

The IMSL® Fortran Library on Windows Installation Guide



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by Rogue Wave Software

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Installing the IMSL Fortran Library for Windows

1. Executing the Install Program

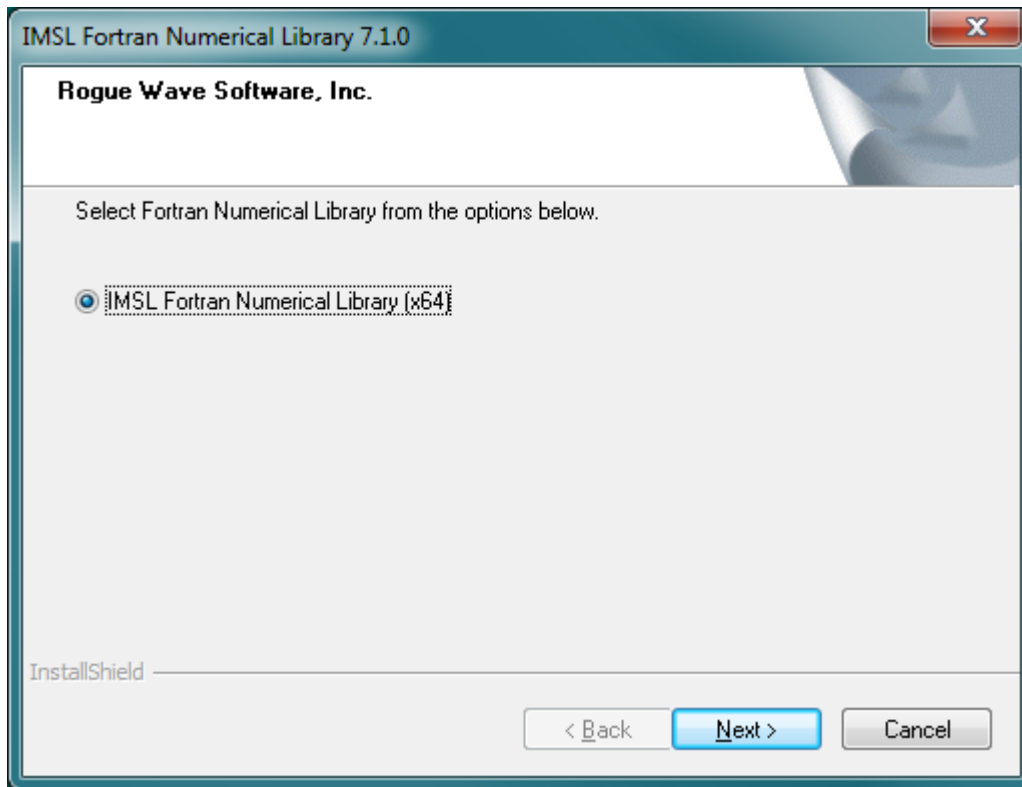
Insert the CD, and the install program should start automatically. If it does not start, run setup.exe in the root directory of the CD.

Note: On systems where administrative privileges are required to install software, start the setup.exe program from the CD with a right click and choose Run as administrator

Note: If you downloaded your software as a zip file, unzip the file into a temporary directory and treat that directory as if it was the CD. i.e. invoke the installation script by clicking on setup.exe.

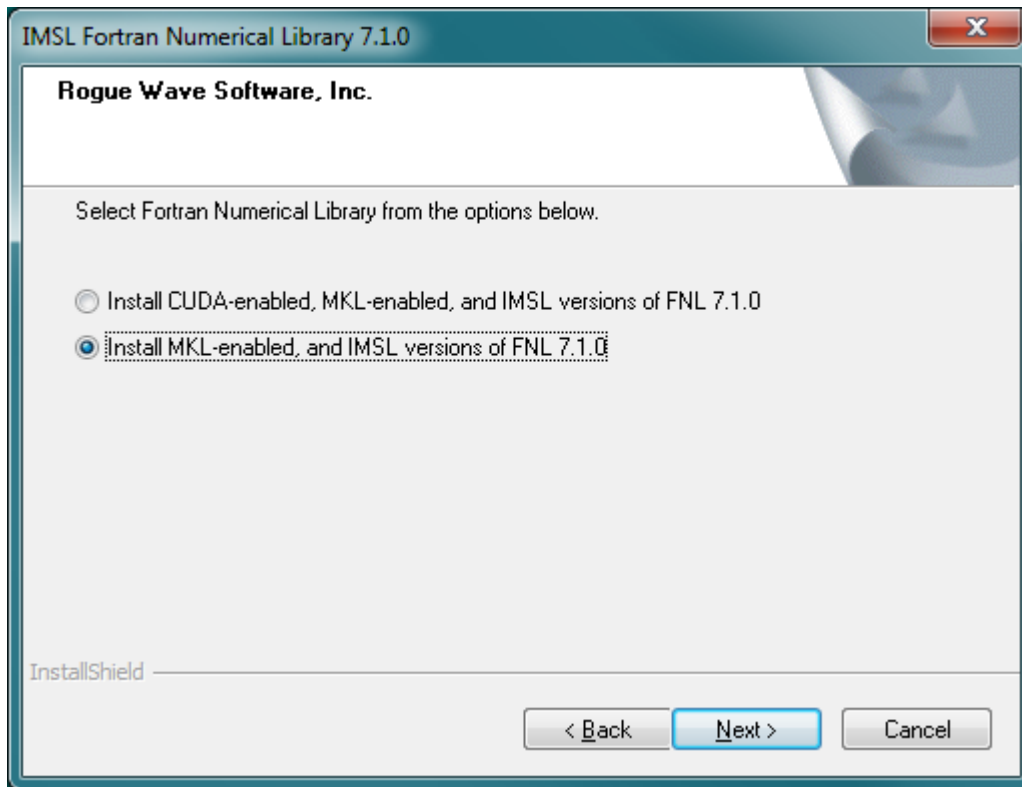
2. System Selection

The first window allows you to select the system for which you are installing the IMSL Fortran Library. After selecting the appropriate architecture, press Next >.



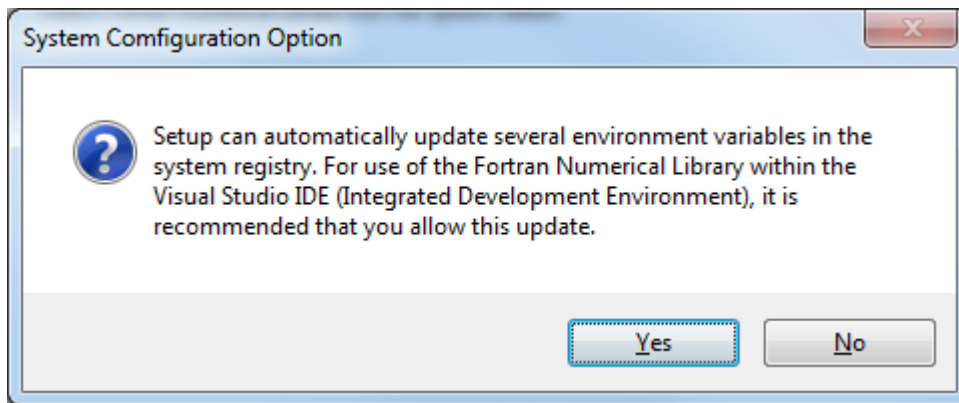
3. Optional Libraries

You will be prompted to install the optional IMSL NVIDIA CUDA™ enhanced library. This version of the library will take advantage of computing capability of NVIDIA graphics cards if available.



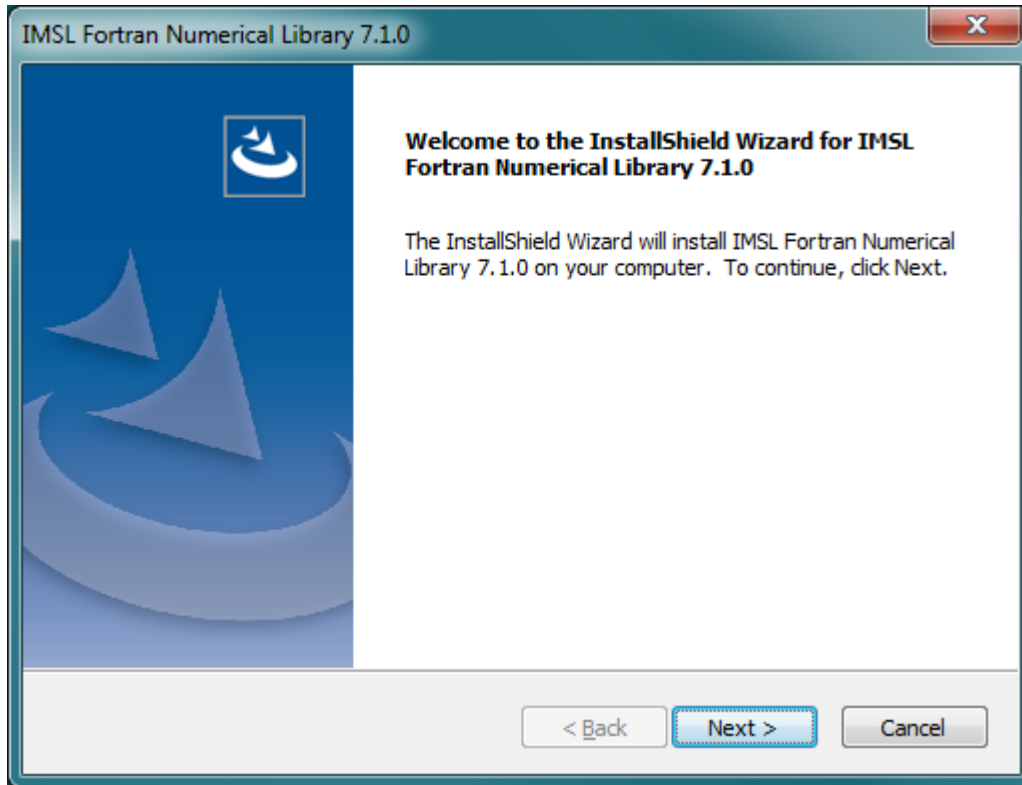
4. Environment Variable Registration

You will be prompted to automatically update environment variables required to use the IMSL Fortran Library. It is recommended that you perform this update.



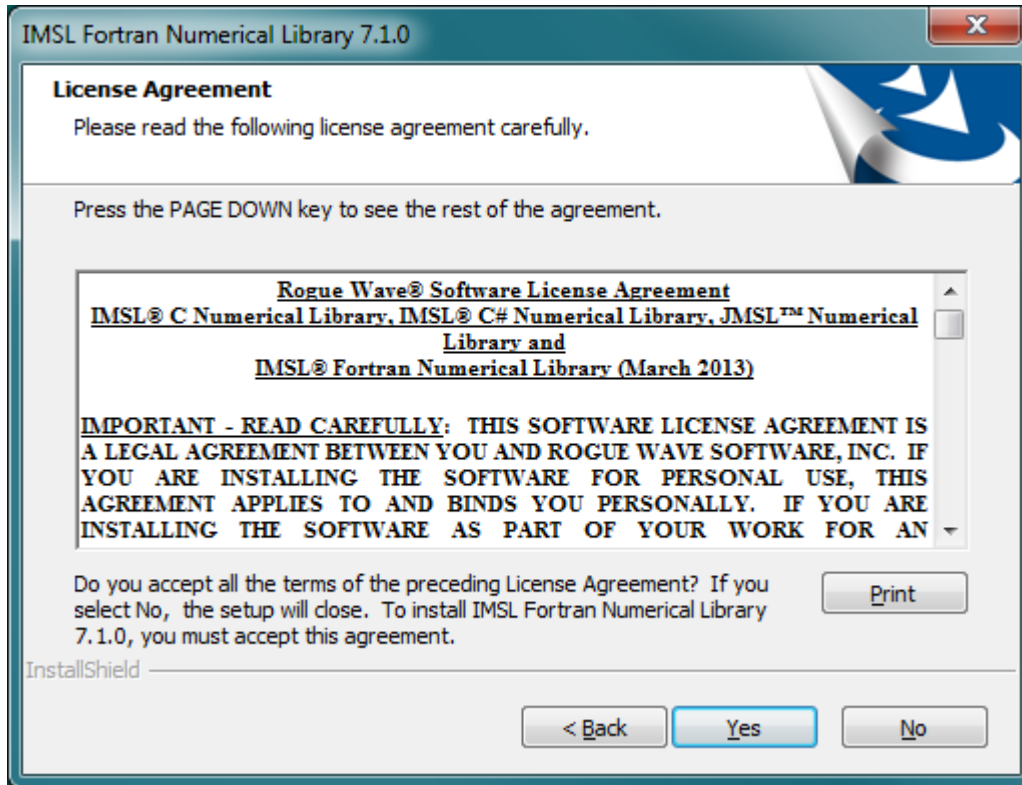
5. Welcome

The first window introduces the installation program for the IMSL Fortran Library. Press Next> to begin.



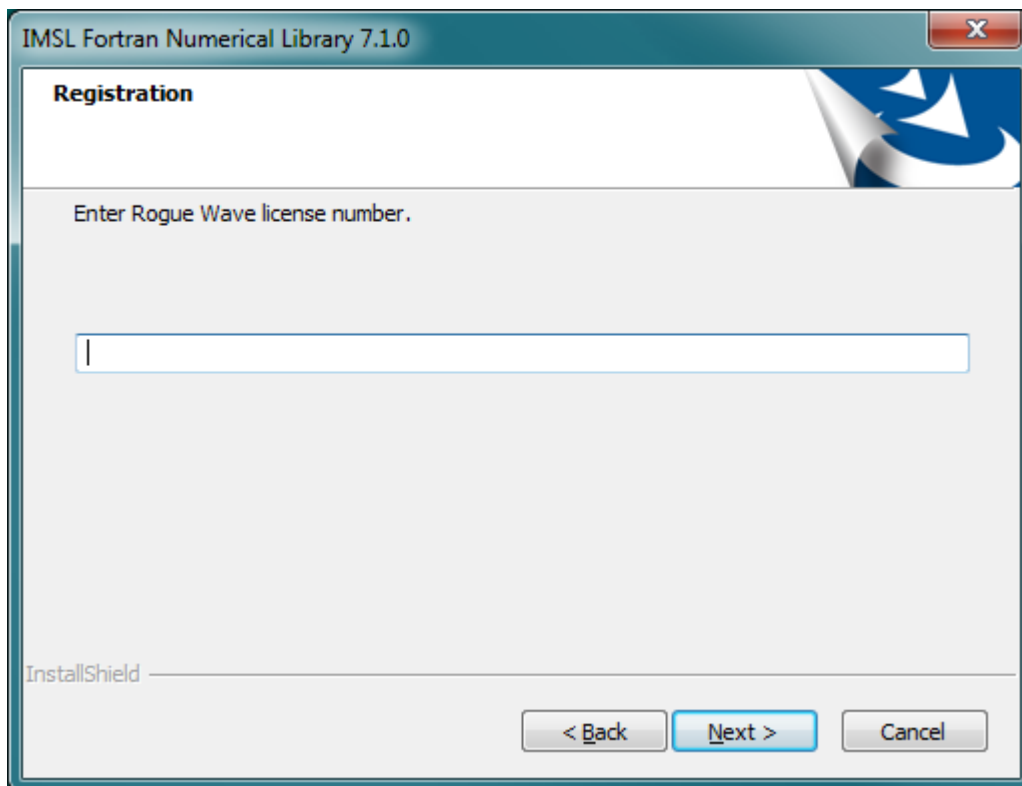
6. License Agreement

This screen presents the end user license agreement. When you have read the contents and agree, press Yes to continue the installation.



7. License Number

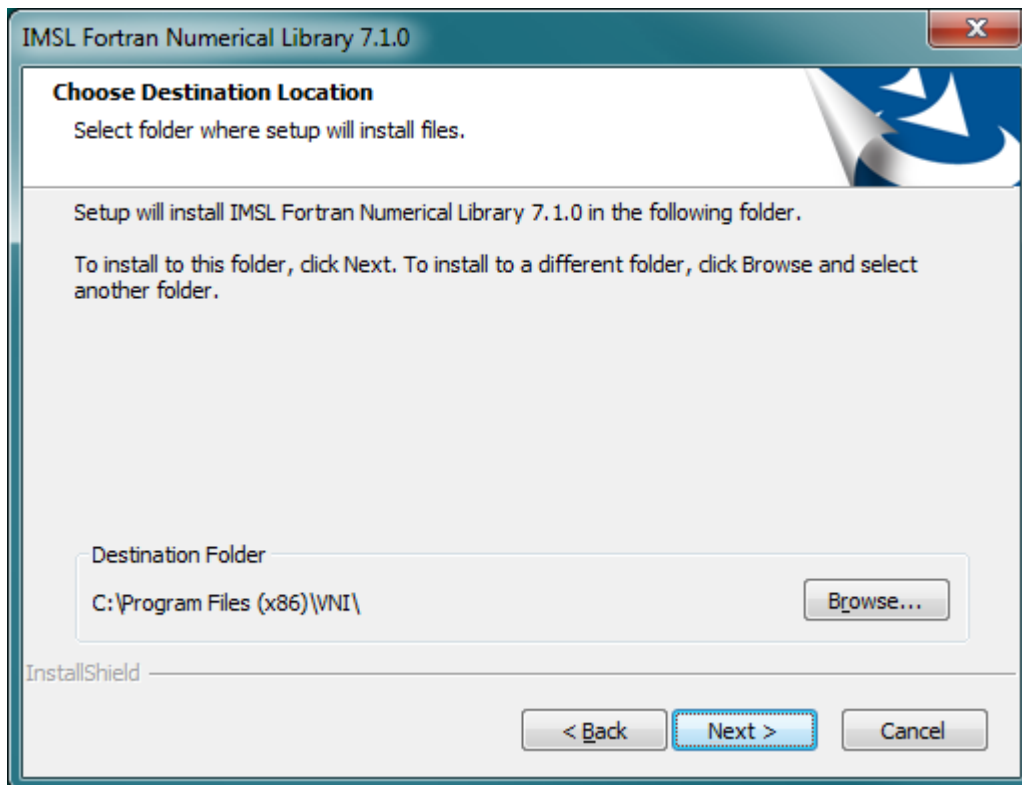
Enter your Rogue Wave license number. If you do not have a license number enter 999999.



The image shows a Windows-style dialog box titled "IMSL Fortran Numerical Library 7.1.0". The dialog has a "Registration" header and a blue and white logo in the top right corner. The main area contains the text "Enter Rogue Wave license number." followed by a single-line text input field. At the bottom left, it says "InstallShield". At the bottom right, there are three buttons: "< Back", "Next >", and "Cancel".

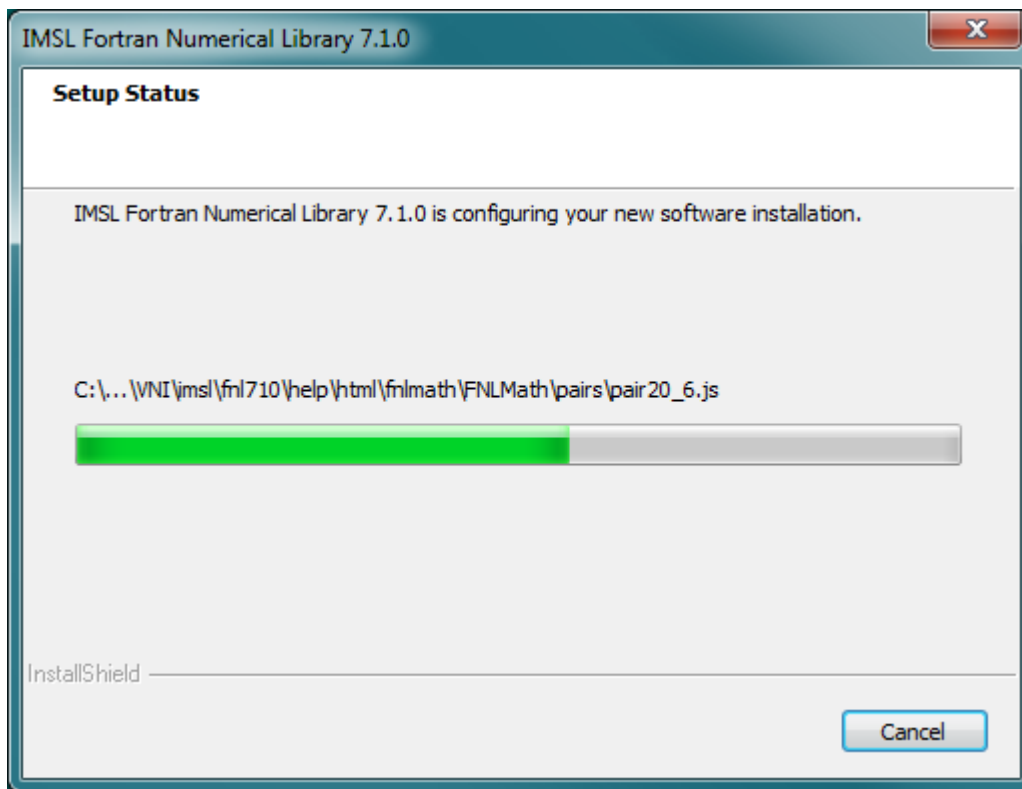
8. Install directory

Set the directory where the IMSL Fortran Library will be installed. The default is C:\Program Files (x86)\VNI\. Use the Browse button to select an alternate location. Press Next> when you are satisfied with the selection.



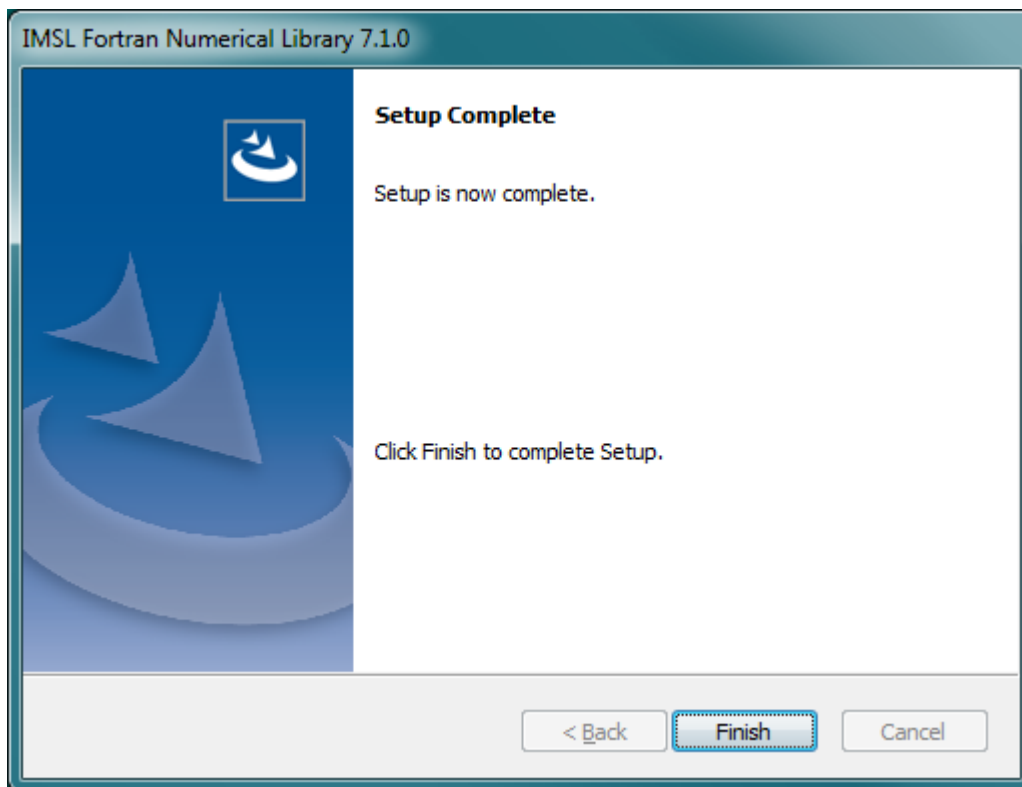
9. Installation Progress

You will be updated as the installation proceeds.



10. Installation Complete

When the setup is complete, you will be notified. Press Finish to exit the install program.



License Key Setup

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

1. Editing the License File

Using a text editor, create the license file <VNI_DIR>\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 from the Visual Studio IDE

Note: The following documentation assumes that the product was installed in the default location. Modifications will be necessary to pathnames if you chose not to install in the default location.

Note: The instructions below use Visual Studio 2010 with the Intel Fortran compiler.

1. Creating a program

This simple example program will solve the following system of linear equations:

$$33x + 16y + 72z = 129$$

$$-24x - 10y - 57z = -96$$

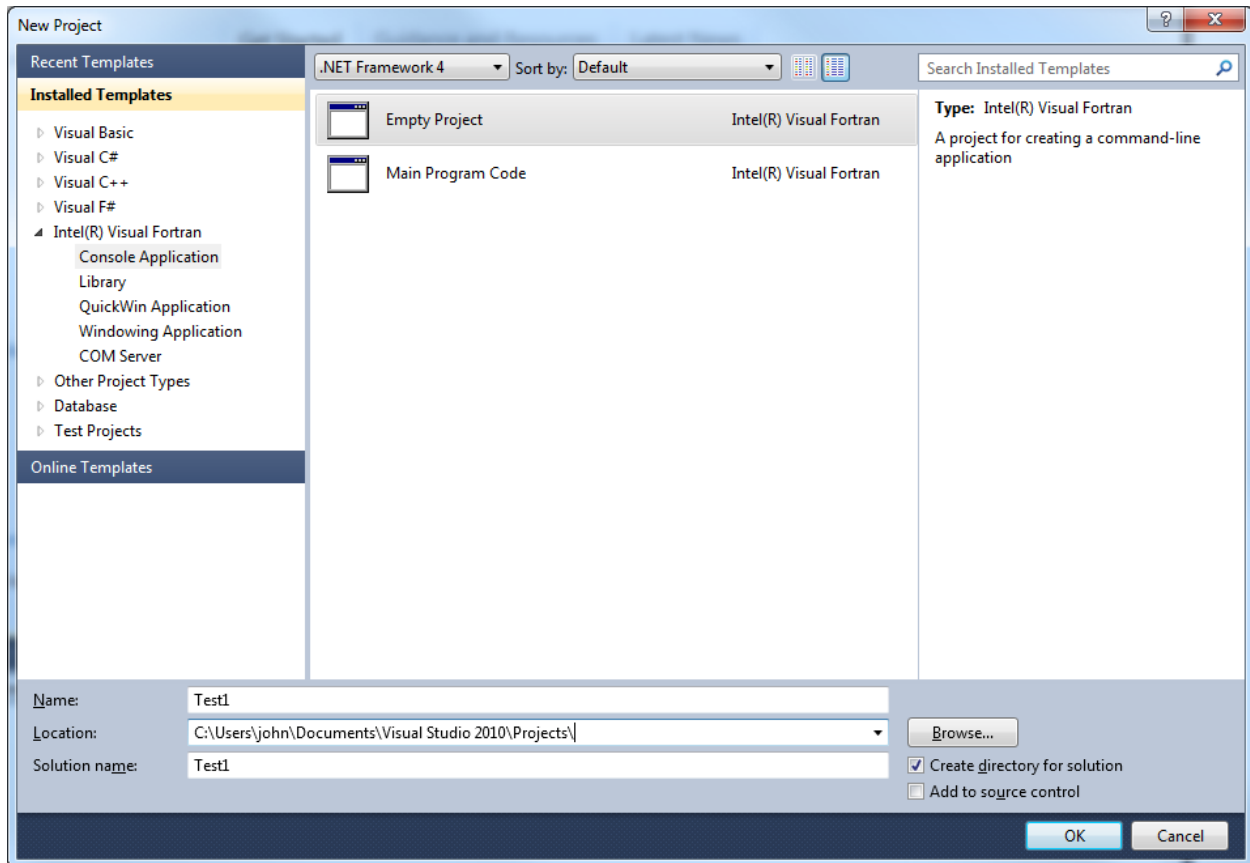
$$18x - 11y + 7z = 8.5$$

2. Start a new project

Start Visual Studio and create a new Intel Fortran Project, Console Application named fnl.

- Start Visual Studio
- Choose File->New->Project
- Under Project Types, select Intel(R) Visual Fortran -> Console Application.

- Under Templates, choose "Empty Project" as the project type,
- Fill in the name of the project and select the desired location; Click OK.



3. Create your Fortran Source File

Copy the following text into the fnl.f90 source file and save it.

```
! ===== Program start =====
  program fnl
! Include the necessary header file:
! For the dynamic library:
  INCLUDE 'link_fnl_shared_imsl.h'
! For the static library:
  INCLUDE 'link_fnl_static_imsl.h'
!
! 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 fnl
! ===== Program End =====

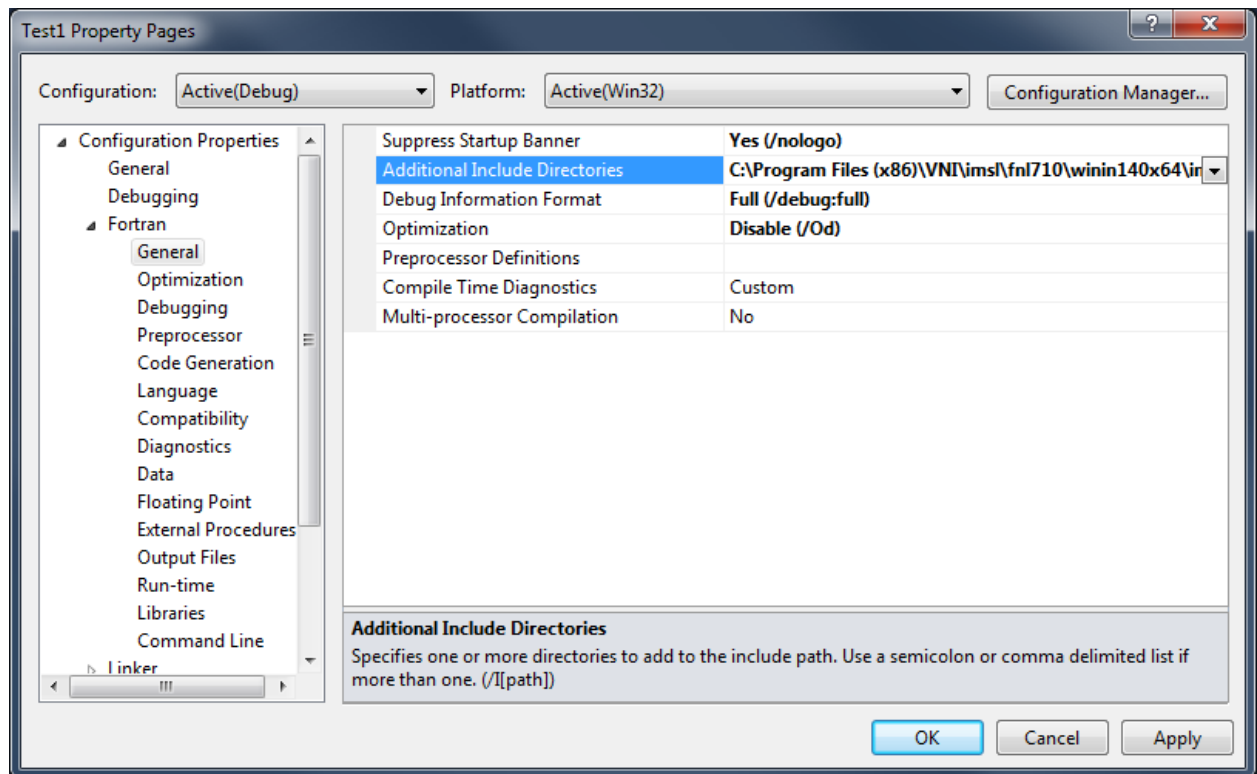
```

4. Add the Fortran Source File to the Project

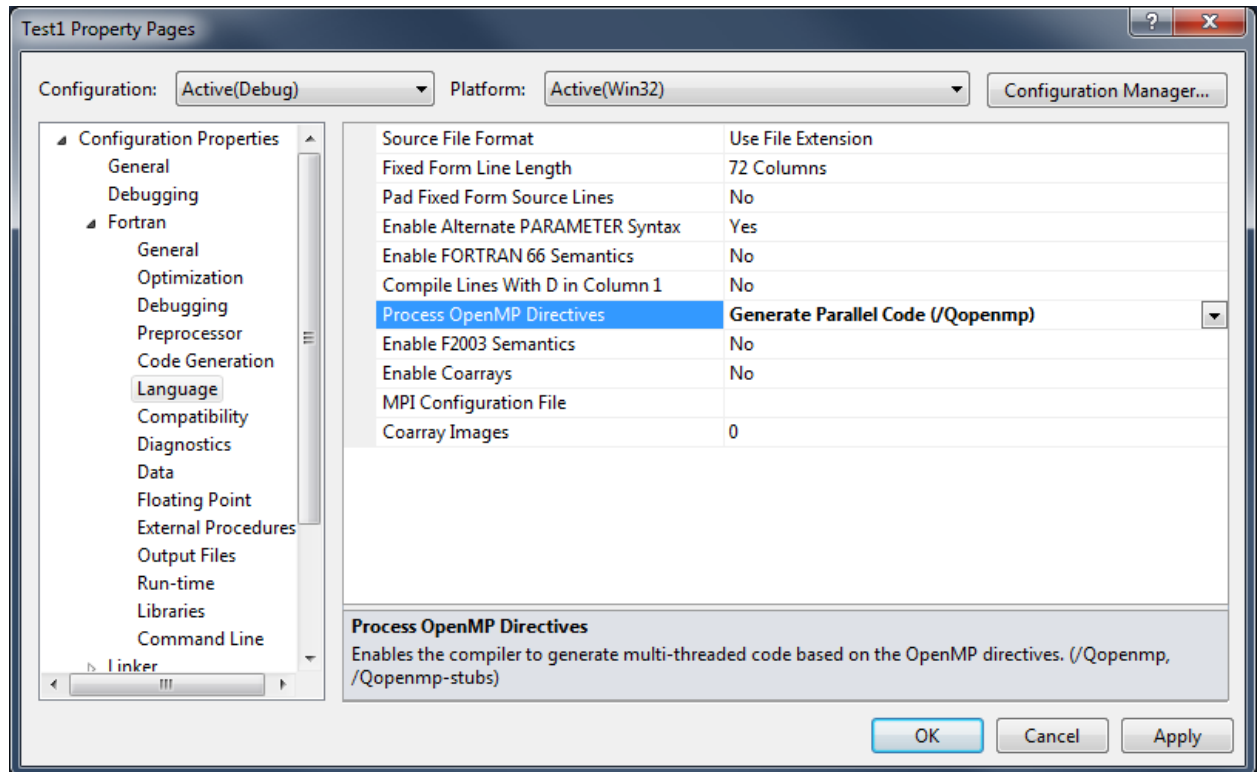
- Select the Project Name -> Right Click “Source Files”
- Click Add -> Existing Item and add your Fortran source code file

5. Set Project Properties

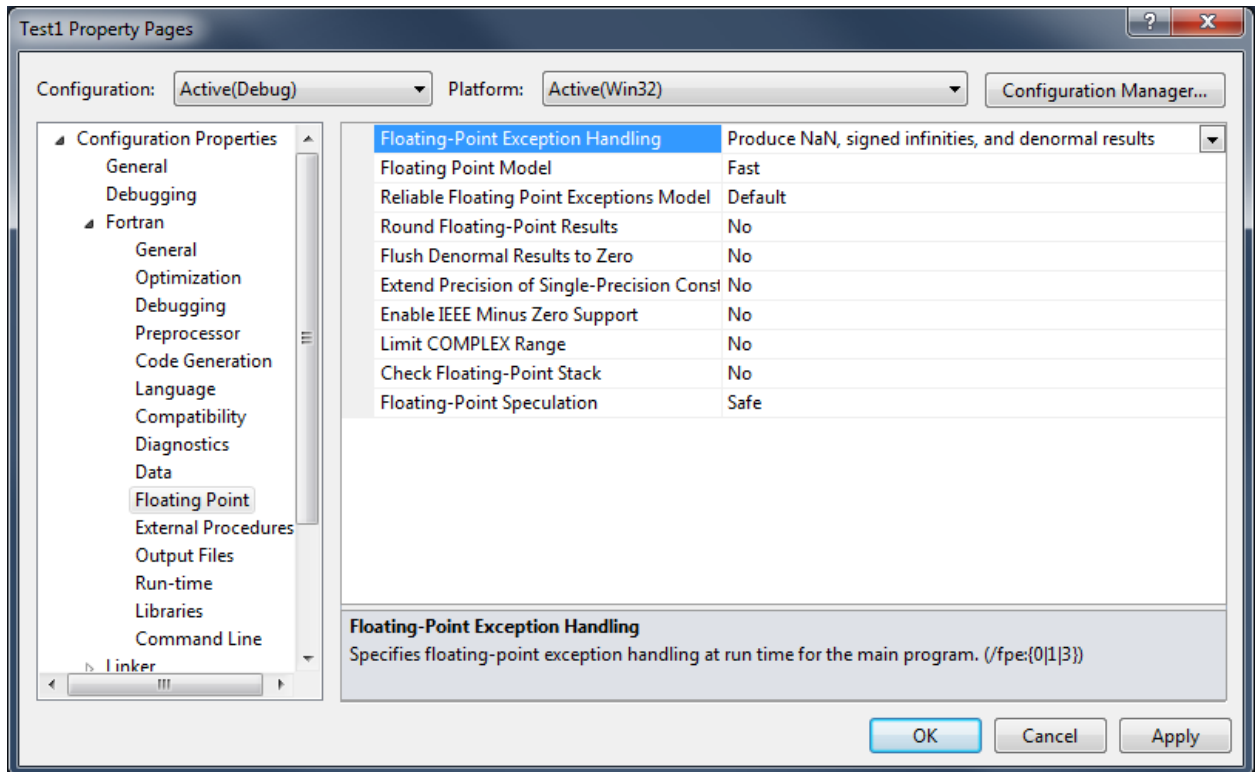
- Right click on the Project name and choose Properties
- Go to Configuration Properties on the left side and select Fortran -> General
- Add the path C:\Program Files (x86)\VNI\imsl\fnl710\winin140x64\include\dll to the Additional Include Directories.
- Click OK



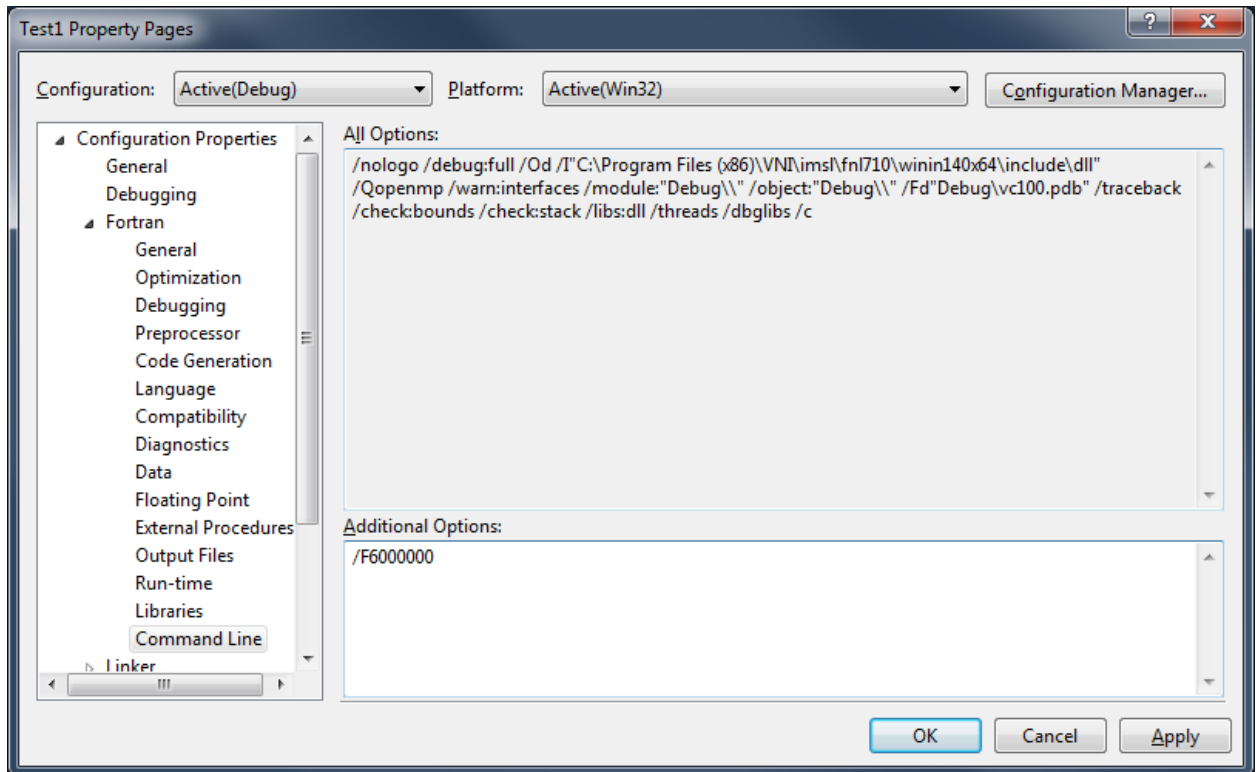
- Right click on the Project name and choose Properties
- Go to Configuration Properties on the left side and select Fortran -> Language, set Process OpenMP Directives to Generate Parallel Code (/Qopenmp)
- Click OK



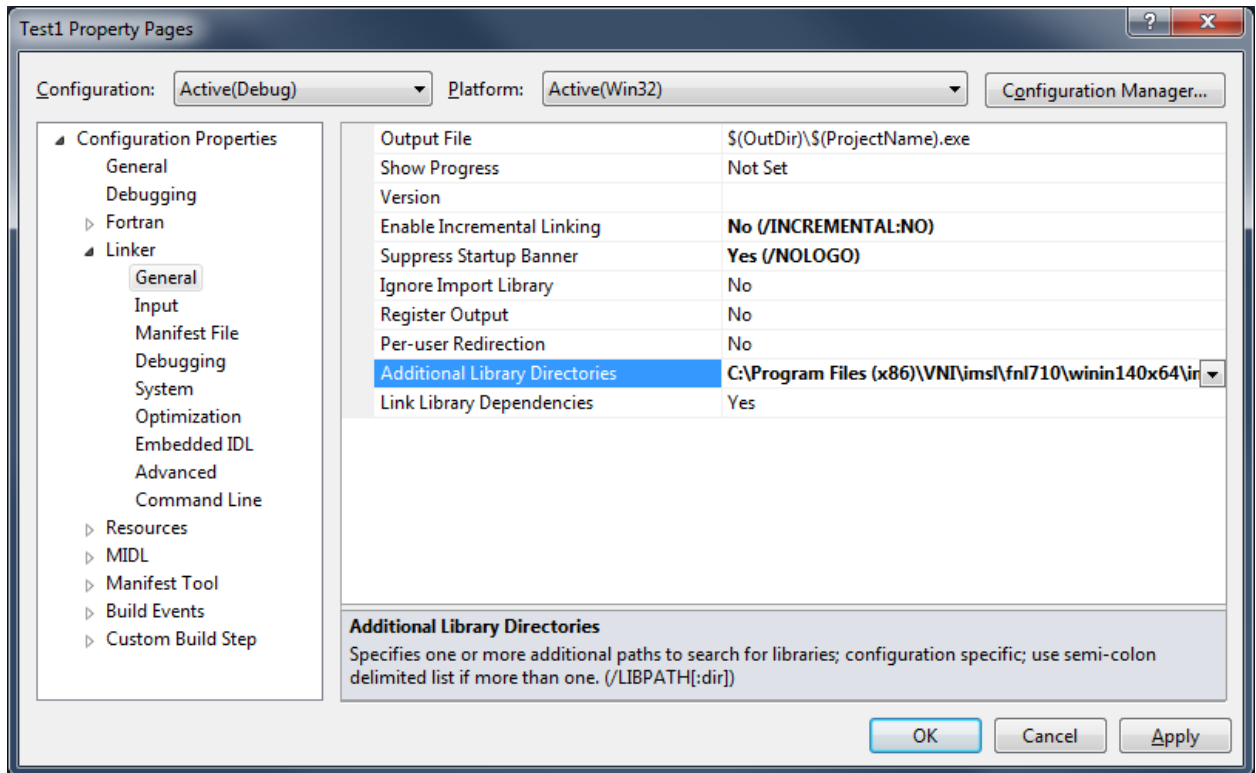
- Right click on the Project name and choose Properties
- Go to Configuration Properties on the left side and select Fortran -> Floating Point, check that the default setting for Floating Point Exception Handling is selected. It should be set to "Produce NaN, signed infinity, and denormal results"



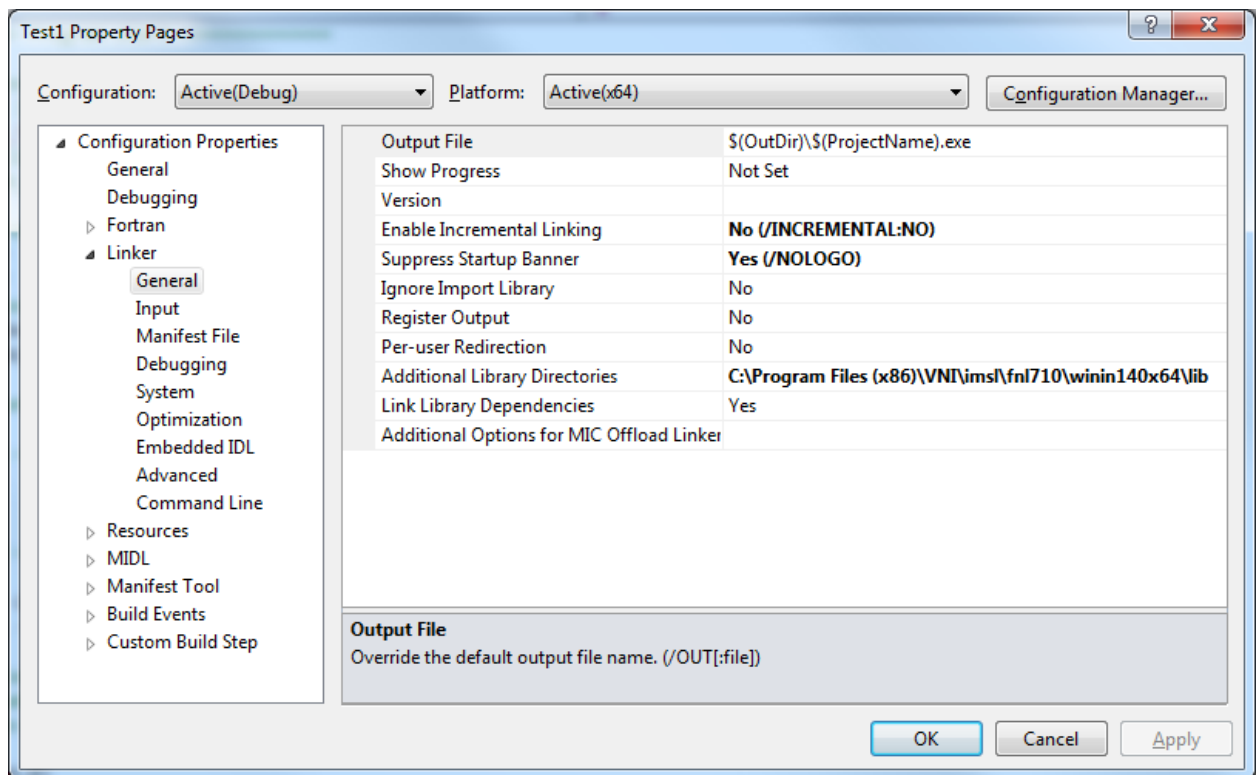
- Right click on the Project name and choose Properties
- Go to Configuration Properties on the left side and select Fortran -> Command Line, add these switches in the Additional Options box: /F6000000
- Click OK



- Right click on the Project name and choose Properties
- Go to Configuration Properties on the left side and select Linker -> General, add C:\Program Files (x86)\VNI\imsl\fnl710\winin140x64\lib to the "Additional Library Directories" list
- Click OK

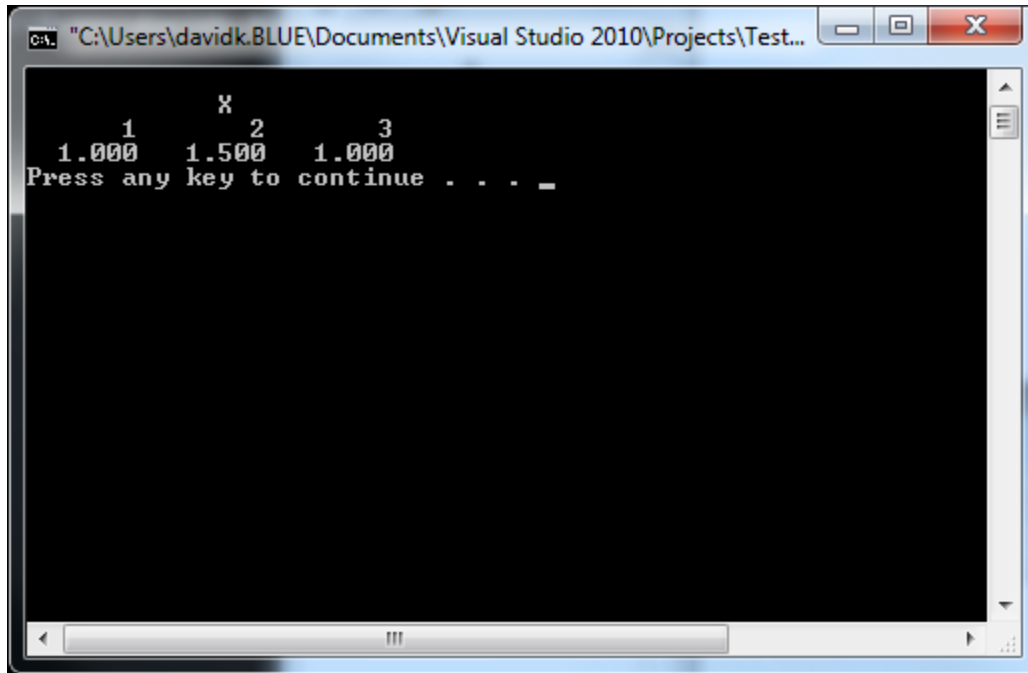


- From Solution Explorer right click on the project name; Choose Properties click Configuration Manager to open the Configuration Manager Dialog Box.
- Click the Active Solution Platform list, and then select the <New...> option to open the New Solution Platform Dialog Box
- Click the Type or select the new platform drop-down arrow, and then select x-64 platform.
- Click OK. The platform you selected in the preceding step will appear under Active Solution Platform in the Configuration Manager dialog box.
- Click Close in the Configuration Manager dialog box, and then click OK



5. Build the Project and Run the Program

- Build the Project by clicking on Build and selecting Build Solution
- Run the program by selecting Debug and selecting Start Without Debugging



```
C:\Users\dauidk.BLUE\Documents\Visual Studio 2010\Projects\Test...
      X
      1      2      3
1.000 1.500 1.000
Press any key to continue . . . _
```

Using IMSL from the Command Line

1. Setting the environment variables

The various environment variables may be set automatically. If you chose not to setup the environment automatically, you must run the fnlsetup.bat batch file from the IMSL Fortran Library install area.

2. Compile the program from the command line

To use the ifort command line compiler, start the environment from the Start Menu: Start -> Programs -> Intel(R) Parallel Studio -> Command Prompt -> Parallel Studio XE with Intel Compiler -> Intel Visual Studio Intel64 2010 mode.

Shared Library

```
> %F90% %F90FLAGS% fnl.f90 %LINK_FNL%
```

Static Library

```
> %F90% %F90FLAGS% fnl.f90 %LINK_FNL_STATIC%
```

3. Execute the program from the command line

```
> fnl.exe
```

		X	
1	2	3	
1.000	1.500	1.00	