The IMSL® Fortran Library on UNIX/Linux Installation Guide

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by Rogue Wave Software

Trademark Information

Installing the IMSL Fortran Library for UNIX/Linux

1. Executing the install program

With an installation CD

Insert the CD and mount the device. You may need administrative rights to do this. The command may be different depending on your operating system.

1. Mount the CD. This differs by operating system.
2. Create the installation target directory: % mkdir /usr/local/vni
3. Start the installation program: % /cdrom/imsl/install/cd_install

   Note: The name of the cdrom drive (/cdrom above) may vary by system

With downloaded files

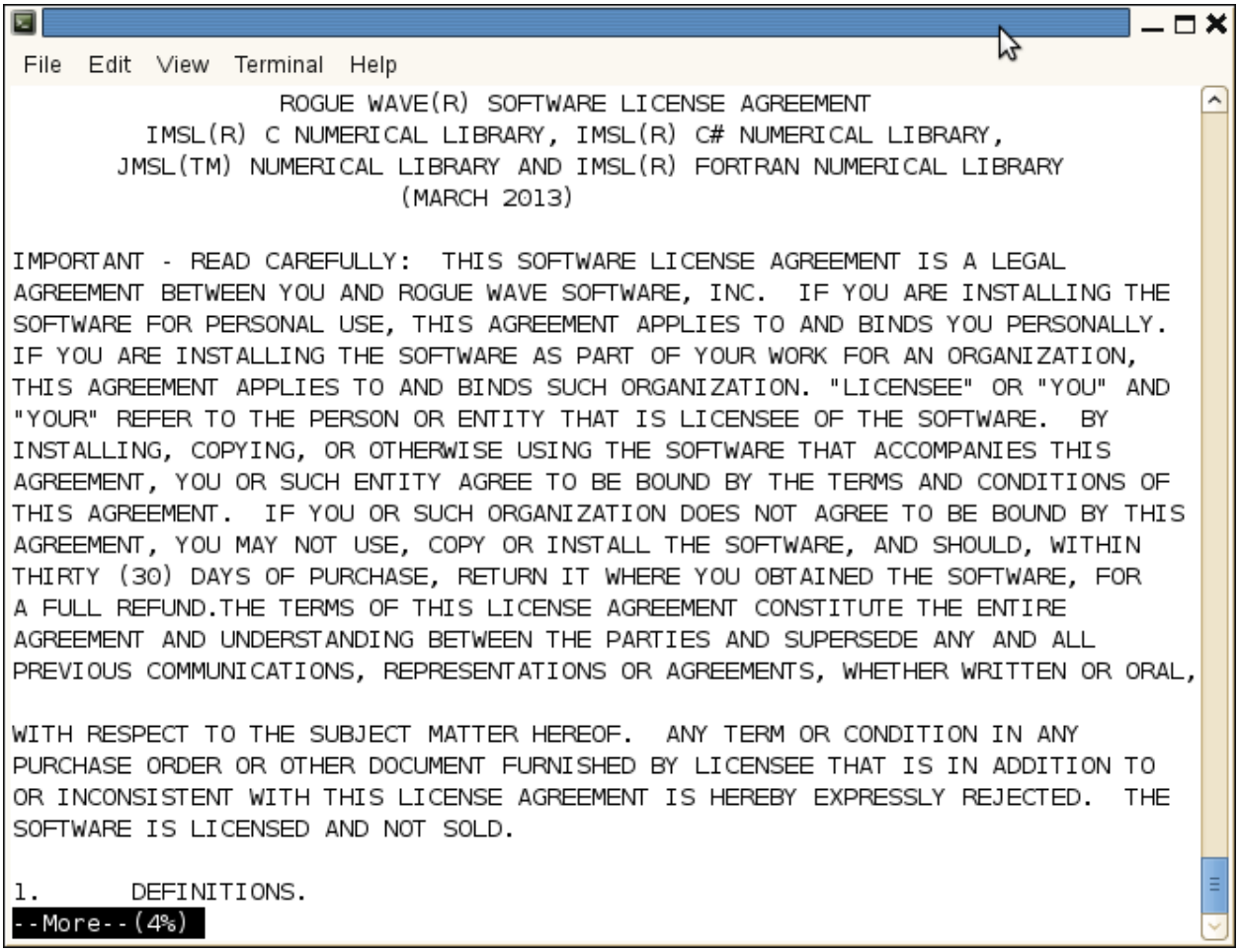
Confirm you have the appropriate tar file for the hardware platform and operating system. The <tarfile> in the following commands will have a name like fnl710lnxin140x64.tar. For this example and all examples in this guide, /usr/local/vni will be used as the product installation target directory, but can be any valid directory. Create a temporary directory (/usr/local/vni/tmp in this example) for the installation files. This temporary directory and its contents may be deleted following successful installation.

Execute the following commands from the directory that contains the downloaded archive:

```
% mkdir /usr/local/vni/tmp
% mv <tarfile> /usr/local/vni /tmp
% cd /usr/local/vni /tmp
% tar xf <tarfile>
% imsl/install/cd_install
```

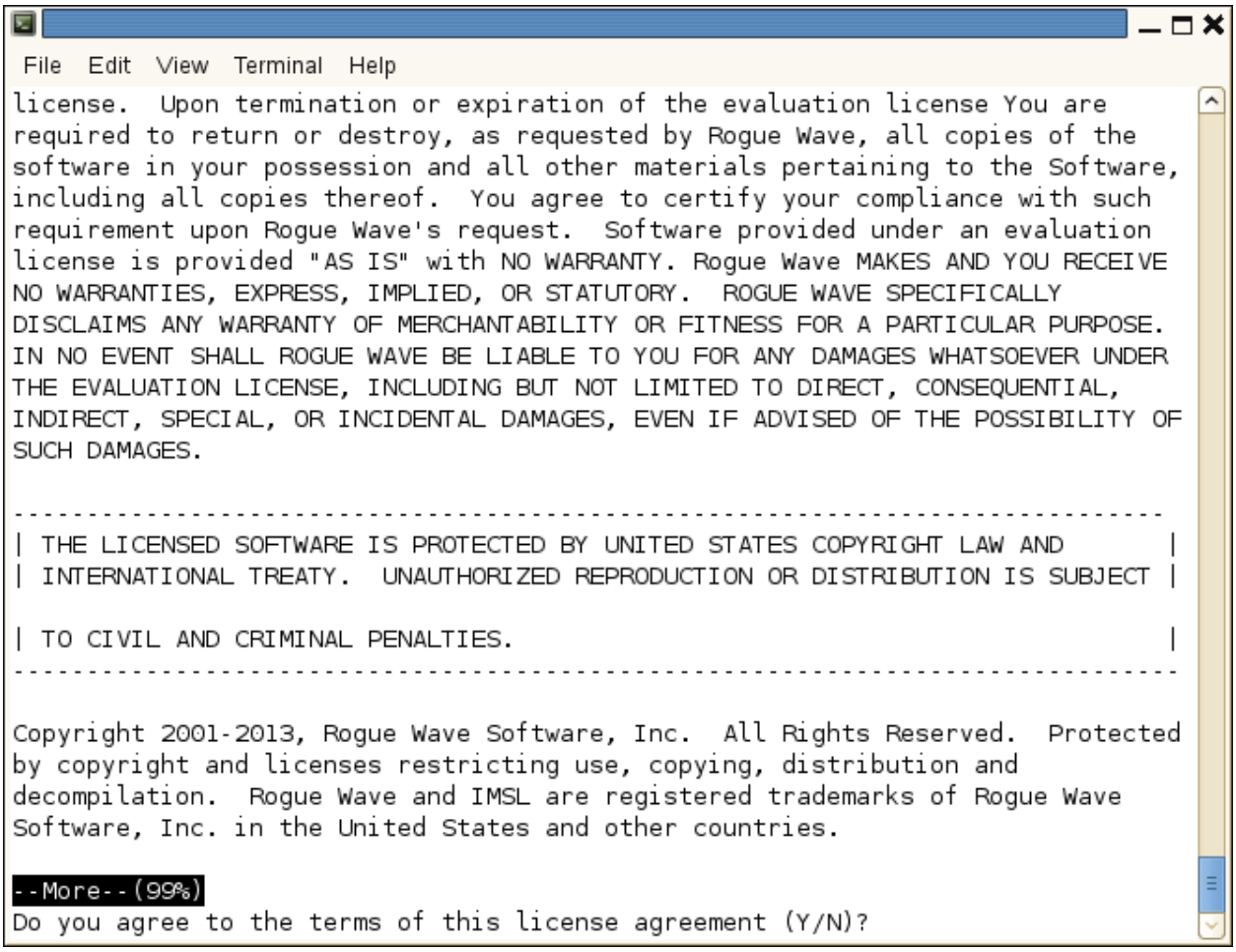
2. License Agreement

This screen presents the end user license agreement. Press the <space bar> to scroll through to read its contents.



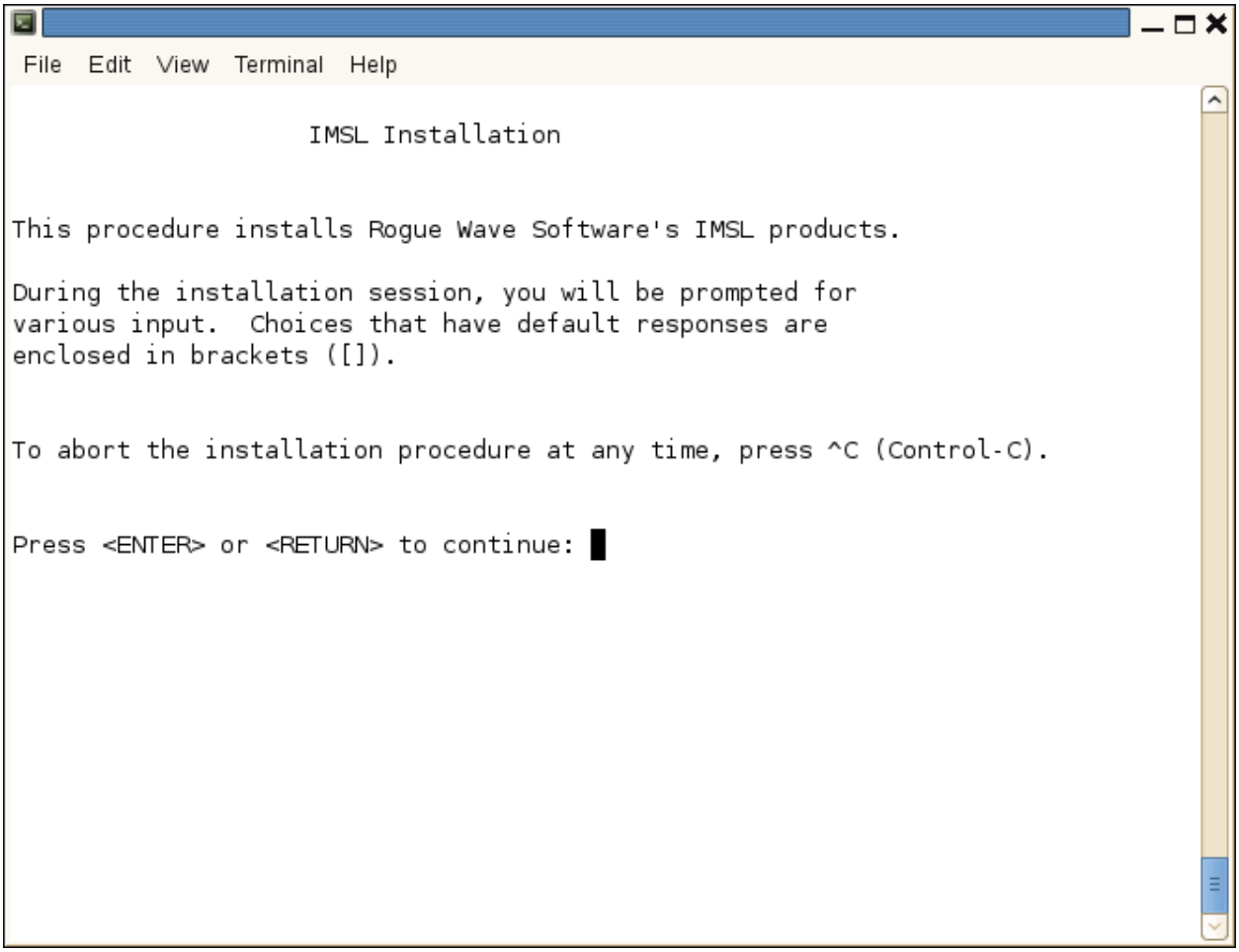
3. License Agreement, continued

When you reach the end of the license agreement, enter y and press Enter to continue the installation.



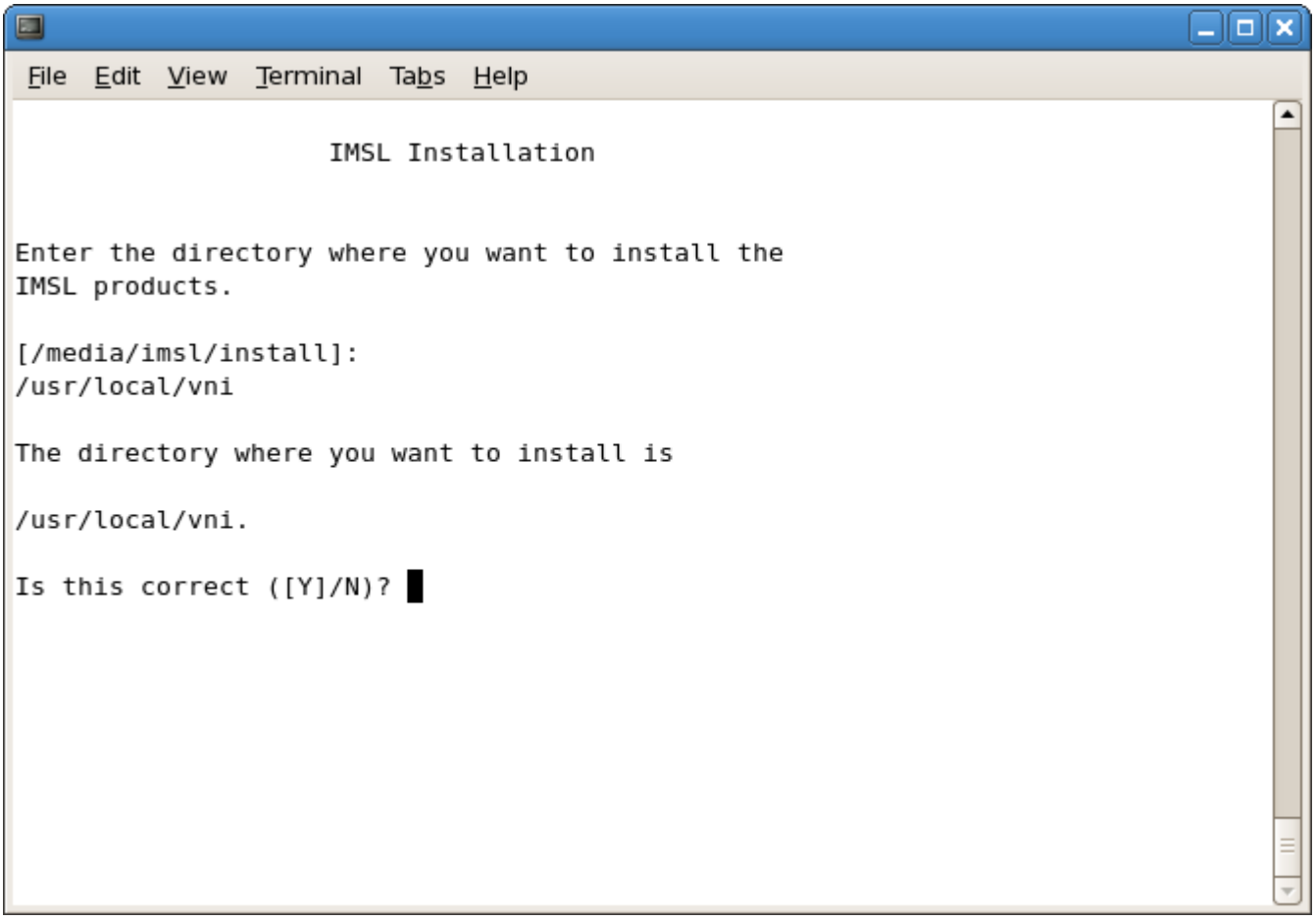
4. Installation information

This is the introduction to the rest of the install procedure. Press Enter to continue.



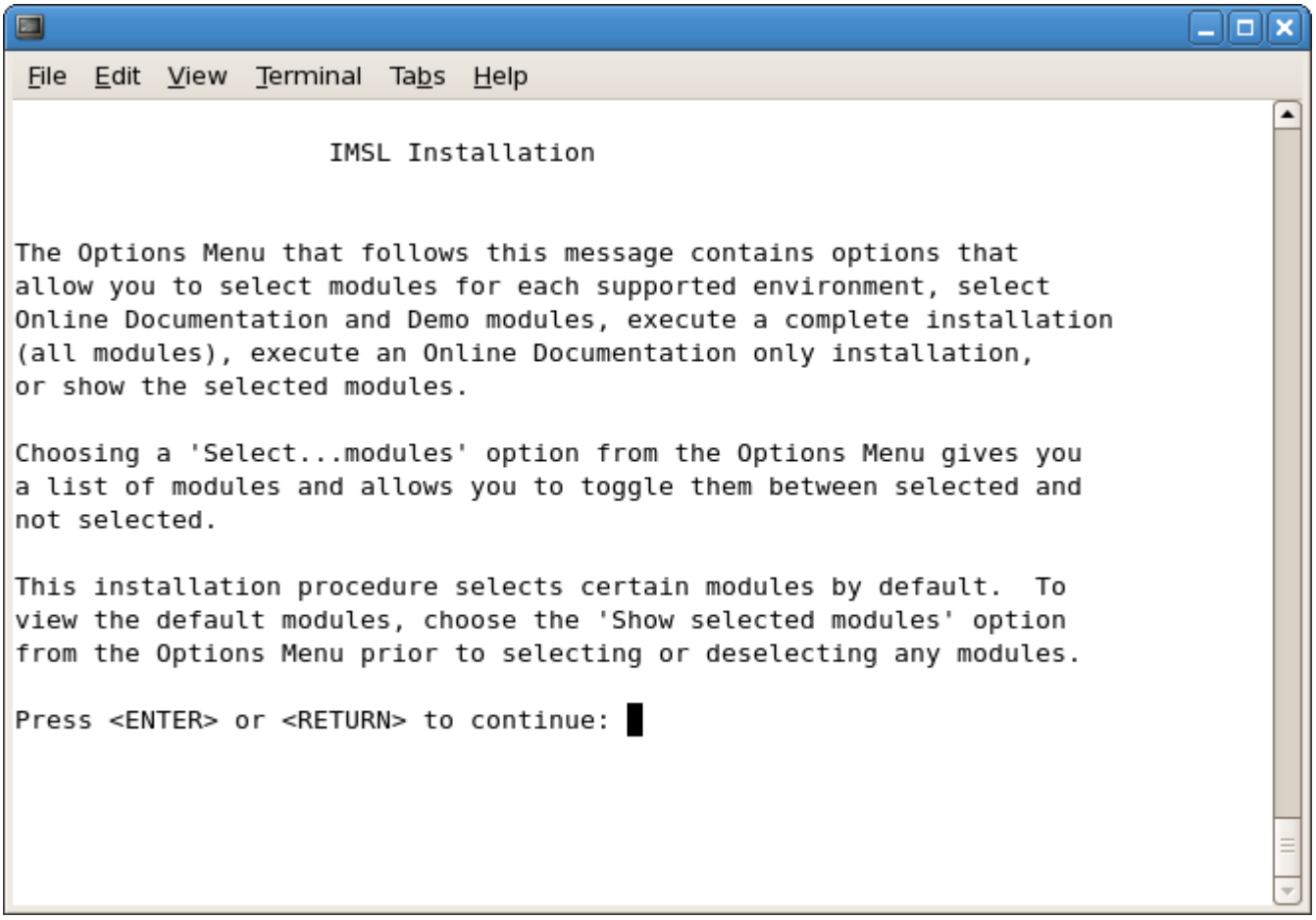
5. Install directory

Set the directory where the IMSL Fortran Library will be installed. The default is the current directory. Here it is /usr/local/vni. You will be prompted for confirmation Press Enter when you are satisfied with the target directory.



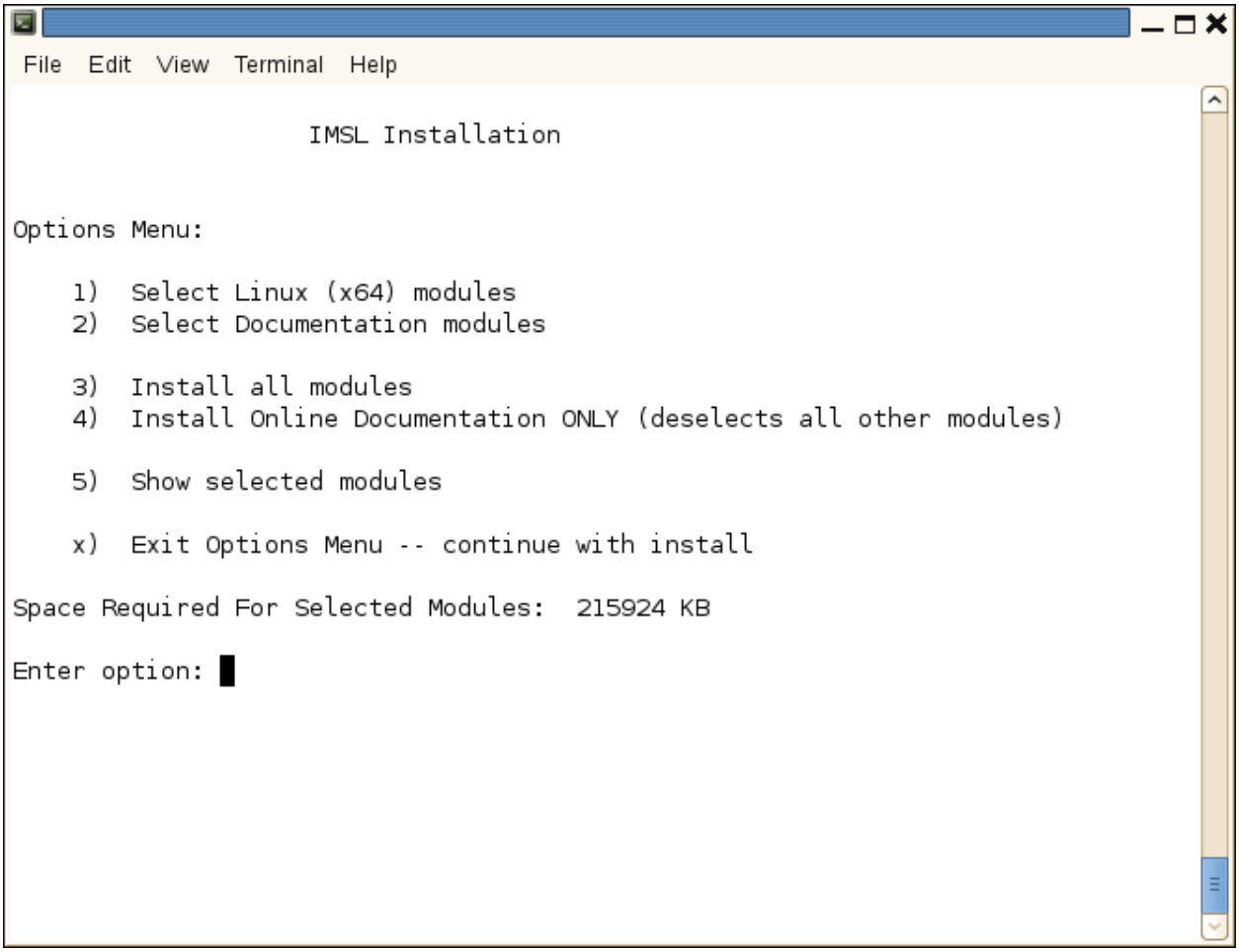
6. Module selection

This introduces the various modules that are available for installation as part of the IMSL Fortran Library. Press Enter to continue to the selection screen



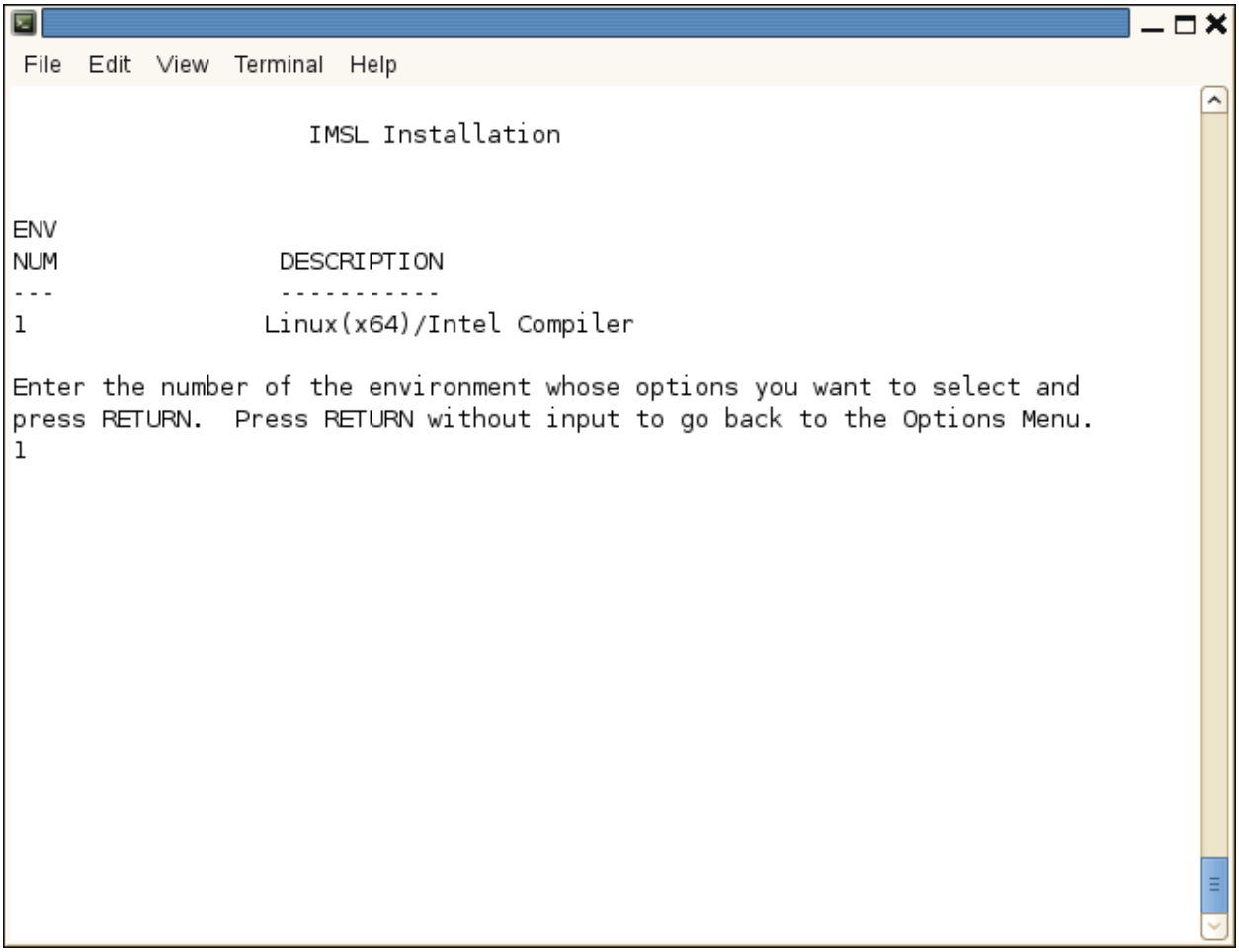
7. Module selection, continued

Select which platform modules to install. For the Linux x64 installation pictured, enter 1 and press Enter. To select all the modules, enter "5".



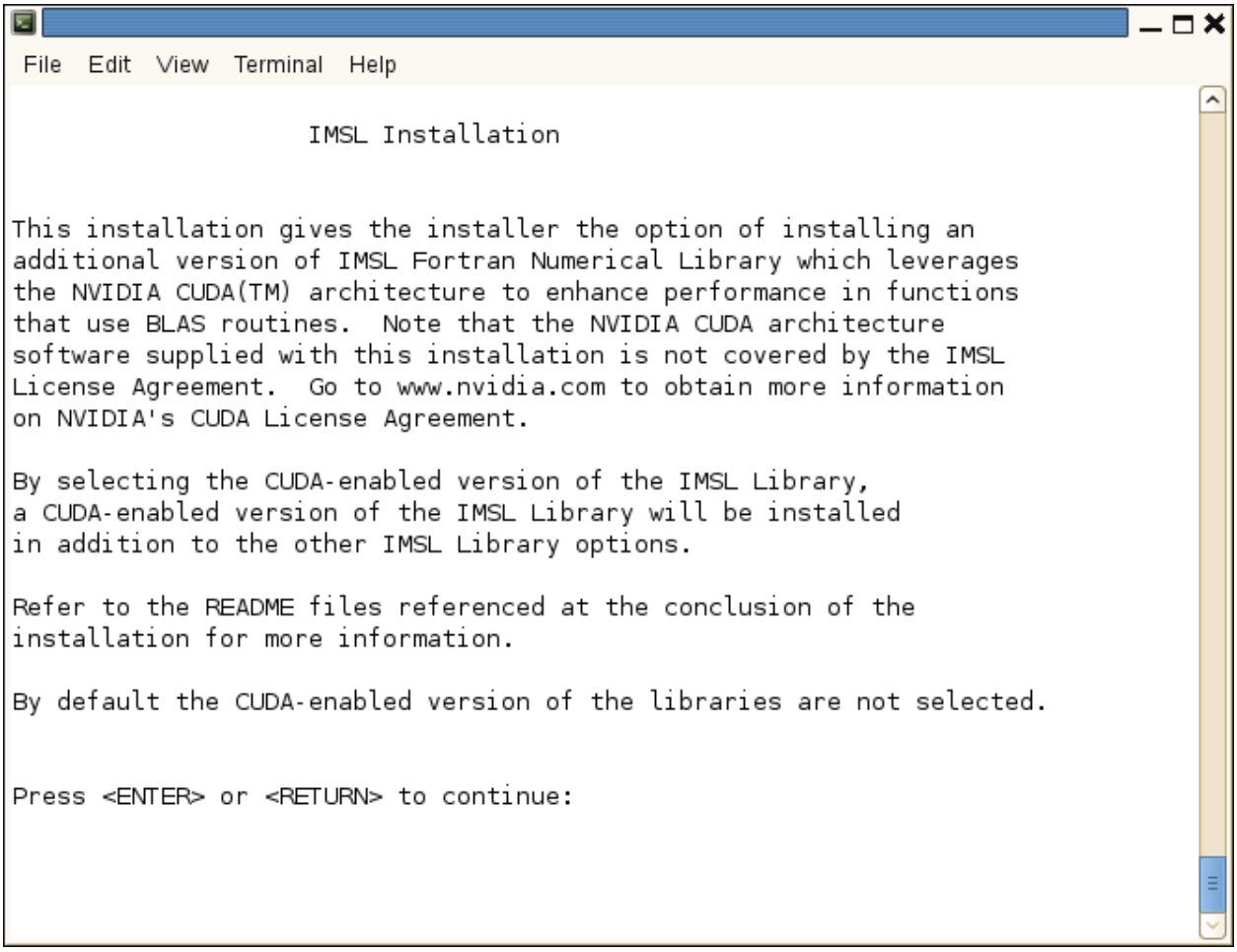
8. Module selection, continued

Review the list of available modules for Linux and type the corresponding numbers to toggle the selection.



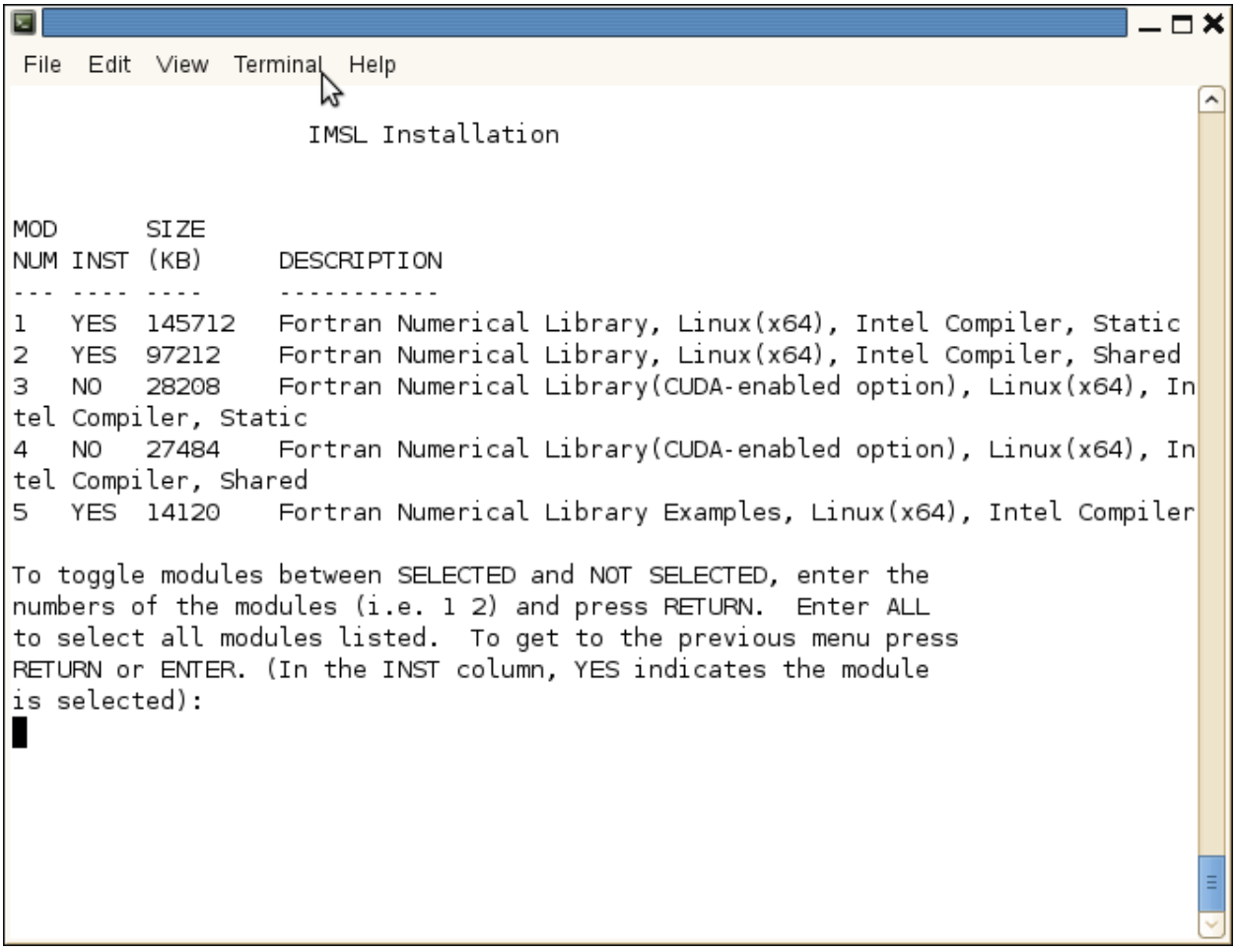
9. NVIDIA License Agreement

Review information regarding NVIDIA CUDA options.



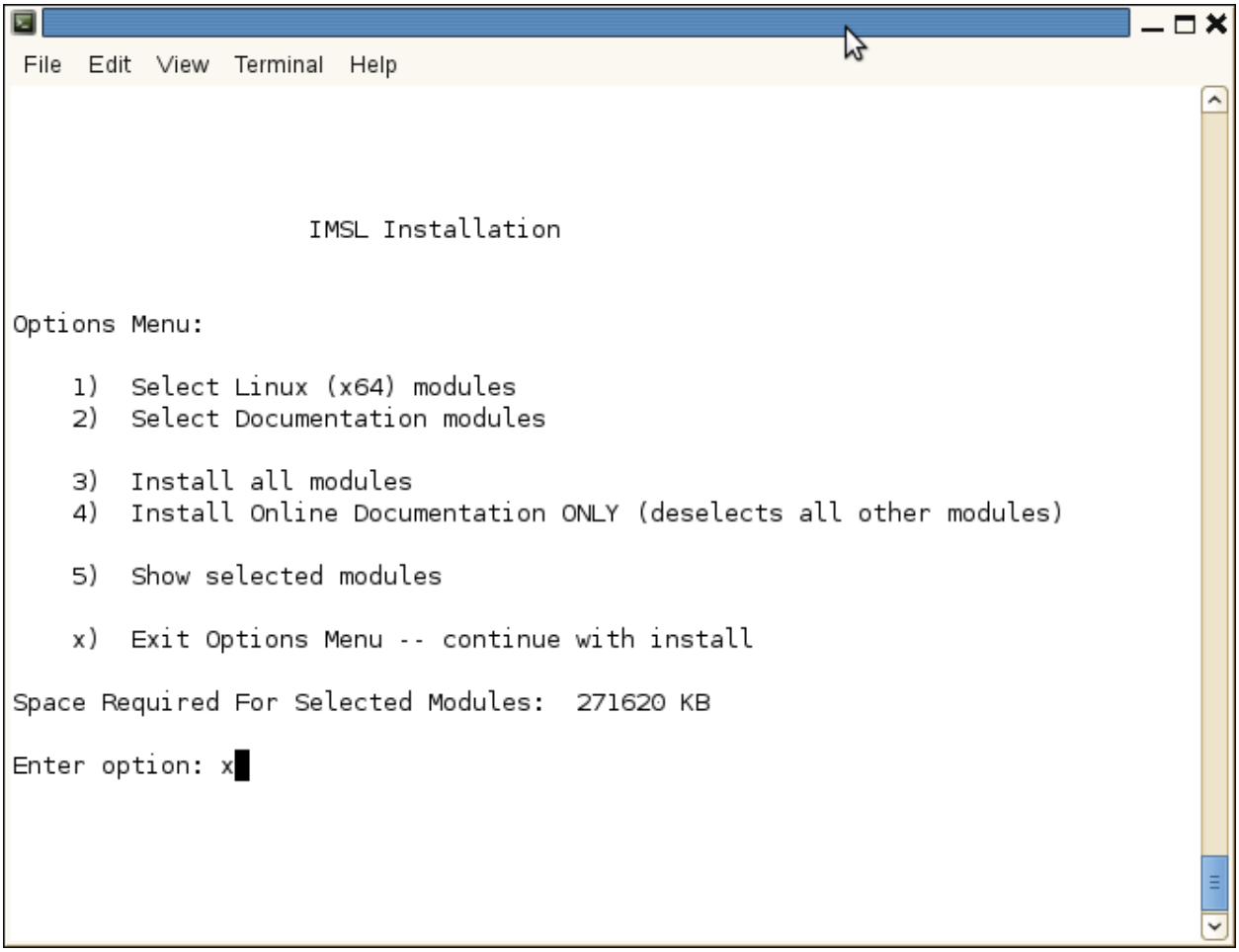
10. Module Selection continued

Review the selected options, and change if needed by entering the number of the option and pressing ENTER. Once you are satisfied with the options selected, press ENTER to exit to previous menus.



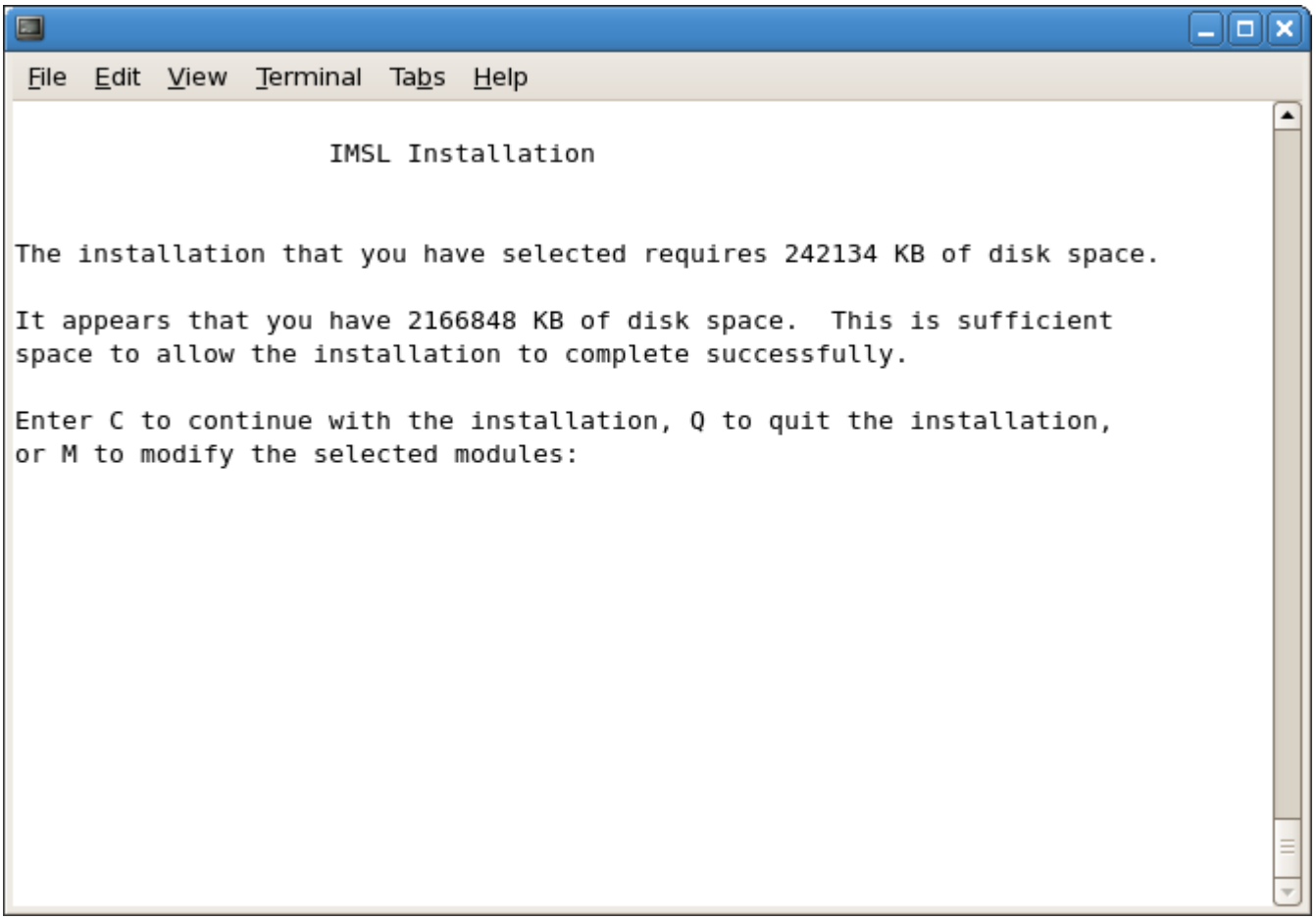
11. Installation begins

Once all the desired modules have been selected and you have returned to this menu, enter x and press Enter to continue installing the IMSL Fortran Library.



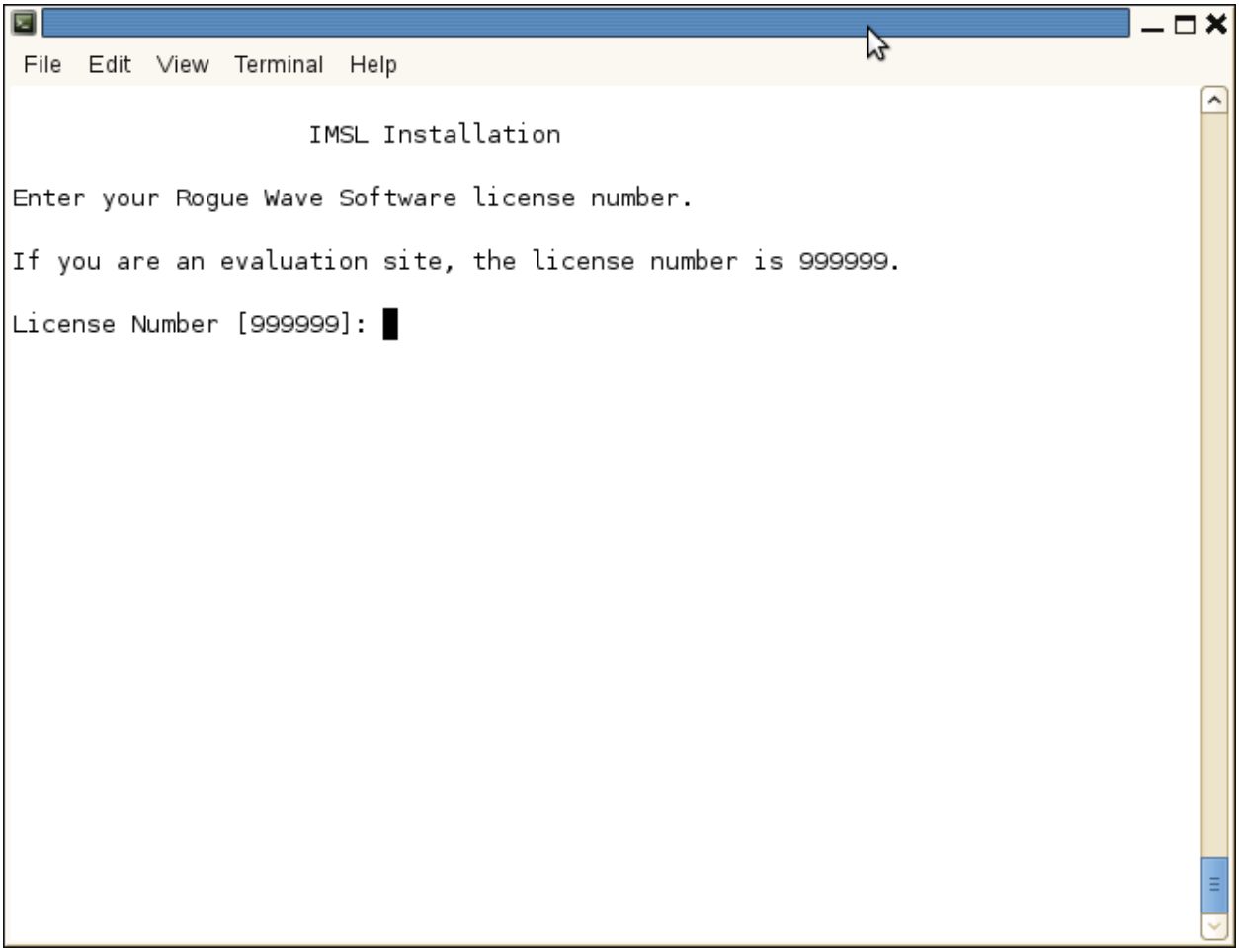
12. Hard disk space confirmation

Before any files are copied, the required disk space is computed and compared to that available. If there are no problems, enter C and press Enter to continue. Enter Q or M to quit the install program or to modify the selected modules.



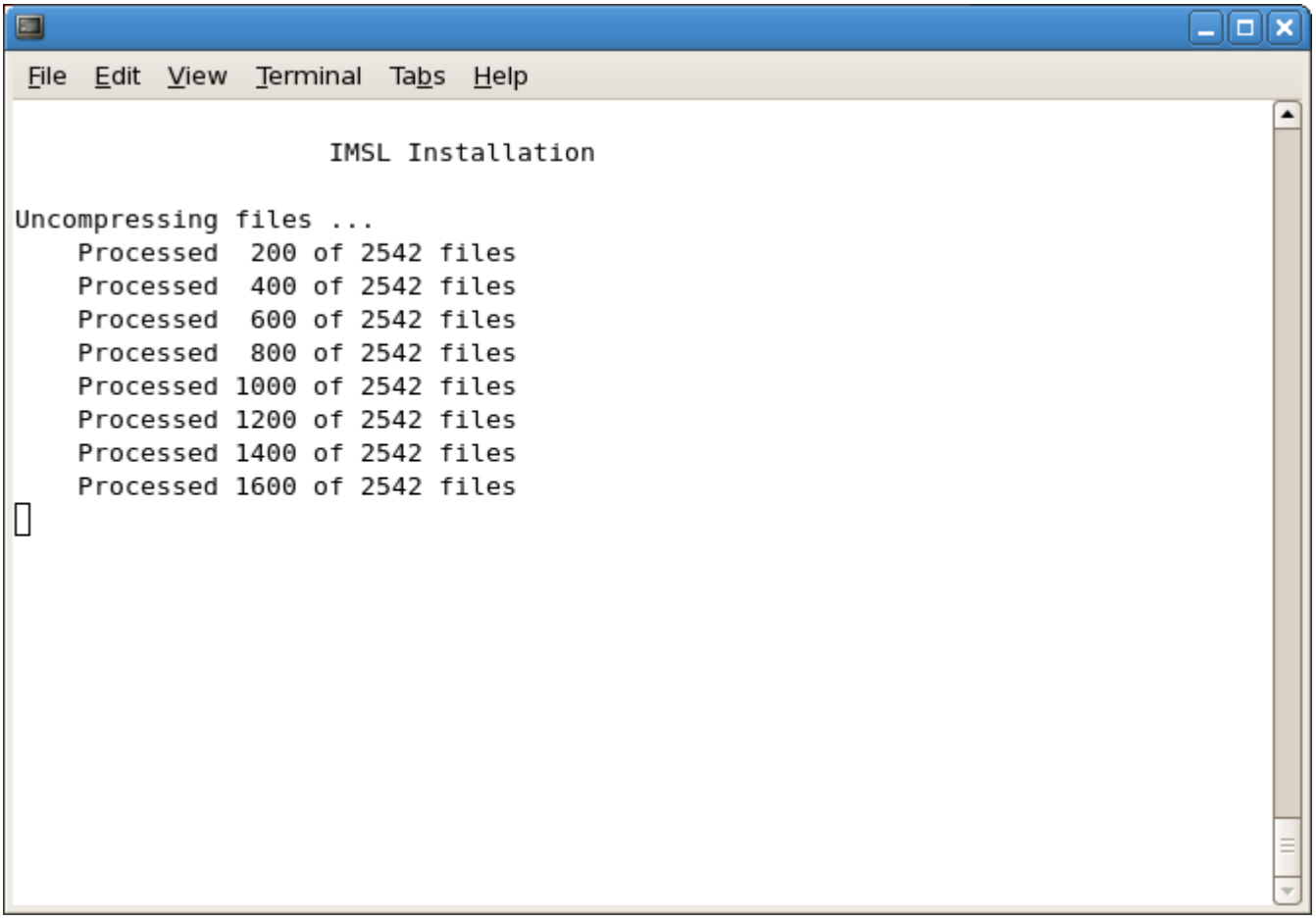
13. License Number

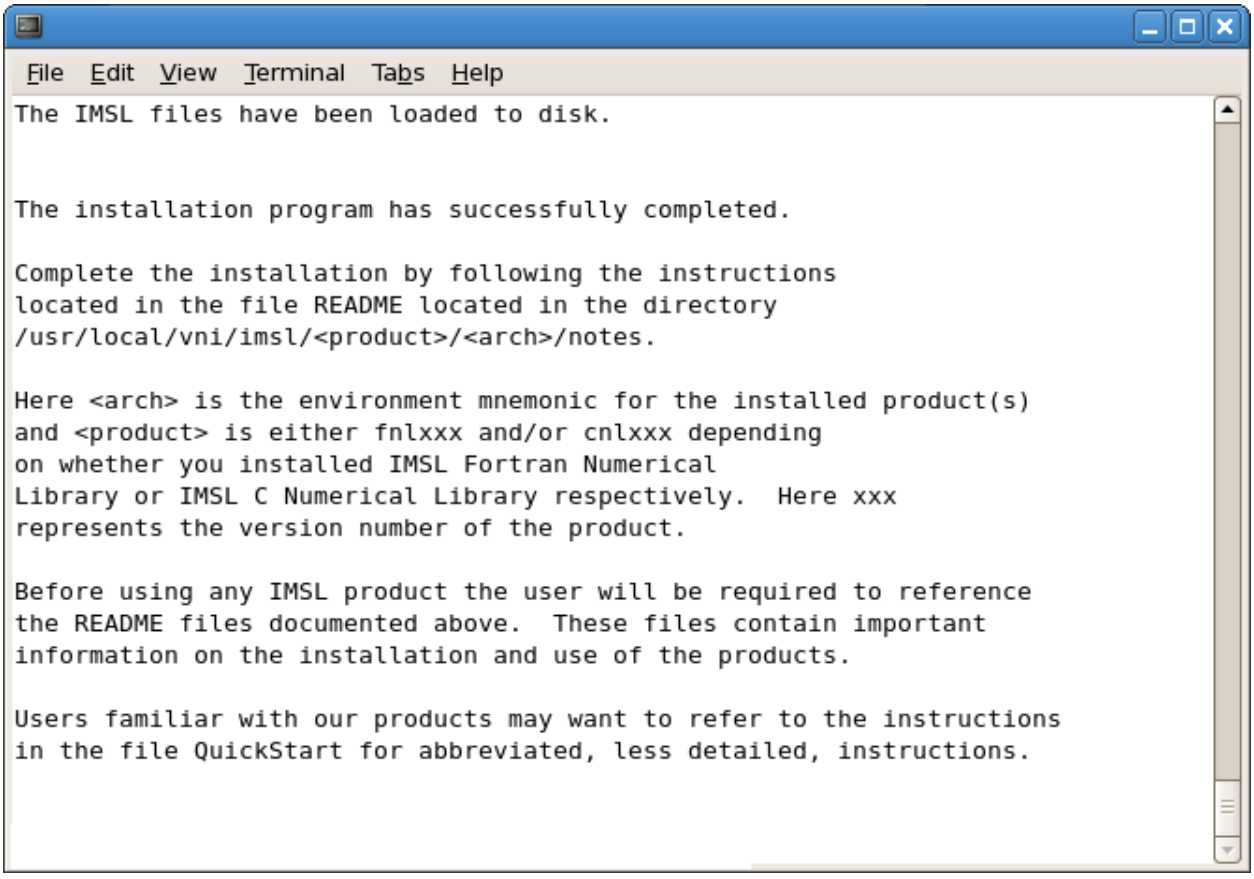
If you have a License Number, enter it at this point. If you do not yet have a license number, or are evaluating the product, use the default 999999. Press Enter to continue.



14. Installation complete

When the install program is finished decompressing and copying files, you will be presented with a summary and returned to the command prompt




File Edit View Terminal Tabs Help
The IMSL files have been loaded to disk.
The installation program has successfully completed.
Complete the installation by following the instructions
located in the file README located in the directory
/usr/local/vni/imsl/<product>/<arch>/notes.
Here <arch> is the environment mnemonic for the installed product(s)
and <product> is either fnlxxx and/or cnlxxx depending
on whether you installed IMSL Fortran Numerical
Library or IMSL C Numerical Library respectively. Here xxx
represents the version number of the product.
Before using any IMSL product the user will be required to reference
the README files documented above. These files contain important
information on the installation and use of the products.
Users familiar with our products may want to refer to the instructions
in the file QuickStart for abbreviated, less detailed, instructions.

License Key setup

Note: For users who have a permanent license, this step is not necessary. Skip to “Using IMSL”.

1. Editing the License File

Using a text editor, create the license file /usr/local/vni/license/imsl_eval.dat. Then cut and paste the license key that you received via email from the Rogue Wave License Administrator into this file and save.

Using IMSL

Using the IMSL Fortran Library for UNIX/Linux

1. Creating a program

This simple example program will solve the following system of linear equations:
33x + 16y + 72z = 129
-24x - 10y - 57z = -96
18x - 11y + 7z = 8.5

Copy the following text into an editor and save the file as fnl.f90

```
! ================ Program start ==============
! Declare which IMSL functions will be used
      USE LSARG_INT
      USE WRRRN_INT
! Declare variables
      PARAMETER (LDA=3, N=3)
      REAL A(LDA,LDA), B(N), X(N)
!
!               Set values for A and B
!
!               A = (33.0 16.0 72.0)
!                   (-24.0 -10.0 -57.0)
!                   (18.0 -11.0 7.0)
!
!               B = (129.0 -96.0 8.5)
!
      DATA A/33.0, -24.0, 18.0, 16.0, -10.0, -11.0, 72.0, -57.0, 7.0/
      DATA B/129.0, -96.0, 8.5/
!
! The main IMSL function call to solve for x in Ax=B.
! This is the floating point version, to use
! double-precision arguments, call DLSARG.
!
      CALL LSARG(A,B,X)
!
! Now print the solution x using WRRRN, a printing utility
!
      CALL WRRRN('X',X,1,N,1)
      END
! ================ Program End ==============
```

Compiling and running the program

Compiling and executing a program calling the IMSL Fortran Library for UNIX/Linux

1. Setting the environment variables

The various environment variables used in compilation must be configured using the setup shell script. Which shell script command to use depends on the shell:

C Shell
> source /usr/local/vni/imsl/fnl710/<env>/bin/fnlsetup.csh

bash, K Shell
> . /usr/local/vni/imsl/fnl710/<env>/bin/fnlsetup.sh

where <env> is the environment mnemonic.

Example using environment mnemonic *lnxin140x64*:

C Shell
> source /usr/local/vni/imsl/fnl710/lnxin140x64/bin/fnlsetup.csh

bash, K Shell
> . /usr/local/vni/imsl/fnl710/lnxin140x64/bin/fnlsetup.sh

2. Compile the program

Shared Library
> $F90 $F90FLAGS fnl.f90 –o fnl $LINK_FNL

Static Library
> $F90 $F90FLAGS fnl.f90 –o fnl $LINK_FNL_STATIC

3. Execute the program

```
> ./fnl
                              x
             1                2               3
      1.000         1.500          1.000
```

For more information, refer to the $FNL_DIR/<env>/notes/README reference.