
Procedure debut

1 Drank

To allocate the resources memory, disc and files.

The execution consists of a set of commands starting with `debut` and ending in `FIN` [U4.11.02], (see also the procedure `POURSUIITE` [U4.11.03]).

The command `debut` which is carried out, as of its reading by the Supervisor, carries out the following tasks:

- definition of the characteristics of data bases (managed by JEVEUX) and assignment of the associated files,
- reading of the catalogs of the elements and the commands.

The apparently complex syntax of this procedure should not worry the user; its call with the operands by default, sufficient in most case, is: `debut s ()`

the operands are to be used in the case of studies requiring a more important size of the files "data bases" or to divert the various files on numbers of logical unit different from the numbers affected by default.

The commands placed before `debut`, if they are syntactically correct, are ignored.

Contents

1	But1.....	
2	Syntaxe3.....	
3	Affichages4.....	
4	Opérandes4.....	
4.1	Operand PAR_LOT4.....	
4.2	Key word IMPR_MACRO4.....	
4.3	Key word LANG5.....	
4.4	Key word BASE5.....	
4.4.1	Operand FICHER6.....	
4.4.2	Operands LONG_ENRE/NMAX_ENRE/LONG_REPE6.....	
4.5	Key word CODE6.....	
4.5.1	Operand NOM6.....	
4.5.2	Operand NIV_PUB_WEB7.....	
4.6	Key word ERREUR7.....	
4.6.1	Operand ERREUR_F7.....	
4.7	Key word IGNORE_ALARM7.....	
4.8	Key word DEBUG	
8.4.8.1	Operand JXVERI8.....	
4.8.2	Operand ENVIMA8.....	
4.8.3	Operand JEVEUX8.....	
4.8.4	Operand SDVERI	
8.4.8.5	Operand HIST_ETAPE8.....	
4.9	Key word MESURE_TEMPS8.....	
4.9.1	Operand NIVE_DETAIL8.....	
4.9.2	Operand MOYENNE9.....	
4.10	Key word MEMOIRE9.....	
4.10.1	Operand TAILLE_GROUP_ELEM9.....	
4.10.2	Operand TAILLE_BLOC9.....	
4.11	Key word CATALOGUE9.....	
4.11.1	Operand FICHER	10
4.11.2	Operand UNITE	10
4.12	Key word RESERVE_CPU10.....	
4.12.1	Operand VALE10.....	
4.12.2	Operand POURCENTAGE10.....	
4.12.3	Operand BORNE	10

2 Syntax

```
debut
(  ◊PAR_LOT          =          "OUI",
[DEFAULT]
          /  "NON",
          ◊IMPR_MACRO =          "NON",
[DEFAULT]
          /  "OUI",

          ◊LANG      = Lang,                                     [TXM]
          ◊BASE      = _F (  ◊FICHER =          "TOTAL",
                              /  "VOLATILE",
                              /  | LONG_ENRE = lenr, [I]
                              | NMAX_ENRE = nenr, [I]
                              | LONG_REPE = lrep, [I]
                              ),
          ◊CODE      = _F (  (  ◊NOM      =nom          code, [K8]
                              ◊NIV_PUB_WEB=/          "INTERNET",
                              /  "INTRANET",
                              ◊VISU_EFICAS=/          "OUI",
                              /  "NON",
                              ),
          ◊ERREUR    = _F (ERREUR_F=/          "ABORT", [DEFAULT]
                              /  "EXCEPTION",
                              ),
          ◊IGNORE_ALARM =l_vale , [l_Kn]
          ◊DEBUG     = _F (  JXVERI =          "OUI",
                              /  "NON",
                              ENVIMA =          ' TEST', [l_Kn]
                              ◊JEVEUX =          "OUI",
                              /  "NON",
                              ◊SDVERI =          "OUI",
                              "NON",
                              ◊HIST_ETAPE =          "NON",
                              "OUI",
                              ),
          ◊MESURE_TEMPS = _F (
[DEFAULT]
                              ◊NIVE_DETAIL = 0
                              /2/1/3

                              ◊MOYENNE =          "OUI" [DEFAULT]
                              /"NON"
                              ),
          ◊MEMOIRE   = _F (  ◊TAILLE_BLOC=/800          ..,
[DEFAULT]
                              /tbloc , [R]
                              ),
          ◊CATALOG   = _F (  ◊ FICHER=          nfic,
[l_Kn]
                              ◊ UNITE=          unit, [I]
                              ),
```

Warning : The translation process used on this website is a "Machine Translation". It may be imprecise and inaccurate in whole or in part and is provided as a convenience.

```
◇RESERVE_CPU =_F ( / VALE=vale [R]
                  / POURCENTAGE= pcent [R]
                  ◇ BORNE=/bv [R]
                  /180 . [DEFAULT]
                  ),
)
```

3 Displays

At the beginning of the execution of Code_Aster, a heading is displayed. One finds there:

- the identification specifies version used: number of version, date of the last modifications,
- the date and the hour of the beginning of the execution,
- the name, architecture, the operating system of the machine,
- the language used for the display of the messages,
- the type of parallelism available (MPI/OpenMP), the number of allocated processors,
- the version of the libraries used (when it is available) for hdf5, med, mumps, Scotch tape,
- then several information on the distribution of the memory.

For example:

```
Memory limits for the execution: 256.00 Mo
consumed by the initialization: 148.68 Mo
by the objects of the command set: 17.48 Mo
remains for the dynamic allocation: 89.84 Mo
Cuts limit of the files of exchange: 48.00 Go
```

What means:

- 256 Mo is the quantity of memory required by the user, it is the total quantity which one should not exceed.
- 148.68 Mo is consumed simply by starting the execution (loading of executable, the associated dynamic libraries, etc).
- 17.48 Mo is consumed by the reading of the command file (Note:: in mode PAR_LOT='NON', the command set being read progressively, this value will be then null).
- 89.84 Mo is the quantity of memory available (at this time) for the objects of computation (equalizes to 256-148.68-17.48). It is thus seen that computation cannot begin if this value is too low.

During the execution, according to the dynamic allocations carried out, when this value varies of more than 10 % (upwards or downwards), a message of this type informs the user:

```
The memory currently consumed except JEVEUX is of 214.08 Mo.
The limit of dynamic allocation JEVEUX is fixed at 41.92 Mo.
```

At the end of the execution, an assessment indicates if same computation can be started again with less memory:

```
The memory requested from launching is over-estimated, it is of 256 Mo.
The peak report used is of 216.02 Mo.
```

or so more memory is necessary (indeed according to the platforms, the maximum limit can be exceeded without the system stopping computation):

```
The memory requested from launching is underestimated, it is of 256 Mo.
The peak report used is of 273.22 Mo.
```

4 Operands

4.1 Operand PAR_LOT

PAR_LOT =

Mode of processing of the commands:

- "OUI" : (option by default); the supervisor analyzes **all** the commands before asking for the execution of it.
- "NON" : after having analyzed a command the supervisor asks for his execution then passes to the analysis (and the execution) of the command following (processing orders by command).

4.2 Key word IMPR_MACRO

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IMPR_MACRO =

Authorizes or not the displays produced by the macros in the file of message. The reading of the files of message can be painful when it contains the totality of the echoes of the subcommands generated by macro itself. By default, only the echo of the commands explicitly called by the user in his command set will appear.

4.3 Key word LANG

It makes it possible to choose the language of display of the messages transmitted by the code. If the key word is not indicated, in fact the environment variables determines the language of the messages (reference: <http://www.gnu.org/software/gettext/manual/gettext.html#Users>). One can for example define in the file `~/.bashrc`: `LANG=fr_FR.UTF-8 export`. Encoding (UTF-8 or ISO-8859-1) makes it possible to correctly display the accentuated characters. The LANG key word expects a value in two letters, for example "FR" (for French) or "IN" (for English).

When a language is selected (that it is by the environment or LANG), still it is necessary that the file of the translated messages (file .mo) is available. This file is expected under this name:

```
$ASTER_ROOT/share/locale/"Lang `"/LC_MESSAGES/aster_ "version `".mo
```

where \$ASTER_ROOT is the principal directory of Code_Aster (e.g.: /aster or /opt/aster), Lang is the name in small letters of the language (e.g. in, Fr, of...) and version is the name of the version of Code_Aster used (stable e.g., testing, unstable).

If the file of translation cannot be read, it is French who is used.

Notice

Even if the file of translation exists, when a message was not translated, there is displayed in French (language used of the messages in the source code).

4.4 Key word BASE

BASE =

the functionality of this key word is to redefine the values of the parameters of the files of direct accesses associated with "data bases" if one does not wish to use those built-in by default.

Values by default of the parameters associated with data bases.

GLOBALE

NMAX_ENRE	62914	
LONG_ENRE	100	Kmots
LONG_REPE	2000	

VOLATILE

NMAX_ENRE	62914	
LONG_ENRE	100	Kmots
LONG_REPE	the 2000	

key is worth 8 bytes out of platform 64 bits under LINUX 64, TRU64 and IRIX 64,4 bytes out of platform 32 bits under SOLARIS, HP-UX and WINDOWS - NT, LINUX.

Under Linux 64, with the default values, the procedure debut will allocate a file of direct access of to more the 62914 records of 100 Kmots (K 1024 are worth) for the "TOTAL" base.

Note:

The real size of the file is dynamic; it depends on the volume of information to store indeed. But this size is limited by the conditions of operating and a parameter preset among the values characterizing the platform. On the platform of reference Linux 64 bits, the maximum size is fixed

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at 48 Go. This value can be modified while passing an argument on the command line of L" executable behind the key word "- max_base size" where size is an actual value measured out of Mo.

On the platforms 32 bits, the maximum size is fixed at 2.047 Go (2 147.483.647), but the code manages several files to go beyond this limit when the parameter "- max_base" passed in argument.

For the global database, which can be saved and re-used in data D" a computation, the maximum size in "POURSUITE" is preserved such as it is if the parameter "- max_base" is not used, but perhaps redefined with the need for this way.

4.4.1 Operand FICHER

◆FICHER =

Symbolic name of the base considered.

4.4.2 Operands LONG_ENRE/NMAX_ENRE/LONG_REPE

Definition of the parameters of data base (files of direct access).

/ | LONG_ENRE = lenr

lenr is the length of the records in Kmots of the files of direct accesses used.

Note:

The manager of JEVEUX memory uses this parameter to determine two types of objects: the large objects which will be cut out in as many records as necessary, and the small objects which will be accumulated in a plug of the size of a record before being discharged.

| NMAX_ENRE = nenr

nenr is the number of records per default, this value is given from LONG_ENRE and of an operating parameter on the platform of reference Linux 64 fixed at 48 Go (51 539 607 552 bytes) for the maximum size of the file associated with a data base, if this value were not modified by the use of the key word - max_base on line of ordering of the executable one.

Note:

Two operands LONG_ENRE and NMAX_ENRE must be used with precaution, a bad use which can lead to the brutal stop of the program by saturation of the files of direct access. Coherence between the maximum size of the file and the value resulting from the product of two parameters LONG_ENRE and NMAX_ENRE is checked at the beginning of execution.

| LONG_REPE = lrep

lrep is the initial length of the directory (maximum number of addressable objects by JEVEUX), it is managed dynamically by the manager of memory which extends the size of the directory and all the associated system objects as needs.

Note:

The choice by the user to modify these various parameters determines in a final way certain characteristics of the global database which cannot be modified in POURSUITE any more.

4.5 Key word CODE

CODE =

Definition of a name for the group of a study. This key word is intended only for the command files of the tests of non regression managed with the source code.

The presence of this key word starts the emission of a message of information and automatically positions the mode of debuggage DEBUG (JXVERI = "OUI",) which implements checks on the JEVEUX objects, which can bring a overcost to the execution. The behavior in the event of error can be modified.

4.5.1 Operand NOM

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◆NOM = name codes

Name of identification of the study, this name is with more than 8 characters.

4.5.2 Operand NIV_PUB_WEB

◆ NIV_PUB_WEB = "INTRANET"

Level gauge of publication. Meaning that the test is only diffusable on the internal network.

NIV_PUB_WEB = "INTERNET"

Indicates that the test is diffusable such as it is on the external network.

VISU_EFICAS = "OUI"

Indicates that the command file can be open without problem with tools EFICAS. This key word is primarily used for the tests and at ends of receipt of the new versions of the tools.

VISU_EFICAS = "NON"

Announces the presence of python source in the command file not allowing its edition with tools EFICAS.

4.6 Key word ERREUR

Makes it possible to modify the behavior of the code in the event of <F> error.

4.6.1 Operand ERREUR_F

In the event of error, the code stops the normal execution of the command set.

By default, an exception is then raised (for the detailed definition of an exception Python, one will refer to the documentation of Python or that of the supervisor, cf [U1.03.01]). In this case, the code carries out the command FIN (cf [U4.11.02]) which closes the base then in order to allow the possible poursuite of computation. It will be noticed that, although the initial error is known as "fatal" (<F>), the diagnosis is <S>_ERROR since the exception "is recovered" by FIN. This base will be then recopied by the manager of studies. This is the behavior when ERREUR_F=' EXCEPTION'.

If ERREUR_F=' ABORT', that means that one explicitly asks the code definitively to stop the execution of the command set in the event of fatal error (<F>). Command FIN is not carried out, the base is thus not closed correctly, it is not recopied and no resumption of computation is possible.

Remarks

For the execution of the benchmarks by the developers, the stop by ABORT is automatic and by default. This is activated by the presence of factor key word the CODE (except if ERREUR_F specifies another thing).

In the event of lack of time CPU, of memory, for all errors of the <S> type and the exceptions, the behavior that is described when ERREUR_F=' EXCEPTION' .

4.7 Key word IGNORE_ALARM

IGNORE_ALARM =

Makes it possible to the user to remove the display of certain alarms (of which he knows the origin) in order to more easily identify other alarms which could appear.

During execution of the command FIN, one systematically displays a summary table of the alarms emitted during the execution (and the number of occurrences). The alarms ignored by the user are preceded by "*" to distinguish them (and they appear even if they were not emitted).

Alarms are indicated from the nomenclature appearing between the characters < and >, for example:
IGNORE_ALARME = ("MED_2", "SUPERVIS_40",...).

4.8 Key word DEBUT

DEBUT =

Option of débogage (reserved for the developers and the maintenance of the code).

4.8.1 Operand JXVERI

JXVERI =

Makes it possible to control the integrity of the segments of the memory between two executions of consecutive commands. By default the execution is carried out without "DEBUT". This option is systematically activated in the presence of key word CODE.

4.8.2 Operand ENVIMA

ENVIMA = "TEST"

Makes it possible to print in the results file the values of the parameters preset in software package ENVIMA characterizing the machine [D6.01.01].

4.8.3 Operand JEVEUX

◇JEVEUX =

Makes it possible to activate the operating mode in debug of the manager of JEVEUX memory: unloadings on disc not differed and assignment from the segments values to an indefinite value [D6.02.01].

4.8.4 Operand SDVERI

SDVERI = "NON"

the use of this key word is bound for the developers. Attention, this functionality little to cause a considerable overcost during the execution.

This key word starts the checking of data structures produced by the operators. It is used in the frame of the procedures of development of the code in the tests of non regression. If key word CODE is present, this key word takes the default value "YES".

4.8.5 Operand HIST_ETAPE

HIST_ETAPE = "NON"

This key word makes it possible to preserve all the history of the stages/commands used. This is greedy in memory and must be used only for quite particular cases (the commands which require it indicates it in their documentation).

By default, this history is not preserved.

4.9 Key word MESURE_TEMPS

key word MESURE_TEMPS makes it possible to choose the level of detail of the impressions of TEMPS CPU which will be displayed in the file of messages by the commands carrying out of elementary computations, of the resolutions of systems linear, the unloading of objects on disc or communications MPI.

4.9.1 Operand NIVE_DETAIL

By default, at the end of each command, one will print line type:

```
#1.Resolution.des.systemes.lineaires CPU. (USER+SYST/SYST/ELAPS ) : 7.52 0.79 11.22 #
2.Calculs.elementaires.et.as
semblages CPU. (USER+SYST/SYST/ELAPS ) : 15.07 0.70 15.77 ◇NIVE_DETAIL=0 no
```

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```
printing . =1          by default printings
                       . =2 more detailed printings
                       : #1.RESOLUTION.DES.SYSTEMES.LINEAIRES CPU (USER
+SYST/SYST/ELAPS): 7.72 0.82 8.72          #1.1.Numerotation, .connectivity .de.la.ma trice
CPU (USER+SYST/SYST/ELAPS): 0.21 0.02 0.31 #1.2.FACTORIZATION.SYMBOLIC CPU (USER+SYST /SYST
/ELAPS): 0.58 0.05 1.28 #                1.3.Factorisation.numeric. (ou.precond .) CPU
( USER+
SYST/SYST/ELAPS): 6.78 0.73 7.71 #1.4.RESOLUTION      CPU (USER+SYST/SYST/ELAPS ): 0.15 0.02
0.35 # 2.Calculs.elementaires.et.as                semblages CPU (USER +SYST
/SYST/ELAPS): 28.87 0.64 29.47 #2.1.ROUTINE.CALCUL      CPU (USER+SYST/SYST/ELAPS): 26.61
0.56 26.61 #2.1.1.Routines.te                        00ij CPU (USER+SYST/SYST/ELAPS): 24.58
0.07 25.78 #2.2.ASSEMBLAGES                          CPU (USER+SYST/SYST/ELAPS): 2.26 0.08
3.36 #2.2.1.ASSEMBLAGE.MATRICES                      CPU (USER+SYST/SYST /ELAPS):
2.02
0.06 3.12 #2.2.2.ASSEMBLAGE.SECONDS.MEMBRES CPU (USER          +SYST/SYST/ELAPS):
0.24 0.02 0.37 =3
more detailed printings and incremental                printing for each time step .
```

During parallel computations (MPI), the time spent in the communications

is also displayed: #4 Communications MPI CPU (USER+SYST/SYST/ELAPS): 12.67 0.50 12.68
AVERAGE Operand

◇MOYENNE=' OUI' display of the statistics (default) = ' NON "not of
display

4.9.2 of the statistics

the MOYENNE key word makes it possible to exclusively control the display
of additional statistics

for parallel computations. It is the average of measurements on all the processors as well as the
standard deviation of these measurements. By default each time displayed is supplemented as
follows: #1 Résolution.des.systèmes.linéaires

CPU (USER+SYST/SYST/ELAPS): 0.29 0.00 0.35 (average....

```
diff. .procs) CPU (USER+SYST/SYST/ELAPS          ): 0.30 0.00 0.47 (variation - type.diff .
.PROCS )
CPU (USER+SYST/SYST/ELAPS)                        : 0.01 0.00 0.05 Key word MEMOIRE the
assignment
of various data structures                          is a dynamic allocation ,
```

4.10 the user indicates

the limits of resource during the launching of executable in the interface of access. Operand
TAILLE_GROUP_ELEM TAILLE_GROUP_ELEM = tgrcl [default: 1000] This parameter gives the
maximum

4.10.1 number of finite elements of

the same type which will be gathered in

a group of elements. This parameter influences the performances memory and CPU of elementary
computations and the assemblies

. When tgrcl is increased, one must in general save TEMPS CPU. On the other hand, the JEVEUX
objects are

larger, which can require more memory. Operand TAILLE_BLOC TAILLE_BLOC = tbloc [default:
800.] This parameter gives the size of the blocks of

4.10.2 the matrixes factorized

for solver LDLT. This size

is given in kiloR8 (1 kiloR8 = 1024 realities). This parameter influences the number of operations of input/output and thus over the time of assembly and resolution. By default this value is fixed at 800 kiloR8, that is to say 8 records per default on the file D" direct access associated with base JEVEUX. Key word CATALOG This key word is reserved for the developers, it is used at the time of the operation

4.11 of compilation of

the catalogs of elements to obtain the file in the form of base JEVEUX. Operand FICHIER ♦ FICHIER = nfc can take only value" CATAELEM' Operand UNITE ♦ UNITE

4.11.1 = unit logical

Number of unit

associated with the catalogs of elements . In

4.11.2 the procedures

of construction

of the catalog of elements one uses like value 4. The file fort.4 is obtained starting from the contents of the directory of the catalo sources using a procedure python. Key word RESERVE_CPU Makes it possible to hold a share of the TEMPS CPU allotted to the job to properly finish

4.12 the execution in the event of

stop by manque de temps CPU detected by an Aster command. This mechanism is useful only in the case of an execution batch of Code_Aster. The value of this reserve can be indicated in absolute value or in the form of a *percentage* of the total TEMPS CPU. This value is limited by the value of key word BORNE. When key word CODE is present, i.e. for all the tests of non regression , one systematically imposes a reserve of 10 seconds TEMPS CPU if key word RESERVE_CPU is absent. Operand VALE Value expressed in seconds withdrawn from the total TEMPS CPU, over which some commands

4.12.1 total

bases itself to stop the execution properly. Operand POURCENTAGE Percentage withdrawn from the total TEMPS CPU, over which some commands total

4.12.2 bases itself to stop

the execution properly. Operand BORNE maximum Value of the reserve of time, being worth by default 180 seconds.

4.12.3