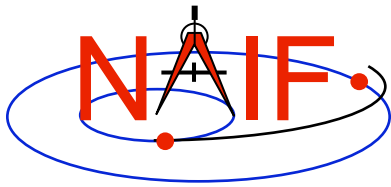


Navigation and Ancillary Information Facility

Preparing for Programming Using the SPICE Toolkit

September 2009



Setting Path to Toolkit Executables

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Recommended for all languages

- **Unix**

- **csh, tcsh:** Use the set command to add the location of toolkit executables to your path.

```
» set path = ($path /my_directory/toolkit/exe)
» set path = ($path /my_directory/cspice/exe)
» set path = ($path /my_directory/icy/exe)
» set path = ($path /my_directory/mice/exe)
```

- **bash**

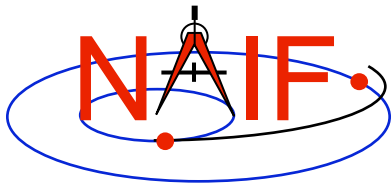
```
» PATH=$PATH:/my_directory/toolkit/exe
» PATH=$PATH:/my_directory/cspice/exe
» PATH=$PATH:/my_directory/icy/exe
» PATH=$PATH:/my_directory/mice/exe
```

- **Windows**

- **Add location of toolkit executables to the environment variable PATH from the Advanced pane on the System Control Panel (Control Panel->System->Advanced).**

```
» drive:\my_directory\toolkit\exe
» drive:\my_directory\cspice\exe
» drive:\my_directory\icy\exe
» drive:\my_directory\mice\exe
```

Replace the *italics* with the path in which you installed the toolkit on your computer.



Unix/Linux: Build

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- **Compile and link an application, say *program*, against the SPICELIB/CSPICE libraries**
 - Assume SPICE is installed at `/naif/toolkit/` or CSPICE is installed at `/naif/cspice/`

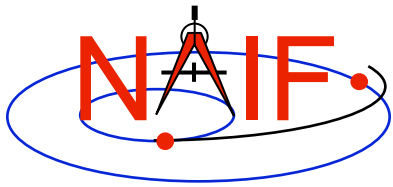
» C

```
$ gcc program.c -I/naif/cspice/include /naif/cspice/lib/csupport.a \
    /naif/cspice/lib/cspice.a -lm
```

» FORTRAN

```
$ g77 program.f /naif/toolkit/support.a /naif/toolkit/spicelib.a
```

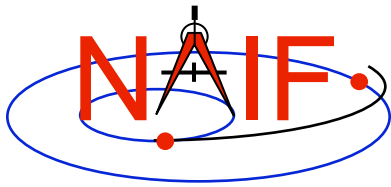
- » Some FORTRAN compilers (e.g. Absoft) require an additional flag `"-lU77"` when linking against SPICELIB to pull in the standard Unix symbols
- The default SPICE library names do not conform to the UNIX convention `libname.a`. So you cannot use the library path/name options `-L/path_to_libs/` and `-lname` unless you rename the SPICE library.



Windows: Compiler settings

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- **The standard installation of Microsoft Visual Studio or Visual Toolkit may not update environment variables needed to use the C compiler (cl) from the standard DOS shell.**
 - **Example, environment variables for "cl" - Visual Studio 7:**
 - » **INCLUDE**
 - C:\Program Files\Microsoft Visual Studio .NET\Vc7\include\
 - C:\Program Files\Microsoft Visual Studio .NET\FrameworkSDK\include\
 - » **LIB**
 - C:\Program Files\Microsoft Visual Studio .NET\Vc7\lib\
 - C:\Program Files\Microsoft Visual Studio .NET\FrameworkSDK\Lib\
 - » **PATH**
 - C:\Program Files\Microsoft Visual Studio .NET\Vc7\bin\
 - **You can set the environment variables either by appending the directory paths shown above to the corresponding environment variable in the *Advanced* pane of the *System* Control Panel or by executing one of the "vars32" batch scripts supplied with the Microsoft compiler:**
 - » vars32.bat
 - » vcvars32.bat
 - » vsvars32.bat



Windows: Builds

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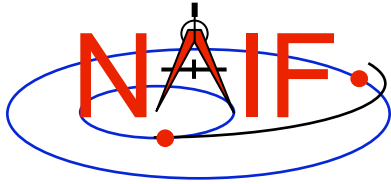
- Assume SPICE is installed at `C:\naif\toolkit\` with CSPICE installed at `C:\naif\cspice\`
 - Compile and link an application, say *program*, against the SPICELIB/CSPICE libraries

» C

```
> cl program.c -IC:\naif\cspice\include C:\naif\cspice\lib\csupport.lib \
C:\naif\cspice\lib\cspice.lib
```

» FORTRAN

```
> df program.f C:\naif\toolkit\lib\SUPPORT.LIB \
C:\naif\toolkit\lib\SPICELIB.LIB
```



Icy: Register the Icy DLM to IDL (1)

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Required for “Icy”

- **Unix and Windows**

- Use the IDL register command:

```
IDL> dlm_register, '_path_to_directory_containing_icy.dlm_'
```

- copy icy.dlm and icy.so (icy.dll) to IDL's binary directory

```
{The IDL install directory}/bin/bin.user_architecture
```

```
» /usr/local/itt/idl64/bin/bin.linux.x86/
```

```
» C:\ITT\IDL64\bin\bin.x86\
```

- **Unix specific:**

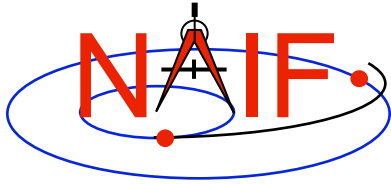
- Start the IDL application from a shell in the directory containing both icy.dlm and icy.so.
- Append the path to your icy.dlm to the IDL_DLM_PATH environment variable to include the directory containing icy.dlm and icy.so, e.g.:

```
setenv IDL_DLM_PATH "<IDL_DEFAULT>:_path_to_directory_containing_icy.dlm_"
```

- **Windows specific:**

- Set environment variable IDL_DLM_PATH as described above from the *Advanced* pane of the *System* Control Panel.

Caveat: with regards to the Icy source directory, *icy/src/icy*, do not invoke IDL from the directory, do not register the directory, and do not append to IDL_DLM_PATH the directory. This directory contains an “icy.dlm” but no “icy.so.”



Icy: Register the Icy DLM to IDL (2)

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- **Confirm IDL recognizes and can access Icy. Assume Icy is installed at `/naif/icy/`**

- **Register the Icy DLM,**

```
IDL> dlm_register, '/naif/icy/lib'
```

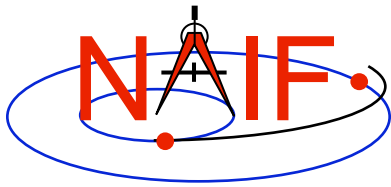
- **Using the help command:**

```
IDL> help, 'icy', /DLM
**ICY - IDL/CSPIICE interface from JPL/NAIF (not loaded)
```

» Appearance of the words “not loaded” might suggest something is wrong, but this is expected state until you execute an Icy command.

- **Execute a trivial Icy command:**

```
IDL> print, cspice_icy('version')
% Loaded DLM: ICY.
Icy 1.4.20 25-DEC-2008 (EDW)
```

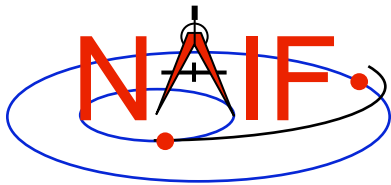


Icy: Using the IDL IDE

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Recommended for “Icy”

- Use the IDL IDE’s preferences panel to set the current working directory to the location where you will be developing your lessons’ code.
- **Optional:** Place your `dln_register` command in a start up script. Specify the script using the IDL IDE’s preferences panel.



Mice

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Required for “Mice”

- **Assume Mice is installed at `C:\naif\mice\` on Windows, or `/naif/mice/` on Unix/Linux. Use of Mice from MATLAB requires the Mice source and library directories exist in the MATLAB search path.**

- **On Windows:**

- » `addpath('C:\naif\mice\lib')`
 - » `addpath('C:\naif\mice\src\mice')`

- **On Unix/Linux:**

- » `addpath('/naif/mice/lib')`
 - » `addpath('/naif/mice/src/mice')`