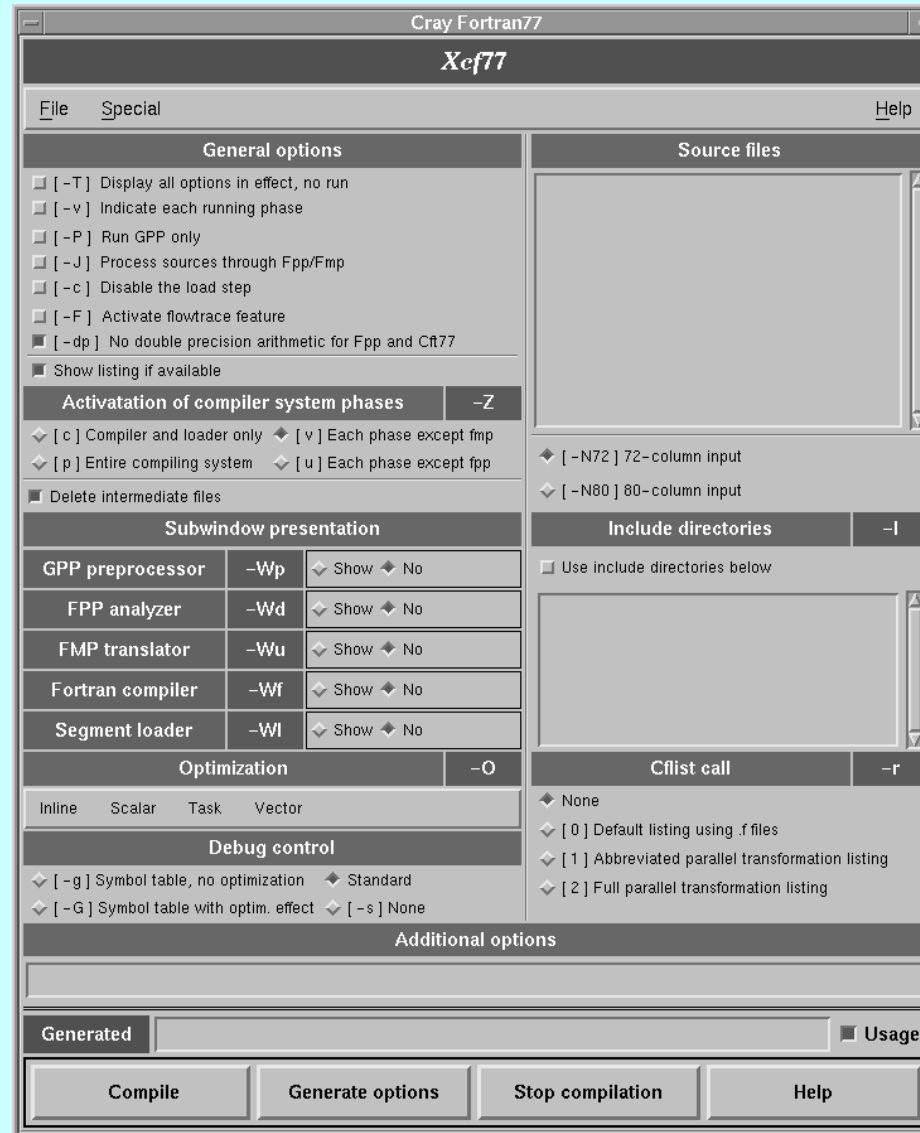


Xcf77

OSF/Motif GUI for Cf77

Xcf77 – OSF/Motif GUI for cf77

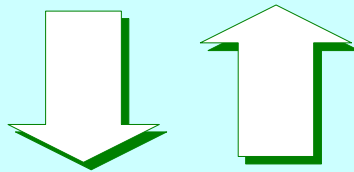


Contents

- Why GUI's?
- Design of xcf77
- Functionality of xcf77
- Example windows

Workstations and X-Terminals

Comfort by graphical access



UNIX platforms

- primitive interfaces
- cryptic interfaces
- expert oriented

Pregnant example

- cf77 development environment

Cf77 frame controlling

- tools
- preprocessors
- compiler
- segldr

The functions of the phases are **not orthogonal** to the cf77 frame:
Identical semantics, but **different syntax**.

Example:

- **-G** in cf77
- **-ez** in cft77
- **-dc -ef** in fpp

Additional handicaps:

- No online help available
- Ready reference (booklet), 42 pages **without detailed explanations**

xcf77 structure		
cf77		
Phases	Files	Other
gpp fpp fmp cft77 segldr	sources printing makefiles listings	history expert help

Implementation limitations

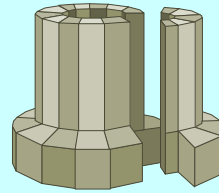
- Xcf77 is based on OSF/Motif and X-Window
- GUI part managed by interface builder (**ixbuild**)
- Complexity of X11 and Motif programming
- Problems if no CVT (Cray Vizualition Tool) available
 - Workstation versions
 - Where to locate the sources?
 - How to start compiler and phases?
 - Access to the listings?
 - Makefile handling

Two modes of Xcf77

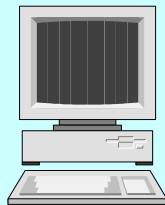
- **Mode #1: running under UNICOS**
- **Mode #2**
 - Running on workstations such as SUN (CS6400 included), HP, SGI, AIX,...
 - All CRAY actions involved by the **rsh(1) command** (security aspect), .rhosts file

CRAY supercomputer with xcf77, sources and objects

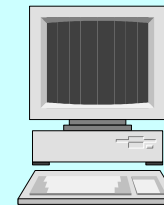
Cray system



Network



X-Terminal



**Workstation
with xcf77**

The file services control

- where xcf77 runs, included user environment
- the source editor usage
- the print command usage
- the history handling



Xcf77 environment

Xcf77 environment

Cray site

◆ Local ◆ Remote

Local (or remote) source file directory

The remote CRAY's internet address

ymp.rhrk.uni-kl.de

Remote user name

backes

Remote search paths

/usr/local/bin:/usr/rhrk:/usr/bin/X11

Close

Environment control



Xcf77 editor control

Editor for files on ymp.rhrk.uni-kl.de

Selectable editors

edit
emacs
nvi
vi

Selected or additional editor

vi

Add editor

Edit history

Enter filename and press RETURN to edit

Close

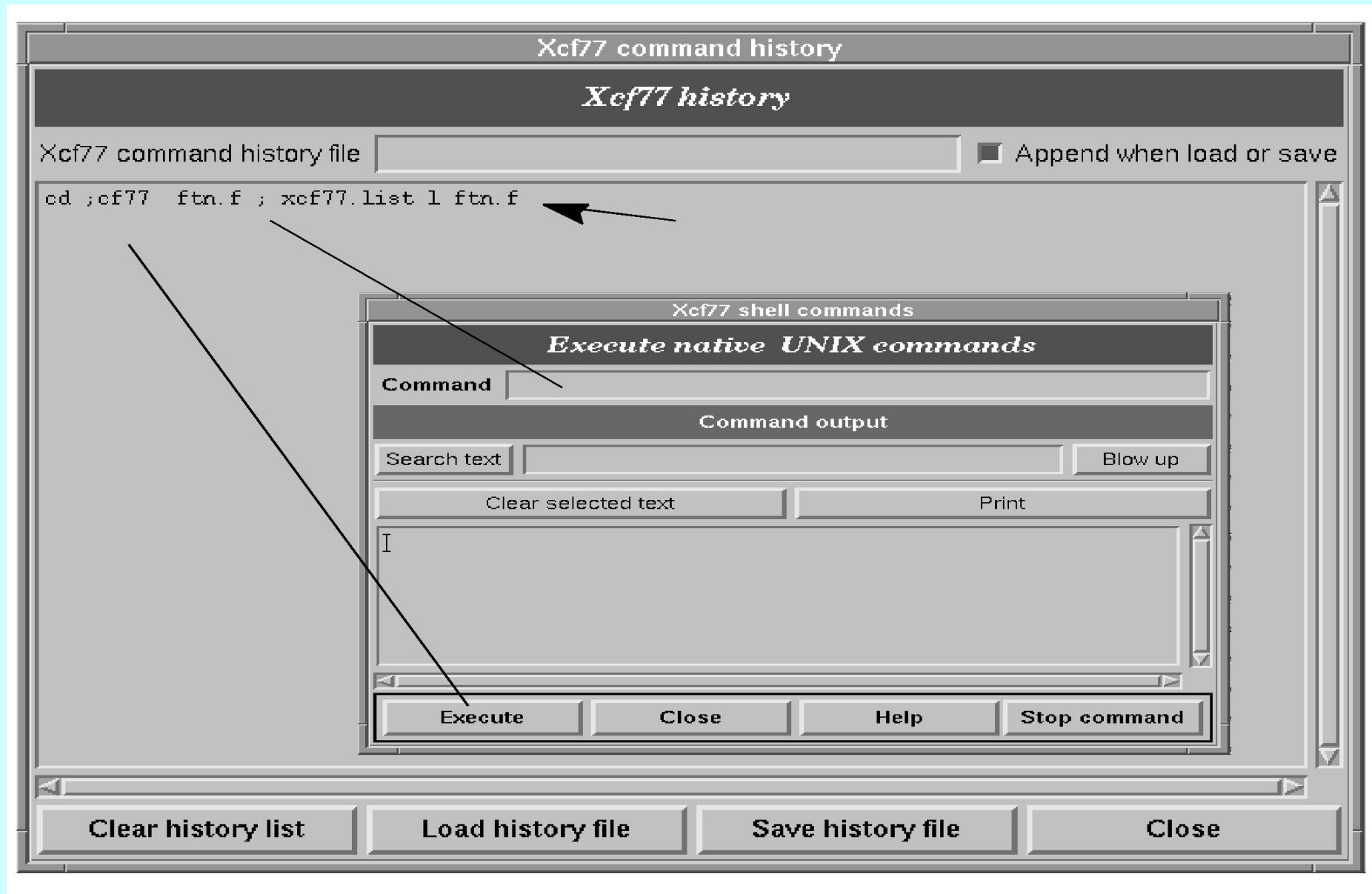
Editor control



print control

History handling

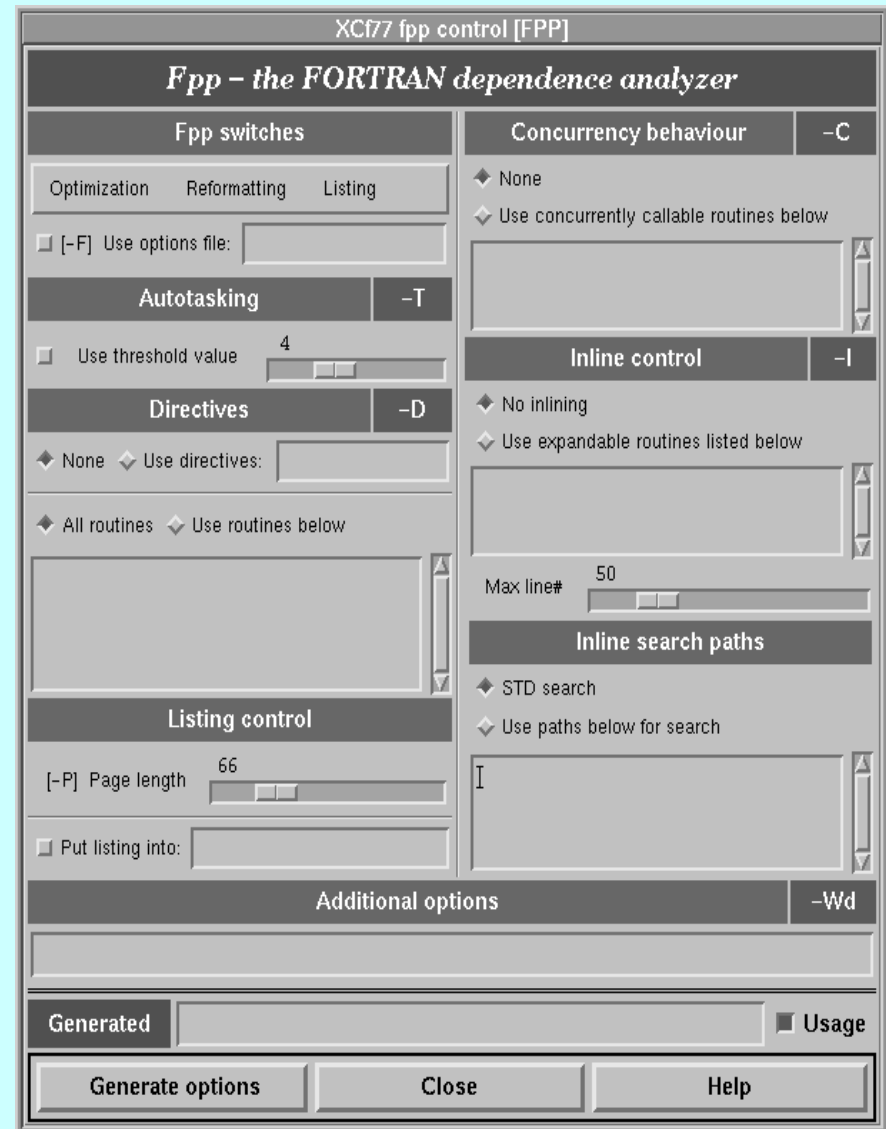
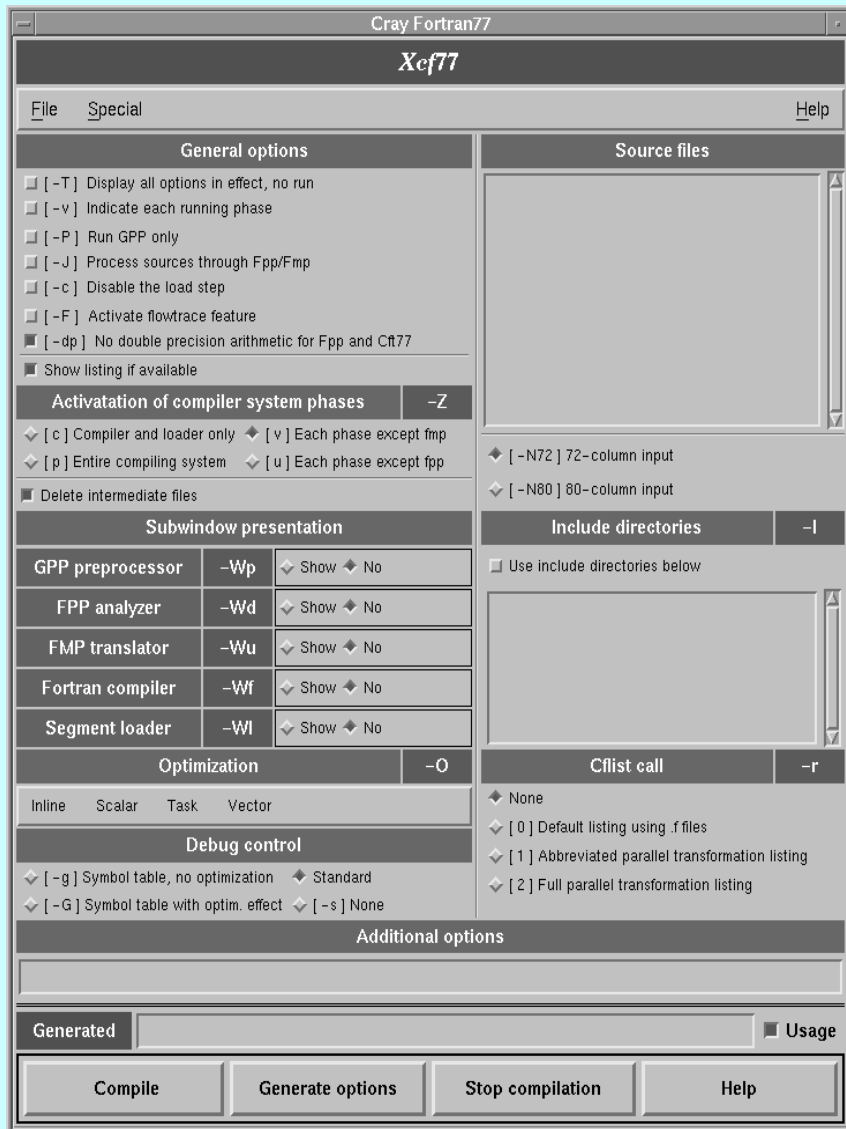
- All executed activities can be stored in history files
- History files can be loaded at each time
- Simple re-execution of stored command by a double click on a command line
- Restriction: the correspondent menus are not restored
- But before re-execution: commands can be modified after transmission into the expert window (single click)



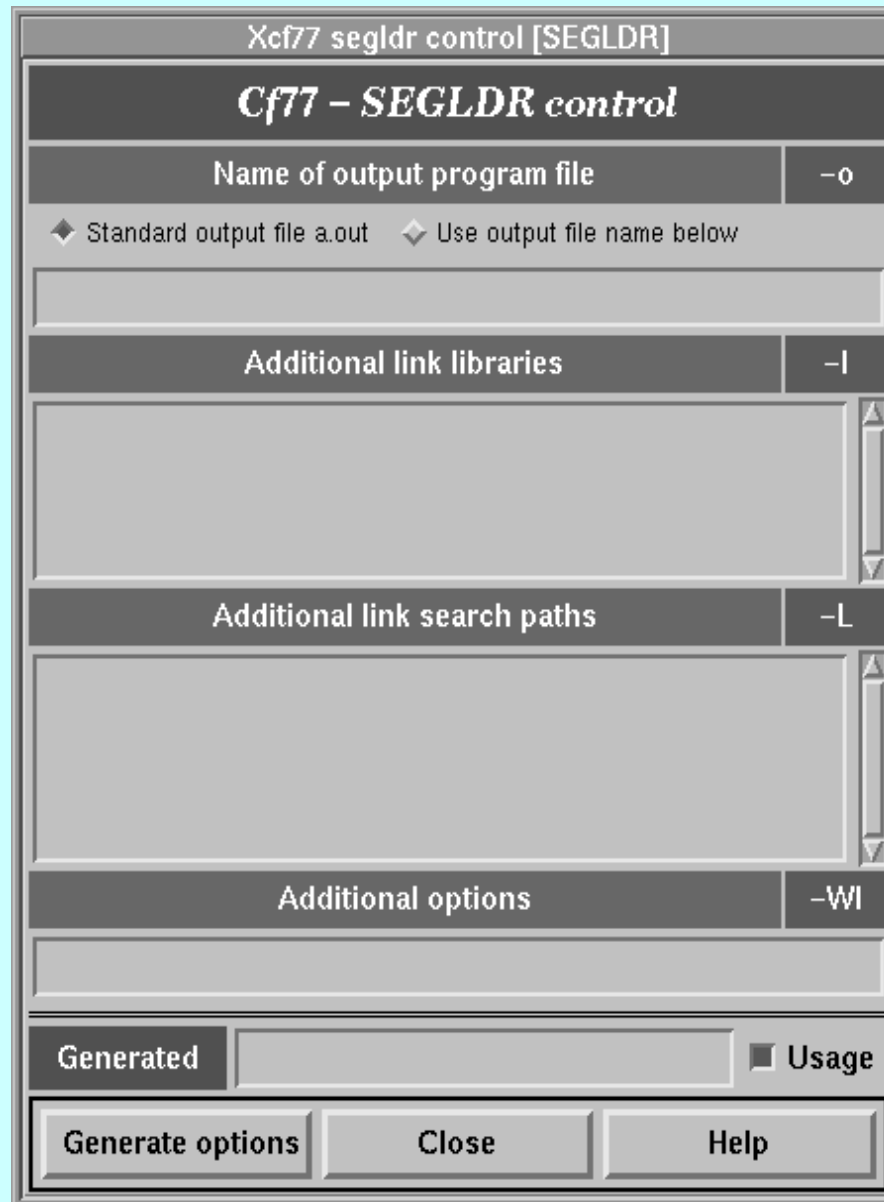
Compiler control

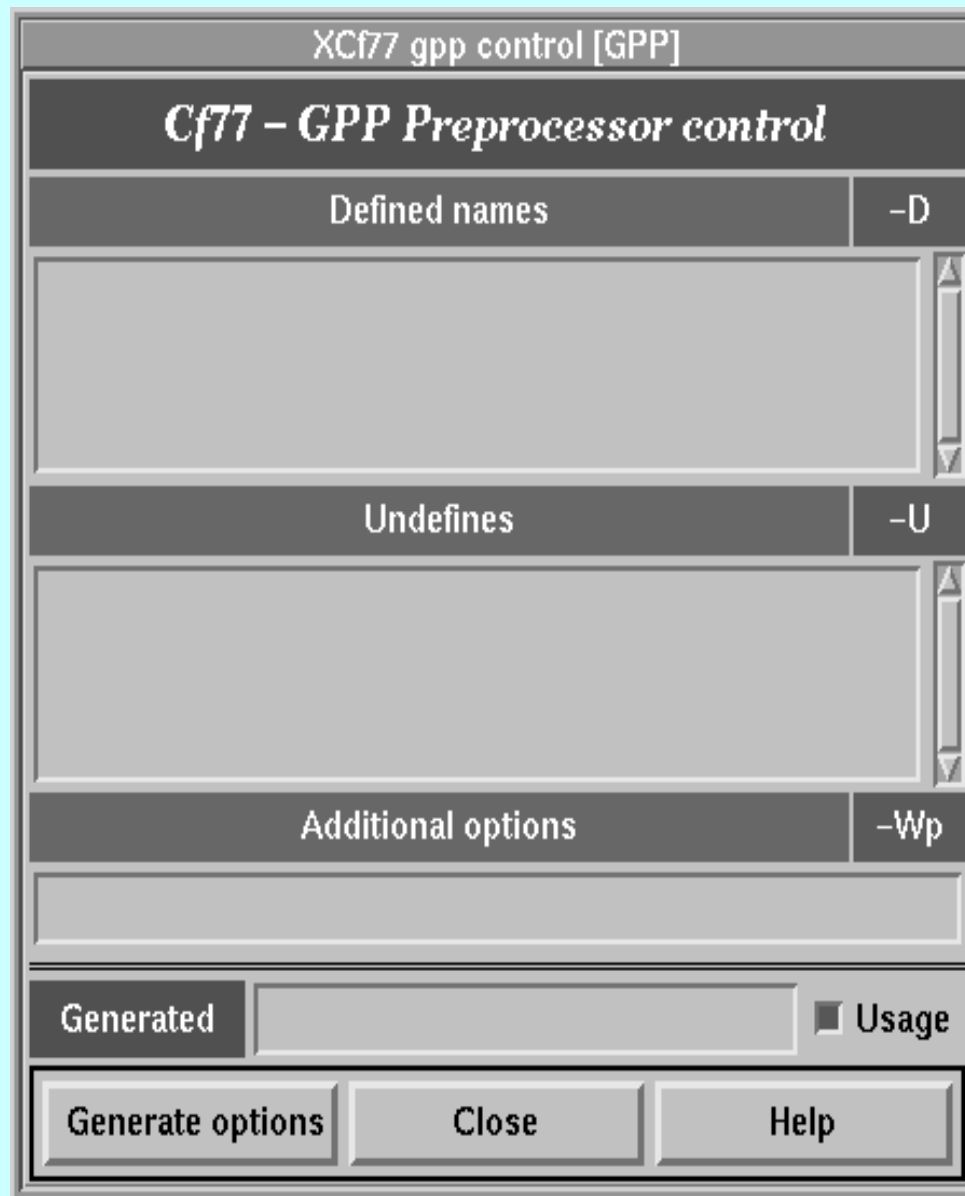
- compiler phases can be selected and presented by toggle buttons
- separate menus for
 - gpp
 - fpp
 - fmp
 - cft77
 - Segldr
- No support for **fort77** (obsolete)

Xcf77 – OSF/Motif GUI for cf77



XCf77 fmp control [FMP]	
<i>Fmp – the FORTRAN multitasking translator</i>	
Fmp output file	Fmp switches -d / -e
◆ STDOUT ◆ Use output file: <input type="text"/>	<input type="checkbox"/> [f] Generate BTRNSFRM and ETRNSFRM markers for debugging <input type="checkbox"/> [v] Enable/disable FMP's generation of a CDIR@ ICDEF <input type="checkbox"/> [w] Optimize restricting of CPU number
Guided and vector scheduling method -g	<input type="checkbox"/> [-l] Replace last character of 8-character-names with S or M <input type="checkbox"/> [-p] Generate output suitable for atexpert <input type="checkbox"/> [-S] Print symbol table to stdout
◆ STD (processor #) ◆ Desired processor # below:	
4	
<input type="text"/>	
CAL file for source stub program -c	Uniprocessor version file -s
◆ STDOUT ◆ Use CAL file: <input type="text"/>	◆ STD ◆ Use version file: <input type="text"/>
Additional options -Wu	
<input type="text"/>	
Generated <input type="text"/>	<input type="checkbox"/> Usage
<input type="button" value="Generate options"/>	<input type="button" value="Close"/>
<input type="button" value="Help"/>	





Compiler listing

- Contains all generated listings, not only the source listing, marked by separators
- Search function for strings
- Print function

Xcf77 – OSF/Motif GUI for cf77

```

Xcf77 compiler listing
F77 compilation listing
Print Clear search text Search text TYPE
-----
PRIMARY LOOP TYPE          LOOP MODIFIERS
-----
S - scalar loop           b - bottom loaded
V - vector loop           c - computed safe vector
length                    W - unwound loop           i - unconditionally
vectorized with an IVDEP  D - deleted loop           k - kernel scheduled
                           r - unrolled
                           s - short vector loop
                           v - short safe vector length

1A PAGE 1 CRAY FORTRAN CFT77 6.0.3.24 10/03/94 07:35:21
07/28/95 12:39:38 PAGE 2
      1      1.          program a
      2      2.          write(6,100)
      3      3.          100 format (' 1234567')
      4      4.          end

1 PAGE 1 CRAY FORTRAN CFT77 6.0.3.24 10/03/94 07:35:21
07/28/95 12:39:38 PAGE 3
-----
INITIAL PAGES OF PROGRAM UNITS
-----
Name          Page
-----
A              2

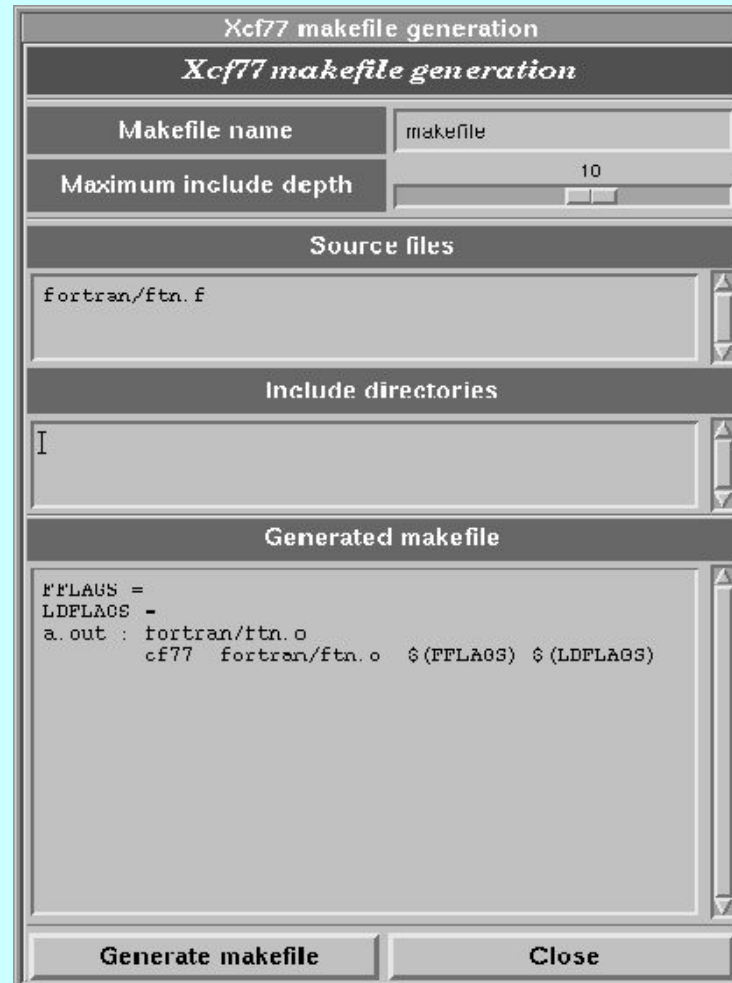
1 PAGE 1 CRAY FORTRAN CFT77 6.0.3.24 10/03/94 07:35:21
07/28/95 12:39:38 PAGE 4
-----
COMPILER OPTIONS
-----
other          -C          -e          -d          -o
              --          --          --          --
              cray-ymp          B          E          noaggress
-N 72          avl          m          M          nobl
-a stack      bdm          q          S          noinline
-i 46         nobmm          r          a          noloopalign
-m 3          cigs          s          c          recurrence
              noema          t          d          norecursive
              readvl          f          scalar
              vpop          g          vector

```

Makefile generation

- Scan all source files for includes until a specified depth
- System includes are omitted
- Generate the dependencies
- Add the compiler and phases' options
- Generate makefile (descending the tree) by running a self developed tool on the CRAY machine

Listed makefile with options



Acceptance

- Introducing f77 programming courses based on xcf77, using X-terminals
- Xcf77 well accepted, both by scientists and students