

ALGOL F

Level 2.1

360S-AL-531 ALGOL F Compiler
and
360S-LM-532 ALGOL F Library

Independent Component Release
for
MVS 3.8

Contents

Contents	2
Figures	3
1. Introduction.....	4
1.1 Overview	4
2. Programming Enhancements.....	5
2.1 Compiler Enhancements.....	5
2.2 Run Time Library Enhancements	5
3. Installing the ICR	6
3.1 Planning	6
3.2 Installation	6
3.3 Changing the Installation Default Compiler Options.....	8
3.4 Running the Installation Verification Programs	8
4. Optional Materials.....	9
4.1 Machine Readable Program Source Material	9
4.2 Program Listings.....	9
Appendix A. IVP IEXSAMP1 Listing	10
Appendix B. IVP IEXSAMP2 Listing	28
Appendix C. IVP IEXSAMP3 Listing	33
Appendix D. IVP IEXSAMP4 Listing	57

Figures

Figure 1 Download Installation JCL.....	6
Figure 2 Installation JCL	7

1. Introduction

1.1 Overview

The Algol F Level 2.1 Independent Component Release is a complete replacement of the previous release Level 2.0 which was a component of OS/360 Release 21. This ICR may be used to upgrade an existing Algol F installation at the Level 2.0 to Level 2.1. Alternatively it may be used to install the Algol F Compiler and Library where the Compiler and Library have not been previously installed. The ICR includes a number of programming enhancements to the Compiler and the Library. The Library routines have been updated for compatibility with the MVS JES2/3 environment.

2. Programming Enhancements

2.1 Compiler Enhancements

A new format heading now identifies the release level of the Compiler and the time and date of the compilation.

Upper and lower case alphabetic characters may be used interchangeably in procedure names, identifier names and Algol Language defined symbols. All alphabetic characters are resolved to upper case except within strings where they retain their upper or lower case specification.

Examples

```
'begin'  
'Array'  
i  
ToTal
```

The range of alphabetic characters is extended to include the national characters \$, _, # and @. These national characters may be used wherever an alphabetic character is acceptable in procedure names and identifier names.

Examples

```
i_to_r  
#sum  
Amt$  
@curr
```

The standard Algol array subscript definition of enclosing square brackets is supported.

Examples

```
'real' 'array' sum[0:10]  
k := sum[i]
```

The operator ** may be used in place of 'POWER'

Compiled Algol programs are identified by a translator ID of 360SAL531 and the date of compilation.

The semicolon count, wherever printed, is left zero suppressed for improved program readability.

2.2 Run Time Library Enhancements

The run time library routines, specifically all routines responsible for data management and the interface with the operating system, are compatible with MVS programming standards. JES2/3 SYSIN datasets are Opened for input only without the Point option set in the DCB MACRF field. JES2/3 SYSOUT datasets are Opened for output only without the Point option set in the DCB MACRF field. Previous techniques to avoid ABENDs when processing SYSIN or SYSOUT datasets are no longer required.

The semicolon count, wherever printed, is left zero suppressed for improved program readability.

3. Installing the ICR

3.1 Planning

Obtain the ICR which is packaged in Hercules Emulated Tape (HET) format with a VOLSER of ALGOL.

The installation JCL and instructions are customized for an MVS 3.8 Turnkey system. If the target system is configured differently then JCL may require modification to suit the system environment. The password for the Master Catalog of the target MVS system is required for the deletion and re-allocation of the SYS1.ALGLIB dataset due to its increased space requirements.

3.2 Installation

Step 1.

The first dataset on the tape contains the installation JCL to install the remaining datasets on the tape. Download this JCL file using the IEBGENER utility to a dataset where the JCL may be edited and customized for the installation requirements and standards. An example job is shown below.

```
//LOADJCL JOB  ALGOL,'DOWNLOAD JCL',MSGLEVEL=(1,1), <-- CUSTOMIZE
//              CLASS=A,MSGCLASS=C                <-- CUSTOMIZE
//GENER  EXEC  PGM=IEBGENER
//SYSPRINT DD  DUMMY
//SYSIN   DD  DUMMY
//SYSUT1  DD  DSN=ALGOLF.LVL210.JCL,LABEL=(1,SL,),DISP=OLD,
//              UNIT=3400-6,VOL=SER=ALGOLF          <-- CUSTOMIZE
//SYSUT2  DD  DSN=userid.work.cntl(ALGJCL),disp=shr <-- CUSTOMIZE
```

Figure 1 Download Installation JCL

Step 2.

Edit the downloaded installation JCL to conform to installation standards and submit the job. The installation JCL is listed below.

```
//T1AI  JOB  111,'ALGOL F LVL2.1', <-- CUSTOMIZE FOR INSTALLATION
//              CLASS=S,MSGCLASS=C, <-- CUSTOMIZE FOR INSTALLATION
//              REGION=4096K,COND=(0,NE),MSGLEVEL=(1,1)
//*
//*          INSTALL
//*          ALGOL F LEVEL 2.1
//*          360S-AL-531 ALGOL F COMPILER
//*          AND
//*          360S-LM-532 ALGOL F LIBRARY
//*          INDEPENDENT COMPONENT RELEASE
//*
//*          BEFORE SUBMITTING THIS JOB CUSTOMIZE THE SYMBOLIC
//*          PARAMETERS TO CONFORM TO LOCAL STANDARDS
//*
//*          NOTE -
//*          THIS JOB WILL ISSUE TWO REQUESTS FOR THE
//*          MASTER CATALOG PASSWORD TO DELETE AND RE-ALLOCATE
//*          SYS1.ALGLIB
//*
//*          THIS JCL IS THE FIRST FILE ON THE DISTRIBUTION TAPE
//*
//*          DSN=ALGOLF.LVL210.JCL,LABEL=(1,SL,EXPDT=98000)
//*
//INSTALL PROC  OLINK='SYS2.LINKLIB', <-- TARGET COMPILER LINKLIB
//              OLIB='SYS1.ALGLIB', <-- TARGET RESIDENT LIBRARY
//              OLUNIT='3350', <-- TARGET RESIDENT LIBRARY
//              OLVOL='MVSRES', <-- TARGET RESIDENT LIBRARY
//              OPROC='SYS2.PROCLIB', <-- TARGET PROCLIB
//              OSAMP='SYS1.SAMPLIB', <-- TARGET IVP SAMPLIB
//              SOUT='*', <-- SYSOUT CLASS, DLFT TO MSGCLASS
//              THLQ='ALGOLF', <-- ADD ADDTNL PREFIX IF REQUIRED
```

```

//          TUNIT='3400-6',          TAPE UNIT FOR DISTRIBUTION TAPE
//          TVOL='ALGOLF'            VOLSER OF DISTRIBUTION TAPE
//*
//*****
//*
//*          NAME: INSTALL ALGOL F LEVEL 2.1 ICR
//*
//*          DESC: INSTALL NEW VERSION OF ALGOL F AND ASSOC
//*                LIBRARIES FROM DISTRIBUTION TAPE
//*
//*****
//*
//*          DELETE SYS1.ALGLIB
//*
//DELETE EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSIN DD DUMMY
//*
//*          LOAD ALL DATASETS
//*
//LOAD EXEC PGM=IEBCOPY,REGION=1024K
//SYSPRINT DD SYSOUT=&SOUT
//*
//INLINK DD DSN=&THLQ..LVL210.MOD,
//          UNIT=&TUNIT,VOL=(PRIVATE,RETAIN,SER=&TVOL),
//          LABEL=(2,SL,EXPDT=980000),DISP=(OLD,PASS)
//OUTLINK DD DSN=&OLINK,DISP=SHR          <--- TARGET LIB
//*
//INLIB DD DSN=&THLQ..LVL210.LIB,
//          UNIT=&TUNIT,VOL=(PRIVATE,RETAIN,SER=&TVOL),
//          LABEL=(3,SL,EXPDT=980000),DISP=(OLD,PASS)
//OUTLIB DD DSN=&OLIB,UNIT=&OLUNIT,          <--- TARGET LIB
//          VOL=SER=&OLVOL,SPACE=(TRK,(15,5,32)),
//          DISP=(,CATLG)
//*
//INPROC DD DSN=&THLQ..LVL210.PRC,
//          UNIT=&TUNIT,VOL=(PRIVATE,RETAIN,SER=&TVOL),
//          LABEL=(4,SL,EXPDT=980000),DISP=(OLD,PASS)
//OUTPROC DD DSN=&OPROC,DISP=SHR          <--- TARGET LIB
//*
//INSAMP DD DSN=&THLQ..LVL210.IVP,
//          UNIT=&TUNIT,VOL=(PRIVATE,RETAIN,SER=&TVOL),
//          LABEL=(5,SL,EXPDT=980000),DISP=(OLD,KEEP)
//OUTSAMP DD DSN=&OSAMP,DISP=SHR          <--- TARGET LIB
//*
//          PEND
//          EXEC INSTALL
//DELETE.SYSIN DD *
//          DELETE SYS1.ALGLIB PURGE
//          SET LASTCC = 0
//*
//LOAD.SYSIN DD *
//          COPY INDD=((INLINK,R)),OUTDD=OUTLINK
//          COPY INDD=((INLIB,R)),OUTDD=OUTLIB
//          COPY INDD=((INPROC,R)),OUTDD=OUTPROC
//          COPY INDD=((INSAMP,R)),OUTDD=OUTSAMP
//*
//

```

Figure 2 Installation JCL

3.3 Changing the Installation Default Compiler Options

The Algol Compiler has been configured with options suitable for the MVS 3.8 environment –

ALGOL PUNCH=NODECK,	X
TYPERUN=LOAD,	X
SORCODE=EBCDIC,	X
SORLIST=SOURCE,	X
PRECISN=SHORT	

The options may be changed by updating the Compiler options setting by use of the AMASPZAP utility program. Member IEXOPTNS in SYS1.SAMPLIB provides a sample job and an explanation of how to change the default options bit settings.

3.4 Running the Installation Verification Programs

The installation job installs four IVP programs (IEXSAMP1, IEXSAMP2, IEXSAMP3 and IEXSAMP4) into SYS1.SAMPLIB and the cataloged procedures to run them into SYS2.PROCLIB. Edit the JCL of the four jobs to conform to installation standards and submit them for execution. The IEXSAMP2 IVP will fail with a return code of 16 as a result of a deliberate divide by zero to prove the successful installation of the run time library error handling module. The IEXSAMP4 job will execute for approximately four minutes on a 25 MIP MVS system. The resulting output from all four jobs may be found in Appendix A, B, C and D.

4. Optional Materials

4.1 Machine Readable Program Source Material

The Assembler and Macro libraries for both the Algol F Level 2.1 Compiler and Library are available in unloaded PDS files distributed in HET format. The HET file may be downloaded from

TBA

4.2 Program Listings

Assembler listings of both the Algol F Level 2.1 Compiler and Library in PDF bookmarked files may be downloaded from

TBA

Appendix A. IVP IEXSAMP1 Listing

J E S 2 J O B L O G

```
13.34.17 JOB 9290 IEF677I WARNING MESSAGE(S) FOR JOB T1IV1 ISSUED
13.34.17 JOB 9290 $HASP373 T1IV1 STARTED - INIT 6 - CLASS S - SYS SYSA
13.34.17 JOB 9290 IEF403I T1IV1 - STARTED - TIME=13.34.17
13.34.17 JOB 9290 IEFACTRT - Stepname Procstep Program Retcode
13.34.17 JOB 9290 T1IV1 IVP1 ALGOL ALGOL RC= 0000
13.34.17 JOB 9290 T1IV1 IVP1 LKED IEWL RC= 0000
13.34.18 JOB 9290 T1IV1 IVP1 GO GO RC= 0000
13.34.18 JOB 9290 T1IV1 AMBLIST AMBLIST RC= 0000
13.34.18 JOB 9290 IEF404I T1IV1 - ENDED - TIME=13.34.18
13.34.18 JOB 9290 $HASP395 T1IV1 ENDED

1 //T1IV1 JOB 111,'ALGOL F LVL2.1', <-- CUSTOMIZE FOR SITE STANDARDS JOB 9290
// CLASS=S,MSGCLASS=C, <-- CUSTOMIZE FOR SITE STANDARDS 00002001
// REGION=1024K,COND=(0,NE),MSGLEVEL=(1,1) 00003001
*** 00004001
*** IBM Algol F Level 2.1 IVP 00005001
*** 00006001
*** 360S-AL-531 Algol F Compiler 00007001
*** and 00008001
*** 360S-LM-532 Algol F Library 00009001
*** 00010001
2 //IVP1 EXEC ALGOFCLG,PARM.GO='TRACE' 00011001
*** 00001001
***** 00002001
*** 00003001
*** IBM ALGOL F LEVEL 2.1 00004001
*** 00005001
*** 360S-AL-531 ALGOL F COMPILER 00006001
*** AND 00007001
*** 360S-LM-532 ALGOL F LIBRARY 00008001
*** 00009001
*** COMPILE, LINK-EDIT AND EXECUTE A PROGRAM 00010001
*** 00011001
***** 00012001
*** 00013001
3 XXALGOL EXEC PGM=ALGOL,REGION=1024K 00014001
4 XXSYSPRINT DD SYSOUT=* 00015001
5 XXSYSPPUNCH DD DUMMY 00016001
6 XXSYSLIN DD DSN=880000000,UNIT=VIO,SPACE=(3200,(20,10)), 00017001
XX DISP=(,PASS) 00018001
7 XXSYSUT1 DD UNIT=VIO,SPACE=(2048,(50,10)) 00019001
8 XXSYSUT2 DD UNIT=VIO,SPACE=(2048,(50,10)) 00020001
9 XXSYSUT3 DD UNIT=VIO,SPACE=(2048,(40,10)) 00021001
10 //ALGOL.SYSIN DD * 00022001
11 XXLKED EXEC PGM=IEWL,PARM='XREF,LIST,LET',COND=(5,LT,ALGOL), 00023001
XX REGION=1024K 00024001
12 XXSYSPRINT DD SYSOUT=* 00025001
13 XXSYSLIB DD DSN=SYS1.ALGLIB,DISP=SHR 00026001
14 XXSYSLMOD DD DSN=880000000,UNIT=VIO,DISP=(,PASS), 00027001
XX SPACE=(2048,(100,20,1)) 00028001
15 XXSYSUT1 DD UNIT=VIO,SPACE=(2048,(100,20)) 00029001
16 XXSYSLIN DD DSN=880000000,DISP=(OLD,DELETE) 00030001
17 XX DD DDNAME=SYSIN 00031001
18 XXGO EXEC PGM=GO,COND=((5,LT,ALGOL),(5,LT,LKED)), 00032001
XX REGION=1024K 00033001
19 XXSTEPLIB DD DSN=880000000,DISP=(OLD,PASS) 00034001
20 XXALGLDD01 DD SYSOUT=* 00035001
21 XXSYSPRINT DD SYSOUT=* 00036001
22 XXSYSUT1 DD UNIT=VIO,SPACE=(1024,(20,10)) 00037001
23 //AMBLIST EXEC PGM=AMBLIST 00038001
*** 00039001
*** DEMONSTRATE LANGUAGE TRANSLATOR ID FOR ALGOL F 00040001
*** PROGRAMS AND TIME OF COMPILATION 00041001
*** 00042001
24 //SYSPRINT DD SYSOUT=* 00043001
25 //SYSLIB DD DSN=880000000,DISP=(OLD,PASS) 00044001
26 //SYSIN DD * 00045001
STMT NO. MESSAGE
-
18 IEF686I DDNAME REFERRED TO ON DDNAME KEYWORD IN PRIOR STEP WAS NOT RESOLVED
IEF236I ALLOC. FOR T1IV1 ALGOL IVP1
IEF237I JES2 ALLOCATED TO SYSPRINT
IEF237I DMY ALLOCATED TO SYSPPUNCH
IEF237I VIO ALLOCATED TO SYSLIN
IEF237I VIO ALLOCATED TO SYSUT1
```

```

IEF237I VIO ALLOCATED TO SYSUT2
IEF237I VIO ALLOCATED TO SYSUT3
IEF237I JES2 ALLOCATED TO SYSIN
IEF142I T11V1 ALGOL IVP1 - STEP WAS EXECUTED - COND CODE 0000
IEF285I JES2.JOB09290.S00103 SYSOUT
IEF285I SYS12230.T133417.RA000.T11V1.OBJECT PASSED *-----2
IEF285I SYS12230.T133417.RA000.T11V1.R0000001 DELETED *-----0
IEF285I SYS12230.T133417.RA000.T11V1.R0000002 DELETED *-----0
IEF285I SYS12230.T133417.RA000.T11V1.R0000003 DELETED *-----13
IEF285I JES2.JOB09290.SI0101 SYSIN
IEF373I STEP /ALGOL / START 12230.1334
IEF374I STEP /ALGOL / STOP 12230.1334 CPU 0MIN 00.05SEC SRB 0MIN 00.00SEC VIRT 192K SYS 304K
*****
* 1. Jobstep of job: T11V1 Stepname: ALGOL Program name: ALGOL Executed on 17.08.12 from 13.34.17 to 13.34.17 *
* elapsed time 24:00:00,10 CPU-Identifier: SYSA Page-in: 0 *
* CPU time 00:00:00,05 Virtual Storage used: 192K Page-out: 0 *
* corr. CPU: 00:00:00,05 CPU time has been corrected by 1 / 1,0 multiplier *
*
* I/O Operation *
* Number of records read via DD * or DD DATA: 53 *
* DMY.....0 DMY.....0 FFF.....2 FFF.....0 FFF.....0 FFF.....13 DMY.....0 *
*
* Charge for step (w/o SYSOUT): 0,08 *
*****
IEF236I ALLOC. FOR T11V1 LKED IVP1
IEF237I JES2 ALLOCATED TO SYSPRINT
IEF237I 148 ALLOCATED TO SYSLIB
IEF237I VIO ALLOCATED TO SYSLMOD
IEF237I VIO ALLOCATED TO SYSUT1
IEF237I VIO ALLOCATED TO SYSLIN
IEF237I DMY ALLOCATED TO
IEF142I T11V1 LKED IVP1 - STEP WAS EXECUTED - COND CODE 0000
IEF285I JES2.JOB09290.S00104 SYSOUT
IEF285I SYS1.ALGLIB KEPT *-----64
IEF285I VOL SER NOS= MVSRES.
IEF285I SYS12230.T133417.RA000.T11V1.G0SET PASSED *-----18
IEF285I SYS12230.T133417.RA000.T11V1.R0000004 DELETED *-----0
IEF285I SYS12230.T133417.RA000.T11V1.OBJECT DELETED *-----3
IEF373I STEP /LKED / START 12230.1334
IEF374I STEP /LKED / STOP 12230.1334 CPU 0MIN 00.05SEC SRB 0MIN 00.01SEC VIRT 1024K SYS 280K
*****
* 2. Jobstep of job: T11V1 Stepname: LKED Program name: IEWL Executed on 17.08.12 from 13.34.17 to 13.34.17 *
* elapsed time 24:00:00,08 CPU-Identifier: SYSA Page-in: 0 *
* CPU time 00:00:00,06 Virtual Storage used: 1024K Page-out: 0 *
* corr. CPU: 00:00:00,06 CPU time has been corrected by 1 / 1,0 multiplier *
*
* I/O Operation *
* Number of records read via DD * or DD DATA: 0 *
* DMY.....0 148.....64 FFF.....18 FFF.....0 FFF.....3 DMY.....0 *
*
* Charge for step (w/o SYSOUT): 0,10 *
*****
IEF236I ALLOC. FOR T11V1 GO IVP1
IEF237I VIO ALLOCATED TO STEPLIB
IEF237I JES2 ALLOCATED TO ALGLDD01
IEF237I JES2 ALLOCATED TO SYSPRINT
IEF237I VIO ALLOCATED TO SYSUT1
IEF142I T11V1 GO IVP1 - STEP WAS EXECUTED - COND CODE 0000
IEF285I SYS12230.T133417.RA000.T11V1.G0SET PASSED *-----0
IEF285I JES2.JOB09290.S00105 SYSOUT
IEF285I JES2.JOB09290.S00106 SYSOUT
IEF285I SYS12230.T133417.RA000.T11V1.R0000005 DELETED *-----12
IEF373I STEP /GO / START 12230.1334
IEF374I STEP /GO / STOP 12230.1334 CPU 0MIN 00.05SEC SRB 0MIN 00.00SEC VIRT 28K SYS 300K
*****
* 3. Jobstep of job: T11V1 Stepname: GO Program name: GO Executed on 17.08.12 from 13.34.17 to 13.34.18 *
* elapsed time 24:00:00,07 CPU-Identifier: SYSA Page-in: 0 *
* CPU time 00:00:00,05 Virtual Storage used: 28K Page-out: 0 *
* corr. CPU: 00:00:00,05 CPU time has been corrected by 1 / 1,0 multiplier *
*
* I/O Operation *
* Number of records read via DD * or DD DATA: 0 *
* FFF.....0 DMY.....0 DMY.....0 FFF.....12 *
*
* Charge for step (w/o SYSOUT): 0,08 *
*****
IEF236I ALLOC. FOR T11V1 AMBLIST
IEF237I JES2 ALLOCATED TO SYSPRINT
IEF237I VIO ALLOCATED TO SYSLIB
IEF237I JES2 ALLOCATED TO SYSIN
IEF142I T11V1 AMBLIST - STEP WAS EXECUTED - COND CODE 0000
IEF285I JES2.JOB09290.S00107 SYSOUT

```

```

IEF285I  SYS12230.T133417.RA000.T11V1.G0SET          PASSED          *-----9
IEF285I  JES2.JOB09290.SI0102                        SYSIN
IEF373I  STEP /AMBLIST / START 12230.1334
IEF374I  STEP /AMBLIST / STOP 12230.1334 CPU          0MIN 00.02SEC SRB          0MIN 00.00SEC VIRT 1024K SYS 280K
*****
* 4. Jobstep of job: T11V1      Stepname: AMBLIST      Program name: AMBLIST      Executed on 17.08.12 from 13.34.18 to 13.34.18 *
*      elapsed time 24:00:00,07      CPU-Identifier: SYSA      Page-in:          0      *
*      CPU time 00:00:00,02      Virtual Storage used: 1024K      Page-out:          0      *
*      corr. CPU: 00:00:00,02      CPU time has been corrected by 1 / 1,0 multiplier      *
*      *      *      *      *      *      *      *      *      *      *      *      *      *      *      *      *      *      *      *      *      *      *
*      I/O Operation      *      *      *      *      *      *      *      *      *      *      *      *      *      *      *      *      *      *      *
*      Number of records read via DD * or DD DATA:      1      *
*      DMY.....0 FFF.....9 DMY.....0      *
*      *      *      *      *      *      *      *      *      *      *      *      *      *      *      *      *      *      *      *
*      Charge for step (w/o SYSOUT):      0,03      *
*****
IEF285I  SYS12230.T133417.RA000.T11V1.G0SET          DELETED
IEF375I  JOB /T11V1 / START 12230.1334
IEF376I  JOB /T11V1 / STOP 12230.1334 CPU          0MIN 00.17SEC SRB          0MIN 00.01SEC

```

```

'BEGIN'                                00013001
'COMMENT' TEST PROGRAM Q09              00014001
      MODIFIED FOR IBM ALGOL F LEVEL 2.1 IVP      00015001
      00016001
      GENERATE AND PRINTS THE FIRST TWENTY      00017001
      LINES OF PASCALS TRIANGLE                00018001
      00019001
      THE K TH ELEMENT P(K,J) OF THE J TH LINE SHOULD BE 00020001
      EQUAL TO THE SUM OF P(K-1,J-1) AND P(K,J-1) FOR K ≠ 0 00021001
      AND K ≠ J. P(0,J)=P(J,J)=1              00022001
      THUS BY ADDING TWO BY TWO ALL ELEMENTS IN ONE LINE 00023001
      PLACING EACH SUM BELOW AND BETWEEN THE TWO ELEMENTS THE 00024001
      NEXT LINE OF PASCALS TRIANGLE COULD BE EXPANDED ; 00025001
      00026001
      'INTEGER' l,k,n,i,m,Powerten;          00027001
1      'INTEGER' 'ARRAY' a[0:19];            00028001
2      'BOOLEAN' c;                          00029001
3      SYSACT(1,6,120);                      00030001
4      SYSACT(1,8,62);                       00031001
5      SYSACT(1,12,1);                       00032001
6      SYSACT(1,2,56);                       00033001
7      OUTSTRING (1,('Pascals Triangle'));    00034001
8      'FOR' l := 0 'STEP' 1 'UNTIL' 19 'DO' 00035001
8      'BEGIN'                                00036001
8      SYSACT(1,14,3);                       00037001
9      'IF' l < 19 'THEN'                     00038001
9      SYSACT(1,2,58-3*l);                   00039001
10     a[l] := 1;                             00040001
11     'FOR' k := l-1 'STEP' -1 'UNTIL' 1 'DO' 00041001
11     a[k] := a[k-1] + a[k];                 00042001
12     'FOR' K :=0 'STEP' 1 'UNTIL' L 'DO'    00043001
12     'BEGIN'                                00044001
12     c := 'TRUE';                          00045001
13     m := a[k];                             00046001
14     'FOR' I := 5 'STEP' -1 'UNTIL' 0 'DO' 00047001
14     'BEGIN'                                00048001
14     Powerten := 10 ** I;                   00049001
15     n := m '/' Powerten;                   00050001
16     m := m-n * Powerten;                   00051001
17     'IF' n 'EQUAL' 0 'THEN'                 00052001
17     'BEGIN'                                00053001
17     'IF' c 'THEN' OUTSYMBOL (1,(' '),1)    00054001
17     'ELSE' OUTSYMBOL (1,('0'),1);          00055001
18     'END'                                  00056001
18     'ELSE'                                00057001
18     'BEGIN'                                00058001
18     c := 'FALSE';                          00059001
19     OUTSYMBOL(1,('123456789'),N);          00060001
20     'END'                                  00061001
20     'END'                                  00062001
20     'END'                                  00063001
20     'END'                                  00064001
20     'END'                                  00065001

```

IDENTIFIER TABLE														PAGE	2
PBN	SC	PBN	NAME	TYPE	DM	DSP	NAME	TYPE	DM	DSP	NAME	TYPE	DM	DSP	
		SURR			PR	LN			PR	LN			PR	LN	
001	00000	000	A	I	A	01 030	C	B		048	I	I		024	
			K	I		01C	L	I		018	M	I		028	
			N	I		020	POWER	I		02C					

STORAGE REQUIREMENTS (DECIMAL) PAGE 3

OBJECT MODULE SIZE 1968 BYTES
 DATA STORAGE AREA SIZES

PBN	BYTES	PBN	BYTES	PBN	BYTES	PBN	BYTES
001	132						

F64-LEVEL LINKAGE EDITOR OPTIONS SPECIFIED XREF,LIST,LET
 DEFAULT OPTION(S) USED - SIZE=(1015808,516096)

CROSS REFERENCE TABLE

CONTROL SECTION			ENTRY							
NAME	ORIGIN	LENGTH	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
PROGRAM	00	7B0								
IHIFRIXP*	7B0	A0	IHIDSTAB	758	IHIENTIF	7A4				
IHIFSARA*	850	E70	IHIFRI	7B0						
			IHIFSAIN	164C						
IHIFSARB*	16C0	690								
IHIOSTRG*	1D50	148								
IHIOSYMB*	1E98	138								
IHISYSCT*	1FD0	780								
IHIORTN*	2750	D70								
			IHIIOROQ	2750	IHIIOROP	2836	IHIIORNX	2C04	IHIIORCL	2E4C
			IHIIORCP	2FF6	IHIIORGP	30F8	IHIIORCN	30FC	IHIIOREN	315C
			IHIIOREV	31DA	IHIIORED	3270	IHIIORCI	3348	IHIIORER	33CC
IHIERROR*	34C0	6E8								
IHIERMSG*	3BA8	9B8								
			IHIERM01	3C58						

LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION	LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION
690	IHISYSCT	IHISYSCT	6C8	IHIOSYMB	IHIOSYMB
6E4	IHIOSTRG	IHIOSTRG	6F4	IHIFRI	IHIFRIXP
1694	IHIFSARB	IHIFSARB	AE8	IHIERROR	IHIERROR
1648	IHIORER	IHIORTN	16A8	IHIORCP	IHIORTN
AFC	IHIORCP	IHIORTN	1644	IHIORGP	IHIORTN
1640	IHIIOREN	IHIORTN	163C	IHIOROQ	IHIORTN
1630	IHIIOREV	IHIORTN	1628	IHIORCI	IHIORTN
16B0	IHIORNX	IHIORTN	1634	IHIORNX	IHIORTN
B01	IHIORNX	IHIORTN	16B4	IHIORCL	IHIORTN
162C	IHIORCL	IHIORTN	16AC	IHIOROP	IHIORTN
1638	IHIOROP	IHIORTN	AF8	IHIOROP	IHIORTN
16A4	IHIENTIF	PROGRAM	8FC	IHIDSTAB	PROGRAM
16C5	IHIFSARA	IHIFSARA	3B90	IHIERM01	IHIERMSG
3B8C	IHIERMSG	IHIERMSG			
ENTRY ADDRESS	164C				

TOTAL LENGTH 4560
 ****GO DOES NOT EXIST BUT HAS BEEN ADDED TO DATA SET
 AUTHORIZATION CODE IS 0.

Pascals Triangle

```

      1
    1 1
  1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1
1 6 15 20 15 6 1
1 7 21 35 35 21 7 1
1 8 28 56 70 56 28 8 1
1 9 36 84 126 126 84 36 9 1
1 10 45 120 210 252 210 120 45 10 1
1 11 55 165 330 462 462 330 165 55 11 1
1 12 66 220 495 792 924 792 495 220 66 12 1
1 13 78 286 715 1287 1716 1716 1287 715 286 78 13 1
1 14 91 364 1001 2002 3003 3432 3003 2002 1001 364 91 14 1
1 15 105 455 1365 3003 5005 6435 6435 5005 3003 1365 455 105 15 1
1 16 120 560 1820 4368 8008 11440 12870 11440 8008 4368 1820 560 120 16 1
1 17 136 680 2380 6188 12376 19448 24310 24310 19448 12376 6188 2380 680 136 17 1
1 18 153 816 3060 8568 18564 31824 43758 48620 43758 31824 18564 8568 3060 816 153 18 1
1 19 171 969 3876 11628 27132 50388 75582 92378 92378 75582 50388 27132 11628 3876 969 171 19 1

```

ALGOL PROGRAM TRACE

MODULE SEMICOLON NUMBERS

GO	1	2	3	4	5	6	7	8	9	10	11	12	13
	14	15	16	17	18	15	16	17	18	15	16	17	18
	15	16	17	18	15	16	17	18	15	16	17	19	20
	9	10	11	12	13	14	15	16	17	18	15	16	17
	18	15	16	17	18	15	16	17	18	15	16	17	18
	15	16	17	19	20	13	14	15	16	17	18	15	16
	17	18	15	16	17	18	15	16	17	18	15	16	17
	18	15	16	17	19	20	9	10	11	12	13	14	15
	16	17	18	15	16	17	18	15	16	17	18	15	16
	17	18	15	16	17	18	15	16	17	19	20	13	14
	15	16	17	18	15	16	17	18	15	16	17	18	15
	16	17	18	15	16	17	18	15	16	17	19	20	13
	14	15	16	17	18	15	16	17	18	15	16	17	18
	15	16	17	18	15	16	17	18	15	16	17	19	20
	9	10	11	12	13	14	15	16	17	18	15	16	17
	18	15	16	17	18	15	16	17	18	15	16	17	18
	15	16	17	19	20	13	14	15	16	17	18	15	16
	17	18	15	16	17	18	15	16	17	18	15	16	17
	18	15	16	17	19	20	13	14	15	16	17	18	15
	16	17	18	15	16	17	18	15	16	17	18	15	16
	17	18	15	16	17	19	20	13	14	15	16	17	18
	15	16	17	18	15	16	17	18	15	16	17	18	15
	16	17	18	15	16	17	19	20	9	10	11	12	13
	14	15	16	17	18	15	16	17	18	15	16	17	18
	15	16	17	18	15	16	17	18	15	16	17	19	20
	13	14	15	16	17	18	15	16	17	18	15	16	17
	18	15	16	17	18	15	16	17	18	15	16	17	19
	20	13	14	15	16	17	18	15	16	17	18	15	16
	17	18	15	16	17	18	15	16	17	18	15	16	17
	19	20	13	14	15	16	17	18	15	16	17	18	15
	16	17	18	15	16	17	18	15	16	17	18	15	16
	17	19	20	13	14	15	16	17	18	15	16	17	18
	15	16	17	18	15	16	17	18	15	16	17	18	15
	16	17	19	20	9	10	11	12	13	14	15	16	17
	18	15	16	17	18	15	16	17	18	15	16	17	18
	15	16	17	18	15	16	17	19	20	13	14	15	16
	17	18	15	16	17	18	15	16	17	18	15	16	17
	18	15	16	17	18	15	16	17	19	20	13	14	15
	16	17	18	15	16	17	18	15	16	17	18	15	16
	17	18	15	16	17	19	20	15	16	17	18	13	14
	15	16	17	18	15	16	17	18	15	16	17	18	15
	16	17	18	15	16	17	19	20	15	16	17	18	13
	14	15	16	17	18	15	16	17	18	15	16	17	18
	15	16	17	18	15	16	17	18	15	16	17	19	20

ALGOL PROGRAM TRACE

MODULE SEMICOLON NUMBERS

13	14	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	19
20	9	10	11	12	13	14	15	16	17	18	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	19	20	13	14	15	16	17	18	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	19	20	13	14	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	19	20	15	16	17	19	20	13	14	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	19	20	15	16	17	18	13	14	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	19	20	15	16	17	19	20	13
14	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	19	20
13	14	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	19
20	9	10	11	12	13	14	15	16	17	18	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	19	20	13	14	15	16	17	18	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	19	20	13	14	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	19	20	15	16	17	19	20	13	14	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	19	20	15	16	17	19	20	13	14
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	18	15	16	17	19	20	15	16	17	19	20
13	14	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	19	20	15	16	17
19	20	13	14	15	16	17	18	15	16	17	18	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	19	20	13	14	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	19	20	9	10	11	12	13	14	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	19	20	13	14	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	19	20	13	14	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	19	20	15	16	17	19	20	13
14	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	19	20	15	16	17	19
20	13	14	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	18	15	16	17	19	20	15	16

ALGOL PROGRAM TRACE

MODULE SEMICOLON NUMBERS

17	18	13	14	15	16	17	18	15	16	17	18	15
16	17	18	15	16	17	18	15	16	17	19	20	15
16	17	19	20	13	14	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	19
20	15	16	17	19	20	13	14	15	16	17	18	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	19	20	13	14	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	18	15	16	17	19	20	9	10	11	12	13
14	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	19	20
13	14	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	19
20	13	14	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	18	15	16	17	19	20	15	16
17	19	20	13	14	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	19	20
15	16	17	19	20	13	14	15	16	17	18	15	16
17	18	15	16	17	18	15	16	17	19	20	15	16
17	19	20	15	16	17	19	20	13	14	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	19
20	15	16	17	19	20	15	16	17	19	20	13	14
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	18	15	16	17	19	20	15	16	17	19	20
13	14	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	19	20	15	16	17
19	20	13	14	15	16	17	18	15	16	17	18	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	19	20	13	14	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	19	20	9	10	11	12	13	14	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	19	20	13	14	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	19	20	15	16	17	18	13	14	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	19	20	15	16	17	19	20	13
14	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	19	20	15	16	17	19	20	15	16	17
18	13	14	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	19	20	15	16	17	19	20	15
16	17	18	13	14	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	19	20	15	16	17	19
20	15	16	17	19	20	13	14	15	16	17	18	15
16	17	18	15	16	17	18	15	16	17	19	20	15

ALGOL PROGRAM TRACE

MODULE SEMICOLON NUMBERS

16	17	19	20	15	16	17	18	13	14	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	19
20	15	16	17	19	20	15	16	17	18	13	14	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	19	20	15	16	17	19	20	13
14	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	19	20	15	16	17	18
13	14	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	19
20	9	10	11	12	13	14	15	16	17	18	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	19	20	13	14	15	16	17	18	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	19	20	15	16	17	19	20	13	14	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	19	20	15	16	17	19	20	13	14	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	19	20	15	16	17	19	20	15	16	17	19	20
13	14	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	19	20	15	16	17	19	20	15	16
17	18	13	14	15	16	17	18	15	16	17	18	15
16	17	18	15	16	17	19	20	15	16	17	19	20
15	16	17	19	20	13	14	15	16	17	18	15	16
17	18	15	16	17	18	15	16	17	19	20	15	16
17	19	20	15	16	17	19	20	13	14	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	19
20	15	16	17	19	20	15	16	17	18	13	14	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	19	20	15	16	17	19	20	15	16	17	19	20
13	14	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	19	20	15	16	17
19	20	13	14	15	16	17	18	15	16	17	18	15
16	17	18	15	16	17	18	15	16	17	19	20	15
16	17	19	20	13	14	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	19	20	9	10	11	12	13	14	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	19	20	13	14	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	19	20	15	16	17	19	20	13
14	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	19	20	15	16	17	19
20	13	14	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	19	20	15	16	17	19	20	15
16	17	18	13	14	15	16	17	18	15	16	17	18

ALGOL PROGRAM TRACE

MODULE SEMICOLON NUMBERS

15	16	17	18	15	16	17	19	20	15	16	17	19
20	15	16	17	19	20	13	14	15	16	17	18	15
16	17	18	15	16	17	18	15	16	17	19	20	15
16	17	19	20	15	16	17	19	20	13	14	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
19	20	15	16	17	19	20	15	16	17	19	20	13
14	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	19	20	15	16	17	19	20	15	16	17
19	20	13	14	15	16	17	18	15	16	17	18	15
16	17	18	15	16	17	19	20	15	16	17	19	20
15	16	17	19	20	13	14	15	16	17	18	15	16
17	18	15	16	17	18	15	16	17	19	20	15	16
17	19	20	15	16	17	18	13	14	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	19	20	15	16	17	19	20	13	14	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	19	20	15	16	17	19	20	13	14
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	18	15	16	17	18	15	16	17	19	20	9
10	11	12	13	14	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	19	20	13	14	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	19
20	15	16	17	19	20	13	14	15	16	17	18	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	19	20	15	16	17	19	20	13	14	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	19
20	15	16	17	19	20	15	16	17	19	20	13	14
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	19	20	15	16	17	19	20	15	16	17	19
20	13	14	15	16	17	18	15	16	17	18	15	16
17	19	20	15	16	17	19	20	15	16	17	19	20
15	16	17	19	20	13	14	15	16	17	18	15	16
17	18	15	16	17	19	20	15	16	17	19	20	15
16	17	19	20	15	16	17	19	20	13	14	15	16
17	18	15	16	17	18	15	16	17	19	20	15	16
17	19	20	15	16	17	19	20	15	16	17	19	20
13	14	15	16	17	18	15	16	17	18	15	16	17
19	20	15	16	17	19	20	15	16	17	19	20	15
16	17	19	20	13	14	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	19	20	15	16	17
19	20	15	16	17	19	20	13	14	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	19	20
15	16	17	19	20	15	16	17	19	20	13	14	15
16	17	18	15	16	17	18	15	16	17	18	15	16

ALGOL PROGRAM TRACE

MODULE SEMICOLON NUMBERS

17	18	15	16	17	19	20	15	16	17	19	20	13
14	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	19	20	15	16	17	19
20	13	14	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
19	20	9	10	11	12	13	14	15	16	17	18	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	19	20	13	14	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	19	20	15	16	17	19	20	13	14	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	19	20	15	16	17	19	20	13	14
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	19	20	15	16	17	19	20	15	16	17	19
20	13	14	15	16	17	18	15	16	17	18	15	16
17	19	20	15	16	17	18	15	16	17	18	15	16
17	19	20	13	14	15	16	17	18	15	16	17	18
15	16	17	19	20	15	16	17	18	15	16	17	18
15	16	17	19	20	13	14	15	16	17	18	15	16
17	18	15	16	17	19	20	15	16	17	18	15	16
17	18	15	16	17	19	20	13	14	15	16	17	18
15	16	17	18	15	16	17	19	20	15	16	17	19
20	15	16	17	19	20	15	16	17	19	20	13	14
15	16	17	18	15	16	17	18	15	16	17	19	20
15	16	17	18	15	16	17	18	15	16	17	19	20
13	14	15	16	17	18	15	16	17	18	15	16	17
19	20	15	16	17	18	15	16	17	18	15	16	17
19	20	13	14	15	16	17	18	15	16	17	18	15
16	17	19	20	15	16	17	18	15	16	17	18	15
16	17	19	20	13	14	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	19	20	15	16	17
19	20	15	16	17	19	20	13	14	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	19	20	15	16	17	19	20	13	14	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	19	20	15	16	17	19	20	13	14
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	18	15	16	17	18	15	16	17	19	20	9
10	11	12	13	14	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	19	20	13	14	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	19
20	15	16	17	19	20	13	14	15	16	17	18	15
16	17	18	15	16	17	18	15	16	17	19	20	15
16	17	18	15	16	17	19	20	13	14	15	16	17

ALGOL PROGRAM TRACE

MODULE SEMICOLON NUMBERS

18	15	16	17	18	15	16	17	18	15	16	17	19
20	15	16	17	19	20	15	16	17	19	20	13	14
15	16	17	18	15	16	17	18	15	16	17	19	20
15	16	17	19	20	15	16	17	19	20	15	16	17
19	20	13	14	15	16	17	18	15	16	17	18	15
16	17	19	20	15	16	17	18	15	16	17	18	15
16	17	19	20	13	14	15	16	17	18	15	16	17
18	15	16	17	19	20	15	16	17	18	15	16	17
18	15	16	17	19	20	13	14	15	16	17	18	15
16	17	18	15	16	17	19	20	15	16	17	19	20
15	16	17	19	20	15	16	17	19	20	13	14	15
16	17	18	15	16	17	18	15	16	17	19	20	15
16	17	19	20	15	16	17	19	20	15	16	17	19
20	13	14	15	16	17	18	15	16	17	18	15	16
17	19	20	15	16	17	18	15	16	17	18	15	16
17	19	20	13	14	15	16	17	18	15	16	17	18
15	16	17	19	20	15	16	17	18	15	16	17	18
15	16	17	19	20	13	14	15	16	17	18	15	16
17	18	15	16	17	19	20	15	16	17	19	20	15
16	17	19	20	15	16	17	19	20	13	14	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
19	20	15	16	17	19	20	15	16	17	19	20	13
14	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	19	20	15	16	17	18	15	16	17	19
20	13	14	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	18	15	16	17	19	20	15	16
17	19	20	13	14	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	19	20	9	10	11	12	13	14	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	19	20	13	14	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	19	20	15	16	17	19	20	13	14
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	19	20	15	16	17	19	20	15	16	17	18
13	14	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	19	20	15	16	17	19	20	15	16
17	18	13	14	15	16	17	18	15	16	17	18	15
16	17	19	20	15	16	17	19	20	15	16	17	19
20	15	16	17	18	13	14	15	16	17	18	15	16
17	18	15	16	17	19	20	15	16	17	19	20	15
16	17	19	20	15	16	17	19	20	13	14	15	16
17	18	15	16	17	18	15	16	17	19	20	15	16
17	18	15	16	17	18	15	16	17	19	20	13	14
15	16	17	18	15	16	17	19	20	15	16	17	19

ALGOL PROGRAM TRACE

MODULE SEMICOLON NUMBERS

20	15	16	17	19	20	15	16	17	19	20	15	16
17	18	13	14	15	16	17	18	15	16	17	19	20
15	16	17	19	20	15	16	17	19	20	15	16	17
19	20	15	16	17	18	13	14	15	16	17	18	15
16	17	19	20	15	16	17	19	20	15	16	17	19
20	15	16	17	19	20	15	16	17	18	13	14	15
16	17	18	15	16	17	18	15	16	17	19	20	15
16	17	18	15	16	17	18	15	16	17	19	20	13
14	15	16	17	18	15	16	17	18	15	16	17	19
20	15	16	17	19	20	15	16	17	19	20	15	16
17	19	20	13	14	15	16	17	18	15	16	17	18
15	16	17	19	20	15	16	17	19	20	15	16	17
19	20	15	16	17	18	13	14	15	16	17	18	15
16	17	18	15	16	17	18	15	16	17	19	20	15
16	17	19	20	15	16	17	18	13	14	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	19
20	15	16	17	19	20	15	16	17	18	13	14	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	19	20	15	16	17	19	20	13
14	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	19	20
9	10	11	12	13	14	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	19	20	13	14	15	16	17	18	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
19	20	15	16	17	19	20	13	14	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	19	20
15	16	17	19	20	15	16	17	19	20	13	14	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	19	20	15	16	17	19	20	15	16	17	18	13
14	15	16	17	18	15	16	17	18	15	16	17	19
20	15	16	17	19	20	15	16	17	19	20	15	16
17	18	13	14	15	16	17	18	15	16	17	18	15
16	17	19	20	15	16	17	19	20	15	16	17	19
20	15	16	17	19	20	13	14	15	16	17	18	15
16	17	19	20	15	16	17	19	20	15	16	17	19
20	15	16	17	19	20	15	16	17	19	20	13	14
15	16	17	18	15	16	17	19	20	15	16	17	19
20	15	16	17	19	20	15	16	17	19	20	15	16
17	19	20	13	14	15	16	17	18	15	16	17	19
20	15	16	17	19	20	15	16	17	19	20	15	16
17	19	20	15	16	17	18	13	14	15	16	17	18
15	16	17	19	20	15	16	17	19	20	15	16	17
19	20	15	16	17	19	20	15	16	17	18	13	14
15	16	17	18	15	16	17	19	20	15	16	17	19

ALGOL PROGRAM TRACE

MODULE SEMICOLON NUMBERS

20	15	16	17	19	20	15	16	17	19	20	15	16
17	19	20	13	14	15	16	17	18	15	16	17	19
20	15	16	17	19	20	15	16	17	19	20	15	16
17	19	20	15	16	17	19	20	13	14	15	16	17
18	15	16	17	18	15	16	17	19	20	15	16	17
19	20	15	16	17	19	20	15	16	17	19	20	13
14	15	16	17	18	15	16	17	18	15	16	17	19
20	15	16	17	19	20	15	16	17	19	20	15	16
17	18	13	14	15	16	17	18	15	16	17	18	15
16	17	18	15	16	17	19	20	15	16	17	19	20
15	16	17	18	13	14	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	19	20	15	16	17
19	20	15	16	17	19	20	13	14	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	18	15
16	17	19	20	15	16	17	19	20	13	14	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	19	20	9	10	11
12	13	14	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
19	20	13	14	15	16	17	18	15	16	17	18	15
16	17	18	15	16	17	18	15	16	17	19	20	15
16	17	19	20	13	14	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	19	20	15	16	17
19	20	15	16	17	19	20	13	14	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	19	20
15	16	17	19	20	15	16	17	19	20	13	14	15
16	17	18	15	16	17	18	15	16	17	19	20	15
16	17	18	15	16	17	19	20	15	16	17	18	13
14	15	16	17	18	15	16	17	18	15	16	17	19
20	15	16	17	19	20	15	16	17	19	20	15	16
17	19	20	13	14	15	16	17	18	15	16	17	19
20	15	16	17	19	20	15	16	17	19	20	15	16
17	19	20	15	16	17	19	20	13	14	15	16	17
18	15	16	17	19	20	15	16	17	19	20	15	16
17	19	20	15	16	17	19	20	15	16	17	19	20
13	14	15	16	17	18	15	16	17	19	20	15	16
17	19	20	15	16	17	19	20	15	16	17	19	20
15	16	17	19	20	13	14	15	16	17	18	15	16
17	19	20	15	16	17	19	20	15	16	17	19	20
15	16	17	19	20	15	16	17	18	13	14	15	16
17	18	15	16	17	19	20	15	16	17	19	20	15
16	17	19	20	15	16	17	19	20	15	16	17	19
20	13	14	15	16	17	18	15	16	17	19	20	15
16	17	19	20	15	16	17	19	20	15	16	17	19
20	15	16	17	19	20	13	14	15	16	17	18	15

ALGOL PROGRAM TRACE

MODULE SEMICOLON NUMBERS

16	17	19	20	15	16	17	19	20	15	16	17	19
20	15	16	17	19	20	15	16	17	19	20	13	14
15	16	17	18	15	16	17	18	15	16	17	19	20
15	16	17	19	20	15	16	17	19	20	15	16	17
19	20	13	14	15	16	17	18	15	16	17	18	15
16	17	19	20	15	16	17	18	15	16	17	19	20
15	16	17	18	13	14	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	19	20	15	16	17
19	20	15	16	17	19	20	13	14	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	19	20
15	16	17	19	20	15	16	17	19	20	13	14	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	19	20	15	16	17	19	20	13
14	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	19	20
9	10	11	12	13	14	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	19	20	13	14	15	16	17	18	15	16
17	18	15	16	17	18	15	16	17	18	15	16	17
19	20	15	16	17	19	20	13	14	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	19	20
15	16	17	19	20	15	16	17	19	20	13	14	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	19	20	15	16	17	19	20	15	16	17	19	20
13	14	15	16	17	18	15	16	17	18	15	16	17
19	20	15	16	17	19	20	15	16	17	19	20	15
16	17	19	20	13	14	15	16	17	18	15	16	17
19	20	15	16	17	19	20	15	16	17	19	20	15
16	17	19	20	15	16	17	19	20	13	14	15	16
17	18	15	16	17	19	20	15	16	17	19	20	15
16	17	19	20	15	16	17	19	20	15	16	17	19
20	13	14	15	16	17	18	15	16	17	19	20	15
16	17	18	15	16	17	19	20	15	16	17	19	20
15	16	17	19	20	13	14	15	16	17	18	15	16
17	19	20	15	16	17	19	20	15	16	17	19	20
15	16	17	19	20	15	16	17	19	20	13	14	15
16	17	18	15	16	17	19	20	15	16	17	19	20
15	16	17	19	20	15	16	17	19	20	15	16	17
19	20	13	14	15	16	17	18	15	16	17	19	20
15	16	17	19	20	15	16	17	19	20	15	16	17
19	20	15	16	17	19	20	13	14	15	16	17	18
15	16	17	19	20	15	16	17	19	20	15	16	17
19	20	15	16	17	19	20	15	16	17	19	20	13
14	15	16	17	18	15	16	17	19	20	15	16	17
18	15	16	17	19	20	15	16	17	19	20	15	16

ALGOL PROGRAM TRACE

MODULE SEMICOLON NUMBERS

17	19	20	13	14	15	16	17	18	15	16	17	19
20	15	16	17	19	20	15	16	17	19	20	15	16
17	19	20	15	16	17	19	20	13	14	15	16	17
18	15	16	17	19	20	15	16	17	19	20	15	16
17	19	20	15	16	17	19	20	15	16	17	19	20
13	14	15	16	17	18	15	16	17	18	15	16	17
19	20	15	16	17	19	20	15	16	17	19	20	15
16	17	19	20	13	14	15	16	17	18	15	16	17
18	15	16	17	18	15	16	17	19	20	15	16	17
19	20	15	16	17	19	20	13	14	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	19	20
15	16	17	19	20	15	16	17	19	20	13	14	15
16	17	18	15	16	17	18	15	16	17	18	15	16
17	18	15	16	17	19	20	15	16	17	19	20	13
14	15	16	17	18	15	16	17	18	15	16	17	18
15	16	17	18	15	16	17	18	15	16	17	19	20

END OF ALGOL PROGRAM EXECUTION

LISTIDR MEMBER=GO

00075001

***** MODULE SUMMARY *****

MEMBER NAME GO

MAIN ENTRY POINT 00164C

** ALIASES **

SECONDARY ENTRY POINT ADDRESSES ASSOCIATED WITH ALIASES:

**** LINKAGE EDITOR ATTRIBUTES OF MODULE ****

**	BIT	STATUS	BIT	STATUS	BIT	STATUS	BIT	STATUS	**
	0	NOT-RENT	1	NOT-REUS	2	NOT-OVLY	3	NOT-TEST	
	4	NOT-OL	5	BLOCK	6	EXEC	7	MULTI-RCD	
	8	NOT-DC	9	ZERO-ORG	10	EP > ZERO	11	RLD	
	12	EDIT	13	NO-SYMS	14	F-LEVEL	15	NOT-REFR	

MODULE SSI: NONE
APFCODE 00000000

*****LOAD MODULE PROCESSED BY VS LINKAGE EDITOR
LISTIDR FOR LOAD MODULE GO

PAGE 0001

THIS LOAD MODULE CONTAINS NO INFORMATION SUPPLIED BY IMASPPAP

THIS LOAD MODULE WAS PRODUCED BY LINKAGE EDITOR 5752SC104 AT LEVEL 03.08 ON DAY 230 OF YEAR 12 AT 13:34:17.

CSECT	TRANSLATOR	VR.MD	YR/DY
PROGRAM	360SAL531	02.01	12/230
IHIFRXP	X390ASM	31.04	12/230
IHIFSARA	X390ASM	31.04	12/230
IHIFSARB	X390ASM	31.04	12/230
IHIOSTRG	X390ASM	31.04	12/230
IHIOSYMB	X390ASM	31.04	12/230
IHISYSCT	X390ASM	31.04	12/230
IHIORTN	X390ASM	31.04	12/230
IHIERROR	X390ASM	31.04	12/230
IHIERMSG	X390ASM	31.04	12/230

CSECT	YR/DAY	USER DATA
IHIERMSG	12/230	360SLM532 V02 M01 ALGOL F LIBRARY
IHIERROR	12/230	360SLM532 V02 M01 ALGOL F LIBRARY
IHIFRXP	12/230	360SLM532 V02 M01 ALGOL F LIBRARY
IHIFSARA	12/230	360SLM532 V02 M01 ALGOL F LIBRARY
IHIFSARB	12/230	360SLM532 V02 M01 ALGOL F LIBRARY
IHIORTN	12/230	360SLM532 V02 M01 ALGOL F LIBRARY
IHIOSTRG	12/230	360SLM532 V02 M01 ALGOL F LIBRARY
IHIOSYMB	12/230	360SLM532 V02 M01 ALGOL F LIBRARY
IHISYSCT	12/230	360SLM532 V02 M01 ALGOL F LIBRARY

Appendix B. IVP IEXSAMP2 Listing

J E S 2 J O B L O G

```
13.35.56 JOB 9291 IEF677I WARNING MESSAGE(S) FOR JOB T1IV2   ISSUED
13.35.56 JOB 9291 $HASP373 T1IV2   STARTED - INIT  6 - CLASS S - SYS SYSA
13.35.56 JOB 9291 IEF403I T1IV2 - STARTED - TIME=13.35.56
13.35.57 JOB 9291 IEFACTRT - Stepname  Procstep  Program   Retcode
13.35.57 JOB 9291 T1IV2      IVP2      ALGOL      ALGOL      RC= 0000
13.35.57 JOB 9291 T1IV2      IVP2      LKED       IEWL       RC= 0000
13.35.57 JOB 9291 T1IV2      IVP2      GO         GO         RC= 0016
13.35.57 JOB 9291 IEF404I T1IV2 - ENDED - TIME=13.35.57
13.35.57 JOB 9291 $HASP395 T1IV2   ENDED

      1      //T1IV2  JOB  111,'ALGOL F LVL2.1',  <-- CUSTOMIZE FOR SITE STANDARDS JOB 9291
      //          CLASS=S,MSGCLASS=C,          <-- CUSTOMIZE FOR SITE STANDARDS 00002001
      //          REGION=1024K,COND=(0,NE),MSGLEVEL=(1,1) 00003001
      ***                                           00004001
      ***      IBM ALGOL F LEVEL 2.1 IVP 00005001
      ***                                           00006001
      ***      360S-AL-531 ALGOL F COMPILER 00007001
      ***      AND 00008001
      ***      360S-LM-532 ALGOL F LIBRARY 00009001
      ***                                           00010001
      2      //IVP2  EXEC  ALGOFCLG,PARM.GO='TRACE,DUMP' 00011001
      ***                                           00010001
      ***** 00002001
      ***                                           00003001
      ***      IBM ALGOL F LEVEL 2.1 00004001
      ***                                           00005001
      ***      360S-AL-531 ALGOL F COMPILER 00006001
      ***      AND 00007001
      ***      360S-LM-532 ALGOL F LIBRARY 00008001
      ***                                           00009001
      ***      COMPILE, LINK-EDIT AND EXECUTE A PROGRAM 00010001
      ***                                           00011001
      ***** 00012001
      ***                                           00013001
      3      XXALGOL EXEC  PGM=ALGOL,REGION=1024K 00014001
      4      XXSYSPRINT DD  SYSOUT=* 00015001
      5      XXSYSPUNCH DD  DUMMY 00016001
      6      XXSYSLIN DD  DSN=&&OBJECT,UNIT=VIO,SPACE=(3200,(20,10)), 00017001
      XX          DISP=(,PASS) 00018001
      7      XXSYSUT1 DD  UNIT=VIO,SPACE=(2048,(50,10)) 00019001
      8      XXSYSUT2 DD  UNIT=VIO,SPACE=(2048,(50,10)) 00020001
      9      XXSYSUT3 DD  UNIT=VIO,SPACE=(2048,(40,10)) 00021001
      10     //ALGOL.SYSIN DD  * 00022001
      11     XXLKED EXEC  PGM=IEWL,PARM='XREF,LIST,LET',COND=(5,LT,ALGOL), 00023001
      XX          REGION=1024K 00024001
      12     XXSYSPRINT DD  SYSOUT=* 00025001
      13     XXSYSLIB DD  DSN=SYS1.ALGLIB,DISP=SHR 00026001
      14     XXSYSLMOD DD  DSN=&&GOSET(GO),UNIT=VIO,DISP=(,PASS), 00027001
      XX          SPACE=(2048,(100,20,1)) 00028001
      15     XXSYSUT1 DD  UNIT=VIO,SPACE=(2048,(100,20)) 00029001
      16     XXSYSLIN DD  DSN=&&OBJECT,DISP=(OLD,DELETE) 00030001
      17     XX DD  DDNAME=SYSIN 00031001
      18     XXGO EXEC  PGM=GO,COND=((5,LT,ALGOL),(5,LT,LKED)), 00032001
      XX          REGION=1024K 00033001
      19     XXSTEPLIB DD  DSN=&&GOSET,DISP=(OLD,PASS) 00034001
      20     XXALGLDD01 DD  SYSOUT=* 00035001
      21     XXSYSPRINT DD  SYSOUT=* 00036001
      22     XXSYSUT1 DD  UNIT=VIO,SPACE=(1024,(20,10))
STMT NO. MESSAGE
-
      18      IEF686I DDNAME REFERRED TO ON DDNAME KEYWORD IN PRIOR STEP WAS NOT RESOLVED
IEF236I ALLOC. FOR T1IV2 ALGOL IVP2
IEF237I JES2 ALLOCATED TO SYSPRINT
IEF237I DMY ALLOCATED TO SYSPUNCH
IEF237I VIO ALLOCATED TO SYSLIN
IEF237I VIO ALLOCATED TO SYSUT1
IEF237I VIO ALLOCATED TO SYSUT2
IEF237I VIO ALLOCATED TO SYSUT3
IEF237I JES2 ALLOCATED TO SYSIN
IEF142I T1IV2 ALGOL IVP2 - STEP WAS EXECUTED - COND CODE 0000
IEF285I JES2.JOB09291.S00102 SYSOUT
IEF285I SYS12230.T133556.RA000.T1IV2.OBJECT PASSED *-----2
IEF285I SYS12230.T133556.RA000.T1IV2.R0000001 DELETED *-----0
IEF285I SYS12230.T133556.RA000.T1IV2.R0000002 DELETED *-----0
IEF285I SYS12230.T133556.RA000.T1IV2.R0000003 DELETED *-----16
```

```

IEF285I  JES2.JOB09291.SI0101          SYSIN
IEF373I  STEP /ALGOL  / START 12230.1335
IEF374I  STEP /ALGOL  / STOP 12230.1335 CPU    0MIN 00.05SEC SRB    0MIN 00.00SEC VIRT 192K SYS   304K
*****
* 1. Jobstep of job: T1IV2      Stepname: ALGOL      Program name: ALGOL      Executed on 17.08.12 from 13.35.56 to 13.35.57 *
*      elapsed time 24:00:00,10      CPU-Identifier: SYSA      Page-in: 0 *
*      CPU time 00:00:00,05      Virtual Storage used: 192K      Page-out: 0 *
*      corr. CPU: 00:00:00,05      CPU time has been corrected by 1 / 1,0 multiplier *
*
*      I/O Operation *
*      Number of records read via DD * or DD DATA: 36 *
*      DMY.....0 DMY.....0 FFF.....2 FFF.....0 FFF.....0 FFF.....16 DMY.....0 *
*
*      Charge for step (w/o SYSOUT): 0,08 *
*****
IEF236I  ALLOC. FOR T1IV2 LKED IVP2
IEF237I  JES2 ALLOCATED TO SYSPRINT
IEF237I 148 ALLOCATED TO SYSLIB
IEF237I VIO ALLOCATED TO SYSLMOD
IEF237I VIO ALLOCATED TO SYSUT1
IEF237I VIO ALLOCATED TO SYSLIN
IEF237I DMY ALLOCATED TO
IEF142I T1IV2 LKED IVP2 - STEP WAS EXECUTED - COND CODE 0000
IEF285I  JES2.JOB09291.S00103          SYSOUT
IEF285I  SYS1.ALGLIB          KEPT          *-----56
IEF285I  VOL SER NOS= MVSRES.
IEF285I  SYS12230.T133556.RA000.T1IV2.GOSET          PASSED          *-----17
IEF285I  SYS12230.T133556.RA000.T1IV2.R0000004          DELETED          *-----0
IEF285I  SYS12230.T133556.RA000.T1IV2.OBJECT          DELETED          *-----3
IEF373I  STEP /LKED  / START 12230.1335
IEF374I  STEP /LKED  / STOP 12230.1335 CPU    0MIN 00.05SEC SRB    0MIN 00.01SEC VIRT 1024K SYS  248K
*****
* 2. Jobstep of job: T1IV2      Stepname: LKED      Program name: IEWL      Executed on 17.08.12 from 13.35.57 to 13.35.57 *
*      elapsed time 24:00:00,07      CPU-Identifier: SYSA      Page-in: 0 *
*      CPU time 00:00:00,06      Virtual Storage used: 1024K      Page-out: 0 *
*      corr. CPU: 00:00:00,06      CPU time has been corrected by 1 / 1,0 multiplier *
*
*      I/O Operation *
*      Number of records read via DD * or DD DATA: 0 *
*      DMY.....0 148.....56 FFF.....17 FFF.....0 FFF.....3 DMY.....0 *
*
*      Charge for step (w/o SYSOUT): 0,10 *
*****
IEF236I  ALLOC. FOR T1IV2 GO IVP2
IEF237I VIO ALLOCATED TO STEPLIB
IEF237I JES2 ALLOCATED TO ALGLDD01
IEF237I JES2 ALLOCATED TO SYSPRINT
IEF237I VIO ALLOCATED TO SYSUT1
IEF142I T1IV2 GO IVP2 - STEP WAS EXECUTED - COND CODE 0016
IEF285I  SYS12230.T133556.RA000.T1IV2.GOSET          PASSED          *-----0
IEF285I  JES2.JOB09291.S00104          SYSOUT
IEF285I  JES2.JOB09291.S00105          SYSOUT
IEF285I  SYS12230.T133556.RA000.T1IV2.R0000005          DELETED          *-----0
IEF373I  STEP /GO      / START 12230.1335
IEF374I  STEP /GO      / STOP 12230.1335 CPU    0MIN 00.02SEC SRB    0MIN 00.00SEC VIRT 28K SYS   280K
*****
* 3. Jobstep of job: T1IV2      Stepname: GO      Program name: GO      Executed on 17.08.12 from 13.35.57 to 13.35.57 *
*      elapsed time 24:00:00,04      CPU-Identifier: SYSA      Page-in: 0 *
*      CPU time 00:00:00,02      Virtual Storage used: 28K      Page-out: 0 *
*      corr. CPU: 00:00:00,02      CPU time has been corrected by 1 / 1,0 multiplier *
*
*      I/O Operation *
*      Number of records read via DD * or DD DATA: 0 *
*      FFF.....0 DMY.....0 DMY.....0 FFF.....0 *
*
*      Charge for step (w/o SYSOUT): 0,03 *
*****
IEF285I  SYS12230.T133556.RA000.T1IV2.GOSET          DELETED
IEF375I  JOB /T1IV2  / START 12230.1335
IEF376I  JOB /T1IV2  / STOP 12230.1335 CPU    0MIN 00.12SEC SRB    0MIN 00.01SEC

```

	'BEGIN'	00013001
	'COMMENT'	00014001
	IBM ALGOL F LEVEL 2.1 IVP	00015001
	SAMPLE PROGRAM TO CREATE DELIBERATE DIVIDE BY ZERO ERROR	00016001
	TO DEMONSTRATE ALGOL RUN TIME DIAGNOSTIC INFORMATION;	00017001
		00018001
	'INTEGER' I;	00019001
1	'REAL' A;	00020001
2	'BOOLEAN' B;	00021001
3	'INTEGER' 'ARRAY' IA[1:5];	00022001
4	'ARRAY' AR[0:3,2:8];	00023001
5	'BOOLEAN' 'ARRAY' BA[0:1,1:3,3:7];	00024001
6	'INTEGER' 'PROCEDURE' IP;	00025001
7	IP := I + 5;	00026001
8	'REAL' 'PROCEDURE' RP(A);	00027001
9	'VALUE' A;	00028001
10	'INTEGER' A;	00029001
11	RP := A*A;	00030001
12	'PROCEDURE' P(A,B,C);	00031001
13	'BOOLEAN' A;	00032001
14	'REAL' B;	00033001
15	'INTEGER' C;	00034001
16	A:= B < C ;	00035001
17	I := 1;	00036001
18	A := 2.6;	00037001
19	AR[1,1] := IP;	00038001
20	AR[1,2] := RP(AR[1,1]);	00039001
21	P(BA[0,1,3],A,I);	00040001
22	P(B,AR[1,2],IP);	00041001
23	SYSACT(1,8,50);	00042001
24	OUTREAL(1,AR[1,1]);	00043001
25	OUTBOOLEAN(1,BA[0,1,3]);	00044001
26	OUTBOOLEAN(1,B);	00045001
27	'COMMENT' DELIBERATE DIVIDE BY ZERO ERROR;	00046001
27	A := A/0;	00047001
28	'END'	00048001

IDENTIFIER TABLE											
PBN	SC	PBN	NAME	TYPE	DM	DSP	NAME	TYPE	DM	DSP	
		SURR			PR	LN				PR	LN
001	00000	000	A	R		01C	AR	R A	02	03C	B
			BA	B A	03	058	I	I		018	IA
			IP	I P	00	070	P	P	03	078	RP
002	00006	001	IP	I P	00	070					
003	00008	001	A	I V		020	RP	R P	01	074	
004	00012	001	A	B N		018	B	R N		020	C
											I N
											028

PAGE 2

STORAGE REQUIREMENTS (DECIMAL)

PAGE 3

OBJECT MODULE SIZE 1840 BYTES

DATA STORAGE AREA SIZES

PBN	BYTES	PBN	BYTES	PBN	BYTES	PBN	BYTES	PBN	BYTES
001	136	002	32	003	40	004	60		

F64-LEVEL LINKAGE EDITOR OPTIONS SPECIFIED XREF,LIST,LET
 DEFAULT OPTION(S) USED - SIZE=(1015808,516096)

CROSS REFERENCE TABLE

CONTROL SECTION			ENTRY							
NAME	ORIGIN	LENGTH	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
PROGRAM	00	730								
IHIFSARA*	730	E70	IHIDSTAB	608	IHIENTIF	724				
			IHIFSAIN	152C						
IHIFSARB*	15A0	690								
IHI000L*	1C30	1C8	IHI000AR	1C82						
IHISOREA*	1DF8	380	IHISORAR	1DF8	IHISOREL	1E38				
IHISYSCT*	2178	780								
IHIORTN*	28F8	D70	IHI000RQ	28F8	IHI000RP	29DE	IHI000RX	2DAC	IHI000RCL	2FF4
			IHI000RCP	319E	IHI000RGP	32A0	IHI000RCN	32A4	IHI000REN	3304
			IHI000REV	3382	IHI000RED	3418	IHI000RCI	34F0	IHI000RER	3574
IHIERROR*	3668	6E8								
IHIERMSG*	3D50	9B8	IHIERM01	3E00						

LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION	LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION
61C	IHISYSCT	IHISYSCT	658	IHISOREL	IHISOREA
660	IHI000L	IHI000L	1574	IHIFSARB	IHIFSARB
9C8	IHIERROR	IHIERROR	1528	IHI000RER	IHI000RTN
1588	IHI000RCP	IHI000RTN	9DC	IHI000RCP	IHI000RTN
1524	IHI000RGP	IHI000RTN	1520	IHI000REN	IHI000RTN
151C	IHI000RQ	IHI000RTN	1510	IHI000REV	IHI000RTN
1508	IHI000RCI	IHI000RTN	1590	IHI000RX	IHI000RTN
1514	IHI000RN	IHI000RTN	9E1	IHI000RN	IHI000RTN
1594	IHI000RCL	IHI000RTN	150C	IHI000RCL	IHI000RTN
158C	IHI000ROP	IHI000RTN	1518	IHI000ROP	IHI000RTN
9D8	IHI000ROP	IHI000RTN	1584	IHIENTIF	PROGRAM
7DC	IHIDSTAB	PROGRAM	15A5	IHIFSARA	IHIFSARA
3D38	IHIERM01	IHIERMSG	3D34	IHIERMSG	IHIERMSG

ENTRY ADDRESS 152C

TOTAL LENGTH 4708

****GO DOES NOT EXIST BUT HAS BEEN ADDED TO DATA SET
 AUTHORIZATION CODE IS 0.

+6.000000'+00 'FALSE' 'FALSE'

IHI031I SC= 27 PSW= 078D000F 480A5F02 DIVISION BY ZERO, FLOATING POINT

MODULE = GO PROGRAM BLOCK NUMBER = 1 (BLOCK)

DECLARED IDENTIFIERS AND OBJECT TIME STACK

000018	00000001	4129999A	00000000	01000000	000A465C	000A4660	000A4674	00000014
000038	00000004	02000024	000A45E8	000A45F0	000A4660	00000070	0000001C	00000004
000058	0300003C	000A45C8	000A45D0	000A45EE	0000001E	0000000F	00000005	00000001
000078	000A460C	000A58FC	000A4698	400A593C				

SMF DISPLACEMENT IN DSA = 000058 DECLARED ARRAY

000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
--------	----------	----------	----------	----------	----------	----------	----------	----------

SMF DISPLACEMENT IN DSA = 00003C DECLARED ARRAY

000000	00000000	00000000	00000000	00000000	00000000	00000000	41600000	42240000
000020	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
000040	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
000060	00000000	00000000	00000000	00000000				

SMF DISPLACEMENT IN DSA = 000024 DECLARED ARRAY

000000	00000000	00000000	00000000	00000000	00000000			
--------	----------	----------	----------	----------	----------	--	--	--

ALGOL PROGRAM TRACE

MODULE SEMICOLON NUMBERS

GO	1	2	3	4	5	6	8	12	17	18	19	7	20
	9	10	11	21	13	14	15	16	22	13	14	15	16
	7	23	24	25	26	27							

END OF ALGOL PROGRAM EXECUTION

Appendix C. IVP IEXSAMP3 Listing

J E S 2 J O B L O G

```
11.09.37 JOB 2687 IEF677I WARNING MESSAGE(S) FOR JOB T1IV3    ISSUED
11.09.37 JOB 2687 $HASP373 T1IV3    STARTED - INIT 6 - CLASS S - SYS SYSA
11.09.37 JOB 2687 IEF403I T1IV3 - STARTED - TIME=11.09.37
11.09.38 JOB 2687 IEFACTRT - Stepname    Procstep    Program    Retcode
11.09.38 JOB 2687 T1IV3        IVP3        ALGOL        ALGOL        RC= 0000
11.09.38 JOB 2687 T1IV3        IVP3        LKED        IEWL        RC= 0000
11.09.38 JOB 2687 T1IV3        IVP3        GO           GO           RC= 0000
11.09.38 JOB 2687 IEF404I T1IV3 - ENDED - TIME=11.09.38
11.09.38 JOB 2687 $HASP395 T1IV3    ENDED
```

```
1    //T1IV3    JOB 111,'ALGOL F LVL2.1',    <-- CUSTOMIZE FOR SITE STANDARDS JOB 2687
     //        CLASS=S,MSGCLASS=C,        <-- CUSTOMIZE FOR SITE STANDARDS 00002001
     //        REGION=8500K,COND=(0,NE),MSGLEVEL=(1,1)        00003001
     ***        00004001
     ***        IBM ALGOL F LEVEL 2.1 IVP        00005001
     ***        00006001
     ***        360S-AL-531 ALGOL F COMPILER        00007001
     ***        AND        00008001
     ***        360S-LM-532 ALGOL F LIBRARY        00009001
     ***        00010001
2    //IVP3    EXEC ALGOFCLG        00011001
     ***        00001001
     *****        00002001
     ***        00003001
     ***        IBM ALGOL F LEVEL 2.1        00004001
     ***        00005001
     ***        360S-AL-531 ALGOL F COMPILER        00006001
     ***        AND        00007001
     ***        360S-LM-532 ALGOL F LIBRARY        00008001
     ***        00009001
     ***        COMPILE, LINK-EDIT AND EXECUTE A PROGRAM        00010001
     ***        00011001
     *****        00012001
     ***        00013001
3    XXALGOL    EXEC PGM=ALGOL,REGION=1024K        00014001
4    XXSYSPRINT DD    SYSOUT=*        00015001
5    XXSYSPUNCH DD    DUMMY        00016001
6    XXSYSLIN    DD    DSN=&&OBJECT,UNIT=VIO,SPACE=(3200,(20,10)),        00017001
     XX        DISP=(,PASS)        00018001
7    XXSYSUT1    DD    UNIT=VIO,SPACE=(2048,(50,10))        00019001
8    XXSYSUT2    DD    UNIT=VIO,SPACE=(2048,(50,10))        00020001
9    XXSYSUT3    DD    UNIT=VIO,SPACE=(2048,(40,10))        00021001
10    //ALGOL.SYSIN DD *        00012001
11    XXLKED    EXEC PGM=IEWL,PARM='XREF,LIST,LET',COND=(5,LT,ALGOL),        00022001
     XX        REGION=1024K        00023001
12    XXSYSPRINT DD    SYSOUT=*        00024001
13    XXSYSLIB    DD    DSN=SYS1.ALGLIB,DISP=SHR        00025001
14    XXSYSMOD    DD    DSN=&&GOSET(GO),UNIT=VIO,DISP=(,PASS),        00026001
     XX        SPACE=(2048,(100,20,1))        00027001
15    XXSYSUT1    DD    UNIT=VIO,SPACE=(2048,(100,20))        00028001
16    XXSYSLIN    DD    DSN=&&OBJECT,DISP=(OLD,DELETE)        00029001
17    XX        DD    DDNAME=SYSIN        00030001
18    XXGO        EXEC PGM=GO,COND=((5,LT,ALGOL),(5,LT,LKED)),        00031001
     XX        REGION=1024K        00032001
19    XXSTEPLIB    DD    DSN=&&GOSET,DISP=(OLD,PASS)        00033001
20    XXALGLDD01 DD    SYSOUT=*        00034001
21    XXSYSPRINT DD    SYSOUT=*        00035001
22    XXSYSUT1    DD    UNIT=VIO,SPACE=(1024,(20,10))        00036001
23    //GO.SYSIN    DD *        00091001
```

STMT NO. MESSAGE

```
-
18    IEF686I DDNAME REFERRED TO ON DDNAME KEYWORD IN PRIOR STEP WAS NOT RESOLVED
IEF236I ALLOC. FOR T1IV3 ALGOL IVP3
IEF237I JES2 ALLOCATED TO SYSPRINT
```

```

IEF237I DMY ALLOCATED TO SYSPUNCH
IEF237I VIO ALLOCATED TO SYSLIN
IEF237I VIO ALLOCATED TO SYSUT1
IEF237I VIO ALLOCATED TO SYSUT2
IEF237I VIO ALLOCATED TO SYSUT3
IEF237I JES2 ALLOCATED TO SYSIN
IEF142I T1IV3 ALGOL IVP3 - STEP WAS EXECUTED - COND CODE 0000
IEF285I JES2.JOB02687.S00103 SYSOUT
IEF285I SYS14353.T110937.RA000.T1IV3.OBJECT PASSED *-----2
IEF285I SYS14353.T110937.RA000.T1IV3.R0000001 DELETED *-----0
IEF285I SYS14353.T110937.RA000.T1IV3.R0000002 DELETED *-----0
IEF285I SYS14353.T110937.RA000.T1IV3.R0000003 DELETED *-----13
IEF285I JES2.JOB02687.SI0101 SYSIN
IEF373I STEP /ALGOL / START 14353.1109
IEF374I STEP /ALGOL / STOP 14353.1109 CPU 0MIN 00.05SEC SRB 0MIN 00.00SEC VIRT 192K SYS 296K
*****
*****
* 1. Jobstep of job: T1IV3 Stepname: ALGOL Program name: ALGOL Executed on 19.12.14 from 11.09.37 to
11.09.38 *
* elapsed time 24:00:00,09 CPU-Identifier: SYSA Page-in: 0
*
* CPU time 00:00:00,05 Virtual Storage used: 192K Page-out: 0
*
* corr. CPU: 00:00:00,05 CPU time has been corrected by 1 / 1,0 multiplier
*
*
* I/O Operation
*
* Number of records read via DD * or DD DATA: 77
*
* DMY.....0 DMY.....0 FFF.....2 FFF.....0 FFF.....0 FFF.....13 DMY.....0
*
*
*
* Charge for step (w/o SYSOUT): 0,08
*
*****
*****
IEF236I ALLOC. FOR T1IV3 LKED IVP3
IEF237I JES2 ALLOCATED TO SYSPRINT
IEF237I 148 ALLOCATED TO SYSLIB
IEF237I VIO ALLOCATED TO SYSLMOD
IEF237I VIO ALLOCATED TO SYSUT1
IEF237I VIO ALLOCATED TO SYSLIN
IEF237I DMY ALLOCATED TO
IEF142I T1IV3 LKED IVP3 - STEP WAS EXECUTED - COND CODE 0000
IEF285I JES2.JOB02687.S00104 SYSOUT
IEF285I SYS1.ALGLIB KEPT *-----72
IEF285I VOL SER NOS= MVSRES.
IEF285I SYS14353.T110937.RA000.T1IV3.G0SET PASSED *-----19
IEF285I SYS14353.T110937.RA000.T1IV3.R0000004 DELETED *-----0
IEF285I SYS14353.T110937.RA000.T1IV3.OBJECT DELETED *-----3
IEF373I STEP /LKED / START 14353.1109
IEF374I STEP /LKED / STOP 14353.1109 CPU 0MIN 00.05SEC SRB 0MIN 00.01SEC VIRT 1028K SYS 264K
*****
*****
* 2. Jobstep of job: T1IV3 Stepname: LKED Program name: IEWL Executed on 19.12.14 from 11.09.38 to
11.09.38 *
* elapsed time 24:00:00,10 CPU-Identifier: SYSA Page-in: 0
*
* CPU time 00:00:00,06 Virtual Storage used: 1028K Page-out: 0
*
* corr. CPU: 00:00:00,06 CPU time has been corrected by 1 / 1,0 multiplier
*
*
* I/O Operation
*
* Number of records read via DD * or DD DATA: 0
*

```

```

*      DMY.....0 148.....72 FFF.....19 FFF.....0 FFF.....3 DMY.....0
*
*
*
*
*      Charge for step (w/o SYSOUT):          0,10
*
*****
*****
IEF236I ALLOC. FOR T1IV3 GO IVP3
IEF237I VIO  ALLOCATED TO STEPLIB
IEF237I JES2 ALLOCATED TO ALGLDD01
IEF237I JES2 ALLOCATED TO SYSPRINT
IEF237I VIO  ALLOCATED TO SYSUT1
IEF237I JES2 ALLOCATED TO SYSIN
IEF142I T1IV3 GO IVP3 - STEP WAS EXECUTED - COND CODE 0000
IEF285I  SYS14353.T110937.RA000.T1IV3.GOSET          PASSED          *-----0
IEF285I  JES2.JOB02687.S00105                        SYSOUT
IEF285I  JES2.JOB02687.S00106                        SYSOUT
IEF285I  SYS14353.T110937.RA000.T1IV3.R0000005      DELETED          *-----0
IEF285I  JES2.JOB02687.SI0102                        SYSIN
IEF373I STEP /GO          / START 14353.1109
IEF374I STEP /GO          / STOP  14353.1109 CPU      0MIN 00.33SEC SRB      0MIN 00.00SEC VIRT 8228K SYS   280K
*****
*****
*      3. Jobstep of job: T1IV3          Stepname: GO          Program name: GO          Executed on 19.12.14 from 11.09.38 to
11.09.38 *
*      elapsed time 24:00:00,34          CPU-Identifier: SYSA          Page-in:      0
*
*      CPU time 00:00:00,33          Virtual Storage used: 8228K          Page-out:      0
*
*      corr. CPU: 00:00:00,33 CPU time has been corrected by 1 / 1,0 multiplier
*
*
*
*      I/O Operation
*
*      Number of records read via DD * or DD DATA:      1
*
*      FFF.....0 DMY.....0 DMY.....0 FFF.....0 DMY.....0
*
*
*
*
*      Charge for step (w/o SYSOUT):          0,55
*
*****
*****
IEF285I  SYS14353.T110937.RA000.T1IV3.GOSET          DELETED
IEF375I  JOB /T1IV3 / START 14353.1109
IEF376I  JOB /T1IV3 / STOP  14353.1109 CPU      0MIN 00.43SEC SRB      0MIN 00.01SEC

```

```

'BEGIN'                                00013001
'COMMENT'                              00014001
//////////////////////////////////// 00015001
// NAME: PETER M. MAURER              00016001
// PROGRAM: SIEVE OF ERATOSTHENES     00017001
// DUE: NEVER                         00018001
// LANGUAGE: ALGOL 60 ALA IBM 360     00019001
//                                    00020001
// Changes:                           00021001
// - Juergen Winkelmann, 2014/07/12, Performance and Output 00022001
// Optimization                       00023001
//////////////////////////////////// 00024001
;                                     00025001
'COMMENT' DEFINE THE SIEVE DATA STRUCTURE ; 00026001
'BOOLEAN' 'ARRAY' CANDIDATES[0:8400000]; 00027001
1 'INTEGER' I,J,K,LIMIT;              00028001
2 'COMMENT' SET LINE-LENGTH=120,SET LINES-PER-PAGE=62,OPEN; 00029001
2 SYSACT(1,6,120);                    00030001
3 SYSACT(1,8,62);                     00031001
4 SYSACT(1,12,1);                     00032001
5 ININTEGER(0,LIMIT);                 00033001
6 'FOR' I := 0 'STEP' 1 'UNTIL' LIMIT 'DO' 00034001
6 'BEGIN'                             00035001
6 'COMMENT' EVERYTHING IS POTENTIALLY PRIME 00036001
6 UNTIL PROVEN OTHERWISE ;            00037001
6 CANDIDATES[I] := 'TRUE';            00038001
7 'END';                              00039001
8 'COMMENT' NEITHER 1 NOR 0 IS PRIME, SO FLAG THEM OFF ; 00040001
8 CANDIDATES[0] := 'FALSE';           00041001
9 CANDIDATES[1] := 'FALSE';           00042001
10 'COMMENT' START THE SIEVE WITH THE INTEGER 0 ; 00043001
10 I := 0;                            00044001
11 K := 0;                            00045001
12 'FOR' I := I 'WHILE' K 'LESS' LIMIT 'DO' 00046001
12 'BEGIN'                             00047001
12 'COMMENT' ADVANCE TO THE NEXT UN-CROSSED OUT. ; 00048001
12 'COMMENT' THIS NUMBER MUST BE A PRIME; 00049001
12 'FOR' I := I 'WHILE' K 'LESS' LIMIT 00050001
12 'AND' 'NOT' CANDIDATES[I] 'DO'     00051001
12 'BEGIN'                             00052001
12 I := I+1;                          00053001
13 K := I*I;                          00054001
14 'END';                              00055001
15 'COMMENT' INSURE AGAINST RUNNING OFF THE END; 00056001
15 'IF' K 'LESS' LIMIT 'THEN'         00057001
15 'BEGIN'                             00058001
15 'COMMENT' CROSS OUT ALL MULTIPLES OF THE PRIME.; 00059001
15 'FOR' K := K 'WHILE' K 'LESS' LIMIT 'DO' 00060001
15 'BEGIN'                             00061001
15 CANDIDATES[K] := 'FALSE';          00062001
16 K := K+I;                          00063001
17 'END';                              00064001
18 'COMMENT' ADVANCE TO THE NEXT CANDIDATE ; 00065001
18 I := I+1;                          00066001

```

19	K := I*I;	00067001
20	'END'	00068001
20	'END';	00069001
21	'COMMENT' ALL UNCROSSED OUT NUMBERS ARE PRIME;	00070001
21	'COMMENT' PRINT ALL PRIMES ;	00071001
21	J := 0;	00072001
22	K := 0;	00073001
23	'FOR' I := 0 'STEP' 1 'UNTIL' LIMIT-1 'DO'	00074001
23	'BEGIN'	00075001
23	'IF' CANDIDATES[I] 'THEN'	00076001
23	'BEGIN'	00077001
23	J := J + 1;	00078001
24	K := K + 1;	00079001
25	OUTINTEGER(1,I);	00080001
26	'IF' J 'EQUAL' 9 'THEN' J := 0;	00081001
27	'END';	00082001
28	'END';	00083001
29	'IF' J 'NOTEQUAL' 0 'THEN' SYSACT(1,14,1);	00084001
30	SYSACT(1,14,1);	00085001
31	OUTINTEGER(1,K);	00086001
32	OUTSTRING(1,(' primes found'));	00087001
33	SYSACT(1,14,1);	00088001
34	'END'	00089001

IDENTIFIER TABLE											
PBN	SC	PBN	NAME	TYPE	DM	DSP	NAME	TYPE	DM	DSP	
		SURR			PR	LN			PR	LN	
001	00000	000	CANDID	B A	01	018	I	I	030	J	I
			K	I		038	LIMIT	I	03C		034

STORAGE REQUIREMENTS (DECIMAL)

OBJECT MODULE SIZE 1992 BYTES

DATA STORAGE AREA SIZES

PBN	BYTES	PBN	BYTES	PBN	BYTES	PBN	BYTES
001	104						

F64-LEVEL LINKAGE EDITOR OPTIONS SPECIFIED XREF,LIST,LET
 DEFAULT OPTION(S) USED - SIZE=(1017856,516096)

CROSS REFERENCE TABLE

CONTROL SECTION

ENTRY

NAME	ORIGIN	LENGTH	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
PROGRAM	00	7C8								
IHIFSARA*	7C8	E68	IHIDSTAB	770	IHIENTIF	7BC				
			IHIFSAIN	15BC						
IHIFSARB*	1630	670								
IHIIDECM*	1CA0	6D0								
			IHIIDEAI	1CA0	IHIIDEII	1CE4	IHIIDEIR	1D28		
IHIOINTE*	2370	1F8								
			IHIOINAR	2370	IHIOINTG	23B0				
IHIOSTRG*	2568	148								
IHISYSCT*	26B0	788								
IHIORTN*	2E38	D18								
			IHIIOROQ	2E38	IHIIOROP	2F04	IHIIORNX	32B4	IHIIORCL	3518
			IHIIORCP	36CE	IHIIORGP	37BC	IHIIORCN	37C0	IHIIOREN	3824
			IHIIOREV	38A0	IHIIORED	3934	IHIIORCI	39E0	IHIIORER	3A64
IHIERROR*	3B50	6E8								
IHIERMSG*	4238	9B8								
			IHIERM01	42E8						
IHIPTTAB*	4BF0	108								

LOCATION	REFERS TO	SYMBOL	IN CONTROL SECTION	LOCATION	REFERS TO	SYMBOL	IN CONTROL SECTION
6A0		IHISYSCT	IHISYSCT	6C4		IHIIDEII	IHIIDECM
6E0		IHIOINTG	IHIOINTE	6F4		IHIOSTRG	IHIOSTRG
1604		IHIFSARB	IHIFSARB	A60		IHIERROR	IHIERROR
874		IHIDSTAB	PROGRAM	15B8		IHIORER	IHIORTN
1618		IHIORCP	IHIORTN	A74		IHIORCP	IHIORTN
15B4		IHIIORGP	IHIORTN	15B0		IHIIOREN	IHIORTN
15AC		IHIIOROQ	IHIORTN	15A0		IHIIOREV	IHIORTN
1598		IHIIORCI	IHIORTN	1620		IHIIORNX	IHIORTN
15A4		IHIIORNX	IHIORTN	A79		IHIIORNX	IHIORTN
1624		IHIIORCL	IHIORTN	159C		IHIIORCL	IHIORTN
161C		IHIIOROP	IHIORTN	15A8		IHIIOROP	IHIORTN
A70		IHIIOROP	IHIORTN	1614		IHIENTIF	PROGRAM
1635		IHIFSARA	IHIFSARA	21B8		IHIPTTAB	IHIPTTAB
4220		IHIERM01	IHIERMSG	421C		IHIERMSG	IHIERMSG

ENTRY ADDRESS 15BC

TOTAL LENGTH 4CF8

****G0 DOES NOT EXIST BUT HAS BEEN ADDED TO DATA SET
 AUTHORIZATION CODE IS 0.

+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	+101	+103
+107	+109	+113	+127	+131	+137	+139	+149	+151
+157	+163	+167	+173	+179	+181	+191	+193	+197
+199	+211	+223	+227	+229	+233	+239	+241	+251
+257	+263	+269	+271	+277	+281	+283	+293	+307
+311	+313	+317	+331	+337	+347	+349	+353	+359
+367	+373	+379	+383	+389	+397	+401	+409	+419
+421	+431	+433	+439	+443	+449	+457	+461	+463
+467	+479	+487	+491	+499	+503	+509	+521	+523
+541	+547	+557	+563	+569	+571	+577	+587	+593
+599	+601	+607	+613	+617	+619	+631	+641	+643
+647	+653	+659	+661	+673	+677	+683	+691	+701
+709	+719	+727	+733	+739	+743	+751	+757	+761
+769	+773	+787	+797	+809	+811	+821	+823	+827
+829	+839	+853	+857	+859	+863	+877	+881	+883
+887	+907	+911	+919	+929	+937	+941	+947	+953
+967	+971	+977	+983	+991	+997	+1009	+1013	+1019
+1021	+1031	+1033	+1039	+1049	+1051	+1061	+1063	+1069
+1087	+1091	+1093	+1097	+1103	+1109	+1117	+1123	+1129
+1151	+1153	+1163	+1171	+1181	+1187	+1193	+1201	+1213
+1217	+1223	+1229	+1231	+1237	+1249	+1259	+1277	+1279
+1283	+1289	+1291	+1297	+1301	+1303	+1307	+1319	+1321
+1327	+1361	+1367	+1373	+1381	+1399	+1409	+1423	+1427
+1429	+1433	+1439	+1447	+1451	+1453	+1459	+1471	+1481
+1483	+1487	+1489	+1493	+1499	+1511	+1523	+1531	+1543
+1549	+1553	+1559	+1567	+1571	+1579	+1583	+1597	+1601
+1607	+1609	+1613	+1619	+1621	+1627	+1637	+1657	+1663
+1667	+1669	+1693	+1697	+1699	+1709	+1721	+1723	+1733
+1741	+1747	+1753	+1759	+1777	+1783	+1787	+1789	+1801
+1811	+1823	+1831	+1847	+1861	+1867	+1871	+1873	+1877
+1879	+1889	+1901	+1907	+1913	+1931	+1933	+1949	+1951
+1973	+1979	+1987	+1993	+1997	+1999	+2003	+2011	+2017
+2027	+2029	+2039	+2053	+2063	+2069	+2081	+2083	+2087
+2089	+2099	+2111	+2113	+2129	+2131	+2137	+2141	+2143
+2153	+2161	+2179	+2203	+2207	+2213	+2221	+2237	+2239
+2243	+2251	+2267	+2269	+2273	+2281	+2287	+2293	+2297
+2309	+2311	+2333	+2339	+2341	+2347	+2351	+2357	+2371
+2377	+2381	+2383	+2389	+2393	+2399	+2411	+2417	+2423
+2437	+2441	+2447	+2459	+2467	+2473	+2477	+2503	+2521
+2531	+2539	+2543	+2549	+2551	+2557	+2579	+2591	+2593
+2609	+2617	+2621	+2633	+2647	+2657	+2659	+2663	+2671
+2677	+2683	+2687	+2689	+2693	+2699	+2707	+2711	+2713
+2719	+2729	+2731	+2741	+2749	+2753	+2767	+2777	+2789
+2791	+2797	+2801	+2803	+2819	+2833	+2837	+2843	+2851
+2857	+2861	+2879	+2887	+2897	+2903	+2909	+2917	+2927
+2939	+2953	+2957	+2963	+2969	+2971	+2999	+3001	+3011
+3019	+3023	+3037	+3041	+3049	+3061	+3067	+3079	+3083
+3089	+3109	+3119	+3121	+3137	+3163	+3167	+3169	+3181
+3187	+3191	+3203	+3209	+3217	+3221	+3229	+3251	+3253
+3257	+3259	+3271	+3299	+3301	+3307	+3313	+3319	+3323
+3329	+3331	+3343	+3347	+3359	+3361	+3371	+3373	+3389
+3391	+3407	+3413	+3433	+3449	+3457	+3461	+3463	+3467
+3469	+3491	+3499	+3511	+3517	+3527	+3529	+3533	+3539
+3541	+3547	+3557	+3559	+3571	+3581	+3583	+3593	+3607
+3613	+3617	+3623	+3631	+3637	+3643	+3659	+3671	+3673
+3677	+3691	+3697	+3701	+3709	+3719	+3727	+3733	+3739
+3761	+3767	+3769	+3779	+3793	+3797	+3803	+3821	+3823
+3833	+3847	+3851	+3853	+3863	+3877	+3881	+3889	+3907
+3911	+3917	+3919	+3923	+3929	+3931	+3943	+3947	+3967
+3989	+4001	+4003	+4007	+4013	+4019	+4021	+4027	+4049

+4051	+4057	+4073	+4079	+4091	+4093	+4099	+4111	+4127
+4129	+4133	+4139	+4153	+4157	+4159	+4177	+4201	+4211
+4217	+4219	+4229	+4231	+4241	+4243	+4253	+4259	+4261
+4271	+4273	+4283	+4289	+4297	+4327	+4337	+4339	+4349
+4357	+4363	+4373	+4391	+4397	+4409	+4421	+4423	+4441
+4447	+4451	+4457	+4463	+4481	+4483	+4493	+4507	+4513
+4517	+4519	+4523	+4547	+4549	+4561	+4567	+4583	+4591
+4597	+4603	+4621	+4637	+4639	+4643	+4649	+4651	+4657
+4663	+4673	+4679	+4691	+4703	+4721	+4723	+4729	+4733
+4751	+4759	+4783	+4787	+4789	+4793	+4799	+4801	+4813
+4817	+4831	+4861	+4871	+4877	+4889	+4903	+4909	+4919
+4931	+4933	+4937	+4943	+4951	+4957	+4967	+4969	+4973
+4987	+4993	+4999	+5003	+5009	+5011	+5021	+5023	+5039
+5051	+5059	+5077	+5081	+5087	+5099	+5101	+5107	+5113
+5119	+5147	+5153	+5167	+5171	+5179	+5189	+5197	+5209
+5227	+5231	+5233	+5237	+5261	+5273	+5279	+5281	+5297
+5303	+5309	+5323	+5333	+5347	+5351	+5381	+5387	+5393
+5399	+5407	+5413	+5417	+5419	+5431	+5437	+5441	+5443
+5449	+5471	+5477	+5479	+5483	+5501	+5503	+5507	+5519
+5521	+5527	+5531	+5557	+5563	+5569	+5573	+5581	+5591
+5623	+5639	+5641	+5647	+5651	+5653	+5657	+5659	+5669
+5683	+5689	+5693	+5701	+5711	+5717	+5737	+5741	+5743
+5749	+5779	+5783	+5791	+5801	+5807	+5813	+5821	+5827
+5839	+5843	+5849	+5851	+5857	+5861	+5867	+5869	+5879
+5881	+5897	+5903	+5923	+5927	+5939	+5953	+5981	+5987
+6007	+6011	+6029	+6037	+6043	+6047	+6053	+6067	+6073
+6079	+6089	+6091	+6101	+6113	+6121	+6131	+6133	+6143
+6151	+6163	+6173	+6197	+6199	+6203	+6211	+6217	+6221
+6229	+6247	+6257	+6263	+6269	+6271	+6277	+6287	+6299
+6301	+6311	+6317	+6323	+6329	+6337	+6343	+6353	+6359
+6361	+6367	+6373	+6379	+6389	+6397	+6421	+6427	+6449
+6451	+6469	+6473	+6481	+6491	+6521	+6529	+6547	+6551
+6553	+6563	+6569	+6571	+6577	+6581	+6599	+6607	+6619
+6637	+6653	+6659	+6661	+6673	+6679	+6689	+6691	+6701
+6703	+6709	+6719	+6733	+6737	+6761	+6763	+6779	+6781
+6791	+6793	+6803	+6823	+6827	+6829	+6833	+6841	+6857
+6863	+6869	+6871	+6883	+6899	+6907	+6911	+6917	+6947
+6949	+6959	+6961	+6967	+6971	+6977	+6983	+6991	+6997
+7001	+7013	+7019	+7027	+7039	+7043	+7057	+7069	+7079
+7103	+7109	+7121	+7127	+7129	+7151	+7159	+7177	+7187
+7193	+7207	+7211	+7213	+7219	+7229	+7237	+7243	+7247
+7253	+7283	+7297	+7307	+7309	+7321	+7331	+7333	+7349
+7351	+7369	+7393	+7411	+7417	+7433	+7451	+7457	+7459
+7477	+7481	+7487	+7489	+7499	+7507	+7517	+7523	+7529
+7537	+7541	+7547	+7549	+7559	+7561	+7573	+7577	+7583
+7589	+7591	+7603	+7607	+7621	+7639	+7643	+7649	+7669
+7673	+7681	+7687	+7691	+7699	+7703	+7717	+7723	+7727
+7741	+7753	+7757	+7759	+7789	+7793	+7817	+7823	+7829
+7841	+7853	+7867	+7873	+7877	+7879	+7883	+7901	+7907
+7919	+7927	+7933	+7937	+7949	+7951	+7963	+7993	+8009
+8011	+8017	+8039	+8053	+8059	+8069	+8081	+8087	+8089
+8093	+8101	+8111	+8117	+8123	+8147	+8161	+8167	+8171
+8179	+8191	+8209	+8219	+8221	+8231	+8233	+8237	+8243
+8263	+8269	+8273	+8287	+8291	+8293	+8297	+8311	+8317
+8329	+8353	+8363	+8369	+8377	+8387	+8389	+8419	+8423
+8429	+8431	+8443	+8447	+8461	+8467	+8501	+8513	+8521
+8527	+8537	+8539	+8543	+8563	+8573	+8581	+8597	+8599
+8609	+8623	+8627	+8629	+8641	+8647	+8663	+8669	+8677
+8681	+8689	+8693	+8699	+8707	+8713	+8719	+8731	+8737
+8741	+8747	+8753	+8761	+8779	+8783	+8803	+8807	+8819
+8821	+8831	+8837	+8839	+8849	+8861	+8863	+8867	+8887
+8893	+8923	+8929	+8933	+8941	+8951	+8963	+8969	+8971

+8999	+9001	+9007	+9011	+9013	+9029	+9041	+9043	+9049
+9059	+9067	+9091	+9103	+9109	+9127	+9133	+9137	+9151
+9157	+9161	+9173	+9181	+9187	+9199	+9203	+9209	+9221
+9227	+9239	+9241	+9257	+9277	+9281	+9283	+9293	+9311
+9319	+9323	+9337	+9341	+9343	+9349	+9371	+9377	+9391
+9397	+9403	+9413	+9419	+9421	+9431	+9433	+9437	+9439
+9461	+9463	+9467	+9473	+9479	+9491	+9497	+9511	+9521
+9533	+9539	+9547	+9551	+9587	+9601	+9613	+9619	+9623
+9629	+9631	+9643	+9649	+9661	+9677	+9679	+9689	+9697
+9719	+9721	+9733	+9739	+9743	+9749	+9767	+9769	+9781
+9787	+9791	+9803	+9811	+9817	+9829	+9833	+9839	+9851
+9857	+9859	+9871	+9883	+9887	+9901	+9907	+9923	+9929
+9931	+9941	+9949	+9967	+9973	+10007	+10009	+10037	+10039
+10061	+10067	+10069	+10079	+10091	+10093	+10099	+10103	+10111
+10133	+10139	+10141	+10151	+10159	+10163	+10169	+10177	+10181
+10193	+10211	+10223	+10243	+10247	+10253	+10259	+10267	+10271
+10273	+10289	+10301	+10303	+10313	+10321	+10331	+10333	+10337
+10343	+10357	+10369	+10391	+10399	+10427	+10429	+10433	+10453
+10457	+10459	+10463	+10477	+10487	+10499	+10501	+10513	+10529
+10531	+10559	+10567	+10589	+10597	+10601	+10607	+10613	+10627
+10631	+10639	+10651	+10657	+10663	+10667	+10687	+10691	+10709
+10711	+10723	+10729	+10733	+10739	+10753	+10771	+10781	+10789
+10799	+10831	+10837	+10847	+10853	+10859	+10861	+10867	+10883
+10889	+10891	+10903	+10909	+10937	+10939	+10949	+10957	+10973
+10979	+10987	+10993	+11003	+11027	+11047	+11057	+11059	+11069
+11071	+11083	+11087	+11093	+11113	+11117	+11119	+11131	+11149
+11159	+11161	+11171	+11173	+11177	+11197	+11213	+11239	+11243
+11251	+11257	+11261	+11273	+11279	+11287	+11299	+11311	+11317
+11321	+11329	+11351	+11353	+11369	+11383	+11393	+11399	+11411
+11423	+11437	+11443	+11447	+11467	+11471	+11483	+11489	+11491
+11497	+11503	+11519	+11527	+11549	+11551	+11579	+11587	+11593
+11597	+11617	+11621	+11633	+11657	+11677	+11681	+11689	+11699
+11701	+11717	+11719	+11731	+11743	+11777	+11779	+11783	+11789
+11801	+11807	+11813	+11821	+11827	+11831	+11833	+11839	+11863
+11867	+11887	+11897	+11903	+11909	+11923	+11927	+11933	+11939
+11941	+11953	+11959	+11969	+11971	+11981	+11987	+12007	+12011
+12037	+12041	+12043	+12049	+12071	+12073	+12097	+12101	+12107
+12109	+12113	+12119	+12143	+12149	+12157	+12161	+12163	+12197
+12203	+12211	+12227	+12239	+12241	+12251	+12253	+12263	+12269
+12277	+12281	+12289	+12301	+12323	+12329	+12343	+12347	+12373
+12377	+12379	+12391	+12401	+12409	+12413	+12421	+12433	+12437
+12451	+12457	+12473	+12479	+12487	+12491	+12497	+12503	+12511
+12517	+12527	+12539	+12541	+12547	+12553	+12569	+12577	+12583
+12589	+12601	+12611	+12613	+12619	+12637	+12641	+12647	+12653
+12659	+12671	+12689	+12697	+12703	+12713	+12721	+12739	+12743
+12757	+12763	+12781	+12791	+12799	+12809	+12821	+12823	+12829
+12841	+12853	+12889	+12893	+12899	+12907	+12911	+12917	+12919
+12923	+12941	+12953	+12959	+12967	+12973	+12979	+12983	+13001
+13003	+13007	+13009	+13033	+13037	+13043	+13049	+13063	+13093
+13099	+13103	+13109	+13121	+13127	+13147	+13151	+13159	+13163
+13171	+13177	+13183	+13187	+13217	+13219	+13229	+13241	+13249
+13259	+13267	+13291	+13297	+13309	+13313	+13327	+13331	+13337
+13339	+13367	+13381	+13397	+13399	+13411	+13417	+13421	+13441
+13451	+13457	+13463	+13469	+13477	+13487	+13499	+13513	+13523
+13537	+13553	+13567	+13577	+13591	+13597	+13613	+13619	+13627
+13633	+13649	+13669	+13679	+13681	+13687	+13691	+13693	+13697
+13709	+13711	+13721	+13723	+13729	+13751	+13757	+13759	+13763
+13781	+13789	+13799	+13807	+13829	+13831	+13841	+13859	+13873
+13877	+13879	+13883	+13901	+13903	+13907	+13913	+13921	+13931
+13933	+13963	+13967	+13997	+13999	+14009	+14011	+14029	+14033
+14051	+14057	+14071	+14081	+14083	+14087	+14107	+14143	+14149
+14153	+14159	+14173	+14177	+14197	+14207	+14221	+14243	+14249

+14251	+14281	+14293	+14303	+14321	+14323	+14327	+14341	+14347
+14369	+14387	+14389	+14401	+14407	+14411	+14419	+14423	+14431
+14437	+14447	+14449	+14461	+14479	+14489	+14503	+14519	+14533
+14537	+14543	+14549	+14551	+14557	+14561	+14563	+14591	+14593
+14621	+14627	+14629	+14633	+14639	+14653	+14657	+14669	+14683
+14699	+14713	+14717	+14723	+14731	+14737	+14741	+14747	+14753
+14759	+14767	+14771	+14779	+14783	+14797	+14813	+14821	+14827
+14831	+14843	+14851	+14867	+14869	+14879	+14887	+14891	+14897
+14923	+14929	+14939	+14947	+14951	+14957	+14969	+14983	+15013
+15017	+15031	+15053	+15061	+15073	+15077	+15083	+15091	+15101
+15107	+15121	+15131	+15137	+15139	+15149	+15161	+15173	+15187
+15193	+15199	+15217	+15227	+15233	+15241	+15259	+15263	+15269
+15271	+15277	+15287	+15289	+15299	+15307	+15313	+15319	+15329
+15331	+15349	+15359	+15361	+15373	+15377	+15383	+15391	+15401
+15413	+15427	+15439	+15443	+15451	+15461	+15467	+15473	+15493
+15497	+15511	+15527	+15541	+15551	+15559	+15569	+15581	+15583
+15601	+15607	+15619	+15629	+15641	+15643	+15647	+15649	+15661
+15667	+15671	+15679	+15683	+15727	+15731	+15733	+15737	+15739
+15749	+15761	+15767	+15773	+15787	+15791	+15797	+15803	+15809
+15817	+15823	+15859	+15877	+15881	+15887	+15889	+15901	+15907
+15913	+15919	+15923	+15937	+15959	+15971	+15973	+15991	+16001
+16007	+16033	+16057	+16061	+16063	+16067	+16069	+16073	+16087
+16091	+16097	+16103	+16111	+16127	+16139	+16141	+16183	+16187
+16189	+16193	+16217	+16223	+16229	+16231	+16249	+16253	+16267
+16273	+16301	+16319	+16333	+16339	+16349	+16361	+16363	+16369
+16381	+16411	+16417	+16421	+16427	+16433	+16447	+16451	+16453
+16477	+16481	+16487	+16493	+16519	+16529	+16547	+16553	+16561
+16567	+16573	+16603	+16607	+16619	+16631	+16633	+16649	+16651
+16657	+16661	+16673	+16691	+16693	+16699	+16703	+16729	+16741
+16747	+16759	+16763	+16787	+16811	+16823	+16829	+16831	+16843
+16871	+16879	+16883	+16889	+16901	+16903	+16921	+16927	+16931
+16937	+16943	+16963	+16979	+16981	+16987	+16993	+17011	+17021
+17027	+17029	+17033	+17041	+17047	+17053	+17077	+17093	+17099
+17107	+17117	+17123	+17137	+17159	+17167	+17183	+17189	+17191
+17203	+17207	+17209	+17231	+17239	+17257	+17291	+17293	+17299
+17317	+17321	+17327	+17333	+17341	+17351	+17359	+17377	+17383
+17387	+17389	+17393	+17401	+17417	+17419	+17431	+17443	+17449
+17467	+17471	+17477	+17483	+17489	+17491	+17497	+17509	+17519
+17539	+17551	+17569	+17573	+17579	+17581	+17597	+17599	+17609
+17623	+17627	+17657	+17659	+17669	+17681	+17683	+17707	+17713
+17729	+17737	+17747	+17749	+17761	+17783	+17789	+17791	+17807
+17827	+17837	+17839	+17851	+17863	+17881	+17891	+17903	+17909
+17911	+17921	+17923	+17929	+17939	+17957	+17959	+17971	+17977
+17981	+17987	+17989	+18013	+18041	+18043	+18047	+18049	+18059
+18061	+18077	+18089	+18097	+18119	+18121	+18127	+18131	+18133
+18143	+18149	+18169	+18181	+18191	+18199	+18211	+18217	+18223
+18229	+18233	+18251	+18253	+18257	+18269	+18287	+18289	+18301
+18307	+18311	+18313	+18329	+18341	+18353	+18367	+18371	+18379
+18397	+18401	+18413	+18427	+18433	+18439	+18443	+18451	+18457
+18461	+18481	+18493	+18503	+18517	+18521	+18523	+18539	+18541
+18553	+18583	+18587	+18593	+18617	+18637	+18661	+18671	+18679
+18691	+18701	+18713	+18719	+18731	+18743	+18749	+18757	+18773
+18787	+18793	+18797	+18803	+18839	+18859	+18869	+18899	+18911
+18913	+18917	+18919	+18947	+18959	+18973	+18979	+19001	+19009
+19013	+19031	+19037	+19051	+19069	+19073	+19079	+19081	+19087
+19121	+19139	+19141	+19157	+19163	+19181	+19183	+19207	+19211
+19213	+19219	+19231	+19237	+19249	+19259	+19267	+19273	+19289
+19301	+19309	+19319	+19333	+19373	+19379	+19381	+19387	+19391
+19403	+19417	+19421	+19423	+19427	+19429	+19433	+19441	+19447
+19457	+19463	+19469	+19471	+19477	+19483	+19489	+19501	+19507
+19531	+19541	+19543	+19553	+19559	+19571	+19577	+19583	+19597
+19603	+19609	+19661	+19681	+19687	+19697	+19699	+19709	+19717

+19727	+19739	+19751	+19753	+19759	+19763	+19777	+19793	+19801
+19813	+19819	+19841	+19843	+19853	+19861	+19867	+19889	+19891
+19913	+19919	+19927	+19937	+19949	+19961	+19963	+19973	+19979
+19991	+19993	+19997	+20011	+20021	+20023	+20029	+20047	+20051
+20063	+20071	+20089	+20101	+20107	+20113	+20117	+20123	+20129
+20143	+20147	+20149	+20161	+20173	+20177	+20183	+20201	+20219
+20231	+20233	+20249	+20261	+20269	+20287	+20297	+20323	+20327
+20333	+20341	+20347	+20353	+20357	+20359	+20369	+20389	+20393
+20399	+20407	+20411	+20431	+20441	+20443	+20477	+20479	+20483
+20507	+20509	+20521	+20533	+20543	+20549	+20551	+20563	+20593
+20599	+20611	+20627	+20639	+20641	+20663	+20681	+20693	+20707
+20717	+20719	+20731	+20743	+20747	+20749	+20753	+20759	+20771
+20773	+20789	+20807	+20809	+20849	+20857	+20873	+20879	+20887
+20897	+20899	+20903	+20921	+20929	+20939	+20947	+20959	+20963
+20981	+20983	+21001	+21011	+21013	+21017	+21019	+21023	+21031
+21059	+21061	+21067	+21089	+21101	+21107	+21121	+21139	+21143
+21149	+21157	+21163	+21169	+21179	+21187	+21191	+21193	+21211
+21221	+21227	+21247	+21269	+21277	+21283	+21313	+21317	+21319
+21323	+21341	+21347	+21377	+21379	+21383	+21391	+21397	+21401
+21407	+21419	+21433	+21467	+21481	+21487	+21491	+21493	+21499
+21503	+21517	+21521	+21523	+21529	+21557	+21559	+21563	+21569
+21577	+21587	+21589	+21599	+21601	+21611	+21613	+21617	+21647
+21649	+21661	+21673	+21683	+21701	+21713	+21727	+21737	+21739
+21751	+21757	+21767	+21773	+21787	+21799	+21803	+21817	+21821
+21839	+21841	+21851	+21859	+21863	+21871	+21881	+21893	+21911
+21929	+21937	+21943	+21961	+21977	+21991	+21997	+22003	+22013
+22027	+22031	+22037	+22039	+22051	+22063	+22067	+22073	+22079
+22091	+22093	+22109	+22111	+22123	+22129	+22133	+22147	+22153
+22157	+22159	+22171	+22189	+22193	+22229	+22247	+22259	+22271
+22273	+22277	+22279	+22283	+22291	+22303	+22307	+22343	+22349
+22367	+22369	+22381	+22391	+22397	+22409	+22433	+22441	+22447
+22453	+22469	+22481	+22483	+22501	+22511	+22531	+22541	+22543
+22549	+22567	+22571	+22573	+22613	+22619	+22621	+22637	+22639
+22643	+22651	+22669	+22679	+22691	+22697	+22699	+22709	+22717
+22721	+22727	+22739	+22741	+22751	+22769	+22777	+22783	+22787
+22807	+22811	+22817	+22853	+22859	+22861	+22871	+22877	+22901
+22907	+22921	+22937	+22943	+22961	+22963	+22973	+22993	+23003
+23011	+23017	+23021	+23027	+23029	+23039	+23041	+23053	+23057
+23059	+23063	+23071	+23081	+23087	+23099	+23117	+23131	+23143
+23159	+23167	+23173	+23189	+23197	+23201	+23203	+23209	+23227
+23251	+23269	+23279	+23291	+23293	+23297	+23311	+23321	+23327
+23333	+23339	+23357	+23369	+23371	+23399	+23417	+23431	+23447
+23459	+23473	+23497	+23509	+23531	+23537	+23539	+23549	+23557
+23561	+23563	+23567	+23581	+23593	+23599	+23603	+23609	+23623
+23627	+23629	+23633	+23663	+23669	+23671	+23677	+23687	+23689
+23719	+23741	+23743	+23747	+23753	+23761	+23767	+23773	+23789
+23801	+23813	+23819	+23827	+23831	+23833	+23857	+23869	+23873
+23879	+23887	+23893	+23899	+23909	+23911	+23917	+23929	+23957
+23971	+23977	+23981	+23993	+24001	+24007	+24019	+24023	+24029
+24043	+24049	+24061	+24071	+24077	+24083	+24091	+24097	+24103
+24107	+24109	+24113	+24121	+24133	+24137	+24151	+24169	+24179
+24181	+24197	+24203	+24223	+24229	+24239	+24247	+24251	+24281
+24317	+24329	+24337	+24359	+24371	+24373	+24379	+24391	+24407
+24413	+24419	+24421	+24439	+24443	+24469	+24473	+24481	+24499
+24509	+24517	+24527	+24533	+24547	+24551	+24571	+24593	+24611
+24623	+24631	+24659	+24671	+24677	+24683	+24691	+24697	+24709
+24733	+24749	+24763	+24767	+24781	+24793	+24799	+24809	+24821
+24841	+24847	+24851	+24859	+24877	+24889	+24907	+24917	+24919
+24923	+24943	+24953	+24967	+24971	+24977	+24979	+24989	+25013
+25031	+25033	+25037	+25057	+25073	+25087	+25097	+25111	+25117
+25121	+25127	+25147	+25153	+25163	+25169	+25171	+25183	+25189
+25219	+25229	+25237	+25243	+25247	+25253	+25261	+25301	+25303

+25307	+25309	+25321	+25339	+25343	+25349	+25357	+25367	+25373
+25391	+25409	+25411	+25423	+25439	+25447	+25453	+25457	+25463
+25469	+25471	+25523	+25537	+25541	+25561	+25577	+25579	+25583
+25589	+25601	+25603	+25609	+25621	+25633	+25639	+25643	+25657
+25667	+25673	+25679	+25693	+25703	+25717	+25733	+25741	+25747
+25759	+25763	+25771	+25793	+25799	+25801	+25819	+25841	+25847
+25849	+25867	+25873	+25889	+25903	+25913	+25919	+25931	+25933
+25939	+25943	+25951	+25969	+25981	+25997	+25999	+26003	+26017
+26021	+26029	+26041	+26053	+26083	+26099	+26107	+26111	+26113
+26119	+26141	+26153	+26161	+26171	+26177	+26183	+26189	+26203
+26209	+26227	+26237	+26249	+26251	+26261	+26263	+26267	+26293
+26297	+26309	+26317	+26321	+26339	+26347	+26357	+26371	+26387
+26393	+26399	+26407	+26417	+26423	+26431	+26437	+26449	+26459
+26479	+26489	+26497	+26501	+26513	+26539	+26557	+26561	+26573
+26591	+26597	+26627	+26633	+26641	+26647	+26669	+26681	+26683
+26687	+26693	+26699	+26701	+26711	+26713	+26717	+26723	+26729
+26731	+26737	+26759	+26777	+26783	+26801	+26813	+26821	+26833
+26839	+26849	+26861	+26863	+26879	+26881	+26891	+26893	+26903
+26921	+26927	+26947	+26951	+26953	+26959	+26981	+26987	+26993
+27011	+27017	+27031	+27043	+27059	+27061	+27067	+27073	+27077
+27091	+27103	+27107	+27109	+27127	+27143	+27179	+27191	+27197
+27211	+27239	+27241	+27253	+27259	+27271	+27277	+27281	+27283
+27299	+27329	+27337	+27361	+27367	+27397	+27407	+27409	+27427
+27431	+27437	+27449	+27457	+27479	+27481	+27487	+27509	+27527
+27529	+27539	+27541	+27551	+27581	+27583	+27611	+27617	+27631
+27647	+27653	+27673	+27689	+27691	+27697	+27701	+27733	+27737
+27739	+27743	+27749	+27751	+27763	+27767	+27773	+27779	+27791
+27793	+27799	+27803	+27809	+27817	+27823	+27827	+27847	+27851
+27883	+27893	+27901	+27917	+27919	+27941	+27943	+27947	+27953
+27961	+27967	+27983	+27997	+28001	+28019	+28027	+28031	+28051
+28057	+28069	+28081	+28087	+28097	+28099	+28109	+28111	+28123
+28151	+28163	+28181	+28183	+28201	+28211	+28219	+28229	+28277
+28279	+28283	+28289	+28297	+28307	+28309	+28319	+28349	+28351
+28387	+28393	+28403	+28409	+28411	+28429	+28433	+28439	+28447
+28463	+28477	+28493	+28499	+28513	+28517	+28537	+28541	+28547
+28549	+28559	+28571	+28573	+28579	+28591	+28597	+28603	+28607
+28619	+28621	+28627	+28631	+28643	+28649	+28657	+28661	+28663
+28669	+28687	+28697	+28703	+28711	+28723	+28729	+28751	+28753
+28759	+28771	+28789	+28793	+28807	+28813	+28817	+28837	+28843
+28859	+28867	+28871	+28879	+28901	+28909	+28921	+28927	+28933
+28949	+28961	+28979	+29009	+29017	+29021	+29023	+29027	+29033
+29059	+29063	+29077	+29101	+29123	+29129	+29131	+29137	+29147
+29153	+29167	+29173	+29179	+29191	+29201	+29207	+29209	+29221
+29231	+29243	+29251	+29269	+29287	+29297	+29303	+29311	+29327
+29333	+29339	+29347	+29363	+29383	+29387	+29389	+29399	+29401
+29411	+29423	+29429	+29437	+29443	+29453	+29473	+29483	+29501
+29527	+29531	+29537	+29567	+29569	+29573	+29581	+29587	+29599
+29611	+29629	+29633	+29641	+29663	+29669	+29671	+29683	+29717
+29723	+29741	+29753	+29759	+29761	+29789	+29803	+29819	+29833
+29837	+29851	+29863	+29867	+29873	+29879	+29881	+29917	+29921
+29927	+29947	+29959	+29983	+29989	+30011	+30013	+30029	+30047
+30059	+30071	+30089	+30091	+30097	+30103	+30109	+30113	+30119
+30133	+30137	+30139	+30161	+30169	+30181	+30187	+30197	+30203
+30211	+30223	+30241	+30253	+30259	+30269	+30271	+30293	+30307
+30313	+30319	+30323	+30341	+30347	+30367	+30389	+30391	+30403
+30427	+30431	+30449	+30467	+30469	+30491	+30493	+30497	+30509
+30517	+30529	+30539	+30553	+30557	+30559	+30577	+30593	+30631
+30637	+30643	+30649	+30661	+30671	+30677	+30689	+30697	+30703
+30707	+30713	+30727	+30757	+30763	+30773	+30781	+30803	+30809
+30817	+30829	+30839	+30841	+30851	+30853	+30859	+30869	+30871
+30881	+30893	+30911	+30931	+30937	+30941	+30949	+30971	+30977
+30983	+31013	+31019	+31033	+31039	+31051	+31063	+31069	+31079

+31081	+31091	+31121	+31123	+31139	+31147	+31151	+31153	+31159
+31177	+31181	+31183	+31189	+31193	+31219	+31223	+31231	+31237
+31247	+31249	+31253	+31259	+31267	+31271	+31277	+31307	+31319
+31321	+31327	+31333	+31337	+31357	+31379	+31387	+31391	+31393
+31397	+31469	+31477	+31481	+31489	+31511	+31513	+31517	+31531
+31541	+31543	+31547	+31567	+31573	+31583	+31601	+31607	+31627
+31643	+31649	+31657	+31663	+31667	+31687	+31699	+31721	+31723
+31727	+31729	+31741	+31751	+31769	+31771	+31793	+31799	+31817
+31847	+31849	+31859	+31873	+31883	+31891	+31907	+31957	+31963
+31973	+31981	+31991	+32003	+32009	+32027	+32029	+32051	+32057
+32059	+32063	+32069	+32077	+32083	+32089	+32099	+32117	+32119
+32141	+32143	+32159	+32173	+32183	+32189	+32191	+32203	+32213
+32233	+32237	+32251	+32257	+32261	+32297	+32299	+32303	+32309
+32321	+32323	+32327	+32341	+32353	+32359	+32363	+32369	+32371
+32377	+32381	+32401	+32411	+32413	+32423	+32429	+32441	+32443
+32467	+32479	+32491	+32497	+32503	+32507	+32531	+32533	+32537
+32561	+32563	+32569	+32573	+32579	+32587	+32603	+32609	+32611
+32621	+32633	+32647	+32653	+32687	+32693	+32707	+32713	+32717
+32719	+32749	+32771	+32779	+32783	+32789	+32797	+32801	+32803
+32831	+32833	+32839	+32843	+32869	+32887	+32909	+32911	+32917
+32933	+32939	+32941	+32957	+32969	+32971	+32983	+32987	+32993
+32999	+33013	+33023	+33029	+33037	+33049	+33053	+33071	+33073
+33083	+33091	+33107	+33113	+33119	+33149	+33151	+33161	+33179
+33181	+33191	+33199	+33203	+33211	+33223	+33247	+33287	+33289
+33301	+33311	+33317	+33329	+33331	+33343	+33347	+33349	+33353
+33359	+33377	+33391	+33403	+33409	+33413	+33427	+33457	+33461
+33469	+33479	+33487	+33493	+33503	+33521	+33529	+33533	+33547
+33563	+33569	+33577	+33581	+33587	+33589	+33599	+33601	+33613
+33617	+33619	+33623	+33629	+33637	+33641	+33647	+33679	+33703
+33713	+33721	+33739	+33749	+33751	+33757	+33767	+33769	+33773
+33791	+33797	+33809	+33811	+33827	+33829	+33851	+33857	+33863
+33871	+33889	+33893	+33911	+33923	+33931	+33937	+33941	+33961
+33967	+33997	+34019	+34031	+34033	+34039	+34057	+34061	+34123
+34127	+34129	+34141	+34147	+34157	+34159	+34171	+34183	+34211
+34213	+34217	+34231	+34253	+34259	+34261	+34267	+34273	+34283
+34297	+34301	+34303	+34313	+34319	+34327	+34337	+34351	+34361
+34367	+34369	+34381	+34403	+34421	+34429	+34439	+34457	+34469
+34471	+34483	+34487	+34499	+34501	+34511	+34513	+34519	+34537
+34543	+34549	+34583	+34589	+34591	+34603	+34607	+34613	+34631
+34649	+34651	+34667	+34673	+34679	+34687	+34693	+34703	+34721
+34729	+34739	+34747	+34757	+34759	+34763	+34781	+34807	+34819
+34841	+34843	+34847	+34849	+34871	+34877	+34883	+34897	+34913
+34919	+34939	+34949	+34961	+34963	+34981	+35023	+35027	+35051
+35053	+35059	+35069	+35081	+35083	+35089	+35099	+35107	+35111
+35117	+35129	+35141	+35149	+35153	+35159	+35171	+35201	+35221
+35227	+35251	+35257	+35267	+35279	+35281	+35291	+35311	+35317
+35323	+35327	+35339	+35353	+35363	+35381	+35393	+35401	+35407
+35419	+35423	+35437	+35447	+35449	+35461	+35491	+35507	+35509
+35521	+35527	+35531	+35533	+35537	+35543	+35569	+35573	+35591
+35593	+35597	+35603	+35617	+35671	+35677	+35729	+35731	+35747
+35753	+35759	+35771	+35797	+35801	+35803	+35809	+35831	+35837
+35839	+35851	+35863	+35869	+35879	+35897	+35899	+35911	+35923
+35933	+35951	+35963	+35969	+35977	+35983	+35993	+35999	+36007
+36011	+36013	+36017	+36037	+36061	+36067	+36073	+36083	+36097
+36107	+36109	+36131	+36137	+36151	+36161	+36187	+36191	+36209
+36217	+36229	+36241	+36251	+36263	+36269	+36277	+36293	+36299
+36307	+36313	+36319	+36341	+36343	+36353	+36373	+36383	+36389
+36433	+36451	+36457	+36467	+36469	+36473	+36479	+36493	+36497
+36523	+36527	+36529	+36541	+36551	+36559	+36563	+36571	+36583
+36587	+36599	+36607	+36629	+36637	+36643	+36653	+36671	+36677
+36683	+36691	+36697	+36709	+36713	+36721	+36739	+36749	+36761
+36767	+36779	+36781	+36787	+36791	+36793	+36809	+36821	+36833

+36847	+36857	+36871	+36877	+36887	+36899	+36901	+36913	+36919
+36923	+36929	+36931	+36943	+36947	+36973	+36979	+36997	+37003
+37013	+37019	+37021	+37039	+37049	+37057	+37061	+37087	+37097
+37117	+37123	+37139	+37159	+37171	+37181	+37189	+37199	+37201
+37217	+37223	+37243	+37253	+37273	+37277	+37307	+37309	+37313
+37321	+37337	+37339	+37357	+37361	+37363	+37369	+37379	+37397
+37409	+37423	+37441	+37447	+37463	+37483	+37489	+37493	+37501
+37507	+37511	+37517	+37529	+37537	+37547	+37549	+37561	+37567
+37571	+37573	+37579	+37589	+37591	+37607	+37619	+37633	+37643
+37649	+37657	+37663	+37691	+37693	+37699	+37717	+37747	+37781
+37783	+37799	+37811	+37813	+37831	+37847	+37853	+37861	+37871
+37879	+37889	+37897	+37907	+37951	+37957	+37963	+37967	+37987
+37991	+37993	+37997	+38011	+38039	+38047	+38053	+38069	+38083
+38113	+38119	+38149	+38153	+38167	+38177	+38183	+38189	+38197
+38201	+38219	+38231	+38237	+38239	+38261	+38273	+38281	+38287
+38299	+38303	+38317	+38321	+38327	+38329	+38333	+38351	+38371
+38377	+38393	+38431	+38447	+38449	+38453	+38459	+38461	+38501
+38543	+38557	+38561	+38567	+38569	+38593	+38603	+38609	+38611
+38629	+38639	+38651	+38653	+38669	+38671	+38677	+38693	+38699
+38707	+38711	+38713	+38723	+38729	+38737	+38747	+38749	+38767
+38783	+38791	+38803	+38821	+38833	+38839	+38851	+38861	+38867
+38873	+38891	+38903	+38917	+38921	+38923	+38933	+38953	+38959
+38971	+38977	+38993	+39019	+39023	+39041	+39043	+39047	+39079
+39089	+39097	+39103	+39107	+39113	+39119	+39133	+39139	+39157
+39161	+39163	+39181	+39191	+39199	+39209	+39217	+39227	+39229
+39233	+39239	+39241	+39251	+39293	+39301	+39313	+39317	+39323
+39341	+39343	+39359	+39367	+39371	+39373	+39383	+39397	+39409
+39419	+39439	+39443	+39451	+39461	+39499	+39503	+39509	+39511
+39521	+39541	+39551	+39563	+39569	+39581	+39607	+39619	+39623
+39631	+39659	+39667	+39671	+39679	+39703	+39709	+39719	+39727
+39733	+39749	+39761	+39769	+39779	+39791	+39799	+39821	+39827
+39829	+39839	+39841	+39847	+39857	+39863	+39869	+39877	+39883
+39887	+39901	+39929	+39937	+39953	+39971	+39979	+39983	+39989
+40009	+40013	+40031	+40037	+40039	+40063	+40087	+40093	+40099
+40111	+40123	+40127	+40129	+40151	+40153	+40163	+40169	+40177
+40189	+40193	+40213	+40231	+40237	+40241	+40253	+40277	+40283
+40289	+40343	+40351	+40357	+40361	+40387	+40423	+40427	+40429
+40433	+40459	+40471	+40483	+40487	+40493	+40499	+40507	+40519
+40529	+40531	+40543	+40559	+40577	+40583	+40591	+40597	+40609
+40627	+40637	+40639	+40693	+40697	+40699	+40709	+40739	+40751
+40759	+40763	+40771	+40787	+40801	+40813	+40819	+40823	+40829
+40841	+40847	+40849	+40853	+40867	+40879	+40883	+40897	+40903
+40927	+40933	+40939	+40949	+40961	+40973	+40993	+41011	+41017
+41023	+41039	+41047	+41051	+41057	+41077	+41081	+41113	+41117
+41131	+41141	+41143	+41149	+41161	+41177	+41179	+41183	+41189
+41201	+41203	+41213	+41221	+41227	+41231	+41233	+41243	+41257
+41263	+41269	+41281	+41299	+41333	+41341	+41351	+41357	+41381
+41387	+41389	+41399	+41411	+41413	+41443	+41453	+41467	+41479
+41491	+41507	+41513	+41519	+41521	+41539	+41543	+41549	+41579
+41593	+41597	+41603	+41609	+41611	+41617	+41621	+41627	+41641
+41647	+41651	+41659	+41669	+41681	+41687	+41719	+41729	+41737
+41759	+41761	+41771	+41777	+41801	+41809	+41813	+41843	+41849
+41851	+41863	+41879	+41887	+41893	+41897	+41903	+41911	+41927
+41941	+41947	+41953	+41957	+41959	+41969	+41981	+41983	+41999
+42013	+42017	+42019	+42023	+42043	+42061	+42071	+42073	+42083
+42089	+42101	+42131	+42139	+42157	+42169	+42179	+42181	+42187
+42193	+42197	+42209	+42221	+42223	+42227	+42239	+42257	+42281
+42283	+42293	+42299	+42307	+42323	+42331	+42337	+42349	+42359
+42373	+42379	+42391	+42397	+42403	+42407	+42409	+42433	+42437
+42443	+42451	+42457	+42461	+42463	+42467	+42473	+42487	+42491
+42499	+42509	+42533	+42557	+42569	+42571	+42577	+42589	+42611
+42641	+42643	+42649	+42667	+42677	+42683	+42689	+42697	+42701

+42703	+42709	+42719	+42727	+42737	+42743	+42751	+42767	+42773
+42787	+42793	+42797	+42821	+42829	+42839	+42841	+42853	+42859
+42863	+42899	+42901	+42923	+42929	+42937	+42943	+42953	+42961
+42967	+42979	+42989	+43003	+43013	+43019	+43037	+43049	+43051
+43063	+43067	+43093	+43103	+43117	+43133	+43151	+43159	+43177
+43189	+43201	+43207	+43223	+43237	+43261	+43271	+43283	+43291
+43313	+43319	+43321	+43331	+43391	+43397	+43399	+43403	+43411
+43427	+43441	+43451	+43457	+43481	+43487	+43499	+43517	+43541
+43543	+43573	+43577	+43579	+43591	+43597	+43607	+43609	+43613
+43627	+43633	+43649	+43651	+43661	+43669	+43691	+43711	+43717
+43721	+43753	+43759	+43777	+43781	+43783	+43787	+43789	+43793
+43801	+43853	+43867	+43889	+43891	+43913	+43933	+43943	+43951
+43961	+43963	+43969	+43973	+43987	+43991	+43997	+44017	+44021
+44027	+44029	+44041	+44053	+44059	+44071	+44087	+44089	+44101
+44111	+44119	+44123	+44129	+44131	+44159	+44171	+44179	+44189
+44201	+44203	+44207	+44221	+44249	+44257	+44263	+44267	+44269
+44273	+44279	+44281	+44293	+44351	+44357	+44371	+44381	+44383
+44389	+44417	+44449	+44453	+44483	+44491	+44497	+44501	+44507
+44519	+44531	+44533	+44537	+44543	+44549	+44563	+44579	+44587
+44617	+44621	+44623	+44633	+44641	+44647	+44651	+44657	+44663
+44687	+44699	+44701	+44711	+44729	+44741	+44753	+44771	+44773
+44777	+44789	+44797	+44809	+44819	+44839	+44843	+44851	+44867
+44879	+44887	+44893	+44909	+44917	+44927	+44939	+44953	+44959
+44963	+44971	+44983	+44987	+45007	+45013	+45053	+45061	+45077
+45083	+45119	+45121	+45127	+45131	+45137	+45139	+45161	+45179
+45181	+45191	+45197	+45233	+45247	+45259	+45263	+45281	+45289
+45293	+45307	+45317	+45319	+45329	+45337	+45341	+45343	+45361
+45377	+45389	+45403	+45413	+45427	+45433	+45439	+45481	+45491
+45497	+45503	+45523	+45533	+45541	+45553	+45557	+45569	+45587
+45589	+45599	+45613	+45631	+45641	+45659	+45667	+45673	+45677
+45691	+45697	+45707	+45737	+45751	+45757	+45763	+45767	+45779
+45817	+45821	+45823	+45827	+45833	+45841	+45853	+45863	+45869
+45887	+45893	+45943	+45949	+45953	+45959	+45971	+45979	+45989
+46021	+46027	+46049	+46051	+46061	+46073	+46091	+46093	+46099
+46103	+46133	+46141	+46147	+46153	+46171	+46181	+46183	+46187
+46199	+46219	+46229	+46237	+46261	+46271	+46273	+46279	+46301
+46307	+46309	+46327	+46337	+46349	+46351	+46381	+46399	+46411
+46439	+46441	+46447	+46451	+46457	+46471	+46477	+46489	+46499
+46507	+46511	+46523	+46549	+46559	+46567	+46573	+46589	+46591
+46601	+46619	+46633	+46639	+46643	+46649	+46663	+46679	+46681
+46687	+46691	+46703	+46723	+46727	+46747	+46751	+46757	+46769
+46771	+46807	+46811	+46817	+46819	+46829	+46831	+46853	+46861
+46867	+46877	+46889	+46901	+46919	+46933	+46957	+46993	+46997
+47017	+47041	+47051	+47057	+47059	+47087	+47093	+47111	+47119
+47123	+47129	+47137	+47143	+47147	+47149	+47161	+47189	+47207
+47221	+47237	+47251	+47269	+47279	+47287	+47293	+47297	+47303
+47309	+47317	+47339	+47351	+47353	+47363	+47381	+47387	+47389
+47407	+47417	+47419	+47431	+47441	+47459	+47491	+47497	+47501
+47507	+47513	+47521	+47527	+47533	+47543	+47563	+47569	+47581
+47591	+47599	+47609	+47623	+47629	+47639	+47653	+47657	+47659
+47681	+47699	+47701	+47711	+47713	+47717	+47737	+47741	+47743
+47777	+47779	+47791	+47797	+47807	+47809	+47819	+47837	+47843
+47857	+47869	+47881	+47903	+47911	+47917	+47933	+47939	+47947
+47951	+47963	+47969	+47977	+47981	+48017	+48023	+48029	+48049
+48073	+48079	+48091	+48109	+48119	+48121	+48131	+48157	+48163
+48179	+48187	+48193	+48197	+48221	+48239	+48247	+48259	+48271
+48281	+48299	+48311	+48313	+48337	+48341	+48353	+48371	+48383
+48397	+48407	+48409	+48413	+48437	+48449	+48463	+48473	+48479
+48481	+48487	+48491	+48497	+48523	+48527	+48533	+48539	+48541
+48563	+48571	+48589	+48593	+48611	+48619	+48623	+48647	+48649
+48661	+48673	+48677	+48679	+48731	+48733	+48751	+48757	+48761
+48767	+48779	+48781	+48787	+48799	+48809	+48817	+48821	+48823

+48847	+48857	+48859	+48869	+48871	+48883	+48889	+48907	+48947
+48953	+48973	+48989	+48991	+49003	+49009	+49019	+49031	+49033
+49037	+49043	+49057	+49069	+49081	+49103	+49109	+49117	+49121
+49123	+49139	+49157	+49169	+49171	+49177	+49193	+49199	+49201
+49207	+49211	+49223	+49253	+49261	+49277	+49279	+49297	+49307
+49331	+49333	+49339	+49363	+49367	+49369	+49391	+49393	+49409
+49411	+49417	+49429	+49433	+49451	+49459	+49463	+49477	+49481
+49499	+49523	+49529	+49531	+49537	+49547	+49549	+49559	+49597
+49603	+49613	+49627	+49633	+49639	+49663	+49667	+49669	+49681
+49697	+49711	+49727	+49739	+49741	+49747	+49757	+49783	+49787
+49789	+49801	+49807	+49811	+49823	+49831	+49843	+49853	+49871
+49877	+49891	+49919	+49921	+49927	+49937	+49939	+49943	+49957
+49991	+49993	+49999	+50021	+50023	+50033	+50047	+50051	+50053
+50069	+50077	+50087	+50093	+50101	+50111	+50119	+50123	+50129
+50131	+50147	+50153	+50159	+50177	+50207	+50221	+50227	+50231
+50261	+50263	+50273	+50287	+50291	+50311	+50321	+50329	+50333
+50341	+50359	+50363	+50377	+50383	+50387	+50411	+50417	+50423
+50441	+50459	+50461	+50497	+50503	+50513	+50527	+50539	+50543
+50549	+50551	+50581	+50587	+50591	+50593	+50599	+50627	+50647
+50651	+50671	+50683	+50707	+50723	+50741	+50753	+50767	+50773
+50777	+50789	+50821	+50833	+50839	+50849	+50857	+50867	+50873
+50891	+50893	+50909	+50923	+50929	+50951	+50957	+50969	+50971
+50989	+50993	+51001	+51031	+51043	+51047	+51059	+51061	+51071
+51109	+51131	+51133	+51137	+51151	+51157	+51169	+51193	+51197
+51199	+51203	+51217	+51229	+51239	+51241	+51257	+51263	+51283
+51287	+51307	+51329	+51341	+51343	+51347	+51349	+51361	+51383
+51407	+51413	+51419	+51421	+51427	+51431	+51437	+51439	+51449
+51461	+51473	+51479	+51481	+51487	+51503	+51511	+51517	+51521
+51539	+51551	+51563	+51577	+51581	+51593	+51599	+51607	+51613
+51631	+51637	+51647	+51659	+51673	+51679	+51683	+51691	+51713
+51719	+51721	+51749	+51767	+51769	+51787	+51797	+51803	+51817
+51827	+51829	+51839	+51853	+51859	+51869	+51871	+51893	+51899
+51907	+51913	+51929	+51941	+51949	+51971	+51973	+51977	+51991
+52009	+52021	+52027	+52051	+52057	+52067	+52069	+52081	+52103
+52121	+52127	+52147	+52153	+52163	+52177	+52181	+52183	+52189
+52201	+52223	+52237	+52249	+52253	+52259	+52267	+52289	+52291
+52301	+52313	+52321	+52361	+52363	+52369	+52379	+52387	+52391
+52433	+52453	+52457	+52489	+52501	+52511	+52517	+52529	+52541
+52543	+52553	+52561	+52567	+52571	+52579	+52583	+52609	+52627
+52631	+52639	+52667	+52673	+52691	+52697	+52709	+52711	+52721
+52727	+52733	+52747	+52757	+52769	+52783	+52807	+52813	+52817
+52837	+52859	+52861	+52879	+52883	+52889	+52901	+52903	+52919
+52937	+52951	+52957	+52963	+52967	+52973	+52981	+52999	+53003
+53017	+53047	+53051	+53069	+53077	+53087	+53089	+53093	+53101
+53113	+53117	+53129	+53147	+53149	+53161	+53171	+53173	+53189
+53197	+53201	+53231	+53233	+53239	+53267	+53269	+53279	+53281
+53299	+53309	+53323	+53327	+53353	+53359	+53377	+53381	+53401
+53407	+53411	+53419	+53437	+53441	+53453	+53479	+53503	+53507
+53527	+53549	+53551	+53569	+53591	+53593	+53597	+53609	+53611
+53617	+53623	+53629	+53633	+53639	+53653	+53657	+53681	+53693
+53699	+53717	+53719	+53731	+53759	+53773	+53777	+53783	+53791
+53813	+53819	+53831	+53849	+53857	+53861	+53881	+53887	+53891
+53897	+53899	+53917	+53923	+53927	+53939	+53951	+53959	+53987
+53993	+54001	+54011	+54013	+54037	+54049	+54059	+54083	+54091
+54101	+54121	+54133	+54139	+54151	+54163	+54167	+54181	+54193
+54217	+54251	+54269	+54277	+54287	+54293	+54311	+54319	+54323
+54331	+54347	+54361	+54367	+54371	+54377	+54401	+54403	+54409
+54413	+54419	+54421	+54437	+54443	+54449	+54469	+54493	+54497
+54499	+54503	+54517	+54521	+54539	+54541	+54547	+54559	+54563
+54577	+54581	+54583	+54601	+54617	+54623	+54629	+54631	+54647
+54667	+54673	+54679	+54709	+54713	+54721	+54727	+54751	+54767
+54773	+54779	+54787	+54799	+54829	+54833	+54851	+54869	+54877

+54881	+54907	+54917	+54919	+54941	+54949	+54959	+54973	+54979
+54983	+55001	+55009	+55021	+55049	+55051	+55057	+55061	+55073
+55079	+55103	+55109	+55117	+55127	+55147	+55163	+55171	+55201
+55207	+55213	+55217	+55219	+55229	+55243	+55249	+55259	+55291
+55313	+55331	+55333	+55337	+55339	+55343	+55351	+55373	+55381
+55399	+55411	+55439	+55441	+55457	+55469	+55487	+55501	+55511
+55529	+55541	+55547	+55579	+55589	+55603	+55609	+55619	+55621
+55631	+55633	+55639	+55661	+55663	+55667	+55673	+55681	+55691
+55697	+55711	+55717	+55721	+55733	+55763	+55787	+55793	+55799
+55807	+55813	+55817	+55819	+55823	+55829	+55837	+55843	+55849
+55871	+55889	+55897	+55901	+55903	+55921	+55927	+55931	+55933
+55949	+55967	+55987	+55997	+56003	+56009	+56039	+56041	+56053
+56081	+56087	+56093	+56099	+56101	+56113	+56123	+56131	+56149
+56167	+56171	+56179	+56197	+56207	+56209	+56237	+56239	+56249
+56263	+56267	+56269	+56299	+56311	+56333	+56359	+56369	+56377
+56383	+56393	+56401	+56417	+56431	+56437	+56443	+56453	+56467
+56473	+56477	+56479	+56489	+56501	+56503	+56509	+56519	+56527
+56531	+56533	+56543	+56569	+56591	+56597	+56599	+56611	+56629
+56633	+56659	+56663	+56671	+56681	+56687	+56701	+56711	+56713
+56731	+56737	+56747	+56767	+56773	+56779	+56783	+56807	+56809
+56813	+56821	+56827	+56843	+56857	+56873	+56891	+56893	+56897
+56909	+56911	+56921	+56923	+56929	+56941	+56951	+56957	+56963
+56983	+56989	+56993	+56999	+57037	+57041	+57047	+57059	+57073
+57077	+57089	+57097	+57107	+57119	+57131	+57139	+57143	+57149
+57163	+57173	+57179	+57191	+57193	+57203	+57221	+57223	+57241
+57251	+57259	+57269	+57271	+57283	+57287	+57301	+57329	+57331
+57347	+57349	+57367	+57373	+57383	+57389	+57397	+57413	+57427
+57457	+57467	+57487	+57493	+57503	+57527	+57529	+57557	+57559
+57571	+57587	+57593	+57601	+57637	+57641	+57649	+57653	+57667
+57679	+57689	+57697	+57709	+57713	+57719	+57727	+57731	+57737
+57751	+57773	+57781	+57787	+57791	+57793	+57803	+57809	+57829
+57839	+57847	+57853	+57859	+57881	+57899	+57901	+57917	+57923
+57943	+57947	+57973	+57977	+57991	+58013	+58027	+58031	+58043
+58049	+58057	+58061	+58067	+58073	+58099	+58109	+58111	+58129
+58147	+58151	+58153	+58169	+58171	+58189	+58193	+58199	+58207
+58211	+58217	+58229	+58231	+58237	+58243	+58271	+58309	+58313
+58321	+58337	+58363	+58367	+58369	+58379	+58391	+58393	+58403
+58411	+58417	+58427	+58439	+58441	+58451	+58453	+58477	+58481
+58511	+58537	+58543	+58549	+58567	+58573	+58579	+58601	+58603
+58613	+58631	+58657	+58661	+58679	+58687	+58693	+58699	+58711
+58727	+58733	+58741	+58757	+58763	+58771	+58787	+58789	+58831
+58889	+58897	+58901	+58907	+58909	+58913	+58921	+58937	+58943
+58963	+58967	+58979	+58991	+58997	+59009	+59011	+59021	+59023
+59029	+59051	+59053	+59063	+59069	+59077	+59083	+59093	+59107
+59113	+59119	+59123	+59141	+59149	+59159	+59167	+59183	+59197
+59207	+59209	+59219	+59221	+59233	+59239	+59243	+59263	+59273
+59281	+59333	+59341	+59351	+59357	+59359	+59369	+59377	+59387
+59393	+59399	+59407	+59417	+59419	+59441	+59443	+59447	+59453
+59467	+59471	+59473	+59497	+59509	+59513	+59539	+59557	+59561
+59567	+59581	+59611	+59617	+59621	+59627	+59629	+59651	+59659
+59663	+59669	+59671	+59693	+59699	+59707	+59723	+59729	+59743
+59747	+59753	+59771	+59779	+59791	+59797	+59809	+59833	+59863
+59879	+59887	+59921	+59929	+59951	+59957	+59971	+59981	+59999
+60013	+60017	+60029	+60037	+60041	+60077	+60083	+60089	+60091
+60101	+60103	+60107	+60127	+60133	+60139	+60149	+60161	+60167
+60169	+60209	+60217	+60223	+60251	+60257	+60259	+60271	+60289
+60293	+60317	+60331	+60337	+60343	+60353	+60373	+60383	+60397
+60413	+60427	+60443	+60449	+60457	+60493	+60497	+60509	+60521
+60527	+60539	+60589	+60601	+60607	+60611	+60617	+60623	+60631
+60637	+60647	+60649	+60659	+60661	+60679	+60689	+60703	+60719
+60727	+60733	+60737	+60757	+60761	+60763	+60773	+60779	+60793
+60811	+60821	+60859	+60869	+60887	+60889	+60899	+60901	+60913

+60917	+60919	+60923	+60937	+60943	+60953	+60961	+61001	+61007
+61027	+61031	+61043	+61051	+61057	+61091	+61099	+61121	+61129
+61141	+61151	+61153	+61169	+61211	+61223	+61231	+61253	+61261
+61283	+61291	+61297	+61331	+61333	+61339	+61343	+61357	+61363
+61379	+61381	+61403	+61409	+61417	+61441	+61463	+61469	+61471
+61483	+61487	+61493	+61507	+61511	+61519	+61543	+61547	+61553
+61559	+61561	+61583	+61603	+61609	+61613	+61627	+61631	+61637
+61643	+61651	+61657	+61667	+61673	+61681	+61687	+61703	+61717
+61723	+61729	+61751	+61757	+61781	+61813	+61819	+61837	+61843
+61861	+61871	+61879	+61909	+61927	+61933	+61949	+61961	+61967
+61979	+61981	+61987	+61991	+62003	+62011	+62017	+62039	+62047
+62053	+62057	+62071	+62081	+62099	+62119	+62129	+62131	+62137
+62141	+62143	+62171	+62189	+62191	+62201	+62207	+62213	+62219
+62233	+62273	+62297	+62299	+62303	+62311	+62323	+62327	+62347
+62351	+62383	+62401	+62417	+62423	+62459	+62467	+62473	+62477
+62483	+62497	+62501	+62507	+62533	+62539	+62549	+62563	+62581
+62591	+62597	+62603	+62617	+62627	+62633	+62639	+62653	+62659
+62683	+62687	+62701	+62723	+62731	+62743	+62753	+62761	+62773
+62791	+62801	+62819	+62827	+62851	+62861	+62869	+62873	+62897
+62903	+62921	+62927	+62929	+62939	+62969	+62971	+62981	+62983
+62987	+62989	+63029	+63031	+63059	+63067	+63073	+63079	+63097
+63103	+63113	+63127	+63131	+63149	+63179	+63197	+63199	+63211
+63241	+63247	+63277	+63281	+63299	+63311	+63313	+63317	+63331
+63337	+63347	+63353	+63361	+63367	+63377	+63389	+63391	+63397
+63409	+63419	+63421	+63439	+63443	+63463	+63467	+63473	+63487
+63493	+63499	+63521	+63527	+63533	+63541	+63559	+63577	+63587
+63589	+63599	+63601	+63607	+63611	+63617	+63629	+63647	+63649
+63659	+63667	+63671	+63689	+63691	+63697	+63703	+63709	+63719
+63727	+63737	+63743	+63761	+63773	+63781	+63793	+63799	+63803
+63809	+63823	+63839	+63841	+63853	+63857	+63863	+63901	+63907
+63913	+63929	+63949	+63977	+63997	+64007	+64013	+64019	+64033
+64037	+64063	+64067	+64081	+64091	+64109	+64123	+64151	+64153
+64157	+64171	+64187	+64189	+64217	+64223	+64231	+64237	+64271
+64279	+64283	+64301	+64303	+64319	+64327	+64333	+64373	+64381
+64399	+64403	+64433	+64439	+64451	+64453	+64483	+64489	+64499
+64513	+64553	+64567	+64577	+64579	+64591	+64601	+64609	+64613
+64621	+64627	+64633	+64661	+64663	+64667	+64679	+64693	+64709
+64717	+64747	+64763	+64781	+64783	+64793	+64811	+64817	+64849
+64853	+64871	+64877	+64879	+64891	+64901	+64919	+64921	+64927
+64937	+64951	+64969	+64997	+65003	+65011	+65027	+65029	+65033
+65053	+65063	+65071	+65089	+65099	+65101	+65111	+65119	+65123
+65129	+65141	+65147	+65167	+65171	+65173	+65179	+65183	+65203
+65213	+65239	+65257	+65267	+65269	+65287	+65293	+65309	+65323
+65327	+65353	+65357	+65371	+65381	+65393	+65407	+65413	+65419
+65423	+65437	+65447	+65449	+65479	+65497	+65519	+65521	+65537
+65539	+65543	+65551	+65557	+65563	+65579	+65581	+65587	+65599
+65609	+65617	+65629	+65633	+65647	+65651	+65657	+65677	+65687
+65699	+65701	+65707	+65713	+65717	+65719	+65729	+65731	+65761
+65777	+65789	+65809	+65827	+65831	+65837	+65839	+65843	+65851
+65867	+65881	+65899	+65921	+65927	+65929	+65951	+65957	+65963
+65981	+65983	+65993	+66029	+66037	+66041	+66047	+66067	+66071
+66083	+66089	+66103	+66107	+66109	+66137	+66161	+66169	+66173
+66179	+66191	+66221	+66239	+66271	+66293	+66301	+66337	+66343
+66347	+66359	+66361	+66373	+66377	+66383	+66403	+66413	+66431
+66449	+66457	+66463	+66467	+66491	+66499	+66509	+66523	+66529
+66533	+66541	+66553	+66569	+66571	+66587	+66593	+66601	+66617
+66629	+66643	+66653	+66683	+66697	+66701	+66713	+66721	+66733
+66739	+66749	+66751	+66763	+66791	+66797	+66809	+66821	+66841
+66851	+66853	+66863	+66877	+66883	+66889	+66919	+66923	+66931
+66943	+66947	+66949	+66959	+66973	+66977	+67003	+67021	+67033
+67043	+67049	+67057	+67061	+67073	+67079	+67103	+67121	+67129
+67139	+67141	+67153	+67157	+67169	+67181	+67187	+67189	+67211

+67213	+67217	+67219	+67231	+67247	+67261	+67271	+67273	+67289
+67307	+67339	+67343	+67349	+67369	+67391	+67399	+67409	+67411
+67421	+67427	+67429	+67433	+67447	+67453	+67477	+67481	+67489
+67493	+67499	+67511	+67523	+67531	+67537	+67547	+67559	+67567
+67577	+67579	+67589	+67601	+67607	+67619	+67631	+67651	+67679
+67699	+67709	+67723	+67733	+67741	+67751	+67757	+67759	+67763
+67777	+67783	+67789	+67801	+67807	+67819	+67829	+67843	+67853
+67867	+67883	+67891	+67901	+67927	+67931	+67933	+67939	+67943
+67957	+67961	+67967	+67979	+67987	+67993	+68023	+68041	+68053
+68059	+68071	+68087	+68099	+68111	+68113	+68141	+68147	+68161
+68171	+68207	+68209	+68213	+68219	+68227	+68239	+68261	+68279
+68281	+68311	+68329	+68351	+68371	+68389	+68399	+68437	+68443
+68447	+68449	+68473	+68477	+68483	+68489	+68491	+68501	+68507
+68521	+68531	+68539	+68543	+68567	+68581	+68597	+68611	+68633
+68639	+68659	+68669	+68683	+68687	+68699	+68711	+68713	+68729
+68737	+68743	+68749	+68767	+68771	+68777	+68791	+68813	+68819
+68821	+68863	+68879	+68881	+68891	+68897	+68899	+68903	+68909
+68917	+68927	+68947	+68963	+68993	+69001	+69011	+69019	+69029
+69031	+69061	+69067	+69073	+69109	+69119	+69127	+69143	+69149
+69151	+69163	+69191	+69193	+69197	+69203	+69221	+69233	+69239
+69247	+69257	+69259	+69263	+69313	+69317	+69337	+69341	+69371
+69379	+69383	+69389	+69401	+69403	+69427	+69431	+69439	+69457
+69463	+69467	+69473	+69481	+69491	+69493	+69497	+69499	+69539
+69557	+69593	+69623	+69653	+69661	+69677	+69691	+69697	+69709
+69737	+69739	+69761	+69763	+69767	+69779	+69809	+69821	+69827
+69829	+69833	+69847	+69857	+69859	+69877	+69899	+69911	+69929
+69931	+69941	+69959	+69991	+69997	+70001	+70003	+70009	+70019
+70039	+70051	+70061	+70067	+70079	+70099	+70111	+70117	+70121
+70123	+70139	+70141	+70157	+70163	+70177	+70181	+70183	+70199
+70201	+70207	+70223	+70229	+70237	+70241	+70249	+70271	+70289
+70297	+70309	+70313	+70321	+70327	+70351	+70373	+70379	+70381
+70393	+70423	+70429	+70439	+70451	+70457	+70459	+70481	+70487
+70489	+70501	+70507	+70529	+70537	+70549	+70571	+70573	+70583
+70589	+70607	+70619	+70621	+70627	+70639	+70657	+70663	+70667
+70687	+70709	+70717	+70729	+70753	+70769	+70783	+70793	+70823
+70841	+70843	+70849	+70853	+70867	+70877	+70879	+70891	+70901
+70913	+70919	+70921	+70937	+70949	+70951	+70957	+70969	+70979
+70981	+70991	+70997	+70999	+71011	+71023	+71039	+71059	+71069
+71081	+71089	+71119	+71129	+71143	+71147	+71153	+71161	+71167
+71171	+71191	+71209	+71233	+71237	+71249	+71257	+71261	+71263
+71287	+71293	+71317	+71327	+71329	+71333	+71339	+71341	+71347
+71353	+71359	+71363	+71387	+71389	+71399	+71411	+71413	+71419
+71429	+71437	+71443	+71453	+71471	+71473	+71479	+71483	+71503
+71527	+71537	+71549	+71551	+71563	+71569	+71593	+71597	+71633
+71647	+71663	+71671	+71693	+71699	+71707	+71711	+71713	+71719
+71741	+71761	+71777	+71789	+71807	+71809	+71821	+71837	+71843
+71849	+71861	+71867	+71879	+71881	+71887	+71899	+71909	+71917
+71933	+71941	+71947	+71963	+71971	+71983	+71987	+71993	+71999
+72019	+72031	+72043	+72047	+72053	+72073	+72077	+72089	+72091
+72101	+72103	+72109	+72139	+72161	+72167	+72169	+72173	+72211
+72221	+72223	+72227	+72229	+72251	+72253	+72269	+72271	+72277
+72287	+72307	+72313	+72337	+72341	+72353	+72367	+72379	+72383
+72421	+72431	+72461	+72467	+72469	+72481	+72493	+72497	+72503
+72533	+72547	+72551	+72559	+72577	+72613	+72617	+72623	+72643
+72647	+72649	+72661	+72671	+72673	+72679	+72689	+72701	+72707
+72719	+72727	+72733	+72739	+72763	+72767	+72797	+72817	+72823
+72859	+72869	+72871	+72883	+72889	+72893	+72901	+72907	+72911
+72923	+72931	+72937	+72949	+72953	+72959	+72973	+72977	+72997
+73009	+73013	+73019	+73037	+73039	+73043	+73061	+73063	+73079
+73091	+73121	+73127	+73133	+73141	+73181	+73189	+73237	+73243
+73259	+73277	+73291	+73303	+73309	+73327	+73331	+73351	+73361
+73363	+73369	+73379	+73387	+73417	+73421	+73433	+73453	+73459

+73471	+73477	+73483	+73517	+73523	+73529	+73547	+73553	+73561
+73571	+73583	+73589	+73597	+73607	+73609	+73613	+73637	+73643
+73651	+73673	+73679	+73681	+73693	+73699	+73709	+73721	+73727
+73751	+73757	+73771	+73783	+73819	+73823	+73847	+73849	+73859
+73867	+73877	+73883	+73897	+73907	+73939	+73943	+73951	+73961
+73973	+73999	+74017	+74021	+74027	+74047	+74051	+74071	+74077
+74093	+74099	+74101	+74131	+74143	+74149	+74159	+74161	+74167
+74177	+74189	+74197	+74201	+74203	+74209	+74219	+74231	+74257
+74279	+74287	+74293	+74297	+74311	+74317	+74323	+74353	+74357
+74363	+74377	+74381	+74383	+74411	+74413	+74419	+74441	+74449
+74453	+74471	+74489	+74507	+74509	+74521	+74527	+74531	+74551
+74561	+74567	+74573	+74587	+74597	+74609	+74611	+74623	+74653
+74687	+74699	+74707	+74713	+74717	+74719	+74729	+74731	+74747
+74759	+74761	+74771	+74779	+74797	+74821	+74827	+74831	+74843
+74857	+74861	+74869	+74873	+74887	+74891	+74897	+74903	+74923
+74929	+74933	+74941	+74959	+75011	+75013	+75017	+75029	+75037
+75041	+75079	+75083	+75109	+75133	+75149	+75161	+75167	+75169
+75181	+75193	+75209	+75211	+75217	+75223	+75227	+75239	+75253
+75269	+75277	+75289	+75307	+75323	+75329	+75337	+75347	+75353
+75367	+75377	+75389	+75391	+75401	+75403	+75407	+75431	+75437
+75479	+75503	+75511	+75521	+75527	+75533	+75539	+75541	+75553
+75557	+75571	+75577	+75583	+75611	+75617	+75619	+75629	+75641
+75653	+75659	+75679	+75683	+75689	+75703	+75707	+75709	+75721
+75731	+75743	+75767	+75773	+75781	+75787	+75793	+75797	+75821
+75833	+75853	+75869	+75883	+75913	+75931	+75937	+75941	+75967
+75979	+75983	+75989	+75991	+75997	+76001	+76003	+76031	+76039
+76079	+76081	+76091	+76099	+76103	+76123	+76129	+76147	+76157
+76159	+76163	+76207	+76213	+76231	+76243	+76249	+76253	+76259
+76261	+76283	+76289	+76303	+76333	+76343	+76367	+76369	+76379
+76387	+76403	+76421	+76423	+76441	+76463	+76471	+76481	+76487
+76493	+76507	+76511	+76519	+76537	+76541	+76543	+76561	+76579
+76597	+76603	+76607	+76631	+76649	+76651	+76667	+76673	+76679
+76697	+76717	+76733	+76753	+76757	+76771	+76777	+76781	+76801
+76819	+76829	+76831	+76837	+76847	+76871	+76873	+76883	+76907
+76913	+76919	+76943	+76949	+76961	+76963	+76991	+77003	+77017
+77023	+77029	+77041	+77047	+77069	+77081	+77093	+77101	+77137
+77141	+77153	+77167	+77171	+77191	+77201	+77213	+77237	+77239
+77243	+77249	+77261	+77263	+77267	+77269	+77279	+77291	+77317
+77323	+77339	+77347	+77351	+77359	+77369	+77377	+77383	+77417
+77419	+77431	+77447	+77471	+77477	+77479	+77489	+77491	+77509
+77513	+77521	+77527	+77543	+77549	+77551	+77557	+77563	+77569
+77573	+77587	+77591	+77611	+77617	+77621	+77641	+77647	+77659
+77681	+77687	+77689	+77699	+77711	+77713	+77719	+77723	+77731
+77743	+77747	+77761	+77773	+77783	+77797	+77801	+77813	+77839
+77849	+77863	+77867	+77893	+77899	+77929	+77933	+77951	+77969
+77977	+77983	+77999	+78007	+78017	+78031	+78041	+78049	+78059
+78079	+78101	+78121	+78137	+78139	+78157	+78163	+78167	+78173
+78179	+78191	+78193	+78203	+78229	+78233	+78241	+78259	+78277
+78283	+78301	+78307	+78311	+78317	+78341	+78347	+78367	+78401
+78427	+78437	+78439	+78467	+78479	+78487	+78497	+78509	+78511
+78517	+78539	+78541	+78553	+78569	+78571	+78577	+78583	+78593
+78607	+78623	+78643	+78649	+78653	+78691	+78697	+78707	+78713
+78721	+78737	+78779	+78781	+78787	+78791	+78797	+78803	+78809
+78823	+78839	+78853	+78857	+78877	+78887	+78889	+78893	+78901
+78919	+78929	+78941	+78977	+78979	+78989	+79031	+79039	+79043
+79063	+79087	+79103	+79111	+79133	+79139	+79147	+79151	+79153
+79159	+79181	+79187	+79193	+79201	+79229	+79231	+79241	+79259
+79273	+79279	+79283	+79301	+79309	+79319	+79333	+79337	+79349
+79357	+79367	+79379	+79393	+79397	+79399	+79411	+79423	+79427
+79433	+79451	+79481	+79493	+79531	+79537	+79549	+79559	+79561
+79579	+79589	+79601	+79609	+79613	+79621	+79627	+79631	+79633
+79657	+79669	+79687	+79691	+79693	+79697	+79699	+79757	+79769

+79777	+79801	+79811	+79813	+79817	+79823	+79829	+79841	+79843
+79847	+79861	+79867	+79873	+79889	+79901	+79903	+79907	+79939
+79943	+79967	+79973	+79979	+79987	+79997	+79999	+80021	+80039
+80051	+80071	+80077	+80107	+80111	+80141	+80147	+80149	+80153
+80167	+80173	+80177	+80191	+80207	+80209	+80221	+80231	+80233
+80239	+80251	+80263	+80273	+80279	+80287	+80309	+80317	+80329
+80341	+80347	+80363	+80369	+80387	+80407	+80429	+80447	+80449
+80471	+80473	+80489	+80491	+80513	+80527	+80537	+80557	+80567
+80599	+80603	+80611	+80621	+80627	+80629	+80651	+80657	+80669
+80671	+80677	+80681	+80683	+80687	+80701	+80713	+80737	+80747
+80749	+80761	+80777	+80779	+80783	+80789	+80803	+80809	+80819
+80831	+80833	+80849	+80863	+80897	+80909	+80911	+80917	+80923
+80929	+80933	+80953	+80963	+80989	+81001	+81013	+81017	+81019
+81023	+81031	+81041	+81043	+81047	+81049	+81071	+81077	+81083
+81097	+81101	+81119	+81131	+81157	+81163	+81173	+81181	+81197
+81199	+81203	+81223	+81233	+81239	+81281	+81283	+81293	+81299
+81307	+81331	+81343	+81349	+81353	+81359	+81371	+81373	+81401
+81409	+81421	+81439	+81457	+81463	+81509	+81517	+81527	+81533
+81547	+81551	+81553	+81559	+81563	+81569	+81611	+81619	+81629
+81637	+81647	+81649	+81667	+81671	+81677	+81689	+81701	+81703
+81707	+81727	+81737	+81749	+81761	+81769	+81773	+81799	+81817
+81839	+81847	+81853	+81869	+81883	+81899	+81901	+81919	+81929
+81931	+81937	+81943	+81953	+81967	+81971	+81973	+82003	+82007
+82009	+82013	+82021	+82031	+82037	+82039	+82051	+82067	+82073
+82129	+82139	+82141	+82153	+82163	+82171	+82183	+82189	+82193
+82207	+82217	+82219	+82223	+82231	+82237	+82241	+82261	+82267
+82279	+82301	+82307	+82339	+82349	+82351	+82361	+82373	+82387
+82393	+82421	+82457	+82463	+82469	+82471	+82483	+82487	+82493
+82499	+82507	+82529	+82531	+82549	+82559	+82561	+82567	+82571
+82591	+82601	+82609	+82613	+82619	+82633	+82651	+82657	+82699
+82721	+82723	+82727	+82729	+82757	+82759	+82763	+82781	+82787
+82793	+82799	+82811	+82813	+82837	+82847	+82883	+82889	+82891
+82903	+82913	+82939	+82963	+82981	+82997	+83003	+83009	+83023
+83047	+83059	+83063	+83071	+83077	+83089	+83093	+83101	+83117
+83137	+83177	+83203	+83207	+83219	+83221	+83227	+83231	+83233
+83243	+83257	+83267	+83269	+83273	+83299	+83311	+83339	+83341
+83357	+83383	+83389	+83399	+83401	+83407	+83417	+83423	+83431
+83437	+83443	+83449	+83459	+83471	+83477	+83497	+83537	+83557
+83561	+83563	+83579	+83591	+83597	+83609	+83617	+83621	+83639
+83641	+83653	+83663	+83689	+83701	+83717	+83719	+83737	+83761
+83773	+83777	+83791	+83813	+83833	+83843	+83857	+83869	+83873
+83891	+83903	+83911	+83921	+83933	+83939	+83969	+83983	+83987
+84011	+84017	+84047	+84053	+84059	+84061	+84067	+84089	+84121
+84127	+84131	+84137	+84143	+84163	+84179	+84181	+84191	+84199
+84211	+84221	+84223	+84229	+84239	+84247	+84263	+84299	+84307
+84313	+84317	+84319	+84347	+84349	+84377	+84389	+84391	+84401
+84407	+84421	+84431	+84437	+84443	+84449	+84457	+84463	+84467
+84481	+84499	+84503	+84509	+84521	+84523	+84533	+84551	+84559
+84589	+84629	+84631	+84649	+84653	+84659	+84673	+84691	+84697
+84701	+84713	+84719	+84731	+84737	+84751	+84761	+84787	+84793
+84809	+84811	+84827	+84857	+84859	+84869	+84871	+84913	+84919
+84947	+84961	+84967	+84977	+84979	+84991	+85009	+85021	+85027
+85037	+85049	+85061	+85081	+85087	+85091	+85093	+85103	+85109
+85121	+85133	+85147	+85159	+85193	+85199	+85201	+85213	+85223
+85229	+85237	+85243	+85247	+85259	+85297	+85303	+85313	+85331
+85333	+85361	+85363	+85369	+85381	+85411	+85427	+85429	+85439
+85447	+85451	+85453	+85469	+85487	+85513	+85517	+85523	+85531
+85549	+85571	+85577	+85597	+85601	+85607	+85619	+85621	+85627
+85639	+85643	+85661	+85667	+85669	+85691	+85703	+85711	+85717
+85733	+85751	+85781	+85793	+85817	+85819	+85829	+85831	+85837
+85843	+85847	+85853	+85889	+85903	+85909	+85931	+85933	+85991
+85999	+86011	+86017	+86027	+86029	+86069	+86077	+86083	+86111

+86113	+86117	+86131	+86137	+86143	+86161	+86171	+86179	+86183
+86197	+86201	+86209	+86239	+86243	+86249	+86257	+86263	+86269
+86287	+86291	+86293	+86297	+86311	+86323	+86341	+86351	+86353
+86357	+86369	+86371	+86381	+86389	+86399	+86413	+86423	+86441
+86453	+86461	+86467	+86477	+86491	+86501	+86509	+86531	+86533
+86539	+86561	+86573	+86579	+86587	+86599	+86627	+86629	+86677
+86689	+86693	+86711	+86719	+86729	+86743	+86753	+86767	+86771
+86783	+86813	+86837	+86843	+86851	+86857	+86861	+86869	+86923
+86927	+86929	+86939	+86951	+86959	+86969	+86981	+86993	+87011
+87013	+87037	+87041	+87049	+87071	+87083	+87103	+87107	+87119
+87121	+87133	+87149	+87151	+87179	+87181	+87187	+87211	+87221
+87223	+87251	+87253	+87257	+87277	+87281	+87293	+87299	+87313
+87317	+87323	+87337	+87359	+87383	+87403	+87407	+87421	+87427
+87433	+87443	+87473	+87481	+87491	+87509	+87511	+87517	+87523
+87539	+87541	+87547	+87553	+87557	+87559	+87583	+87587	+87589
+87613	+87623	+87629	+87631	+87641	+87643	+87649	+87671	+87679
+87683	+87691	+87697	+87701	+87719	+87721	+87739	+87743	+87751
+87767	+87793	+87797	+87803	+87811	+87833	+87853	+87869	+87877
+87881	+87887	+87911	+87917	+87931	+87943	+87959	+87961	+87973
+87977	+87991	+88001	+88003	+88007	+88019	+88037	+88069	+88079
+88093	+88117	+88129	+88169	+88177	+88211	+88223	+88237	+88241
+88259	+88261	+88289	+88301	+88321	+88327	+88337	+88339	+88379
+88397	+88411	+88423	+88427	+88463	+88469	+88471	+88493	+88499
+88513	+88523	+88547	+88589	+88591	+88607	+88609	+88643	+88651
+88657	+88661	+88663	+88667	+88681	+88721	+88729	+88741	+88747
+88771	+88789	+88793	+88799	+88801	+88807	+88811	+88813	+88817
+88819	+88843	+88853	+88861	+88867	+88873	+88883	+88897	+88903
+88919	+88937	+88951	+88969	+88993	+88997	+89003	+89009	+89017
+89021	+89041	+89051	+89057	+89069	+89071	+89083	+89087	+89101
+89107	+89113	+89119	+89123	+89137	+89153	+89189	+89203	+89209
+89213	+89227	+89231	+89237	+89261	+89269	+89273	+89293	+89303
+89317	+89329	+89363	+89371	+89381	+89387	+89393	+89399	+89413
+89417	+89431	+89443	+89449	+89459	+89477	+89491	+89501	+89513
+89519	+89521	+89527	+89533	+89561	+89563	+89567	+89591	+89597
+89599	+89603	+89611	+89627	+89633	+89653	+89657	+89659	+89669
+89671	+89681	+89689	+89753	+89759	+89767	+89779	+89783	+89797
+89809	+89819	+89821	+89833	+89839	+89849	+89867	+89891	+89897
+89899	+89909	+89917	+89923	+89939	+89959	+89963	+89977	+89983
+89989	+90001	+90007	+90011	+90017	+90019	+90023	+90031	+90053
+90059	+90067	+90071	+90073	+90089	+90107	+90121	+90127	+90149
+90163	+90173	+90187	+90191	+90197	+90199	+90203	+90217	+90227
+90239	+90247	+90263	+90271	+90281	+90289	+90313	+90353	+90359
+90371	+90373	+90379	+90397	+90401	+90403	+90407	+90437	+90439
+90469	+90473	+90481	+90499	+90511	+90523	+90527	+90529	+90533
+90547	+90583	+90599	+90617	+90619	+90631	+90641	+90647	+90659
+90677	+90679	+90697	+90703	+90709	+90731	+90749	+90787	+90793
+90803	+90821	+90823	+90833	+90841	+90847	+90863	+90887	+90901
+90907	+90911	+90917	+90931	+90947	+90971	+90977	+90989	+90997
+91009	+91019	+91033	+91079	+91081	+91097	+91099	+91121	+91127
+91129	+91139	+91141	+91151	+91153	+91159	+91163	+91183	+91193
+91199	+91229	+91237	+91243	+91249	+91253	+91283	+91291	+91297
+91303	+91309	+91331	+91367	+91369	+91373	+91381	+91387	+91393
+91397	+91411	+91423	+91433	+91453	+91457	+91459	+91463	+91493
+91499	+91513	+91529	+91541	+91571	+91573	+91577	+91583	+91591
+91621	+91631	+91639	+91673	+91691	+91703	+91711	+91733	+91753
+91757	+91771	+91781	+91801	+91807	+91811	+91813	+91823	+91837
+91841	+91867	+91873	+91909	+91921	+91939	+91943	+91951	+91957
+91961	+91967	+91969	+91997	+92003	+92009	+92033	+92041	+92051
+92077	+92083	+92107	+92111	+92119	+92143	+92153	+92173	+92177
+92179	+92189	+92203	+92219	+92221	+92227	+92233	+92237	+92243
+92251	+92269	+92297	+92311	+92317	+92333	+92347	+92353	+92357
+92363	+92369	+92377	+92381	+92383	+92387	+92399	+92401	+92413

+92419	+92431	+92459	+92461	+92467	+92479	+92489	+92503	+92507
+92551	+92557	+92567	+92569	+92581	+92593	+92623	+92627	+92639
+92641	+92647	+92657	+92669	+92671	+92681	+92683	+92693	+92699
+92707	+92717	+92723	+92737	+92753	+92761	+92767	+92779	+92789
+92791	+92801	+92809	+92821	+92831	+92849	+92857	+92861	+92863
+92867	+92893	+92899	+92921	+92927	+92941	+92951	+92957	+92959
+92987	+92993	+93001	+93047	+93053	+93059	+93077	+93083	+93089
+93097	+93103	+93113	+93131	+93133	+93139	+93151	+93169	+93179
+93187	+93199	+93229	+93239	+93241	+93251	+93253	+93257	+93263
+93281	+93283	+93287	+93307	+93319	+93323	+93329	+93337	+93371
+93377	+93383	+93407	+93419	+93427	+93463	+93479	+93481	+93487
+93491	+93493	+93497	+93503	+93523	+93529	+93553	+93557	+93559
+93563	+93581	+93601	+93607	+93629	+93637	+93683	+93701	+93703
+93719	+93739	+93761	+93763	+93787	+93809	+93811	+93827	+93851
+93871	+93887	+93889	+93893	+93901	+93911	+93913	+93923	+93937
+93941	+93949	+93967	+93971	+93979	+93983	+93997	+94007	+94009
+94033	+94049	+94057	+94063	+94079	+94099	+94109	+94111	+94117
+94121	+94151	+94153	+94169	+94201	+94207	+94219	+94229	+94253
+94261	+94273	+94291	+94307	+94309	+94321	+94327	+94331	+94343
+94349	+94351	+94379	+94397	+94399	+94421	+94427	+94433	+94439
+94441	+94447	+94463	+94477	+94483	+94513	+94529	+94531	+94541
+94543	+94547	+94559	+94561	+94573	+94583	+94597	+94603	+94613
+94621	+94649	+94651	+94687	+94693	+94709	+94723	+94727	+94747
+94771	+94777	+94781	+94789	+94793	+94811	+94819	+94823	+94837
+94841	+94847	+94849	+94873	+94889	+94903	+94907	+94933	+94949
+94951	+94961	+94993	+94999	+95003	+95009	+95021	+95027	+95063
+95071	+95083	+95087	+95089	+95093	+95101	+95107	+95111	+95131
+95143	+95153	+95177	+95189	+95191	+95203	+95213	+95219	+95231
+95233	+95239	+95257	+95261	+95267	+95273	+95279	+95287	+95311
+95317	+95327	+95339	+95369	+95383	+95393	+95401	+95413	+95419
+95429	+95441	+95443	+95461	+95467	+95471	+95479	+95483	+95507
+95527	+95531	+95539	+95549	+95561	+95569	+95581	+95597	+95603
+95617	+95621	+95629	+95633	+95651	+95701	+95707	+95713	+95717
+95723	+95731	+95737	+95747	+95773	+95783	+95789	+95791	+95801
+95803	+95813	+95819	+95857	+95869	+95873	+95881	+95891	+95911
+95917	+95923	+95929	+95947	+95957	+95959	+95971	+95987	+95989
+96001	+96013	+96017	+96043	+96053	+96059	+96079	+96097	+96137
+96149	+96157	+96167	+96179	+96181	+96199	+96211	+96221	+96223
+96233	+96259	+96263	+96269	+96281	+96289	+96293	+96323	+96329
+96331	+96337	+96353	+96377	+96401	+96419	+96431	+96443	+96451
+96457	+96461	+96469	+96479	+96487	+96493	+96497	+96517	+96527
+96553	+96557	+96581	+96587	+96589	+96601	+96643	+96661	+96667
+96671	+96697	+96703	+96731	+96737	+96739	+96749	+96757	+96763
+96769	+96779	+96787	+96797	+96799	+96821	+96823	+96827	+96847
+96851	+96857	+96893	+96907	+96911	+96931	+96953	+96959	+96973
+96979	+96989	+96997	+97001	+97003	+97007	+97021	+97039	+97073
+97081	+97103	+97117	+97127	+97151	+97157	+97159	+97169	+97171
+97177	+97187	+97213	+97231	+97241	+97259	+97283	+97301	+97303
+97327	+97367	+97369	+97373	+97379	+97381	+97387	+97397	+97423
+97429	+97441	+97453	+97459	+97463	+97499	+97501	+97511	+97523
+97547	+97549	+97553	+97561	+97571	+97577	+97579	+97583	+97607
+97609	+97613	+97649	+97651	+97673	+97687	+97711	+97729	+97771
+97777	+97787	+97789	+97813	+97829	+97841	+97843	+97847	+97849
+97859	+97861	+97871	+97879	+97883	+97919	+97927	+97931	+97943
+97961	+97967	+97973	+97987	+98009	+98011	+98017	+98041	+98047
+98057	+98081	+98101	+98123	+98129	+98143	+98179	+98207	+98213
+98221	+98227	+98251	+98257	+98269	+98297	+98299	+98317	+98321
+98323	+98327	+98347	+98369	+98377	+98387	+98389	+98407	+98411
+98419	+98429	+98443	+98453	+98459	+98467	+98473	+98479	+98491
+98507	+98519	+98533	+98543	+98561	+98563	+98573	+98597	+98621
+98627	+98639	+98641	+98663	+98669	+98689	+98711	+98713	+98717
+98729	+98731	+98737	+98773	+98779	+98801	+98807	+98809	+98837

+98849	+98867	+98869	+98873	+98887	+98893	+98897	+98899	+98909
+98911	+98927	+98929	+98939	+98947	+98953	+98963	+98981	+98993
+98999	+99013	+99017	+99023	+99041	+99053	+99079	+99083	+99089
+99103	+99109	+99119	+99131	+99133	+99137	+99139	+99149	+99173
+99181	+99191	+99223	+99233	+99241	+99251	+99257	+99259	+99277
+99289	+99317	+99347	+99349	+99367	+99371	+99377	+99391	+99397
+99401	+99409	+99431	+99439	+99469	+99487	+99497	+99523	+99527
+99529	+99551	+99559	+99563	+99571	+99577	+99581	+99607	+99611
+99623	+99643	+99661	+99667	+99679	+99689	+99707	+99709	+99713
+99719	+99721	+99733	+99761	+99767	+99787	+99793	+99809	+99817
+99823	+99829	+99833	+99839	+99859	+99871	+99877	+99881	+99901
+99907	+99923	+99929	+99961	+99971	+99989	+99991		

+9592 primes found

END OF ALGOL PROGRAM EXECUTION

Appendix D. IVP IEXSAMP4 Listing

J E S 2 J O B L O G

```
13.38.53 JOB 9293 IEF677I WARNING MESSAGE(S) FOR JOB T1IV4 ISSUED
13.38.53 JOB 9293 $HASP373 T1IV4 STARTED - INIT 6 - CLASS S - SYS SYSA
13.38.53 JOB 9293 IEF403I T1IV4 - STARTED - TIME=13.38.53
13.38.53 JOB 9293 IEFACTRT - Stepname Procstep Program Retcode
13.38.53 JOB 9293 T1IV4 IVP4 ALGOL ALGOL RC= 0000
13.38.53 JOB 9293 T1IV4 IVP4 LKED IEWL RC= 0000
13.38.53 JOB 9293 T1IV4 ASMTIM ASM IFOX00 RC= 0000
13.38.54 JOB 9293 T1IV4 ASMTIM LKED IEWL RC= 0000
13.42.09 JOB 9293 T1IV4 GOIVP4 GO RC= 0000
13.42.09 JOB 9293 IEF404I T1IV4 - ENDED - TIME=13.42.09
13.42.09 JOB 9293 $HASP395 T1IV4 ENDED

1 //T1IV4 JOB 111,'ALGOL F LVL2.1', <-- CUSTOMIZE FOR SITE STANDARDS JOB 9293
// CLASS=S,MSGCLASS=C, <-- CUSTOMIZE FOR SITE STANDARDS 00002001
// REGION=1024K,COND=(0,NE),MSGLEVEL=(1,1) 00003001
*** 00004001
*** IBM Algol F Level 2.1 IVP 00005001
*** 00006001
*** 360S-AL-531 Algol F Compiler 00007001
*** and 00008001
*** 360S-LM-532 Algol F Library 00009001
*** 00010001
2 //IVP4 EXEC ALGOFCL 00011001
*** 00001001
***** 00002001
*** 00003001
*** IBM ALGOL F LEVEL 2.1 00004001
*** 00005001
*** 360S-AL-531 ALGOL F COMPILER 00006001
*** AND 00007001
*** 360S-LM-532 ALGOL F LIBRARY 00008001
*** 00009001
*** COMPILE AND LINK-EDIT A PROGRAM 00010001
*** 00011001
***** 00012001
*** 00013001
3 XXALGOL EXEC PGM=ALGOL,REGION=1024K 00014001
4 XXSYSPRINT DD SYSOUT=* 00015001
5 XXSYSPUNCH DD DUMMY 00016001
6 XXSYSLIN DD DSN=&&OBJECT,UNIT=VIO,SPACE=(3200,(20,10)), 00017001
XX DISP=(,PASS) 00018001
7 XXSYSUT1 DD UNIT=VIO,SPACE=(2048,(50,10)) 00019001
8 XXSYSUT2 DD UNIT=VIO,SPACE=(2048,(50,10)) 00020001
9 XXSYSUT3 DD UNIT=VIO,SPACE=(2048,(40,10)) 00021001
10 //ALGOL.SYSIN DD * 00012001
11 XXLKED EXEC PGM=IEWL,PARM='XREF,LIST,LET',COND=(5,LT,ALGOL), 00022001
XX REGION=1024K 00023001
12 XXSYSPRINT DD SYSOUT=* 00024001
13 XXSYSLIB DD DSN=SYS1.ALGLIB,DISP=SHR 00025001
14 XXSYSLMOD DD DSN=&&GOSET(GO),UNIT=VIO,DISP=(,PASS), 00026001
XX SPACE=(2048,(100,20,1)) 00027001
15 XXSYSUT1 DD UNIT=VIO,SPACE=(2048,(100,20)) 00028001
16 XXSYSLIN DD DSN=&&OBJECT,DISP=(OLD,DELETE) 00029001
17 XX DD DDNAME=SYSIN 00030001
18 //ASMTIM EXEC ASMFCL 00789001
19 XXASMFCL PROC SOUT='*' 00000107
20 XXASM EXEC PGM=IFOX00,PARM=OBJ,REGION=512K 00000204
21 //ASM.SYSLIB DD DSN=SYS1.MACLIB,DISP=SHR 00790001
X/SYSLIB DD DSN=SYS1.MACLIB,DISP=SHR 00000307
22 // DD DSN=SYS1.AMODGEN,DISP=SHR 00791001
X/ DD DSN=SYS1.AMODGEN,DISP=SHR 00000407
23 XXSYSUT1 DD UNIT=VIO,SPACE=(TRK,(30,30)) 00000504
24 XXSYSUT2 DD UNIT=VIO,SPACE=(TRK,(30,30)) 00000604
25 XXSYSUT3 DD UNIT=VIO,SPACE=(TRK,(30,30)) 00000704
26 XXSYSPRINT DD SYSOUT=&SOUT 00000805
27 XXSYSPUNCH DD DUMMY 00000904
28 XXSYSGO DD DSN=&&OBJECT,UNIT=VIO,SPACE=(TRK,(3,30)), 00001004
XX DISP=(MOD,PASS) 00001104
29 //ASM.SYSIN DD * 00792001
30 XXLKED EXEC PGM=IEWL,PARM='XREF,LET,LIST,NCAL',REGION=2048K, 00001204
XX COND=(8,LT,ASM) 00001304
31 XXSYSPRINT DD SYSOUT=&SOUT 00001406
32 XXSYSUT1 DD UNIT=VIO,SPACE=(2024,(50,20)) 00001506
33 XXSYSLIN DD DSN=&&OBJECT,DISP=(OLD,DELETE) 00001604
34 XX DD DDNAME=SYSIN 00001704
```

```

35 //LKED.SYSLMOD DD DSN=&&GOSET(CPUTIM),DISP=(OLD,PASS) 00882001
X/SYSLMOD DD DSN=&&GOSET(GO),UNIT=SYSDA,SPACE=(2048,(50,20,1)), 00001804
XX DISP=(MOD,PASS) 00001904
36 //GOIVP4 EXEC PGM=GO 00883001
37 //STEPLIB DD DSN=&&GOSET,DISP=(OLD,PASS) 00884001
38 //ALGLDD01 DD SYSOUT=* 00885001
39 //SYSPRINT DD SYSOUT=* 00886001
40 //SYSUT1 DD UNIT=VIO,SPACE=(1024,(20,10)) 00887001
STMT NO. MESSAGE
-
26 IEF653I SUBSTITUTION JCL - SYSOUT=*
31 IEF653I SUBSTITUTION JCL - SYSOUT=*
18 IEF686I DDNAME REFERRED TO ON DDNAME KEYWORD IN PRIOR STEP WAS NOT RESOLVED
36 IEF686I DDNAME REFERRED TO ON DDNAME KEYWORD IN PRIOR STEP WAS NOT RESOLVED
IEF236I ALLOC. FOR T11V4 ALGOL IVP4
IEF237I JES2 ALLOCATED TO SYSPRINT
IEF237I DMY ALLOCATED TO SYSPUNCH
IEF237I VIO ALLOCATED TO SYSLIN
IEF237I VIO ALLOCATED TO SYSUT1
IEF237I VIO ALLOCATED TO SYSUT2
IEF237I VIO ALLOCATED TO SYSUT3
IEF237I JES2 ALLOCATED TO SYSIN
IEF142I T11V4 ALGOL IVP4 - STEP WAS EXECUTED - COND CODE 0000
IEF285I JES2.JOB09293.S00103 SYSOUT
IEF285I SYS12230.T133853.RA000.T11V4.OBJECT PASSED *-----17
IEF285I SYS12230.T133853.RA000.T11V4.R0000001 DELETED *-----11
IEF285I SYS12230.T133853.RA000.T11V4.R0000002 DELETED *-----17
IEF285I SYS12230.T133853.RA000.T11V4.R0000003 DELETED *-----77
IEF285I JES2.JOB09293.SI0101 SYSIN
IEF373I STEP /ALGOL / START 12230.1338
IEF374I STEP /ALGOL / STOP 12230.1338 CPU 0MIN 00.11SEC SRB 0MIN 00.01SEC VIRT 192K SYS 308K
*****
* 1. Jobstep of job: T11V4 Stepname: ALGOL Program name: ALGOL Executed on 17.08.12 from 13.38.53 to 13.38.53 *
* elapsed time 24:00:00,15 CPU-Identifier: SYSA Page-in: 0 *
* CPU time 00:00:00,12 Virtual Storage used: 192K Page-out: 0 *
* corr. CPU: 00:00:00,12 CPU time has been corrected by 1 / 1,0 multiplier *
*
* I/O Operation *
* Number of records read via DD * or DD DATA: 775 *
* DMY.....0 DMY.....0 FFF.....17 FFF.....11 FFF.....17 FFF.....77 DMY.....0 *
*
* Charge for step (w/o SYSOUT): 0,20 *
*****
IEF236I ALLOC. FOR T11V4 LKED IVP4
IEF237I JES2 ALLOCATED TO SYSPRINT
IEF237I 148 ALLOCATED TO SYSLIB
IEF237I VIO ALLOCATED TO SYSLMOD
IEF237I VIO ALLOCATED TO SYSUT1
IEF237I VIO ALLOCATED TO SYSLIN
IEF237I DMY ALLOCATED TO
IEF142I T11V4 LKED IVP4 - STEP WAS EXECUTED - COND CODE 0000
IEF285I JES2.JOB09293.S00104 SYSOUT
IEF285I SYS1.ALGLIB KEPT *-----107
IEF285I VOL SER NOS= MVSRES.
IEF285I SYS12230.T133853.RA000.T11V4.GOSET PASSED *-----26
IEF285I SYS12230.T133853.RA000.T11V4.R0000004 DELETED *-----0
IEF285I SYS12230.T133853.RA000.T11V4.OBJECT DELETED *-----18
IEF373I STEP /LKED / START 12230.1338
IEF374I STEP /LKED / STOP 12230.1338 CPU 0MIN 00.07SEC SRB 0MIN 00.01SEC VIRT 1024K SYS 280K
*****
* 2. Jobstep of job: T11V4 Stepname: LKED Program name: IEWL Executed on 17.08.12 from 13.38.53 to 13.38.53 *
* elapsed time 24:00:00,09 CPU-Identifier: SYSA Page-in: 0 *
* CPU time 00:00:00,08 Virtual Storage used: 1024K Page-out: 0 *
* corr. CPU: 00:00:00,08 CPU time has been corrected by 1 / 1,0 multiplier *
*
* I/O Operation *
* Number of records read via DD * or DD DATA: 0 *
* DMY.....0 148.....107 FFF.....26 FFF.....0 FFF.....18 DMY.....0 *
*
* Charge for step (w/o SYSOUT): 0,13 *
*****
IEF236I ALLOC. FOR T11V4 ASM ASMTIM
IEF237I 148 ALLOCATED TO SYSLIB
IEF237I 248 ALLOCATED TO
IEF237I VIO ALLOCATED TO SYSUT1
IEF237I VIO ALLOCATED TO SYSUT2
IEF237I VIO ALLOCATED TO SYSUT3
IEF237I JES2 ALLOCATED TO SYSPRINT
IEF237I DMY ALLOCATED TO SYSPUNCH
IEF237I VIO ALLOCATED TO SYSGO
IEF237I JES2 ALLOCATED TO SYSIN
IEF142I T11V4 ASM ASMTIM - STEP WAS EXECUTED - COND CODE 0000

```

```

IEF285I  SYS1.MACLIB                                KEPT      *-----4
IEF285I  VOL SER NOS= MVSRES.
IEF285I  SYS1.AMODGEN                                KEPT      *-----7
IEF285I  VOL SER NOS= MVSDBL.
IEF285I  SYS12230.T133853.RA000.T11V4.R0000005    DELETED    *-----31
IEF285I  SYS12230.T133853.RA000.T11V4.R0000006    DELETED    *-----15
IEF285I  SYS12230.T133853.RA000.T11V4.R0000007    DELETED    *-----8
IEF285I  JES2.JOB09293.S00105                      SYSOUT
IEF285I  SYS12230.T133853.RA000.T11V4.OBJECT      PASSED     *-----7
IEF285I  JES2.JOB09293.SI0102                      SYSIN
IEF373I  STEP /ASM      / START 12230.1338
IEF374I  STEP /ASM      / STOP 12230.1338 CPU      0MIN 00.17SEC SRB      0MIN 00.00SEC VIRT 1024K SYS 344K
*****
*      3. Jobstep of job: T11V4      Stepname: ASM      Program name: IFOX00      Executed on 17.08.12 from 13.38.53 to 13.38.53 *
*      elapsed time 24:00:00,30      CPU-Identifier: SYSA      Page-in: 0 *
*      CPU time 00:00:00,17      Virtual Storage used: 1024K      Page-out: 0 *
*      corr. CPU: 00:00:00,17      CPU time has been corrected by 1 / 1,0 multiplier *
* * *
*      I/O Operation *
*      Number of records read via DD * or DD DATA: 88 *
*      148.....4 248.....7 FFF.....31 FFF.....15 FFF.....8 DMY.....0 DMY.....0 FFF.....7 DMY.....0 *
* * *
*      Charge for step (w/o SYSOUT): 0,28 *
*****
IEF236I  ALLOC. FOR T11V4 LKED ASMTIM
IEF237I  JES2 ALLOCATED TO SYSPRINT
IEF237I  VIO ALLOCATED TO SYSUT1
IEF237I  VIO ALLOCATED TO SYSLIN
IEF237I  DMY ALLOCATED TO
IEF237I  VIO ALLOCATED TO SYSLMOD
IEF142I  T11V4 LKED ASMTIM - STEP WAS EXECUTED - COND CODE 0000
IEF285I  JES2.JOB09293.S00106                      SYSOUT
IEF285I  SYS12230.T133853.RA000.T11V4.R0000008    DELETED    *-----0
IEF285I  SYS12230.T133853.RA000.T11V4.OBJECT      DELETED    *-----8
IEF285I  SYS12230.T133853.RA000.T11V4.GOSET      PASSED     *-----10
IEF373I  STEP /LKED      / START 12230.1338
IEF374I  STEP /LKED      / STOP 12230.1338 CPU      0MIN 00.03SEC SRB      0MIN 00.00SEC VIRT 1024K SYS 280K
*****
*      4. Jobstep of job: T11V4      Stepname: LKED      Program name: IEWL      Executed on 17.08.12 from 13.38.53 to 13.38.54 *
*      elapsed time 24:00:00,04      CPU-Identifier: SYSA      Page-in: 0 *
*      CPU time 00:00:00,03      Virtual Storage used: 1024K      Page-out: 0 *
*      corr. CPU: 00:00:00,03      CPU time has been corrected by 1 / 1,0 multiplier *
* * *
*      I/O Operation *
*      Number of records read via DD * or DD DATA: 0 *
*      DMY.....0 FFF.....0 FFF.....8 DMY.....0 FFF.....10 *
* * *
*      Charge for step (w/o SYSOUT): 0,05 *
*****
IEF236I  ALLOC. FOR T11V4 GOIVP4
IEF237I  VIO ALLOCATED TO STEPLIB
IEF237I  JES2 ALLOCATED TO ALGLDD01
IEF237I  JES2 ALLOCATED TO SYSPRINT
IEF237I  VIO ALLOCATED TO SYSUT1
IEF142I  T11V4 GOIVP4 - STEP WAS EXECUTED - COND CODE 0000
IEF285I  SYS12230.T133853.RA000.T11V4.GOSET      PASSED     *-----0
IEF285I  JES2.JOB09293.S00107                      SYSOUT
IEF285I  JES2.JOB09293.S00108                      SYSOUT
IEF285I  SYS12230.T133853.RA000.T11V4.R0000009    DELETED    *-----0
IEF373I  STEP /GOIVP4 / START 12230.1338
IEF374I  STEP /GOIVP4 / STOP 12230.1342 CPU      3MIN 15.31SEC SRB      0MIN 00.00SEC VIRT 56K SYS 280K
*****
*      5. Jobstep of job: T11V4      Stepname: GOIVP4      Program name: GO      Executed on 17.08.12 from 13.38.54 to 13.42.09 *
*      elapsed time 24:03:15,49      CPU-Identifier: SYSA      Page-in: 0 *
*      CPU time 00:03:15,31      Virtual Storage used: 56K      Page-out: 0 *
*      corr. CPU: 00:03:15,31      CPU time has been corrected by 1 / 1,0 multiplier *
* * *
*      I/O Operation *
*      Number of records read via DD * or DD DATA: 0 *
*      FFF.....0 DMY.....0 DMY.....0 FFF.....0 *
* * *
*      Charge for step (w/o SYSOUT): 325,51 *
*****
IEF285I  SYS12230.T133853.RA000.T11V4.GOSET      DELETED
IEF375I  JOB /T11V4 / START 12230.1338
IEF376I  JOB /T11V4 / STOP 12230.1342 CPU      3MIN 15.69SEC SRB      0MIN 00.02SEC

```

```

'BEGIN' 00013001
'COMMENT' Basic Statement Times for Algol 60 00014001
          B A Wichmann 00015001
          National Physics laboratory 00016001
          Teddington, Middlesex 00017001
          November 1973; 00018001
          00019001
'COMMENT' Modified for IBM Algol F Level 2.1 IVP 00020001
          This program will execute for aproximately 4 minutes 00021001
          on an MVS 3.8 system running on a Hercules 3.07 00022001
          system averaging 25 mips. 00023001
          00024001
          Timings are guidelines only due to the PC, Windows 00025001
          and the Hercules timer implementations and will 00026001
          therefore vary for each execution; 00027001
          00028001
'REAL' x, y, z; 00029001
1 'INTEGER' i, j, n, k, l, m, case; 00030001
2 'INTEGER' 'ARRAY' e1[1:1], e2[1:1,1:1], e3[1:1,1:1,1:1]; 00031001
3 00032001
3 'PROCEDURE' p0; 00033001
4 ; 00034001
5 00035001
5 'PROCEDURE' p1(x); 00036001
6 'VALUE' x; 00037001
7 'REAL' x; 00038001
8 ; 00039001
9 00040001
9 'PROCEDURE' p2(x,y); 00041001
10 'VALUE' x, y; 00042001
11 'REAL' x, y; 00043001
12 ; 00044001
13 00045001
13 'PROCEDURE' p3(x,y,z); 00046001
14 'VALUE' x, y, z; 00047001
15 'REAL' x, y, z; 00048001
16 ; 00049001
17 00050001
17 'INTEGER' 'ARRAY' #TT[1:43]; 00051001
18 00052001
18 'PROCEDURE' printt; 00053001
19 'BEGIN' 00054001
19 'INTEGER' i; 00055001
20 'REAL' x, mix, loop; 00056001
21 'COMMENT' calculate time differences; 00057001
21 'FOR' i := 43 'STEP' -1 'UNTIL' 2 'DO' 00058001
21 'BEGIN' 00059001
21 #TT[i] := #TT[i] - #TT[i-1]; 00060001
22 'COMMENT' subtract previous accum cpu time 00061001
22 to derive case timing; 00062001
22 'END'; 00063001
23 'FOR' i := 2 'STEP' 1 'UNTIL' 42 'DO' 00064001
23 'BEGIN' 00065001
23 #TT[i] := (#TT[i] - #TT[43]) / ((n * 10) / 1000); 00066001

```

24	'COMMENT' subtract loop overhead and	00067001
24	convert to picoseconds;	00068001
24	'END';	00069001
25	'COMMENT' Print results;	00070001
25	SYSACT(1,14,1);	00071001
26	OUTINTEGER(1,#TT[2]);	00072001
27	OUTSTRING(1,('x := 1.0 '));	00073001
28	SYSACT(1,14,1);	00074001
29	OUTINTEGER(1,#TT[3]);	00075001
30	OUTSTRING(1,('x := 1 '));	00076001
31	SYSACT(1,14,1);	00077001
32	OUTINTEGER(1,#TT[4]);	00078001
33	OUTSTRING(1,('x := y '));	00079001
34	SYSACT(1,14,1);	00080001
35	OUTINTEGER(1,#TT[5]);	00081001
36	OUTSTRING(1,('x := y + z '));	00082001
37	SYSACT(1,14,1);	00083001
38	OUTINTEGER(1,#TT[6]);	00084001
39	OUTSTRING(1,('x := y * z '));	00085001
40	SYSACT(1,14,1);	00086001
41	OUTINTEGER(1,#TT[7]);	00087001
42	OUTSTRING(1,('x := y / z '));	00088001
43	SYSACT(1,14,1);	00089001
44	OUTINTEGER(1,#TT[8]);	00090001
45	OUTSTRING(1,('k := 1 '));	00091001
46	SYSACT(1,14,1);	00092001
47	OUTINTEGER(1,#TT[9]);	00093001
48	OUTSTRING(1,('k := 1.0 '));	00094001
49	SYSACT(1,14,1);	00095001
50	OUTINTEGER(1,#TT[10]);	00096001
51	OUTSTRING(1,('k := 1 + m '));	00097001
52	SYSACT(1,14,1);	00098001
53	OUTINTEGER(1,#TT[11]);	00099001
54	OUTSTRING(1,('k := 1 * m '));	00100001
55	SYSACT(1,14,1);	00101001
56	OUTINTEGER(1,#TT[12]);	00102001
57	OUTSTRING(1,('k := 1 / m '));	00103001
58	SYSACT(1,14,1);	00104001
59	OUTINTEGER(1,#TT[13]);	00105001
60	OUTSTRING(1,('k := 1 '));	00106001
61	SYSACT(1,14,1);	00107001
62	OUTINTEGER(1,#TT[14]);	00108001
63	OUTSTRING(1,('x := 1 '));	00109001
64	SYSACT(1,14,1);	00110001
65	OUTINTEGER(1,#TT[15]);	00111001
66	OUTSTRING(1,('1 := y '));	00112001
67	SYSACT(1,14,1);	00113001
68	OUTINTEGER(1,#TT[16]);	00114001
69	OUTSTRING(1,('x := y ** 2 '));	00115001
70	SYSACT(1,14,1);	00116001
71	OUTINTEGER(1,#TT[17]);	00117001
72	OUTSTRING(1,('x := y ** 3 '));	00118001
73	SYSACT(1,14,1);	00119001
74	OUTINTEGER(1,#TT[18]);	00120001

SC	SOURCE STATEMENT	
75	OUTSTRING(1,('x := y ** z'));	00121001
76	SYSACT(1,14,1);	00122001
77	OUTINTEGER(1,#TT[19]);	00123001
78	OUTSTRING(1,('e1[1] := 1'));	00124001
79	SYSACT(1,14,1);	00125001
80	OUTINTEGER(1,#TT[20]);	00126001
81	OUTSTRING(1,('e2[1,1] := 1'));	00127001
82	SYSACT(1,14,1);	00128001
83	OUTINTEGER(1,#TT[21]);	00129001
84	OUTSTRING(1,('e3[1,1,1] := 1'));	00130001
85	SYSACT(1,14,1);	00131001
86	OUTINTEGER(1,#TT[22]);	00132001
87	OUTSTRING(1,('l := e1[1]'));	00133001
88	SYSACT(1,14,1);	00134001
89	OUTINTEGER(1,#TT[23]);	00135001
90	OUTSTRING(1,('begin real a; end'));	00136001
91	SYSACT(1,14,1);	00137001
92	OUTINTEGER(1,#TT[24]);	00138001
93	OUTSTRING(1,('begin real a[1:1]; end'));	00139001
94	SYSACT(1,14,1);	00140001
95	OUTINTEGER(1,#TT[25]);	00141001
96	OUTSTRING(1,('begin real a[1:500]; end'));	00142001
97	SYSACT(1,14,1);	00143001
98	OUTINTEGER(1,#TT[26]);	00144001
99	OUTSTRING(1,('begin real a[1:1,1:1]; end'));	00145001
100	SYSACT(1,14,1);	00146001
101	OUTINTEGER(1,#TT[27]);	00147001
102	OUTSTRING(1,('begin real a[1:1,1:1,1:1]; end'));	00148001
103	SYSACT(1,14,1);	00149001
104	OUTINTEGER(1,#TT[28]);	00150001
105	OUTSTRING(1,('begin goto lab; lab: end'));	00151001
106	SYSACT(1,14,1);	00152001
107	OUTINTEGER(1,#TT[29]);	00153001
108	OUTSTRING(1,('begin switch s := q; goto s[1]; q: end'));	00154001
109	SYSACT(1,14,1);	00155001
110	OUTINTEGER(1,#TT[30]);	00156001
111	OUTSTRING(1,('x := sin(y)'));	00157001
112	SYSACT(1,14,1);	00158001
113	OUTINTEGER(1,#TT[31]);	00159001
114	OUTSTRING(1,('x := cos(y)'));	00160001
115	SYSACT(1,14,1);	00161001
116	OUTINTEGER(1,#TT[32]);	00162001
117	OUTSTRING(1,('x := abs(y)'));	00163001
118	SYSACT(1,14,1);	00164001
119	OUTINTEGER(1,#TT[33]);	00165001
120	OUTSTRING(1,('x := exp(y)'));	00166001
121	SYSACT(1,14,1);	00167001
122	OUTINTEGER(1,#TT[34]);	00168001
123	OUTSTRING(1,('x := ln(y)'));	00169001
124	SYSACT(1,14,1);	00170001
125	OUTINTEGER(1,#TT[35]);	00171001
126	OUTSTRING(1,('x := sqrt(y)'));	00172001
127	SYSACT(1,14,1);	00173001
128	OUTINTEGER(1,#TT[36]);	00174001

```

SC      SOURCE STATEMENT

129      OUTSTRING(1,('x := arctan(y)'));
130      SYSACT(1,14,1);
131      OUTINTEGER(1,#TT[37]);
132      OUTSTRING(1,('x := sign(y)'));
133      SYSACT(1,14,1);
134      OUTINTEGER(1,#TT[38]);
135      OUTSTRING(1,('x := entier(y)'));
136      SYSACT(1,14,1);
137      OUTINTEGER(1,#TT[39]);
138      OUTSTRING(1,('p0'));
139      SYSACT(1,14,1);
140      OUTINTEGER(1,#TT[40]);
141      OUTSTRING(1,('p1(x)'));
142      SYSACT(1,14,1);
143      OUTINTEGER(1,#TT[41]);
144      OUTSTRING(1,('p2(x,y)'));
145      SYSACT(1,14,1);
146      OUTINTEGER(1,#TT[42]);
147      OUTSTRING(1,('p3(x,y,z)'));
148      'COMMENT' print DO loop overhead;
148      SYSACT(1,14,1);
149      OUTINTEGER(1,#TT[43]);
150      OUTSTRING(1,('DO Loop overhead'));
151      'END';
152
152      'INTEGER' 'PROCEDURE' CPUTIM; 'CODE';
154      'COMMENT' Procedure that returns the current accumulated
154      job step processor time in microseconds in the
154      MVS 3.8J environment;
154
154      'COMMENT' Set line-length = 120, Set lines-per-page = 62, OPEN;
154      SYSACT(1,6,120);
155      SYSACT(1,8,62);
156      SYSACT(1,12,1);
157      SYSACT(1,2,10);
158      OUTSTRING (1,('Algol F Statement Timings'));
159      SYSACT(1,14,1);
160      OUTSTRING(1,('Picoseconds Statement'));
161
161      x := y := z := 1.0;
162      l := k := m := 1;
163      e1[1] := 1;
164      case := 1;
165
165      'COMMENT' Case 01;
165      n := 100000;
166      'COMMENT' n should be given a large enough value
166      for the resolution of the clock not to
166      be a limiting factor to the accuracy.
166      If n is made too large then processor time
166      is wasted;
166      #TT[1] := CPUTIM;
167      'COMMENT' #TT[1] equals program initialization overhead;
167

```

```

00175001
00176001
00177001
00178001
00179001
00180001
00181001
00182001
00183001
00184001
00185001
00186001
00187001
00188001
00189001
00190001
00191001
00192001
00193001
00194001
00195001
00196001
00197001
00198001
00199001
00200001
00201001
00202001
00203001
00204001
00205001
00206001
00207001
00208001
00209001
00210001
00211001
00212001
00213001
00214001
00215001
00216001
00217001
00218001
00219001
00220001
00221001
00222001
00223001
00224001
00225001
00226001
00227001
00228001

```

```
167      'COMMENT' Case 02;                                00229001
167      case := case + 1;                                  00230001
168      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'              00231001
168      'BEGIN'                                           00232001
168          x := 1.0; x := 1.0; x := 1.0; x := 1.0; x := 1.0; 00233001
173          x := 1.0; x := 1.0; x := 1.0; x := 1.0; x := 1.0; 00234001
178      'END';                                           00235001
179      #TT[case] := CPUTIM;                               00236001
180                                                         00237001
180      case := case + 1;                                  00238001
181      'COMMENT' Case 03;                                00239001
181      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'              00240001
181      'BEGIN'                                           00241001
181          x := 1; x := 1; x := 1; x := 1; x := 1;         00242001
186          x := 1; x := 1; x := 1; x := 1; x := 1;         00243001
191      'END';                                           00244001
192      #TT[case] := CPUTIM;                               00245001
193                                                         00246001
193      case := case + 1;                                  00247001
194      'COMMENT' Case 04;                                00248001
194      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'              00249001
194      'BEGIN'                                           00250001
194          x := y; x := y; x := y; x := y;                 00251001
198          x := y; x := y; x := y; x := y;                 00252001
202          x := y; x := y; x := y; x := y;                 00253001
206          x := y;                                         00254001
207      'END';                                           00255001
208      #TT[case] := CPUTIM;                               00256001
209                                                         00257001
209      case := case + 1;                                  00258001
210      'COMMENT' Case 05;                                00259001
210      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'              00260001
210      'BEGIN'                                           00261001
210          x := y + z; x := y + z; x := y + z; x := y + z; 00262001
214          x := y + z; x := y + z; x := y + z; x := y + z; 00263001
218          x := y + z; x := y + z;                         00264001
220      'END';                                           00265001
221      #TT[case] := CPUTIM;                               00266001
222                                                         00267001
222      case := case + 1;                                  00268001
223      'COMMENT' Case 06;                                00269001
223      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'              00270001
223      'BEGIN'                                           00271001
223          x := y * z; x := y * z; x := y * z; x := y * z; 00272001
227          x := y * z; x := y * z; x := y * z; x := y * z; 00273001
231          x := y * z; x := y * z;                         00274001
233      'END';                                           00275001
234      #TT[case] := CPUTIM;                               00276001
235                                                         00277001
235      case := case + 1;                                  00278001
236      'COMMENT' Case 07;                                00279001
236      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'              00280001
236      'BEGIN'                                           00281001
236          x := y/z; x := y/z; x := y/z; x := y/z;         00282001
```



```
240          x := y/z; x := y/z; x := y/z; x := y/z;          00283001
244          x := y/z; x := y/z;          00284001
246      'END';          00285001
247      #TT[case] := CPUTIM;          00286001
248          00287001
248      case := case + 1;          00288001
249      'COMMENT' Case 08;          00289001
249      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'          00290001
249      'BEGIN'          00291001
249          k := 1; k := 1; k := 1; k := 1;          00292001
253          k := 1; k := 1; k := 1; k := 1;          00293001
257          k := 1; k := 1;          00294001
259      'END';          00295001
260      #TT[case] := CPUTIM;          00296001
261          00297001
261      case := case + 1;          00298001
262      'COMMENT' Case 09;          00299001
262      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'          00300001
262      'BEGIN'          00301001
262          k := 1.0; k := 1.0; k := 1.0; k := 1.0;          00302001
266          k := 1.0; k := 1.0; k := 1.0; k := 1.0;          00303001
270          k := 1.0; k := 1.0;          00304001
272      'END';          00305001
273      #TT[case] := CPUTIM;          00306001
274          00307001
274      case := case + 1;          00308001
275      'COMMENT' Case 10;          00309001
275      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'          00310001
275      'BEGIN'          00311001
275          k := l + m; k := l + m;          00312001
277          k := l + m; k := l + m;          00313001
279          k := l + m; k := l + m;          00314001
281          k := l + m; k := l + m;          00315001
283          k := l + m; k := l + m;          00316001
285      'END';          00317001
286      #TT[case] := CPUTIM;          00318001
287          00319001
287      case := case + 1;          00320001
288      'COMMENT' Case 11;          00321001
288      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'          00322001
288      'BEGIN'          00323001
288          k := l * m; k := l * m; k := l * m;          00324001
291          k := l * m; k := l * m; k := l * m;          00325001
294          k := l * m; k := l * m; k := l * m;          00326001
297          k := l * m;          00327001
298      'END';          00328001
299      #TT[case] := CPUTIM;          00329001
300          00330001
300      case := case + 1;          00331001
301      'COMMENT' Case 12;          00332001
301      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'          00333001
301      'BEGIN'          00334001
301          k := l / m; k := l / m; k := l / m;          00335001
304          k := l / m; k := l / m; k := l / m;          00336001
```

```

307          k := 1 / m; k := 1 / m; k := 1 / m;          00337001
310          k := 1 / m;          00338001
311      'END';          00339001
312      #TT[case] := CPUTIM;          00340001
313          00341001
313      case := case + 1;          00342001
314      'COMMENT' Case 13;          00343001
314      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'          00344001
314      'BEGIN'          00345001
314          k := 1; k := 1; k := 1;          00346001
317          k := 1; k := 1; k := 1;          00347001
320          k := 1; k := 1; k := 1;          00348001
323          k := 1; k := 1; k := 1;          00349001
326          k := 1;          00350001
327      'END';          00351001
328      #TT[case] := CPUTIM;          00352001
329          00353001
329      case := case + 1;          00354001
330      'COMMENT' Case 14;          00355001
330      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'          00356001
330      'BEGIN'          00357001
330          x := 1; x := 1; x := 1; x := 1;          00358001
334          x := 1; x := 1; x := 1; x := 1;          00359001
338          x := 1; x := 1;          00360001
340      'END';          00361001
341      #TT[case] := CPUTIM;          00362001
342          00363001
342      case := case + 1;          00364001
343      'COMMENT' Case 15;          00365001
343      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'          00366001
343      'BEGIN'          00367001
343          l := y; l := y; l := y;          00368001
346          l := y; l := y; l := y;          00369001
349          l := y; l := y; l := y;          00370001
352          l := y;          00371001
353      'END';          00372001
354      #TT[case] := CPUTIM;          00373001
355          00374001
355      case := case + 1;          00375001
356      'COMMENT' Case 16;          00376001
356      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'          00377001
356      'BEGIN'          00378001
356          x := y ** 2; x := y ** 2;          00379001
358          x := y ** 2; x := y ** 2;          00380001
360          x := y ** 2; x := y ** 2;          00381001
362          x := y ** 2; x := y ** 2;          00382001
364          x := y ** 2; x := y ** 2;          00383001
366      'END';          00384001
367      #TT[case] := CPUTIM;          00385001
368          00386001
368      case := case + 1;          00387001
369      'COMMENT' Case 17;          00388001
369      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'          00389001
369      'BEGIN'          00390001

```

```
369          x := y ** 3; x := y ** 3;          00391001
371          x := y ** 3; x := y ** 3;          00392001
373          x := y ** 3; x := y ** 3;          00393001
375          x := y ** 3; x := y ** 3;          00394001
377          x := y ** 3; x := y ** 3;          00395001
379          'END';                              00396001
380          #TT[case] := CPUTIM;                 00397001
381                                         00398001
381          case := case + 1;                    00399001
382          'COMMENT' Case 18;                   00400001
382          'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO' 00401001
382          'BEGIN'                             00402001
382              x := y ** z;      x := y ** z;   00403001
384              x := y ** z;      x := y ** z;   00404001
386              x := y ** z;      x := y ** z;   00405001
388              x := y ** z;      x := y ** z;   00406001
390              x := y ** z;      x := y ** z;   00407001
392          'END';                              00408001
393          #TT[case] := CPUTIM;                 00409001
394                                         00410001
394          case := case + 1;                    00411001
395          'COMMENT' Case 19;                   00412001
395          'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO' 00413001
395          'BEGIN'                             00414001
395              e1[1] := 1; e1[1] := 1; e1[1] := 1; 00415001
398              e1[1] := 1; e1[1] := 1; e1[1] := 1; 00416001
401              e1[1] := 1; e1[1] := 1; e1[1] := 1; 00417001
404              e1[1] := 1;                     00418001
405          'END';                              00419001
406          #TT[case] := CPUTIM;                 00420001
407                                         00421001
407          case := case + 1;                    00422001
408          'COMMENT' Case 20;                   00423001
408          'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO' 00424001
408          'BEGIN'                             00425001
408              e2[1,1] := 1; e2[1,1] := 1; e2[1,1] := 1; 00426001
411              e2[1,1] := 1; e2[1,1] := 1; e2[1,1] := 1; 00427001
414              e2[1,1] := 1; e2[1,1] := 1; e2[1,1] := 1; 00428001
417              e2[1,1] := 1; e2[1,1] := 1;         00429001
419          'END';                              00430001
420          #TT[case] := CPUTIM;                 00431001
421                                         00432001
421          case := case + 1;                    00433001
422          'COMMENT' Case 21;                   00434001
422          'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO' 00435001
422          'BEGIN'                             00436001
422              e3[1,1,1] := 1; e3[1,1,1] := 1;     00437001
424              e3[1,1,1] := 1; e3[1,1,1] := 1;     00438001
426              e3[1,1,1] := 1; e3[1,1,1] := 1;     00439001
428              e3[1,1,1] := 1; e3[1,1,1] := 1;     00440001
430              e3[1,1,1] := 1; e3[1,1,1] := 1;     00441001
432          'END';                              00442001
433          #TT[case] := CPUTIM;                 00443001
434                                         00444001
```

```

434     case := case + 1;                                00445001
435     'COMMENT' Case 22;                                00446001
435     'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'             00447001
435     'BEGIN'                                           00448001
435         l := e1[1]; l := e1[1]; l := e1[1];          00449001
438         l := e1[1]; l := e1[1]; l := e1[1];          00450001
441         l := e1[1]; l := e1[1]; l := e1[1];          00451001
444         l := e1[1];                                   00452001
445     'END';                                           00453001
446     #TT[case] := CPUTIM;                             00454001
447                                                     00455001
447     case := case + 1;                                00456001
448     'COMMENT' Case 23;                                00457001
448     'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'             00458001
448     'BEGIN'                                           00459001
448         'BEGIN'                                       00460001
448             'REAL' a;                                00461001
449         'END';                                       00462001
450         'BEGIN'                                       00463001
450             'REAL' a;                                00464001
451         'END';                                       00465001
452         'BEGIN'                                       00466001
452             'REAL' a;                                00467001
453         'END';                                       00468001
454         'BEGIN'                                       00469001
454             'REAL' a;                                00470001
455         'END';                                       00471001
456         'BEGIN'                                       00472001
456             'REAL' a;                                00473001
457         'END';                                       00474001
458     'END';                                           00475001
459     #TT[case] := CPUTIM;                             00476001
460                                                     00477001
460     case := case + 1;                                00478001
461     'COMMENT' Case 24;                                00479001
461     'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'             00480001
461     'BEGIN'                                           00481001
461         'BEGIN'                                       00482001
461             'ARRAY' a[1:1];                          00483001
462         'END';                                       00484001
463     'END';                                           00485001
464     #TT[case] := CPUTIM;                             00486001
465                                                     00487001
465     case := case + 1;                                00488001
466     'COMMENT' Case 25;                                00489001
466     'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'             00490001
466     'BEGIN'                                           00491001
466         'BEGIN'                                       00492001
466             'ARRAY' a[1:500];                        00493001
467         'END';                                       00494001
468     'END';                                           00495001
469     #TT[case] := CPUTIM;                             00496001
470                                                     00497001
470     case := case + 1;                                00498001

```

```

471      'COMMENT' Case 26;                                00499001
471      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'              00500001
471      'BEGIN'                                           00501001
471      'BEGIN'                                           00502001
471      'ARRAY' a[1:1,1:1];                               00503001
472      'END';                                           00504001
473      'END';                                           00505001
474      #TT[case] := CPUTIM;                               00506001
475      case := case + 1;                                   00507001
475      case := case + 1;                                   00508001
476      'COMMENT' Case 27;                                00509001
476      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'              00510001
476      'BEGIN'                                           00511001
476      'BEGIN'                                           00512001
476      'ARRAY' a[1:1,1:1,1:1];                           00513001
477      'END';                                           00514001
478      'END';                                           00515001
479      #TT[case] := CPUTIM;                               00516001
480      case := case + 1;                                   00517001
480      case := case + 1;                                   00518001
481      'COMMENT' Case 28;                                00519001
481      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'              00520001
481      'BEGIN'                                           00521001
481      'GOTO' 10;                                         00522001
482      10: ;                                              00523001
483      'GOTO' 11;                                         00524001
484      11: ;                                              00525001
485      'GOTO' 12;                                         00526001
486      12: ;                                              00527001
487      'GOTO' 13;                                         00528001
488      13: ;                                              00529001
489      'GOTO' 14;                                         00530001
490      14: ;                                              00531001
491      'GOTO' 15;                                         00532001
492      15: ;                                              00533001
493      'GOTO' 16;                                         00534001
494      16: ;                                              00535001
495      'GOTO' 17;                                         00536001
496      17: ;                                              00537001
497      'GOTO' 18;                                         00538001
498      18: ;                                              00539001
499      'GOTO' 19;                                         00540001
500      19: ;                                              00541001
501      p0;                                                00542001
502      'END';                                           00543001
503      #TT[case] := CPUTIM;                               00544001
504      case := case + 1;                                   00545001
504      case := case + 1;                                   00546001
505      'COMMENT' Case 29;                                00547001
505      'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'              00548001
505      'BEGIN'                                           00549001
505      'BEGIN'                                           00550001
505      'SWITCH' s := q; 'GOTO' s[1];                     00551001
507      q: ;                                              00552001

```

```

508         'END';                                00553001
509         'END';                                00554001
510         #TT[case] := CPUTIM;                   00555001
511                                           00556001
511         case := case + 1;                       00557001
512         'COMMENT' Case 30;                      00558001
512         'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'    00559001
512         'BEGIN'                                00560001
512             x := sin(y);                        00561001
513             x := sin(y);                        00562001
514             x := sin(y);                        00563001
515             x := sin(y);                        00564001
516             x := sin(y);                        00565001
517             x := sin(y);                        00566001
518             x := sin(y);                        00567001
519             x := sin(y);                        00568001
520             x := sin(y);                        00569001
521             x := sin(y);                        00570001
522         'END';                                00571001
523         #TT[case] := CPUTIM;                   00572001
524                                           00573001
524         case := case + 1;                       00574001
525         'COMMENT' Case 31;                      00575001
525         'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'    00576001
525         'BEGIN'                                00577001
525             x := cos(y);                        00578001
526             x := cos(y);                        00579001
527             x := cos(y);                        00580001
528             x := cos(y);                        00581001
529             x := cos(y);                        00582001
530             x := cos(y);                        00583001
531             x := cos(y);                        00584001
532             x := cos(y);                        00585001
533             x := cos(y);                        00586001
534             x := cos(y);                        00587001
535         'END';                                00588001
536         #TT[case] := CPUTIM;                   00589001
537                                           00590001
537         case := case + 1;                       00591001
538         'COMMENT' Case 32;                      00592001
538         'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'    00593001
538         'BEGIN'                                00594001
538             x := abs(y); x := abs(y); x := abs(y); 00595001
541             x := abs(y); x := abs(y); x := abs(y); 00596001
544             x := abs(y); x := abs(y); x := abs(y); 00597001
547             x := abs(y);                        00598001
548         'END';                                00599001
549         #TT[case] := CPUTIM;                   00600001
550                                           00601001
550         case := case + 1;                       00602001
551         'COMMENT' Case 33;                      00603001
551         'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'    00604001
551         'BEGIN'                                00605001
551             x := exp(y);                        00606001

```

```

552          x := exp(y);          00607001
553          x := exp(y);          00608001
554          x := exp(y);          00609001
555          x := exp(y);          00610001
556          x := exp(y);          00611001
557          x := exp(y);          00612001
558          x := exp(y);          00613001
559          x := exp(y);          00614001
560          x := exp(y);          00615001
561          'END';                00616001
562          #TT[case] := CPUTIM;    00617001
563                                     00618001
564          case := case + 1;        00619001
565          'COMMENT' Case 34;       00620001
566          'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO' 00621001
567          'BEGIN'                00622001
568          x := ln(y);             00623001
569          x := ln(y);             00624001
570          x := ln(y);             00625001
571          x := ln(y);             00626001
572          x := ln(y);             00627001
573          x := ln(y);             00628001
574          x := ln(y);             00629001
575          x := ln(y);             00630001
576          x := ln(y);             00631001
577          x := ln(y);             00632001
578          'END';                00633001
579          #TT[case] := CPUTIM;    00634001
580                                     00635001
581          case := case + 1;        00636001
582          'COMMENT' Case 35;       00637001
583          'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO' 00638001
584          'BEGIN'                00639001
585          x := sqrt(y);           00640001
586          x := sqrt(y);           00641001
587          x := sqrt(y);           00642001
588          x := sqrt(y);           00643001
589          x := sqrt(y);           00644001
590          x := sqrt(y);           00645001
591          x := sqrt(y);           00646001
592          x := sqrt(y);           00647001
593          x := sqrt(y);           00648001
594          x := sqrt(y);           00649001
595          'END';                00650001
596          #TT[case] := CPUTIM;    00651001
597                                     00652001
598          case := case + 1;        00653001
599          'COMMENT' Case 36;       00654001
600          'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO' 00655001
601          'BEGIN'                00656001
602          x := arctan(y);          00657001
603          x := arctan(y);          00658001
604          x := arctan(y);          00659001
605          x := arctan(y);          00660001

```

```

594         x := arctan(y);          00661001
595         x := arctan(y);          00662001
596         x := arctan(y);          00663001
597         x := arctan(y);          00664001
598         x := arctan(y);          00665001
599         x := arctan(y);          00666001
600     'END';                        00667001
601     #TT[case] := CPUTIM;          00668001
602                                     00669001
603     case := case + 1;              00670001
604     'COMMENT' Case 37;             00671001
605     'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO' 00672001
606     'BEGIN'                        00673001
607         x := sign(y); x := sign(y); x := sign(y); 00674001
608         x := sign(y); x := sign(y); x := sign(y); 00675001
609         x := sign(y); x := sign(y); x := sign(y); 00676001
610         x := sign(y);              00677001
611     'END';                        00678001
612     #TT[case] := CPUTIM;          00679001
613                                     00680001
614     case := case + 1;              00681001
615     'COMMENT' Case 38;             00682001
616     'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO' 00683001
617     'BEGIN'                        00684001
618         x := entier(y); x := entier(y); 00685001
619         x := entier(y); x := entier(y); 00686001
620         x := entier(y); x := entier(y); 00687001
621         x := entier(y); x := entier(y); 00688001
622         x := entier(y); x := entier(y); 00689001
623     'END';                        00690001
624     #TT[case] := CPUTIM;          00691001
625                                     00692001
626     case := case + 1;              00693001
627     'COMMENT' Case 39;             00694001
628     'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO' 00695001
629     'BEGIN'                        00696001
630         p0;                        00697001
631         p0;                        00698001
632         p0;                        00699001
633         p0;                        00700001
634         p0;                        00701001
635         p0;                        00702001
636         p0;                        00703001
637         p0;                        00704001
638         p0;                        00705001
639         p0;                        00706001
640     'END';                        00707001
641     #TT[case] := CPUTIM;          00708001
642                                     00709001
643     case := case + 1;              00710001
644     'COMMENT' Case 40;             00711001
645     'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO' 00712001
646     'BEGIN'                        00713001
647         p1(x);                     00714001

```



```

643         p1(x);          00715001
644         p1(x);          00716001
645         p1(x);          00717001
646         p1(x);          00718001
647         p1(x);          00719001
648         p1(x);          00720001
649         p1(x);          00721001
650         p1(x);          00722001
651         p1(x);          00723001
652     'END';              00724001
653     #TT[case] := CPUTIM; 00725001
654                                     00726001
655     case := case + 1;     00727001
656     'COMMENT' Case 41;    00728001
657     'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO' 00729001
658     'BEGIN'              00730001
659         p2(x,y);          00731001
660         p2(x,y);          00732001
661         p2(x,y);          00733001
662         p2(x,y);          00734001
663         p2(x,y);          00735001
664         p2(x,y);          00736001
665         p2(x,y);          00737001
666         p2(x,y);          00738001
667         p2(x,y);          00739001
668         p2(x,y);          00740001
669     'END';              00741001
670     #TT[case] := CPUTIM; 00742001
671                                     00743001
672     case := case + 1;     00744001
673     'COMMENT' Case 42;    00745001
674     'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO' 00746001
675     'BEGIN'              00747001
676         p3(x,y,z);        00748001
677         p3(x,y,z);        00749001
678         p3(x,y,z);        00750001
679         p3(x,y,z);        00751001
680         p3(x,y,z);        00752001
681         p3(x,y,z);        00753001
682         p3(x,y,z);        00754001
683         p3(x,y,z);        00755001
684         p3(x,y,z);        00756001
685         p3(x,y,z);        00757001
686     'END';              00758001
687     #TT[case] := CPUTIM; 00759001
688                                     00760001
689     case := case + 1;     00761001
690     'COMMENT' Case 43;    00762001
691     'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO' 00763001
692     ;                    00764001
693     'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO' 00765001
694     ;                    00766001
695     'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO' 00767001
696     ;                    00768001

```

684	'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'	00769001
684	;	00770001
685	'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'	00771001
685	;	00772001
686	'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'	00773001
686	;	00774001
687	'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'	00775001
687	;	00776001
688	'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'	00777001
688	;	00778001
689	'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'	00779001
689	;	00780001
690	'FOR' i := 1 'STEP' 1 'UNTIL' n 'DO'	00781001
690	;	00782001
691	#TT[case] := CPUTIM;	00783001
692		00784001
692	printt;	00785001
693		00786001
693	'END';	00787001

IDENTIFIER TABLE														PAGE	16
PBN	SC	PBN SURR	NAME	TYPE	DM	DSP PR LN	NAME	TYPE	DM	DSP PR LN	NAME	TYPE	DM	DSP PR LN	
001	00000	000	CASE	I		03C	CPUTIM	I P C	00	084	E1	I A	01	040	
			E2	I A	02	058	E3	I A	03	074	I	I		024	
			J	I		028	K	I		030	L	I		034	
			L0	L		088	L1	L		08C	L2	L		090	
			L3	L		094	L4	L		098	L5	L		09C	
			L6	L		0A0	L7	L		0A4	L8	L		0A8	
			L9	L		0AC	M	I		038	N	I		02C	
			P0	P	00	070	P1	P	01	074	P2	P	02	078	
			P3	P	03	07C	PRINTT	P	00	080	X	R		018	
			Y	R		01C	Z	R		020	#TT	I A	01	094	
002	00003	001													
003	00005	001	X	R V		018									
004	00009	001	X	R V		018	Y	R V		020					
005	00013	001	X	R V		018	Y	R V		020	Z	R V		028	
006	00018	001	I	I		018	LOOP	R		024	MIX	R		020	
			X	R		01C									
007	00152	001	CPUTIM	I P C	00	084									
008	00448	001	A	R		018									
009	00450	001	A	R		018									
010	00452	001	A	R		018									
011	00454	001	A	R		018									
012	00456	001	A	R		018									
013	00461	001	A	R A	01	018									
014	00466	001	A	R A	01	018									
015	00471	001	A	R A	02	018									
016	00476	001	A	R A	03	018									
017	00505	001	Q	L		0B4	S	S	01	0B0					

STORAGE REQUIREMENTS (DECIMAL)

PAGE 17

OBJECT MODULE SIZE 29752 BYTES

DATA STORAGE AREA SIZES

PBN	BYTES	PBN	BYTES	PBN	BYTES	PBN	BYTES	PBN	BYTES
001	348	002	24	003	32	004	40	005	48
006	92	007	32	008	28	009	28	010	28
011	28	012	28	013	56	014	56	015	64
016	72	017	24						

F64-LEVEL LINKAGE EDITOR OPTIONS SPECIFIED XREF,LIST,LET
 DEFAULT OPTION(S) USED - SIZE=(1015808,516096)

CROSS REFERENCE TABLE

CONTROL SECTION			ENTRY							
NAME	ORIGIN	LENGTH	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
PROGRAM	00	7438								
IHIFRIXP*	7438	A0	IHIDSTAB	71E8	IHIENTIF	742C				
			IHIFRI	7438						
IHIOINTE*	74D8	1F8	IHIOINAR	74D8	IHIOINTG	7518				
IHIOSTRG*	76D0	148								
IHISATAN*	7818	E0	IHISAT	7818						
IHISEXPT*	78F8	138	IHISEX	78F8						

IHISLOGM*	7A30	E8										
IHISSCSN*	7B18	140	IHISLO	7A30								
IHISSQRT*	7C58	C8	IHISSCC	7B18	IHISSCS	7B52						
IHISYSCT*	7D20	780	IHISSQ	7C58								
IHIFRRXP*	84A0	F8										
IHIFSARA*	8598	E70	IHIFRR	84A0								
IHIFSARB*	9408	690	IHIFSAIN	9394								
IHIORTN*	9A98	D70										
			IHIIOROQ	9A98	IHIIOROP	9B7E	IHIIORNX	9F4C	IHIIORCL	A194		
			IHIIORCP	A33E	IHIIORGP	A440	IHIIORCN	A444	IHIIOREN	A4A4		
			IHIIOREV	A522	IHIIORED	A5B8	IHIIORCI	A690	IHIIORER	A714		
IHIERROR*	A808	6E8										
IHIERMSG*	AEF0	9B8										
			IHIERM01	AFA0								

LOCATION	REFERS TO	SYMBOL	IN CONTROL	SECTION	LOCATION	REFERS TO	SYMBOL	IN CONTROL	SECTION
6D88		IHISYSCT		IHISYSCT	6D8C		IHISSQ		IHISSQRT
6D90		IHISSCS		IHISSCSN	6D94		IHISSCC		IHISSCSN
6D98		IHISAT		IHISATAN	6D9C		IHISLO		IHISLOGM
6DA0		IHISEX		IHISEXPT	6DC8		IHI0INTG		IHI0INTE
6DDC		IHI0STRG		IHI0STRG	6DEC		IHIFRI		IHIFRIXP
6DF0		IHIFRR		IHIFRRXP	8590		IHISEX		IHISEXPT
858C		IHISLO		IHISLOGM	93DC		IHIFSARB		IHIFSARB
8830		IHIERROR		IHIERROR	9390		IHIIORER		IHIORTN
93F0		IHIIORCP		IHIORTN	8844		IHIIORCP		IHIORTN
938C		IHIIORGP		IHIORTN	9388		IHIIOREN		IHIORTN
9384		IHIIOROQ		IHIORTN	9378		IHIIOREV		IHIORTN
9370		IHIIORCI		IHIORTN	93F8		IHIIORNX		IHIORTN
937C		IHIIORNX		IHIORTN	8849		IHIIORNX		IHIORTN
93FC		IHIIORCL		IHIORTN	9374		IHIIORCL		IHIORTN
93F4		IHIIOROP		IHIORTN	9380		IHIIOROP		IHIORTN
8840		IHIIOROP		IHIORTN	93EC		IHI0ENTIF		PROGRAM
8644		IHI0STAB		PROGRAM	940D		IHIFSARA		IHIFSARA
AED8		IHIERM01		IHIERMSG	AED4		IHIERMSG		IHIERMSG

ENTRY ADDRESS 9394

TOTAL LENGTH B8A8

****GO DOES NOT EXIST BUT HAS BEEN ADDED TO DATA SET

AUTHORIZATION CODE IS 0.

SYMBOL	TYPE	ID	ADDR	LENGTH	LDID	ASM 0201 13.38 08/17/12
CPUTIM	SD	0001	000000	0000AC		

CPU CPUTIM - ALGOL F FUNCTION TO RETURN ACCUMULATED STEP CPU TIME

PAGE 2

LOC	OBJECT	CODE	ADDR1	ADDR2	STMT	SOURCE	STATEMENT	ASM 0201 13.38 08/17/12
					2 *			00795001
					3 *	FUNCTION -		00796001
					4 *	RETURN THE ACCUMULATED STEP CPU TIME IN MICROSECONDS WHEN		00797001
					5 *	CALLED AS AN ALGOL F FUNCTION DECLARED AS -		00798001
					6 *	'INTEGER' 'PROCEDURE' CPUTIM; 'CODE';		00799001
					7 *	THIS ALGOL F FUNCTION IS DESIGNED TO OPERATE IN THE		00800001
					8 *	MVS 3.8 ENVIRONMENT		00801001
					9 *			00802001
					10 *	ENVIRONMENT -		00803001
					11 *	SEE OS/360 ALGOL F PROGRAMMERS GUIDE GC33-4000 FOR A		00804001
					12 *	DESCRIPTION OF THE INVOKING ENVIRONMENT		00805001
					13 *			00806001
					14 *	STATUS -		00807001
					15 *	THIS FUNCTION IS SERIALLY REUSEABLE BUT NOT		00808001
					16 *	RECURSIVE OR REENTRANT		00809001
					17 *			00810001
000000					18	CPUTIM	CSECT	00811001
					19 *			00812001
					20 *	FSA OFFSETS		00813001
					21 *			00814001
			000D4		22	CAP1	EQU X'0D4'	00815001
			000D8		23	CAP2	EQU X'0D8'	00816001
			000DC		24	PROLOGFP	EQU X'0DC'	00817001
			000E4		25	RETPROG	EQU X'0E4'	00818001
			000E8		26	EPILOGP	EQU X'0E8'	00819001
			000F4		27	CSWE1	EQU X'0F4'	00820001
			00118		28	VALUCALL	EQU X'118'	00821001
					29 *			00822001
			00000		30		USING PBTAB,R11	00823001
					31 *			00824001
					32 *	PROGRAM BLOCK TABLE		00825001
					33 *			00826001
000000 00000000					34	PBTAB	DC A(0)	00827001
000004 C3D7E4E3					35		DC CL4'CPUT' NAME	00828001
000008 00000000					36		DC A(0)	00829001
00000C 0020					37		DC H'32' L'DSA FOR TYPED PROCEDURE (FUNCTION)	00830001
00000E 08					38		DC X'08' TYPE PROCEDURE INTEGER	00831001
00000F 00					39		DC AL1(0) NUMBER OF FORMAL PARAMETERS	00832001
					40 *			00833001
					41 *	ENTRY BLOCK		00834001
					42 *			00835001
000010 00000000					43	CPUECT	DC A(PBTAB)	00836001
000014 00000000					44		DC A(0)	00837001
000018 0000001C					45		DC A(CPUCODE)	00838001
					46 *			00839001
					47 *	ESTABLISH ADDRESSABILITY TO THE PSA, ASCB		00840001
					48 *			00841001
			00000		49		USING PSA,R0	00842001
			00000		50		USING ASCB,R4	00843001
					51 *			00844001
00001C 47F0 B036			00036		52	CPUCODE	B CPUCODEA	00845001
					53 *			00846001
000020 15					54		DC AL1(L'ID)	00847001
					55	ID	DC C'CPUTIM &SYSDATE &SYSTIME'	00848001
000021 C3D7E4E3C9D440F0					56+ID		DC C'CPUTIM 08/17/12 13.38'	00848001

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	ASM 0201 13.38 08/17/12
				57 *		00849001
000036	90EA B070	00070		58 CPUCODEA STM	R14,R10,SAVEAREA+12	00850001
00003A	5840 0224	00224		59 L	R4,PSAAOLD R4 -> CURRENT ASCB	00851001
00003E	9823 4040	00040		60 LM	R2,R3,ASCBEST ACCUM STEP TCB CPU TIME	00852001
000042	5E30 40CC	000CC		61 AL	R3,ASCBSTRT+4 ADD ACCUM SRB CPU TIME	00853001
000046	47C0 B04E	0004E		62 BC	12,CPUCODEB OVERFLOW ? NO, BRANCH	00854001
00004A	4120 2001	00001		63 LA	R2,1(R2) YES, ADD CARRY	00855001
00004E	5A20 40C8	000C8		64 CPUCODEB A	R2,ASCBSTRT TOTAL CPU TIME (TCB + SRB)	00856001
000052	8C20 000C	0000C		65 SRDL	R2,(63-51) SHIFT TO CONVERT TO MICROSECONDS	00857001
000056	5030 A018	00018		66 ST	R3,24(,R10) STORE RESULT IN DSA+24	00858001
00005A	98EA B070	00070		67 LM	R14,R10,SAVEAREA+12	00859001
00005E	47F0 D0E8	000E8		68 B	EPILOGP(,R13) RETURN VIA EPILOG CODE IN FSA	00860001
				69 *		00861001
000062	0000					
000064	0000000000000000			70 SAVEAREA DC	18F'0'	00862001
				71 *		00863001
				72	PRINT NOGEN	00864001
				73 *		00865001
				74 *	PREFIXED SAVE AREA	00866001
				75 *		00867001
				76	IHAPSA	00868001
				544 *		00869001
				545 *	ADDRESS SPACE CONTROL BLOCK	00870001
				546 *		00871001
				547	IHAASCB	00872001
				780 *		00873001
				781	PRINT GEN	00874001
				782 *		00875001
				783 *	REGISTER EQUATES	00876001
				784 *		00877001
				785	IEZREGS	00878001
	00000	786+R0		EQU	0	00000600
	00001	787+R1		EQU	1	00000700
	00002	788+R2		EQU	2	00000800
	00003	789+R3		EQU	3	00000900
	00004	790+R4		EQU	4	00001000
	00005	791+R5		EQU	5	00001100
	00006	792+R6		EQU	6	00001200
	00007	793+R7		EQU	7	00001300
	00008	794+R8		EQU	8	00001400
	00009	795+R9		EQU	9	00001500
	0000A	796+R10		EQU	10	00001600
	0000B	797+R11		EQU	11	00001700
	0000C	798+R12		EQU	12	00001800
	0000D	799+R13		EQU	13	00001900
	0000E	800+R14		EQU	14	00002000
	0000F	801+R15		EQU	15	00002100
				802 *		00879001
000010				803	END CPUENT	00880001

POS.ID	REL.ID	FLAGS	ADDRESS	ASM 0201 13.38 08/17/12
0001	0001	0C	000010	
0001	0001	0C	000018	

SYMBOL	LEN	VALUE	DEFN	REFERENCES	ASM 0201 13.38 08/17/12
ASCB	00001	00000000	00564	00050	
ASCBEST	00008	00000040	00619	00060	
ASCBSEBT	00008	000000C8	00778	00061 00064	
CPUCODE	00004	0000001C	00052	00045	
CPUCODEA	00004	00000036	00058	00052	
CPUCODEB	00004	0000004E	00064	00062	
CPUNT	00004	00000010	00043	00003	
EPILOGP	00001	000000E8	00026	00068	
FLCEICOD	00002	00000086	00150	00151	
FLCENPSW	00004	00000058	00129	00131	
FLCEOPSW	00008	00000018	00112	00113	
FLCINPSW	00004	00000078	00142	00144	
FLCIOPSW	00008	00000038	00120	00121	
FLCIPPSW	00008	00000000	00103	00106	
FLCMNPSW	00004	00000070	00138	00141	
FLCMOPSW	00008	00000030	00118	00119	
FLCPICOD	00002	0000008E	00170	00171	
FLCPIILC	00001	0000008D	00164	00169	
FLCPNPSW	00004	00000068	00135	00137	
FLCPOPSW	00008	00000028	00116	00117	
FLCSNPSW	00004	00000060	00132	00134	
FLCSOPSW	00008	00000020	00114	00115	
FLCSVCN	00002	0000008A	00160	00161	
FLCSVILC	00001	00000089	00155	00159	
FLCTIMER	00004	00000050	00126	00127	
ID	00021	00000021	00056	00054	
PBTAB	00004	00000000	00034	00030 00043	
PSA	00001	00000000	00101	00049 00313 00318	
PSAAOLD	00004	00000224	00250	00059	
PSAIPCDM	00001	0000026C	00319	00318	
PSAIPCRM	00001	00000264	00314	00313	
PSATNEW	00004	00000218	00246	00247	
R0	00001	00000000	00786	00049	
R10	00001	0000000A	00796	00058 00066 00067	
R11	00001	0000000B	00797	00030	
R13	00001	0000000D	00799	00068	
R14	00001	0000000E	00800	00058 00067	
R2	00001	00000002	00788	00060 00063 00064 00065	
R3	00001	00000003	00789	00060 00061 00066	
R4	00001	00000004	00790	00050 00059	
SAVEAREA	00004	00000064	00070	00058 00067	

ASM 0201 13.38 08/17/12

NO STATEMENTS FLAGGED IN THIS ASSEMBLY

HIGHEST SEVERITY WAS 0

OPTIONS FOR THIS ASSEMBLY

ALIGN, ALOGIC, BUFSIZE(STD), DECK, ESD, FLAG(0), LINECOUNT(55), LIST, NOMCALL, YFLAG, WORKSIZE(2097152)

NOMLOGIC, NONUMBER, OBJECT, NORENT, RLD, NOSTMT, NOLIBMAC, NOTERMAL, NOTEST, XREF(SHORT)

SYSPARM()

WORK FILE BUFFER SIZE/NUMBER =19066/ 1

TOTAL RECORDS READ FROM SYSTEM INPUT 88

TOTAL RECORDS READ FROM SYSTEM LIBRARY 762

TOTAL RECORDS PUNCHED 7

TOTAL RECORDS PRINTED 172

F64-LEVEL LINKAGE EDITOR OPTIONS SPECIFIED XREF,LET,LIST,NCAL
DEFAULT OPTION(S) USED - SIZE=(1015808,516096)

CROSS REFERENCE TABLE

CONTROL SECTION			ENTRY							
NAME	ORIGIN	LENGTH	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
CPUTIM	00	AC								

LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION	LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION
----------	------------------	--------------------	----------	------------------	--------------------

ENTRY ADDRESS 10

TOTAL LENGTH B0

***CPUTIM DOES NOT EXIST BUT HAS BEEN ADDED TO DATA SET
AUTHORIZATION CODE IS 0.


```

      Algol F Statement Timings
Picoseconds  Statement
+14   x := 1.0
+492  x := 1
+327  x := y
+164  x := y + z
+164  x := y * z
+163  x := y / z
+164  k := 1
+655  k := 1.0
+164  k := 1 + m
+327  k := 1 * m
+1638 k := 1 / m
+164  k := 1
+492  x := 1
+659  l := y
+818  x := y ** 2
+820  x := y ** 3
+2625 x := y ** z
+164  e1[1] := 1
+328  e2[1,1] := 1
+163  e3[1,1,1] := 1
+328  l := e1[1]
+13454 begin real a; end
+5732  begin real a[1:1]; end
+8846  begin real a[1:500]; end
+5896  begin real a[1:1,1:1]; end
+5898  begin real a[1:1,1:1,1:1]; end
+3112  begin goto lab; lab: end
+2783  begin switch s := q; goto s[1]; q: end
+1638  x := sin(y)
+1473  x := cos(y)
+164   x := abs(y)
+1309  x := exp(y)
+1310  x := ln(y)
+982   x := sqrt(y)
+1475  x := arctan(y)
+491   x := sign(y)
+983   x := entier(y)
+27542 p0
+31601 p1(x)
+33736 p2(x,y)
+35911 p3(x,y,z)
      0  D0 Loop overhead

END OF ALGOL PROGRAM EXECUTION

```