections).

BACKSPACE First the character to the left of the cursor is erased and then the cursor is moved one character to the left.

Function keys:

F1 Help window for keys. A different help window according to the type of the field which cursor points.

F2 - P Current form is copied in the edit field

F2 - R The current field is marked as a reference field.

If Ctrl-PgDn is pressed then the cursor is moved to the reference field in the next observation.

Ctrl-PgUp uses the reference field correspondingly.

F3 The current observation is fixed

ALT F3 The current key (which cursor points) is fixed.

F4 Set the current file as a target file

ALT F4 Move cursor to the next subform

ALT F5 Search a value in the current field

F6 Change the display order of observations

F7 Find next 'free value' for a single key

ALT F9 Insert an observation

ALT F10 Delete an observation

F8 Exit

M = More information on MFEDIT operation

</PRE></P><HR>

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo

</BODY>

</HTML>

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"><STRONG>The MFEDIT operation </STRONG> written by Mark

```

Editing and displaying several Survo data files at a time

Further information:

```

<A HREF="qw7_02.html">1 = Introduction, assignments for Survo data files</A>
<A HREF="qw7_03.html">2 = Fields on forms</A>
<A HREF="qw7_04.html">3 = Options in the MFEDIT operation</A>
<A HREF="qw7_05.html">4 = Validity checks of field values (FEDIT and MFEDIT)</A>
<A HREF="qw7_06.html">5 = Designing the forms in MFEDIT</A>
<A HREF="qw7_07.html">6 = Transformations in MFEDIT</A>
<A HREF="qw73_01.html">7 = The MFEDIT keyboard</A>
<A HREF="qw7_08.html">8 = Protection of (old) observations</A>

<A HREF="q21_01.html">D = More on data analysis</A>
<A HREF="q01_02.html">E = More information on SURVO 84 EDITOR</A>

```

```

</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</DIV>
</BODY>
</HTML>

```

```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC=" ../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"><STRONG>Introduction</STRONG>

```

With the MFEDIT operation you may display and edit several SURVO 84C data files at a time. The condition for the operation is that there must be a relation between those data files. The relation is indicated by key variables.

In the MFEDIT operation, information is displayed, edited and entered on forms in the same way as in the FEDIT operation. In MFEDIT each

form may be divided into subforms. Different files may be assigned to subforms. The size of a form is not limited to the size of the screen. For instance, one may design a form which has 120 rows and 100 columns.

Further, the user may have a set of forms which are displayed one at a time. When new values are entered, MFEDIT automatically checks that the values are not in contradiction with the type of the field. Additional validity checks may be defined, e.g. by listing valid values for some fields.

The form of the MFEDIT operation is

```
MFEDIT <form file>
FILE1=<Survo data file>(<list of keys>)
FILE2=<Survo data file>(<list of keys>)
...
<options>
```

THE FORM FILE

The forms are defined by a separate ASCII file. Their maximum record length is 253 characters. Each form may be divided into subforms. Usually, each Survo data file has its one subform and within one subform, only variables of one data file are referred to. You can use the SURVO 84C editor to create and edit it (unlike FEDIT, MFEDIT cannot create a default form file).

SURVO DATA FILES

Survo data files must be given in the order defined by their hierarchy (if such exists). All data files must exist; MFEDIT cannot create them. After the name of the data file the keys defining the relation between files are given in parentheses in such an order that the primary keys are given first.

By default, the program expects that the corresponding keys have the same names in different files; otherwise the correspondency must be given. If that is not the case, then the correspondency is defined by giving both names separated by a vertical bar in either of the files (the name existing in that file must be given first), e.g.

MFEDIT federat.txt

```
FILE1=Society(Scode<STRONG>|Society</STRONG>)
```

```
FILE2=Persons(Personid)
```

```
FILE3=Members(Society,Personid)
```

Up to 7 assignments can be given to MFEDIT by the FILEn specifications. Each assignment may refer to different files or some of them may refer to the same file. Up to 10 different key variables can exist in these assignments.

By default, the program assumes that last file (given by FILE3 in the example) is of primary interest, here named as a target file. During the session, the target file can be changed by pressing the F4 key.

OPTIONS

With various options the user may specify the order in which the observations are shown, the preliminary work of the program, the size of the forms and some other limits of the program. One can also define that lowercase letters should be changed to capital letters.

Fields on forms

Like FEDIT there are two kind of fields that may exist on forms:

(1) standard fields and

(2) selection fields.

M = More information on MFEDIT operation
</PRE></P><HR>

```

<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"><STRONG>Fields on forms</STRONG>: Two kind of fields may e

```

```

<STRONG>(1) standard fields</STRONG> and
<STRONG>(2)</STRONG> <STRONG>selection fields</STRONG>.

```

In standard fields, each field corresponds to a variable in a Survo data file. The desired value of the variable is written on the field. The field length is defined by the type of the variable.

In the case of selection fields, the alternatives for values of a (group of) variable(s) are written on the form. The user selects one or more of the alternatives by pressing the Return key. The number of selections in a selection group equals to the number of variables in the Survo data file assigned to this selection group. Free selection fields may be used for those situations where all possible choices cannot be written out.

```

<A HREF="qw7_01.html">M = More information on MFEDIT operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="..survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&
<P><PRE CLASS="HelpText"><STRONG>Options in the MFEDIT operation</STRONG>

```

ORDER If ORDER=ORIG is specified, then the observations in the target file are displayed in the original order. During

the session, the user can switch back to the sorted order by pressing F6 (if the sorted keys have been saved before).

OPTIONS If **OPTIONS=NOSORT** is specified, then the key values are neither copied nor sorted in the memory. It follows that the observations in the target file are displayed in the original order only.

CAPS The default behaviour for changing the small letters

MAXCOLS Maximum number of columns in the forms (49<maxcols<254)
(default: found maximum length; option rarely needed)

MAXROWS Maximum number of rows in the forms (default: found
maximum number of rows; option rarely needed)

MAXCHOICES Maximum number of selections in one group (default 50)

SELECTGROUPS IF **SELECTGROUPS=ROWPAIR** is specified and if several selection groups (with a single selection) are located one after the other then after the selection the cursor is moved to the choice of the next group located in the same row (if exists) - not to the first choice.

IF **SELECTGROUPS=PAIRED** is specified then the cursor is moved to the choice of the next group having the same order number (not necessarily in the same row).

For multi-selection groups **SELECTGROUPS** has no effect!

```
<A HREF="qw7_01.html">M = More information on MFEDIT operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText"><STRONG>Validity checks of field values</STRONG>(FEDIT and MFEDIT)
</PRE>
</P>
</BODY>
</HTML>
```

Validity checks for the entered values may be defined by **RESTR** statements in the form file.

For numeric variables, the minimum and maximum values or a list of valid values may be given.

For string variables, only a list of valid strings can be given.

Each **RESTR** statement ends with a **ENDRESTR** statement. These statements are placed after the **ENDTEXT** statement.

Examples:

RESTR: MIN(vble1,vble2,vble3)=0;

```

MAX(vble1,vble2)=99; MAX(vble3)=999;
vble4=0,1,2
vble5=0(1)9
vble6='AGFA','FUJI','KODAK';
ENDRESTR;

```

With one MIN or MAX definition, several variables having the same minimum (maximum) value may be given. Note that the string values are given in apostrophes. If the values of a numeric variable are equally spaced then an abbreviated notation may be used, e.g. the specification 0(1)9 yields the same as 0,1,2, ..., 9.

If validity checks are defined for a field and the type value does not fill the given conditions, an error message is given. Only valid values are written into the data file.

The CAPS specification may be used to alter the default behaviour for each variable separately while small letters are entered. The default behaviour for all variables may be given by the CAPS option of the FEDIT or MFEDIT operation. Example:

```
RESTR CAPS(vble6,vble7,vble8)=Y ENDRESTR;
```

The given value Y defines that for the three variables entered lowercase letters are transformed to capital letters. If the user had given the FEDIT option CAPS=1 in the edit field, then he might define for some variables that no transformation should be done. In that case, the letter N would be used instead of Y.

```

<A HREF="qw71_01.html">F = More information on FEDIT operation</A>
<A HREF="qw7_01.html">M = More information on MFEDIT operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
<!--
Created by using the PRINT operation of SURVO MM
For more information, see http://www.survo.fi/
-->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText"><STRONG>Designing the forms in MFEDIT</STRONG>

```

The form definitions are given in MFEDIT by a separate ASCII file, a form file. The form is divided into subforms which are indicated by the SUBFORM and ENDSUBFORM statements. The structure of the form file in MFEDIT is the following:

```

<STRONG>FORM</STRONG>(name of the form):
<STRONG>SUBFORM</STRONG>(name of subform): FILE &lt;name of data file>&lt;protection>
SELECT:
    &lt; definition of variables corresponding to each
    (multi)selection group &gt;
ENDSELECT;

```

TRANSF: <definition of automatic transformations>;
ENDTRANSF;

TEXT:

<definition of the ordinary form>;

ENDTEXT;

RESTR:

<definition of valid variable values>;

ENDRESTR;

ENDSUBFORM

SUBFORM(name of 2. subform): FILE <name of data file>;

....

ENDSUBFORM

...

ENDFORM;

FORM(name of the next form):

...

ENDFORM;

ENDOFFILE;

The form file in the following example consists of one form with two subforms:

FORM(F1):

SUBFORM(Customer) FILE Customer;

TEXT:

Customer I.D.: &Customid

First name: &Fname

Last name: &Lname

Street: &Street

Postal code: &Postcode City: &City

Country: &Country

ENDTEXT;

ENDSUBFORM;

SUBFORM(Delivery) FILE Delivery;

TEXT:

Product code: &Prodcode Customer code: &Customid

Date of delivery, Year: &Year Month: &Month Day: &Day

of items delivered: &Nofitems Unit price: &Unitprce

ENDTEXT;

ENDSUBFORM;

ENDFORM;

ENDOFFILE;

Each subform definition starts with SUBFORM keyword followed by a short name (maximum 8 characters) in parentheses. Next, the name of the Survo data file or logical reference (FILE1, FILE2 ...) is given by the FILE statement. The file (or logical) name may be followed by a protection option. Each SUBFORM statement generates the upper border of the subform. The border consists of the name of the Survo data file, the current record sequence number, the form and the subform names. The middle part of the border is reserved for certain status information (e.g. which file is the target file).

Instead of the file name given in the FILE statement, the corresponding logical name (FILE1, FILE2) may be given. If the same data file is assigned to several forms, then logical names must be used for linking the subforms to the right FILEn specifications. The contents of the subform are defined by the lines between the key words TEXT and ENDTEXT:

The left margin of a standard field is given by the character &; followed by the variable name. The length of the field is defined by the length of the variable:

1 byte numeric variable - field length is 3

2 " " 6
 4 byte real type numeric variable - field length is 7
 8 " " 14
 string variables - field length is the maximum length of
 the variable defined in the Survo data file.

By default fields in a form refer to the Survo data file given by the FILE statement. However, a standard field may refer to another file too. In that case the logical file reference must be given after the variable name in parenthesis, e.g.

&price(F1) or &price(FILE1)

If the subform includes selection fields, then a SELECT statement is needed to declare the symbols of the selection groups, the number of selections allowed and the names of variables, where the selected values will be saved, e.g. (on the next page)

FORM(F1):

SUBFORM(Persons) FILE Persons;

TEXT:

PERSON FORM:

Person I.D.: &Personid

Family name: &Name1

First name: &Name2

Street: &Street

Postal code: &Postcode City: &City

ENDTEXT;

ENDSUBFORM;

SUBFORM(exhibits) FILE exhibits;

SELECT @1 1 TO Classif; ENDSELECT;

TEXT:

EXHIBITS

Person I.D.: &Personid Exhibit code: &Exhibcde

Title of the exhibit: &Exhtitle

The classification of the exhibit:

@1<Traditional> @1<Postal History> @1<Postal Station>

@1<Aerophilately> @1<Thematic> @1<Maximaphily>

The 1st subclassification: &Subcl1

The 2nd subclassification: &Subcl2

ENDTEXT;

ENDSUBFORM;

SUBFORM(Particip) FILE particip;

SELECT @2 1 TO Class; @3 1 TO Prize; @4 1 TO Specprze; ENDSELECT;

TEXT:

Participations to exhibits

Person I.D.: &Personid Exhibit code: &Exhibcde

Date of exhibition (yy-mm-dd): &Date

Exhibition name: &Exhname

Class: @2<Champion> @2<Competitive>

Prize awarded:

@3<LargeGold> @3<Gold> @3<LargeVermeil> @3<Vermeil>

@3<LargeSilver> @3<Silver> @3<SilverBronze> @3<Bronze> @3<None>

Special Prize: @4<None> @4<Special> @4<Felicitat>

ENDTEXT;

ENDSUBFORM;

In the TEXT statement, a selection field starts with the symbol of the corresponding selection group (defined in SELECT statement) and the corresponding value to be saved is given between the characters < and >.

Free selection fields are given by <?>. The field length of a selection field is defined by the type of the corresponding variable.

Validity checks for field values may be defined by RESTR statements.

```

<A HREF="qw7_01.html">M = More information on MFEDIT operation</A>
</PRE></P><HR>
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">http://www.survo.fi</A>
</BODY>
</HTML>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<HTML>
  <!--
    Created by using the PRINT operation of SURVO MM
    For more information, see http://www.survo.fi/
  -->
<HEAD>
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="Generator" CONTENT="SURVO MM">
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>
<META NAME="Classification" CONTENT="help system">
<META NAME="Keywords" CONTENT="Survo, help, hypertext">
</HEAD>
<BODY>
<H1><IMG SRC="../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&nbsp;
<P><PRE CLASS="HelpText"><STRONG>Numerical transformations</STRONG> in FEDIT or MFEDIT
<STRONG>TRANSF</STRONG> statement, which is placed before the TEXT statement. An example

```

```

TRANSF: Newvbl1=(Score1-Score2)^2/(Score3-Score4)^2;
      Logsum=LOG(Price1+Price2+Price3); ENDTRANSF;

```

Note that each transformation ends with a semicolon. These transformation may involve besides arithmetic operations the following mathematical functions ABS, SQRT, EXP and LOG. If a variable used in arithmetic operations or in mathematical functions has a missing value then the resulting value is always missing. The missing values are handled differently by the special functions MAX, MIN, SUM, MEAN and DEV, e.g. the statement

```
Newvbl2=MEAN(Score1,Score2,Score3,Score4);
```

computes mean of the non-missing values of the four variables. A transformation may be conditioned by an if-then-else statement, e.g.

```

TRANSF: If Price1>Price2 and Price3>Price4
      then X1=Price1+Price3 else X1=Price2+Price4;
      If City="HELSINKI" or City="Espoo"
      then Cityarea=1 else Cityarea=0; ENDTRANSF;

```

For numeric variables the following six conditional operators are available:

```

> "greater than"
>= "greater than or equal to"
= "equal to"
<= "less than or equal to"
< "less than"
< > "not equal"

```

String variables may be used in the conditional expression too (but not in the ordinary transformation statement). For string variables only the operators "equal" and "not equal" are available. Several conditions can be joined either by AND or OR operators but both types must not be used in the same if statement. The then and else parts may involve one transformation statement only.

To indicate missing values in transformations the symbol MISSING may be used, e.g.

```
TRANSF if Dpros=MISSING then Dpros=0;  
      if Treatmnt<1 then Treatmnt=MISSING; ENDTRANSF;
```

By default, MFEDIT assumes that the variables used in transformations refer to the default file of that subform. Variables in other files may be referred by giving the logical file reference in brackets, e.g.

```
TRANSF: Totprice=Nofitems*Unitprce[F2]; ENDTRANSF;
```

The defined transformations are computed for the current observations just before the form is shown on the screen and each time any of the fields on the form is changed. Therefore, the transformations must be such that they can be performed several times without getting wrong results. A necessary condition is that the left-hand and righthand sides of transformation equations have no common variable. The program does not check this feature!

```
<A HREF="qw71_01.html">F = More information on FEDIT operation</A>  
<A HREF="qw7_01.html">M = More information on MFEDIT operation</A>  
</PRE></P><HR>  
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">  
</BODY>  
</HTML>  
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"  
      "http://www.w3.org/TR/html4/loose.dtd">  
<HTML>  
  <!--  
    Created by using the PRINT operation of SURVO MM  
    For more information, see http://www.survo.fi/  
  -->  
<HEAD>  
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">  
<META NAME="Generator" CONTENT="SURVO MM">  
<TITLE>SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</TITLE>  
<LINK REL="stylesheet" HREF="q.css" TYPE="text/css">  
<META NAME="Description" CONTENT="SURVO&nbsp;MM&nbsp;Help&nbsp;System&nbsp;(web&nbsp;edition)</META>  
<META NAME="Classification" CONTENT="help system">  
<META NAME="Keywords" CONTENT="Survo, help, hypertext">  
</HEAD>  
<BODY>  
<H1><IMG SRC="../../survologo1.gif" WIDTH="200" HEIGHT="82" ALT="SURVO&nbsp;MM">&  
<P><PRE CLASS="HelpText">Earlier written observations may be protected against changes by  
mistake by adding the key word PROTECTED after file name in the  
FILE statement, e.g.  
  FILE FILE1 PROTECTED;  
A given number of observations may be protected by stating the  
number of protected observations after the keyword:  
  FILE FILE1 PROTECTED 266;  
At this moment the state of protection cannot be changed during  
the MFEDIT session.  
  
<A HREF="qw7_01.html">M = More information on MFEDIT operation</A>  
</PRE></P><HR>  
<DIV CLASS="Details"><SMALL>More information on Survo from <A HREF="http://www.survo.fi">  
</BODY>  
</HTML>
```