How to Build the Raw IF DDM Processor on Windows

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Introduction

This document describes how I got the DDM processor to run on my Windows 10 system. The DDM processor was intended to be used on a Linux system so to get it running on Windows I used Cygwin to create a Linux environment where the processor can be run.

Setting up Cygwin

1. Go to https://cygwin.com/install.html to install Cygwin.
2. Download and run the "setup-x86_64.exe" from the Cygwin website.
3. The first few steps (everything before selecting packages) do not need to be done exactly how I did. However, I included screenshots for reference. The install path, particularly, can be set to wherever you prefer.
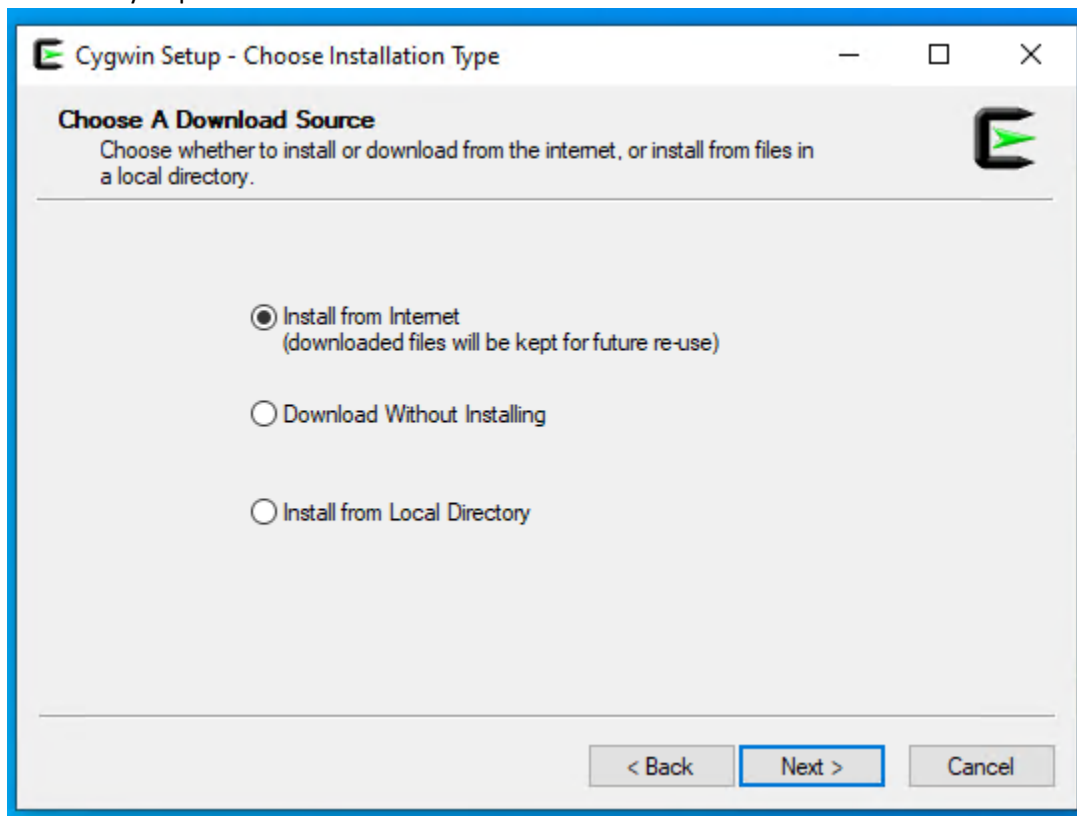
Cygwin Setup - Choose Installation Directory

Select Root Install Directory
Select the directory where you want to install Cygwin. Also choose a few installation parameters.

Root Directory

C:\cygwin64   [Browse...]

Install For

◉ All Users (RECOMMENDED)

Cygwin will be available to all users of the system.

○ Just Me

Cygwin will still be available to all users, but Desktop Icons, Cygwin Menu Entries, and important Installer information are only available to the current user. Only select this if you lack Administrator privileges or if you have specific needs.

[< Back] [Next >] [Cancel]

Cygwin Setup - Select Local Package Directory

Select Local Package Directory
Select a directory where you want Setup to store the installation files it downloads. The directory will be created if it does not already exist.

Local Package Directory

C:\Users\russelan\Downloads   [Browse...]

[< Back] [Next >] [Cancel]
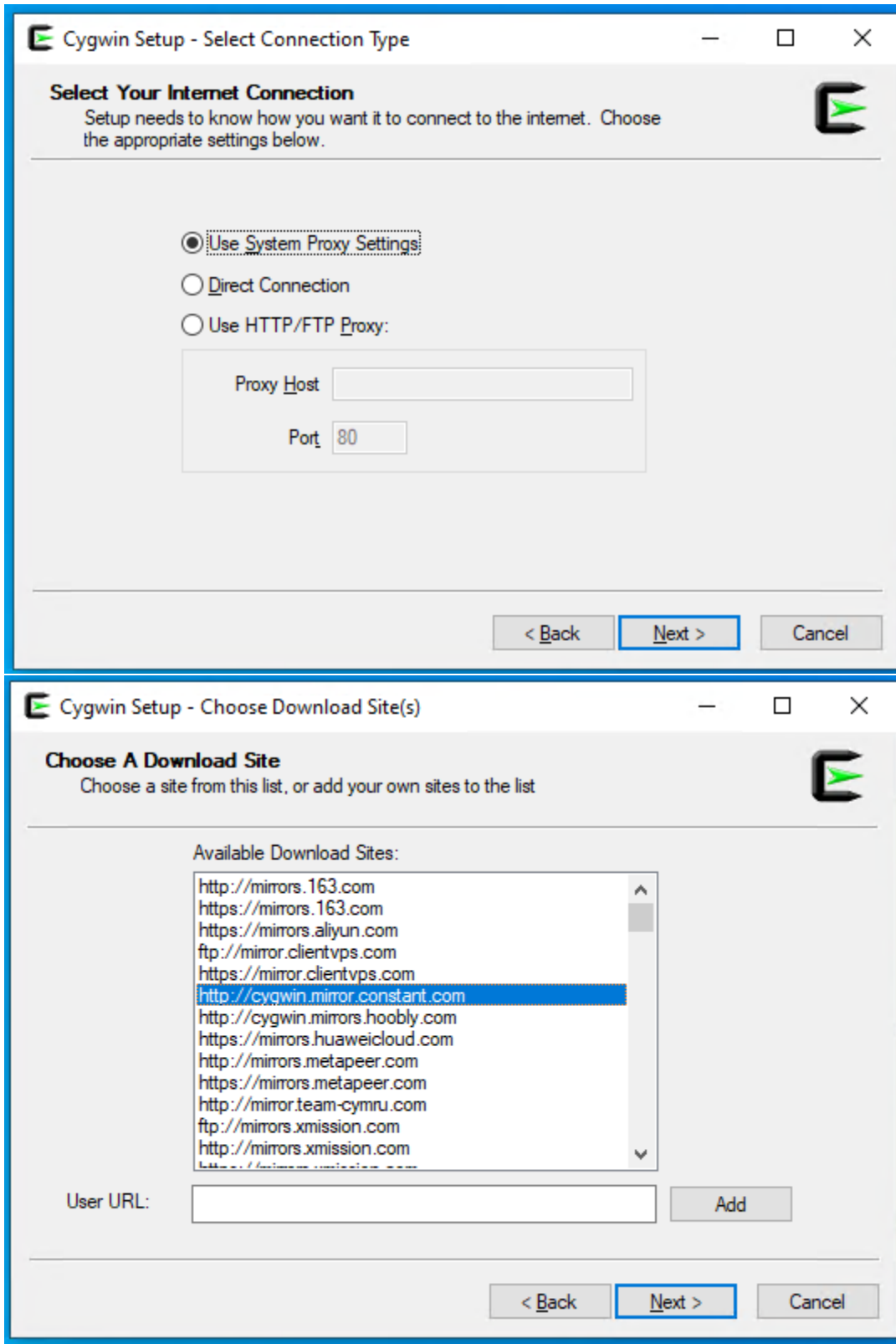
4. Next comes the package selection. This part of the Cygwin installation where we select all the packages we will need to build the DDM processor. The first thing we need to do is make sure we can see all the available packages by setting the "View" to "Full". We are going to search for

a few packages so **do not** hit "Next" on this screen until we add all the packages we are going to need.
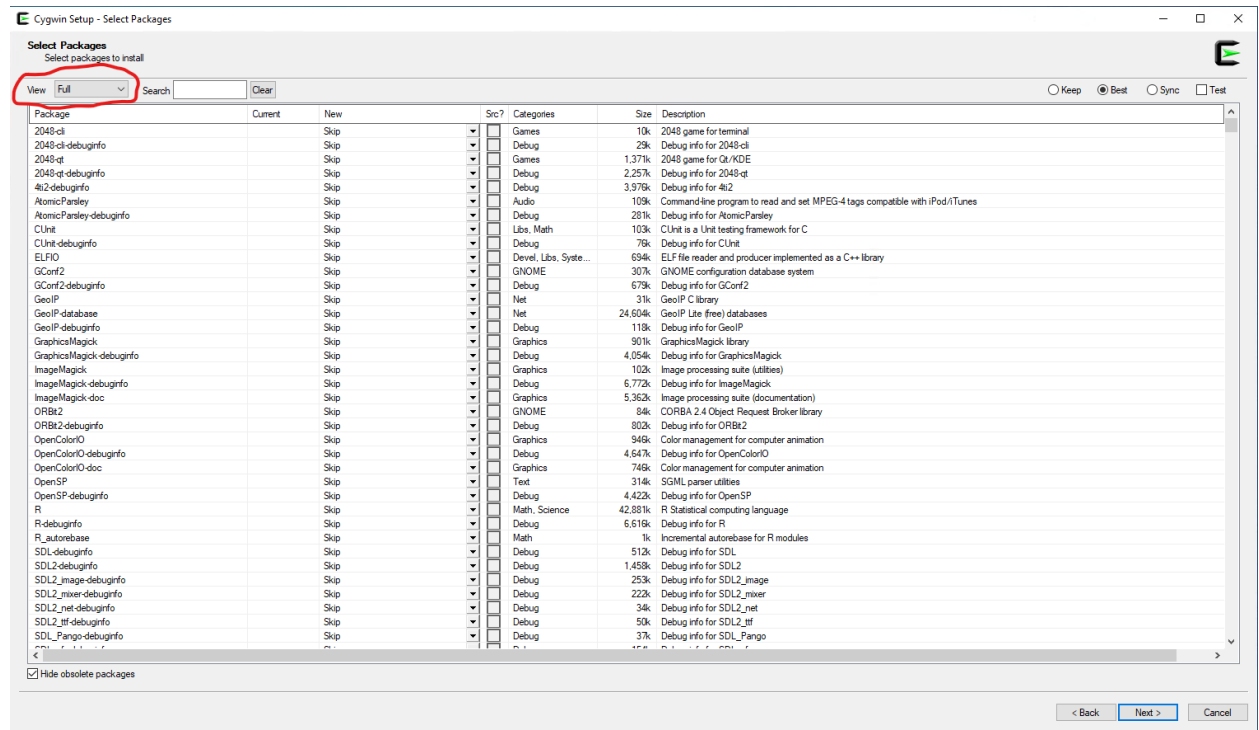

5. Search GCC and select "gcc-core", "gcc-g++", "libgcc1", and "libgccpp1". To select a package hit the drop down arrow next to where it says "Skip" and select the newest version of the packages. Note, my screenshot may look a little different than your screen since I already have the packages installed. My screen says "Keep", but yours will say "Skip" until you select the version
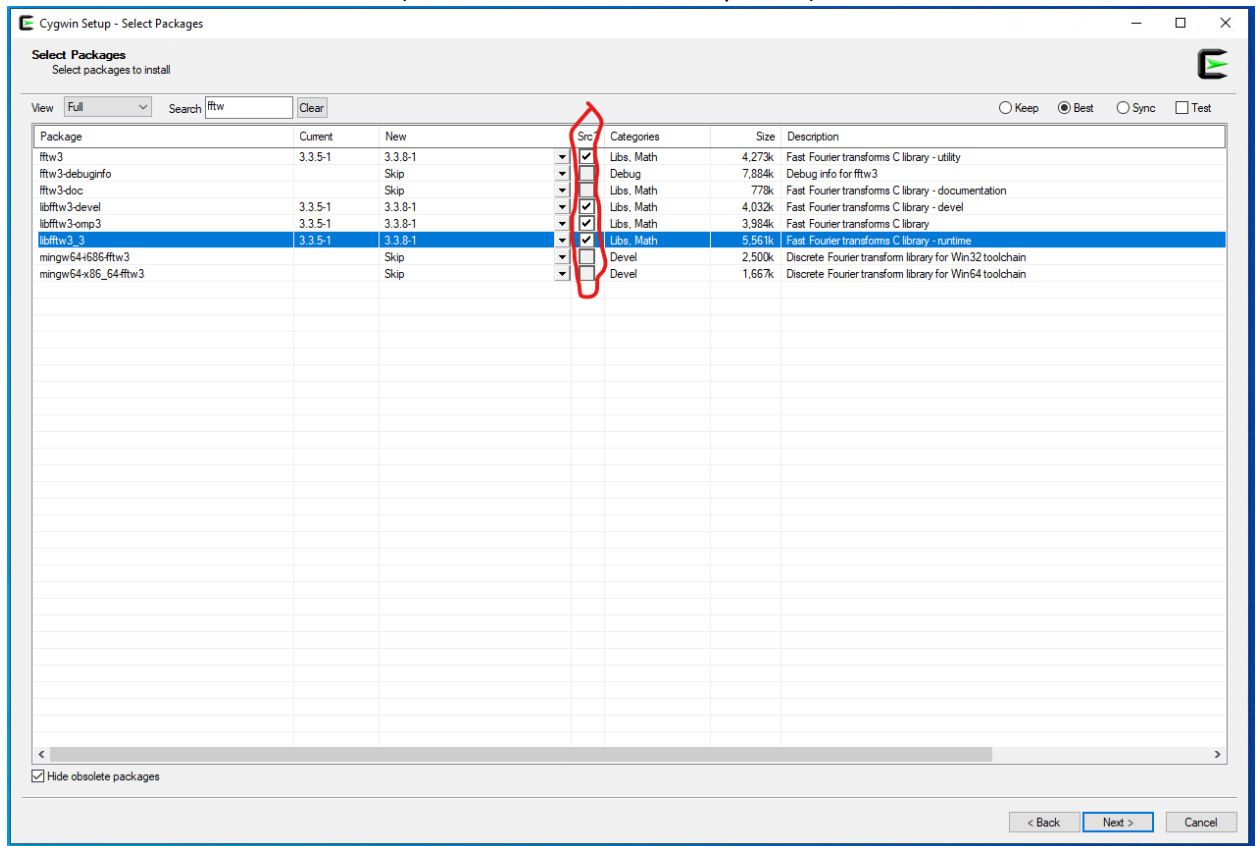
number then it will show the version number of the package you are about to install.
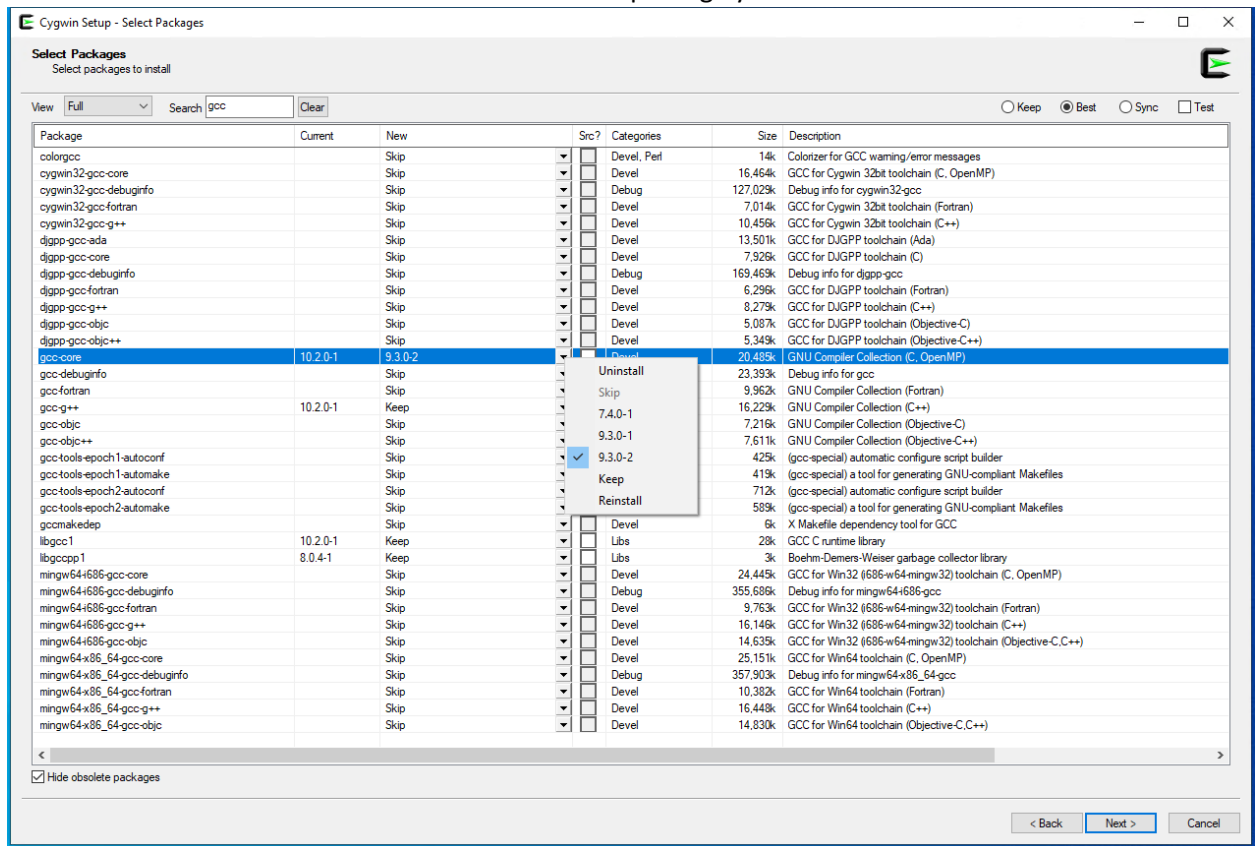
6. Now search the package "make" and select the most recent version of that program.
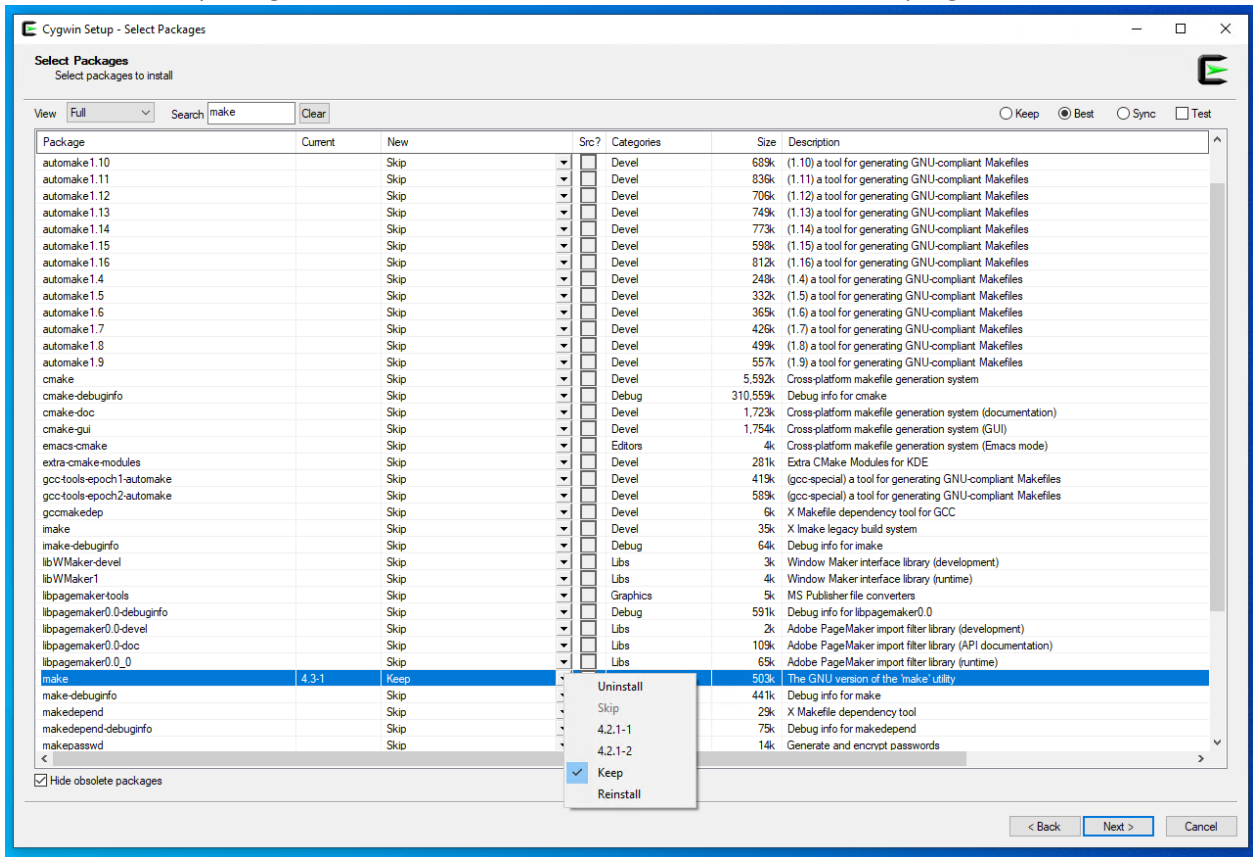
7. Select the most recent versions of "fftw3", "libfftw3-devel", "libfftw3-omp3", and "libfftw3_3" and check the box for the "Src?" (circled in red in the below picture).
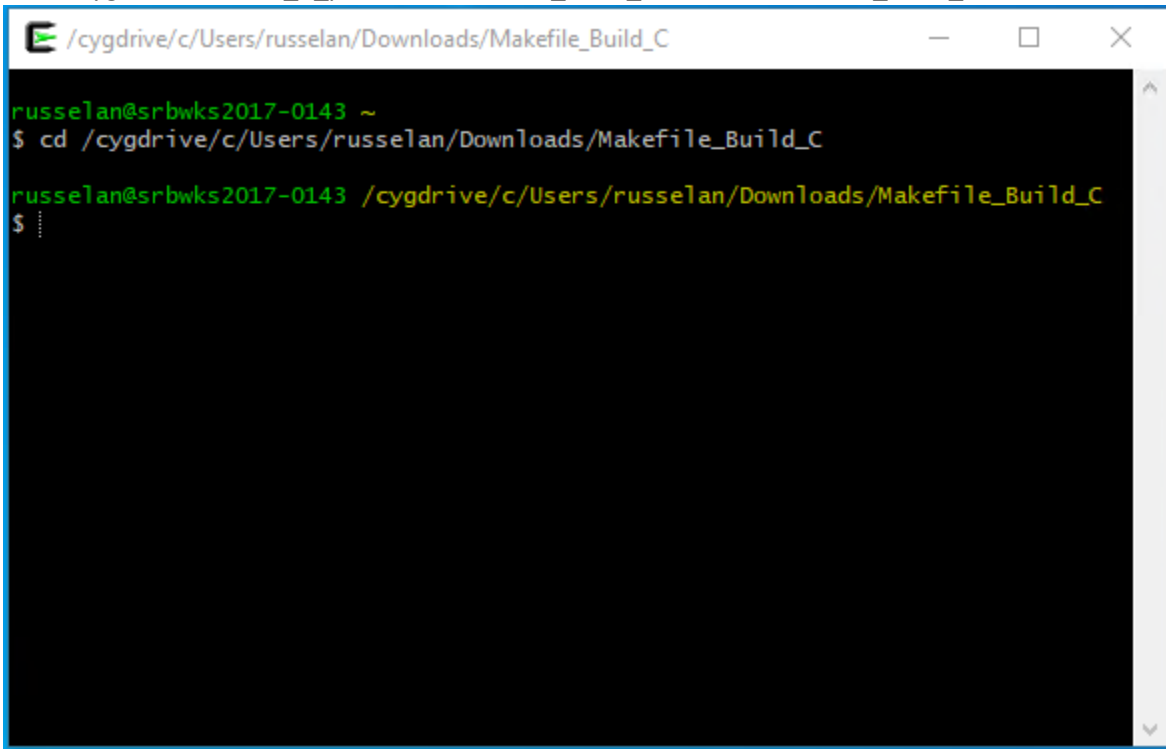

8. Now hit "Next" and it will prompt you to review changes. Make sure you have all the packages listed above then hit "Next" again.
9. Now the actual installation will take place which may take some time. Once it is done you should be all set to use Cygwin.

Using Cygwin

1. Open up the newly installed Cygwin. Cygwin is a Linux emulator so it should understand most standard Linux commands. One important thing to note is how Cygwin handles paths. If we want to access a directory with this path on Windows: "C:\Users\russelan\Downloads\Makefile_Build_C" it will look like this in Cygwin: "/cygdrive/c/Users/russelan/Downloads/Makefile_Build_C". Below is an example of how to change directory to Makefile_Build_C. Mine is located in my Downloads folder, but yours may be in a different location so adjust the command appropriately. The Makefile_Build_C can be downloaded to your system from cygnss-sftp-1.engin.umich.edu:
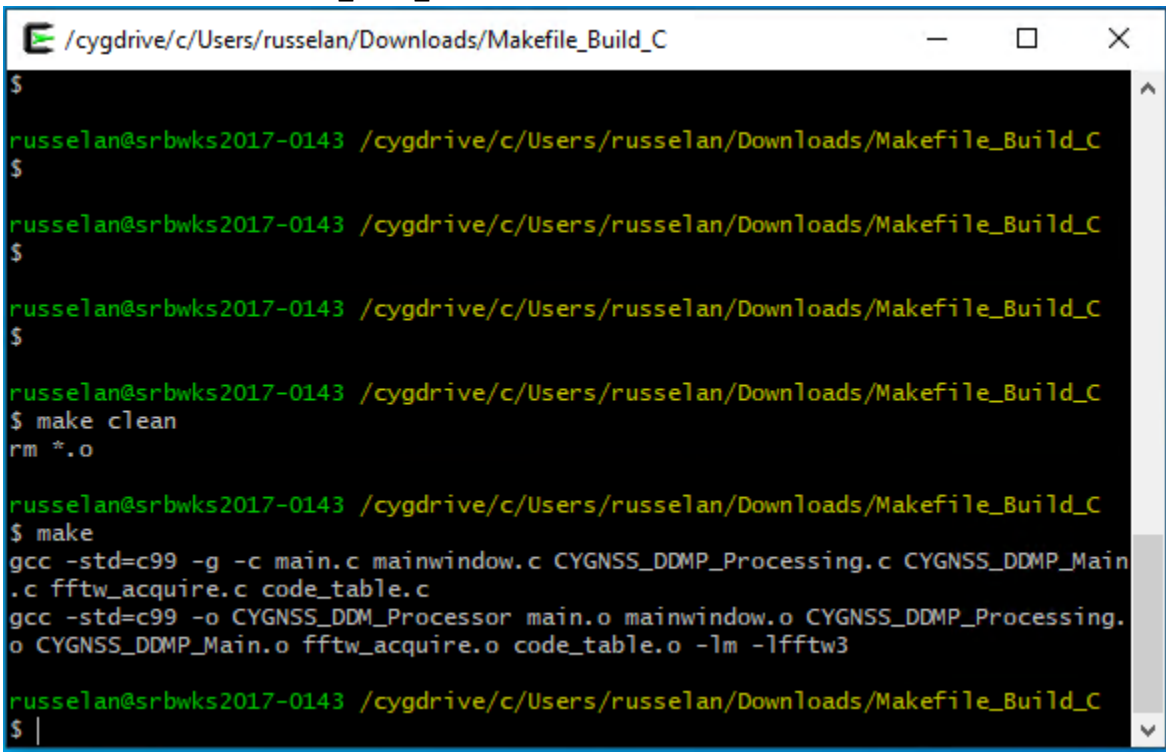
/data/cygnss/tools/raw_if_processor/CYGNSS_DDM_Processor/Makefile_Build_C.

2. Now that you are in the Makefile_Build_C directory in Cygwin, you can do a "make clean" and a "make" to build the CYGNSS_DDM_Processor.exe executable.

a. If you run into an issue with the FFTW3 library try going back to step 7 of the "Installing Cygwin" section and making sure you have all the packages and source. You can re-run

Cygwin's "setup-x86_64.exe" as many times as you would like to get all the packages you need.

3. Now you should be able to follow the instructions on cygnss-sftp-1.engin.umich.edu: /data/cygnss/tools/raw_if_processor/CYGNSS_DDM_Processor/Documentation to process the example Raw IF collection.