SSHFS Setup Guide

1) Enable "**Windows subsystem for Linux**":

   ▪ Go to Control Panel -> Programs -> Programs and Features -> Turn Windows features on or off
   ▪ Scroll down, locate "Windows subsystem for Linux", make sure it is ticked
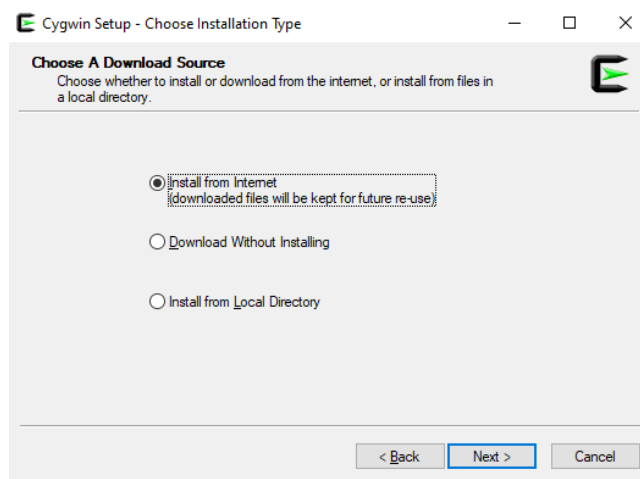   ▪ Restarted the computer if required

2) From Microsoft Store, download **Ubuntu.**

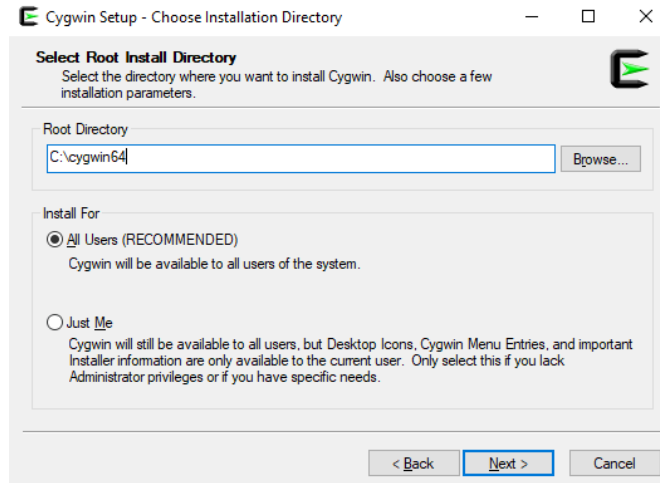3) Download the latest version of **Cygwin** from:

   https://cygwin.com/install.html

4) In the **Cygwin installer**:

   ▪ Install from the Internet:
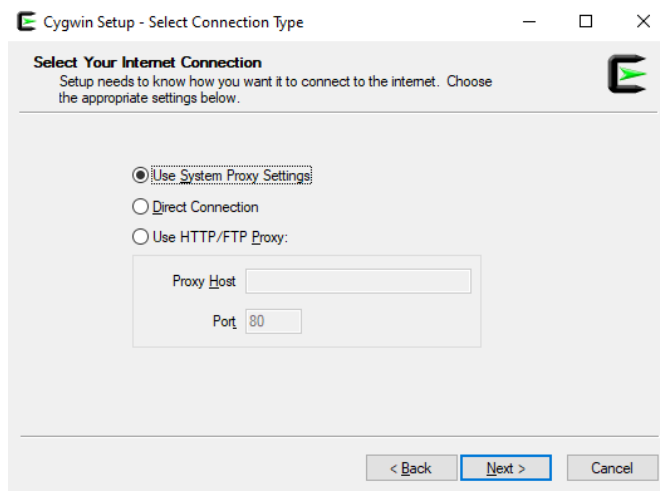

   ▪ Leave your root directory as default:
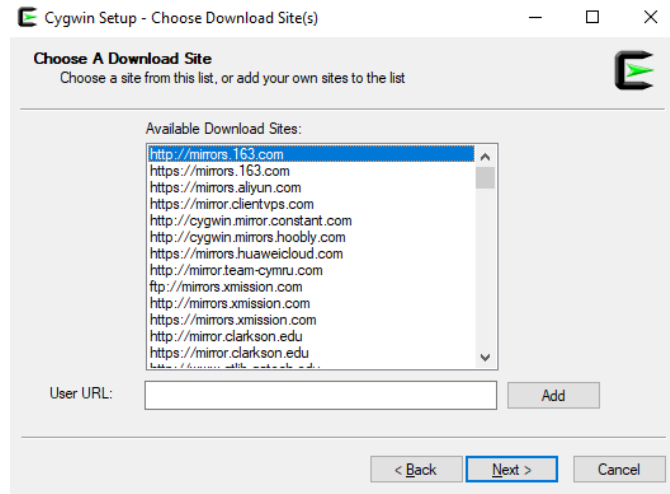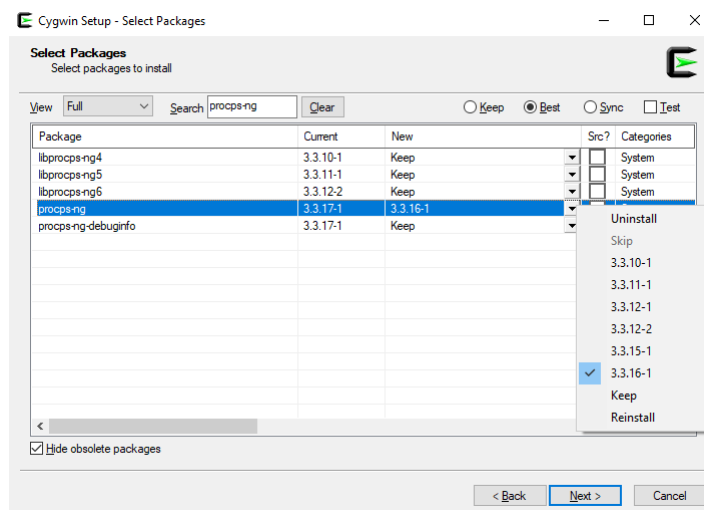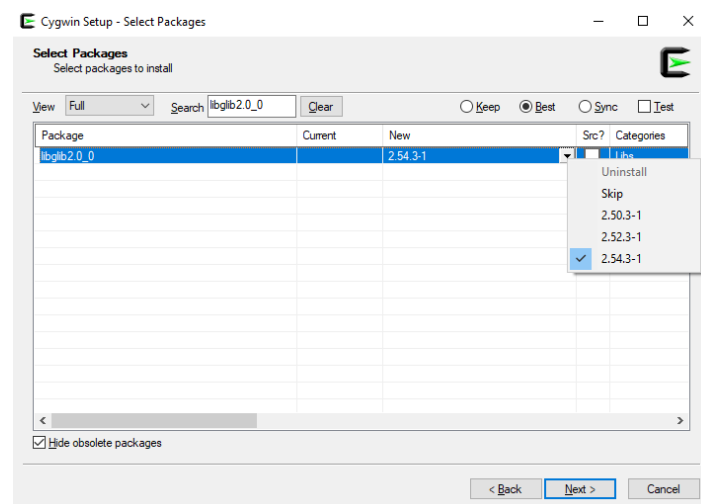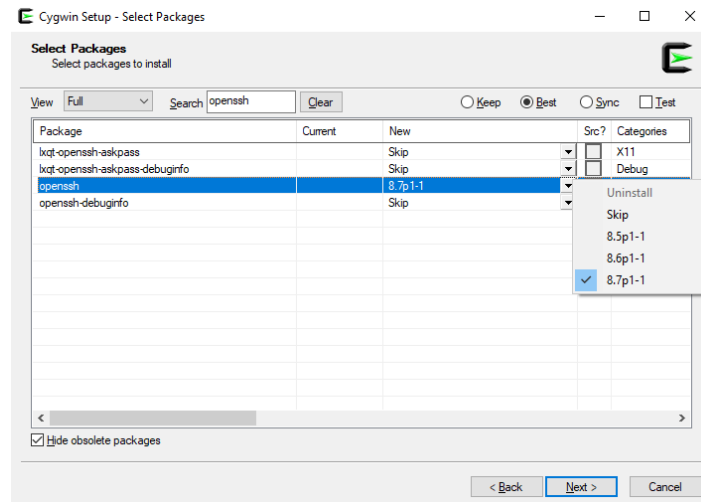
- Use systems proxy settings:

- Select the first available download site:

- When it comes to the **Select Packages window**, change view to '**Full**'.

- Install the following packages by changing the '**New**' column to the latest version of the package:
  a) **procps-ng**
  b) **openssh**
  c) **libglib2.0_0**

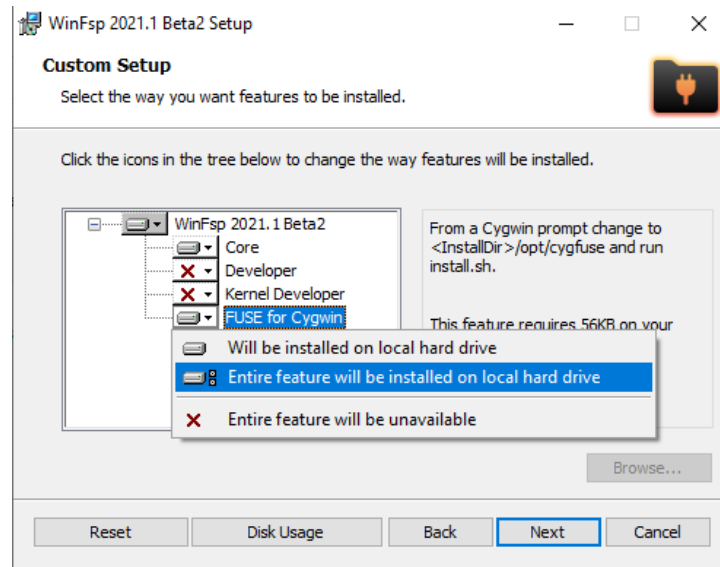- Finish the installation by clicking "**Next**".

5) Install **WinFsp:**

 - Download the latest version from here:

   https://github.com/billziss-gh/winfsp/releases

 - When installing WinFSP, enable "**FUSE for Cygwin**":

6) Install **SSHFS-Win**:

- Download the latest version from here:
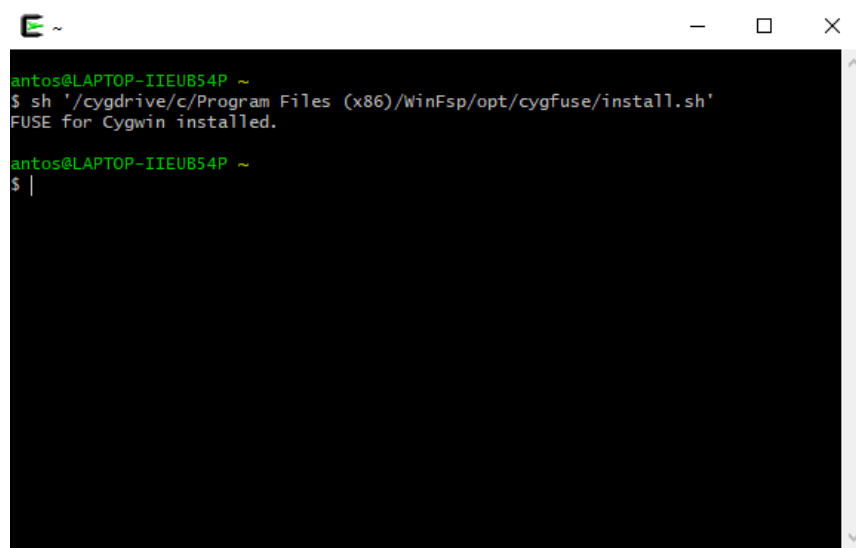
  https://github.com/billziss-gh/sshfs-win/releases

- Download either x64 (64bit) or x86 (32bit) **.msi** file. Use default settings.

7) Setup **SSHFS** and **FUSE** in **Cygwin**:

- Open the **Cygwin Terminal** (you search for it in the Windows Search Bar).

- Run the script that comes with WinFSP. Assuming **WinFSP** at the **default location**, the command is:

```
sh '/cygdrive/c/Program Files (x86)/WinFsp/opt/cygfuse/install.sh'
```
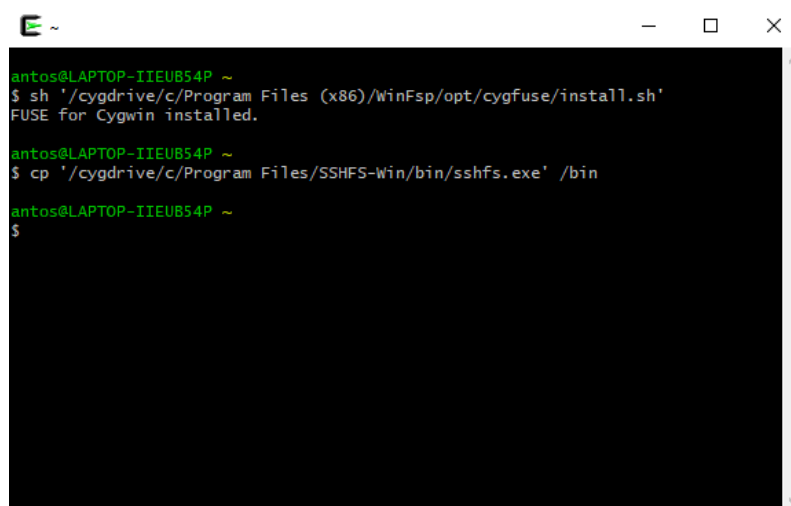
- Next, create a copy of SSHFS-Win's sshfs.exe in Cygwin's /bin folder. Assuming **SSHFS-Win** at the **default location**, the command is:

```
cp '/cygdrive/c/Program Files/SSHFS-Win/bin/sshfs.exe' /bin
```

Or if you have installed 32bit version SSHFS-Win, you may need to use:

```
cp '/cygdrive/c/Program Files (x86)/SSHFS-Win/bin/sshfs.exe' /bin
```

8) **Mount the account:**

- To mount your account, you first need to create a symbolic link with your Desktop:
  a) Navigate to the **File Explorer**, locate your **Desktop**, right-click on it and select **Properties**
  b) Find the path to your Desktop in Properties window:
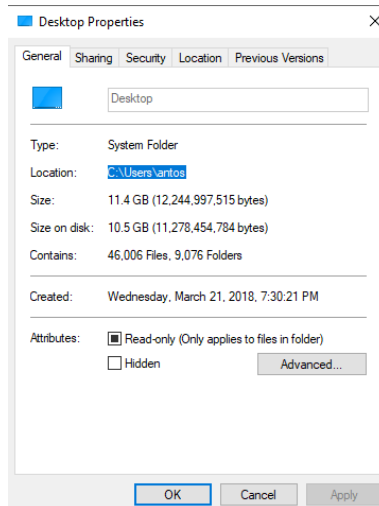
  c) **In the Cygwin terminal**, create a link to the Desktop using the following format:

```
ln -s /cygdrive/c/Users/yourLocalUserName/Desktop
```

  where the highlighted part is your path to the Desktop, found in the step b) above. **Replace the red highlighted path with your own path**. It is likely similar to the one above, but it may differ. Notice that, in Cygwin, disk C name starts with **small c** and **does not require semicolon** after it. Also, notice that **backslashes are reversed** (/ instead of \). See the screenshot below as an example.

- Now, use sshfs to mount your account using the following command. Replace yourUserid with your student userid:

```
sshfs yourUserid@linux.student.cs.uwaterloo.ca: ~/Desktop/yourUserid
                    -ouid=`id -u`,gid=`id -g`
```

```
antos@LAPTOP-IIEUB54P ~
$ ln -s /cygdrive/c/Users/antos/Desktop

antos@LAPTOP-IIEUB54P ~
$ sshfs aryavkin@linux.student.cs.uwaterloo.ca: ~/Desktop/aryavkin -ouid=`id -u`,gid=`id -g`
(aryavkin@linux.student.cs.uwaterloo.ca)

This system requires two-factor authentication for personal logins.

Type in your TEACHING domain password followed by the one of the following options.

  1) Tap your assigned and connected CSCF YubiKey token.
  2) Press ENTER for UW DUO validation.

YubiKey plus DUO validations is also valid for passwordless login.


Password:
(aryavkin@linux.student.cs.uwaterloo.ca) Duo two-factor login for aryavkin

Enter a passcode or select one of the following options:

 1. Duo Push to +X XXX XXX-X9-08
 2. Phone call to +X XXX XXX-X9-08
 3. SMS passcodes to +X XXX XXX-X9-08

Passcode or option (1-3): 1

antos@LAPTOP-IIEUB54P ~
$ |
```

9) Now, the folder to your course account should appear on your **Desktop.**

Common Issues:

1) If you want to unmount your account, **reboot your machine**. After a reboot, you can remount your account using sshfs command in the Cygwin terminal (see step 8).

2) Make sure you use ` (character above tilda, top left of the keyboard) and not ' (single quotation) when using sshfs command (step 8). Cygwin does not recognize both as the same and it may not work.

3) If you are given an error like "**ln: failed to create a symbolic link './Desktop': File exists**", remove the old link via command "**rm Desktop**" and use the link command again:

4) After entering sshfs command, make sure you type "**yes**" when the prompt asks to continue connecting:

5) If you have a "**Connection reset by a peer**" error, ensure that **you can connect to the account via Command Prompt** first. Steps for the connection to the Command Prompt can be found in the "GettingStarted" document. If you cannot connect even via Command Prompt, contact course ISC or CSCF.

6) If you don't have Desktop folder on your local machine, you can use **any other folder** as a replacement. For example, here I have created a Test directory on my other local drive (D instead of C) and mounted my acount in this new directory:

You will be able to find your mounted account in the directory you placed it in, Test in my case. Make sure you modify the link command (ln -s) and sshfs command accordingly (see the screenshots above).

7) If, during the mounting process, error similar to this one occurs:

Try reinstalling Cygwin and **ensure that all required libraries are properly installed**.