Installation of on-line help
including a browser popup window in OpenCalphad
on Windows and Linux

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The information here is relevant for OC 5.021 and later

1 Background

This is a guide how to install on-line help in OC with or without using a separate popup window with the user guide in a browser like Explorer or Firefox.

1.1 The help facility in OC

Help in OC can be obtained by typing a ? or ?? whenever OC asks you a question you do not understand or when you want to know to possible answers to a command. For example to obtain a menu:

```
--->OC5:?
 ABOUT           EXIT            MAP             SELECT
 AMEND           FIN             NEW             SET
 BACK            HELP            OPTIMIZE        SHOW
 CALCULATE       HPCALC          PLOT            STEP
 DEBUG           INFORMATION     QUIT
 DELETE          LIST            READ
 ENTER           MACRO           SAVE
--->OC5:
```

After displaying the help text, here just the menu, the same question is asked again. When OC wants a more specific answer like a state variable or a value the help text can be more elaborate:

```
--->OC5:set cond
State variable: /T/: ?

 >>> We should open a help window to display text:  3695 3721
{\bf State variable:}
```

A condition is a value assigned to a state variable or an expression
of state variables. By setting the status of a phase to fix you have
also set a condition. For example

{\em set cond t=1273 p=1e5 n=1 x(cr)=0.1 w%(c)=1}

Two cases of expressions can be used as conditions, for example a
relation between mole fraction like\\
{\bf set condition x(liq,o)-x(c1_mo2,o)=0}\\
means that the oxygen content in liquid and c1_mo2 phases should be the
same. That is useful to calculate the congruent melting of c1_mo2.

Another case is if the total anount if some components has a relation,
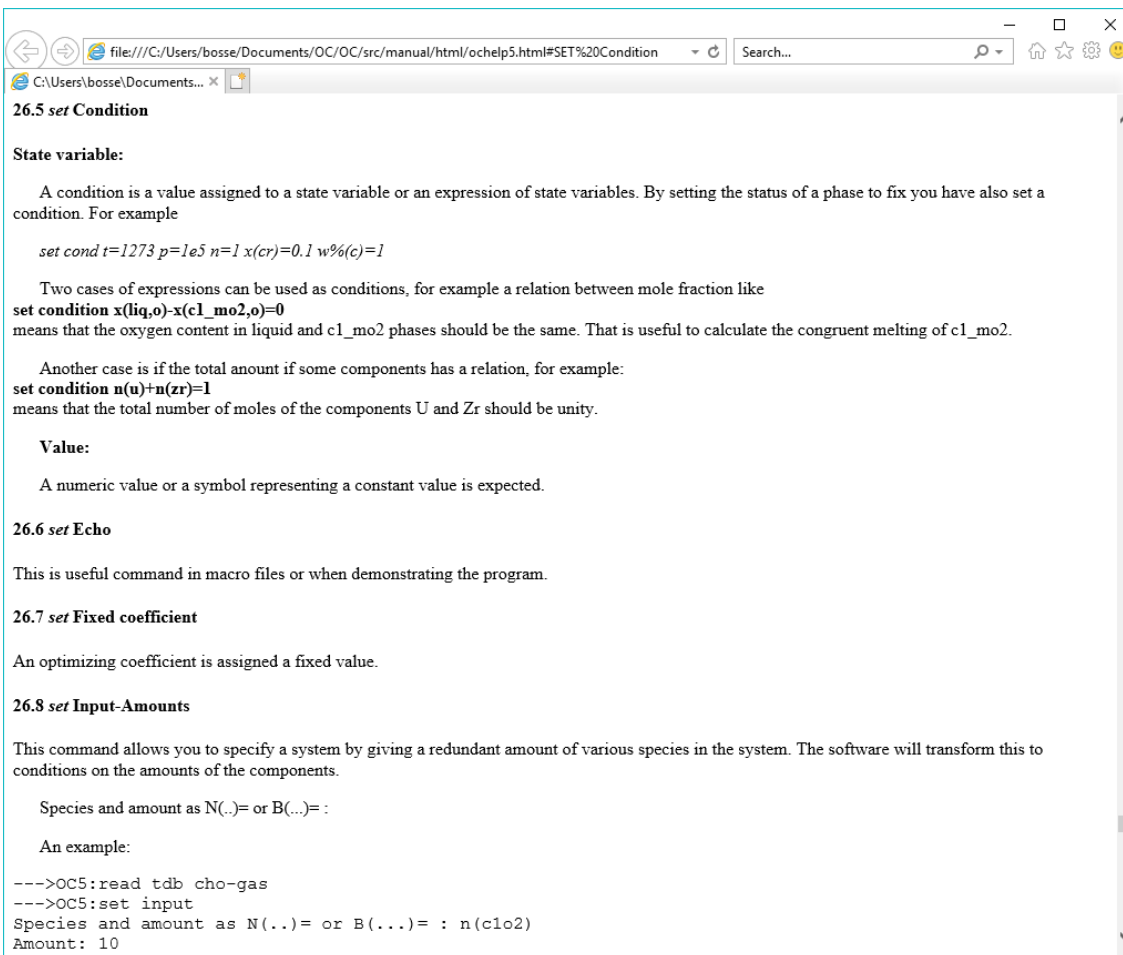for example:\\
{\bf set condition n(u)+n(zr)=1}\\
means that the total number of moles of the components U and Zr should
be unity.

{\bf Value:}

A numeric value or a symbol representing a constant value is expected.

State variable: /T/:

The example of the help text displayed here is without the browser and must be short not
to obscure other output from OC. But is may not be sufficient for a beginner. With the
online popup help a browser window with the text below will open:

26.5 *set* **Condition**

State variable:

A condition is a value assigned to a state variable or an expression of state variables. By setting the status of a phase to fix you have also set a condition. For example

set cond t=1273 p=1e5 n=1 x(cr)=0.1 w%(c)=1

Two cases of expressions can be used as conditions, for example a relation between mole fraction like
set condition x(liq,o)-x(c1_mo2,o)=0
means that the oxygen content in liquid and c1_mo2 phases should be the same. That is useful to calculate the congruent melting of c1_mo2.

Another case is if the total amount if some components has a relation, for example:
set condition n(u)+n(zr)=1
means that the total number of moles of the components U and Zr should be unity.

Value:

A numeric value or a symbol representing a constant value is expected.

26.6 *set* **Echo**

This is useful command in macro files or when demonstrating the program.

26.7 *set* **Fixed coefficient**

An optimizing coefficient is assigned a fixed value.

26.8 *set* **Input-Amounts**

This command allows you to specify a system by giving a redundant amount of various species in the system. The software will transform this to conditions on the amounts of the components.

Species and amount as N(..)= or B(...)= :

An example:

```
--->OC5:read tdb cho-gas
--->OC5:set input
Species and amount as N(..)= or B(...)= : n(c1o2)
Amount: 10
```

Writing a User Guide is a significant effort and few users bother reading such a guide. But making the user guide available when the user asks for help for a particular question, starting with a text that should be most relevant for the question, makes the effort of writing the guide more worth while. Beacuse the user can in the browser windows scroll the text and search for related information in other parts of the user guide.

1.2   How OC can find the relevant help text in the user guide

The method OC uses to find the relevant text to provide as help when you type a ? at a command or question is based on an internal record of the path of commands and questions you have already given or answered. When you type a ? at a question or command this path record is compared one by one with sections and subsections in the LaTeX version of the user guide down to the last question where you typed ?. The text from this section until the next one will be displayed as help (or in the browser window if you use the browser).

As both software and user guide is created by failable humans there are cases when the help software does not find the relevant text to show. Please give feedback to the OC developers

for these cases.

1.3 How OC can display the relevant help text in a browser window

When the browser window is enabled the same search for the relevant text is made as described in the previous section. However, in addition to have searchable sections and subsections in the LaTeX file there are also "\hypertarget{anchor}" at each section and subsection in the LaTeX file. When converting the LaTeX file to an html file (using a utility called htlatex) these "anchors" become searchable inside the html file. If the popup help is active and the help facility finds such an "anchor" within the relevant helptext then OC will use the Fortran subroutine "execute_command_line" to start a browser window providing the help file and the value of the "anchor", using the command:

firefox "file:/path/ochelp.html#anchor"

This will open the popup window and position the html file at the line containing the "anchor" at the top of the screen. If this help text is not sufficient you can search the whole user guide inside this browser window.

As very few read the user guide it is interesting to make the user guide useful and easily available in particular for the person spending several weeks or months writing it.

2 Windows installation of help files

When you have downloaded OC there is a directory "manual/" with three files:

- ochelp.tex is the source LaTeX file for the user guide needed to search for the help text.

- ochelp.pdf is a printable PDF of the user guide created using the pdflatex program.

- ochelp.html is the browser version of the user guide that can be used by a browser like Firefox or internet Explorer.

The first and last of there files has to be moved to a directory where OC can find them and the recommended way is to create a separate directory for that, preferably at your home directory or, if several are using OC on a server, at a directory accessible to all users.

Whenever you download a new version of OC move the new set of help files to the directory you have set as OCHOME.

2.1 Create environment variable

Each user of OC must then create an *enviroment variable* called OCHOME which points to this directory. On Windows you create such an environment variable using the steps described below (if you have never done this please ask a local guru for help):

1. Click at the Windows symbol at the lower left corner. On the menu that pops up click on the "cogweel/gear" symbol (called settings).

2. This will open a popup window called **Settings**. At the top of this there is frame asking *Find a setting* (in your prefered language). In this window type "environment" (in your prefered language). Below the frame where you are typing some alternatives will be shown and click on *Edit environment variables for your account* (in your prefered language).

3. In a new popup window called *Environment Variables* you will have two framed lists, one called User variables and another called System variables. Below each there are 3 buttons: "New..", "Edit..." and Delete.

   You are adding a User variable so click on "New..." under the top frame. If you want to correct or delete an environment variable click first on the variable and then on the appropriate button.

4. When you click on "New..." there will be yet another popup window (you reallize now why this is called the Windows operating system?). In this there are two framed input lines. In the first you enter the variable name, in this case OCHOME and in the second you should enter the whole path for this directory.

   To help you with the latter you can use the button "browse Directory" to search all your directories to find where you created OCHOME. In fact you can create the directory in this process if you have not already done that.

5. When you entered the variable name and value click on the OK button in this window and it will disappear.

6. Click on the OK button in the window called *Environment Variables.* and this will also disappear.

7. Close the "settings" window.

8. Open a new terminal window and type **SET**. This will display all environment variables and you should see the one you just entered.

9. Congratulations, you have created a new environment variable !

Next time you start OC it will find the help files on the OCHOME directory (if you have rememberd to copy them there).

3 Linux installation of popup help

When you have downloaded OC there is a directory "manual/" with three files:

- ochelp.tex is the source LaTeX file for the user guide needed to search for the help text.

- ochelp.pdf is a printable PDF of the user guide created using the pdflatex program.

- ochelp.html is the browser version of the user guide that can be used by a browser like Firefox or internet Explorer.

The first and last of there files has to be moved to a directory where OC can find them and the recommended way is to create a separate directory for that, preferably at your home directory or, if several are using OC on a server, at a directory accessable to all users.

Whenever you download a new version of OC move the new set of help files to the directory you have set as OCHOME.

3.1 Create environment variable

If your OCHOME directory is at your login directory and it is called .ochome you can create the environment variable by a line

export OCHOME=/home/yourusername/.ochome in your ".bashrc" file (or equivalent file) which contain commands run each time you login or open a terminal window.

3.2 Turn on/off the browser help

When you become an advanced user you may not want the browser window to open whenever you type ?. There is a command

set advanced help-popup-off and if you answer Y it will not be used. You can turn it on again with the same command if you answer anything else than Y.

Have fun and help make OC useful!