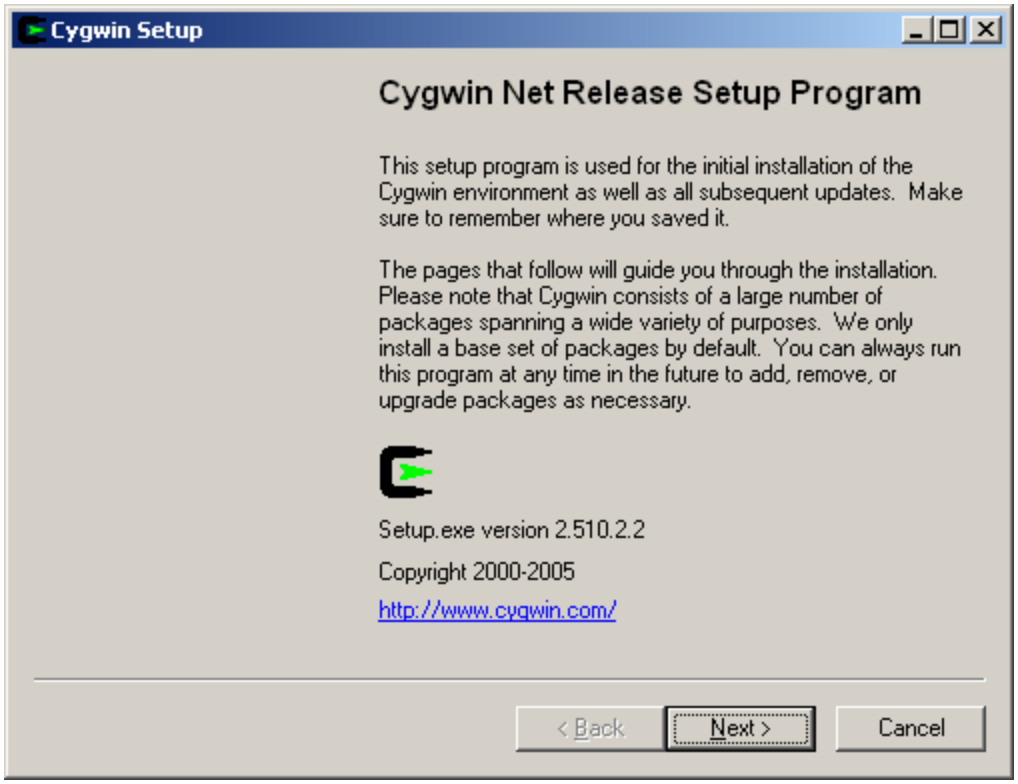
Setting up Cygwin C++

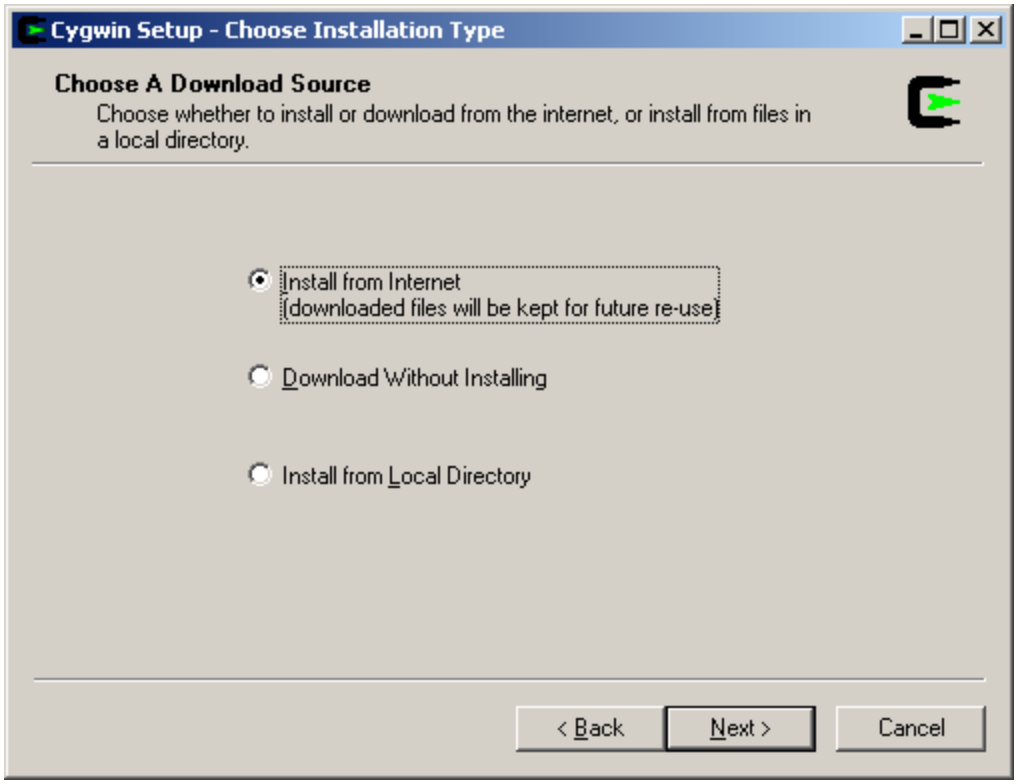
Downloading

- Visit http://www.cygwin.com
- Download setup.exe
  - http://www.cygwin.com/setup.exe
- Run setup.exe

Splash Screen

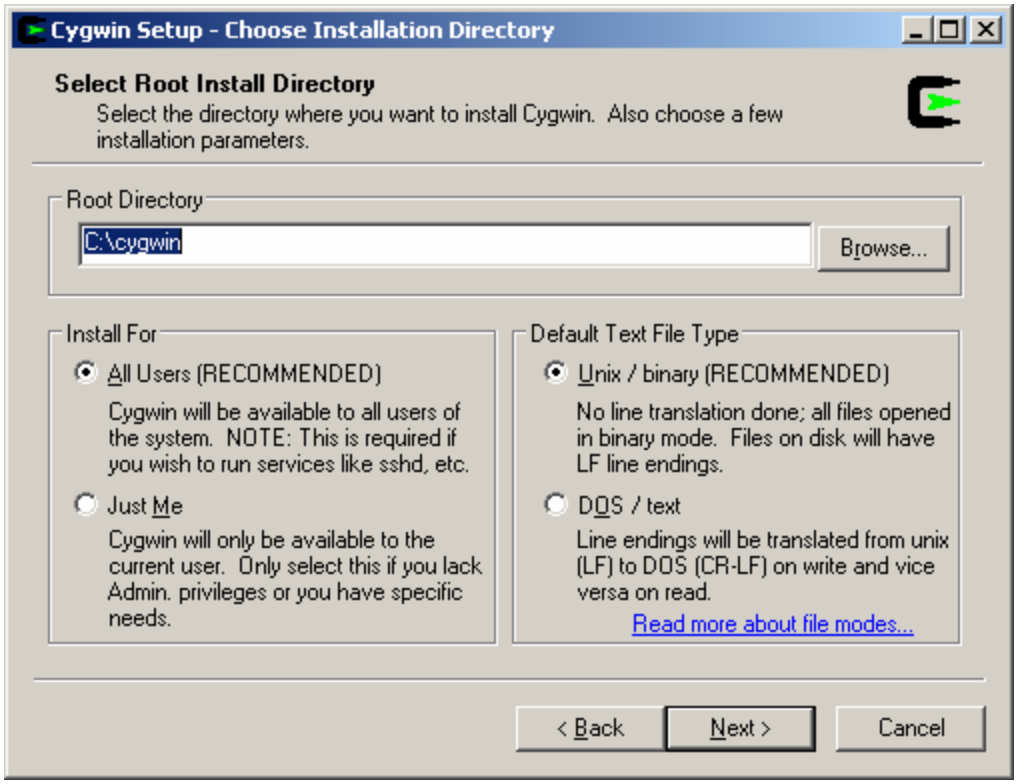


Installation Type



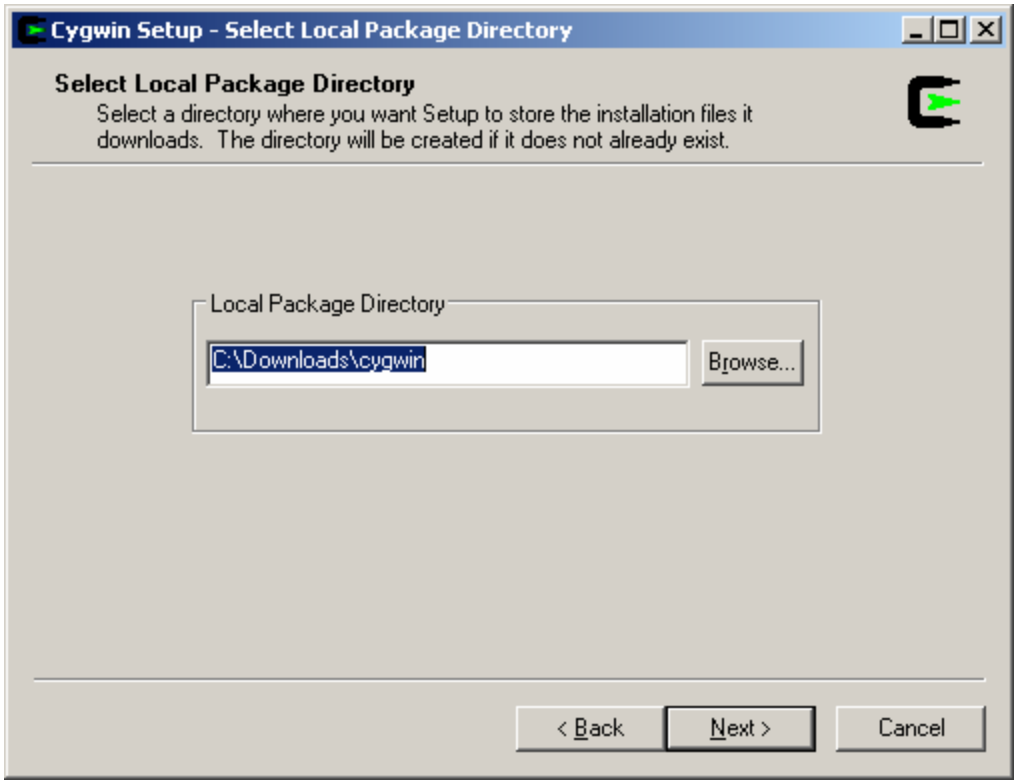
Choose "Install from Internet"

Install Directory



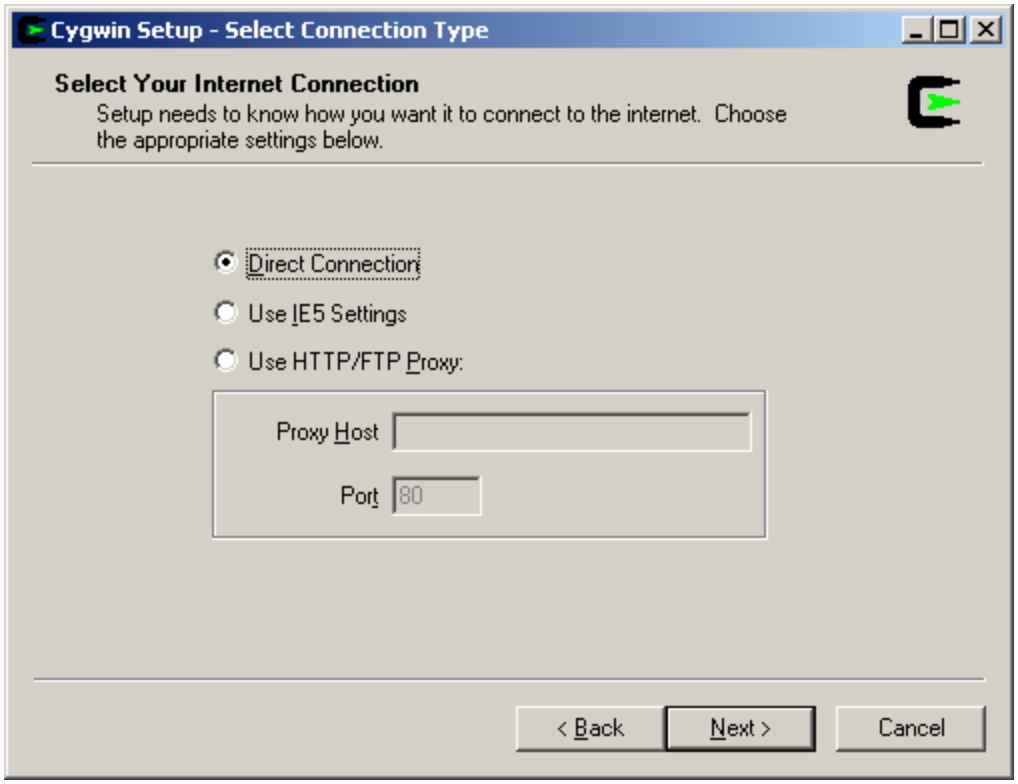
Choose a directory to serve as the "root" of your cygwin install. This Is the directory you will end up in if you do "cd /"

Download Directory



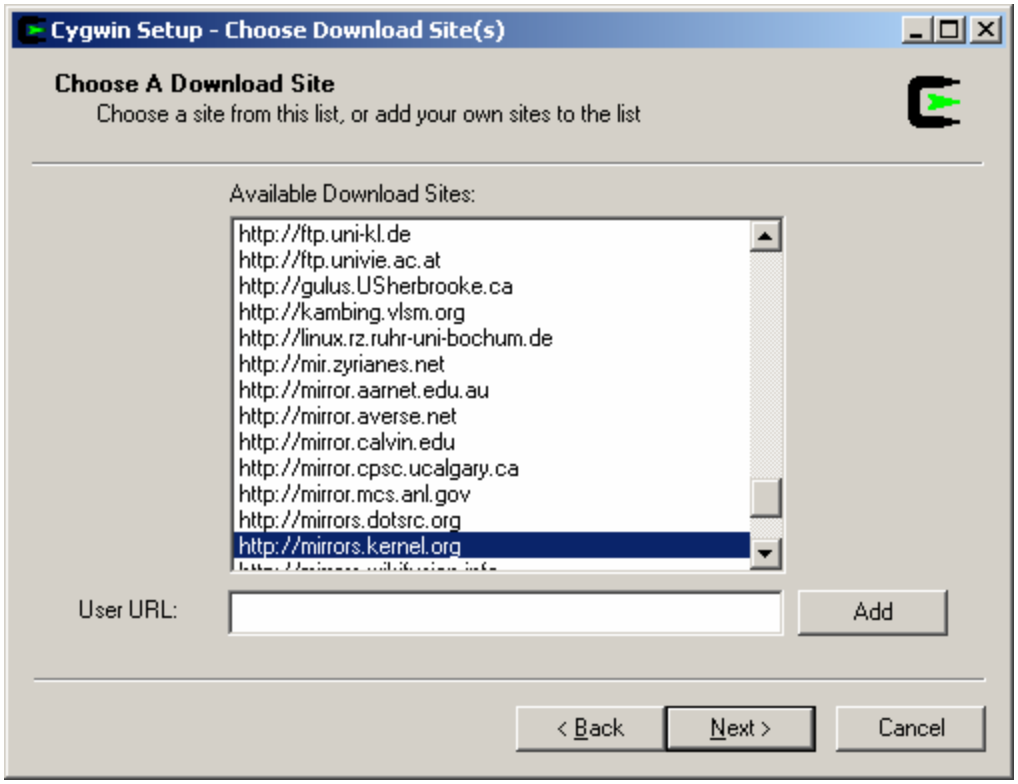
Choose a directory for all of your cygwin packages to be downloaded to. This is for storage purposes only. No software will be installed into this directory and it's contents can be deleted after your installation is complete.

Connection Type



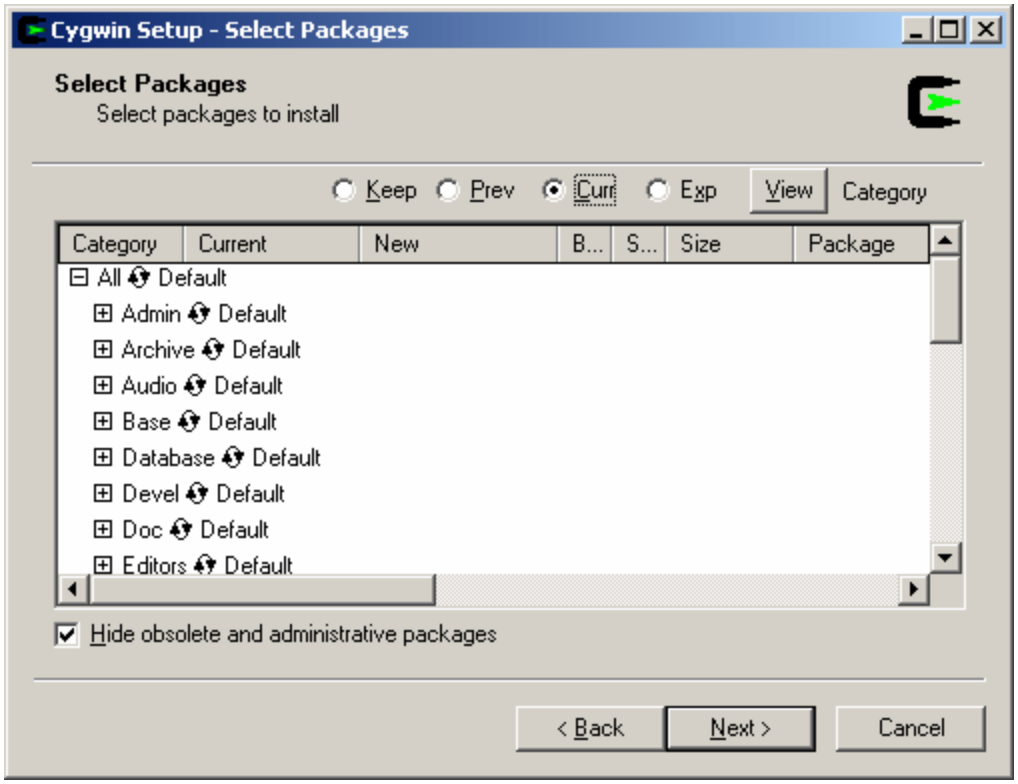
Choose your internet connection type.

Download Site



Choose a download site. All sites SHOULD have all of the software you need, but some are faster than others

Select Packages



This is where you choose what software you would like to install.

Useful Packages

- Packages of interest for CS2900 programming
  - Devel/gcc
    - C compiler
  - Devel/gcc-g++
    - C++ compiler
  - Devel/gdb
    - Debugger
  - Devel/make
    - Software creation utilities
  - Interpreters/python
    - pyhton interpreter

Install

- Once you have chosen the packages you want, click Next to begin the download and install process
- When installation is complete, you should have Cygwin icons on your desktop and start menu
- Double clicking the cygwin icon will bring up a command line window similar to a DOS window
  - This is a unix style bash shell
  - You will be positioned in your "home" directory
    - This will be something like /home/cseagle
    - From Windows point of view this will really be c:\cygwin\home\cseagle where the prefix is the directory you specified as your cygwin root

Using cygwin

- Changing directories
  - cd
    - By itself changes to your home directory
  - cd c:
    - Changes to the root of your C drive
  - Because unix does not use drive letters Cygwin also offers the /cygdrive directory
    - cd /cygdrive/c
    - Has the same effect as cd c:

Editing Programs

- Use any text/programming editor that you like
- Easiest to save your files in your home directory
  - C:\cygwin\home\<your user name>
- That way, your files will be in the same directory that cygwin starts in

Compiling With g++

- gcc is a C only compiler
- g++ will compile both C and C++
- There are a number of different ways to use g++ to compile your programs
  - Compile to a default executable file
  - Compile to an executable that you specify
  - Compile to an object (NOT executable) file

Basic Compilation

- Assuming you have a source file named myprog.cpp

```
g++ myprog.cpp
```

  - The compiler MUST be able to find your source file which usually resides in the current working directory
  - Assuming no error messages, generates an executable named `a.exe` (`a.out` on Unix systems)
- If your program is spread across several files simply list them all on the command line

```
g++ file1.cpp file2.cpp file3.cpp
```

Basic Compilation

- Assuming you have a source file named myprog.cpp

```
g++ -o myprog myprog.cpp
```

  - Assuming no error messages, generates an executable named `myprog.exe` (`myprog` on Unix systems)
  - The –o option is used to specify the name of the executable file that the compiler will create

Basic Compilation

- Assuming you have a source file named myprog.cpp

```
g++ -c myprog.cpp
```

  - Assuming no error messages, generates an object file named `myprog.o`
  - The –c option tells the compiler to "compile only, do not create an executable file"
    - This is useful when you want to compile a file that does not contain a main function

Executing Your Compiled Program

- Once you have successfully created an executable file, you can run it directly from the command line
  - `./myprog`
    - The `./` tells bash to look in the current directory for the program you are trying to run (in this case `myprog`)