EE434
ASIC & Digital Systems

Linux

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For Windows Users

- Before you use Linux, you should understand work environments of Linux and how to remotely connect to Linux servers.

- This tutorial briefly explains them.

Operating Systems

- An operating system (OS) is generally text-based (i.e., no GUI).
  - GUI means Graphical User Interface.

- However, modern operating systems also support GUI as an additional feature.

- Even Linux supports GUI, so do not think that Windows is GUI-based and Linux is text-based.

Client & Server

- Suppose you want to use an expensive software. However, you can't buy it yourself.

- Suppose you need a fast, but expensive hardware. You can't buy it yourself.

- A solution for this problem is
  - Buy a hardware (server) that can be shared by users.
  - Buy the software and install it in the server.

- Then, you just need a computer (client) to connect to the server. It doesn't need to be fast.

- Once you connect to the server, you can run the software using the fast hardware (server).

Terminal (Client) Software

- Suppose you have your own computer.

- You need to connect to a server. For this, you need a software. It is called a client program, a terminal program, etc.

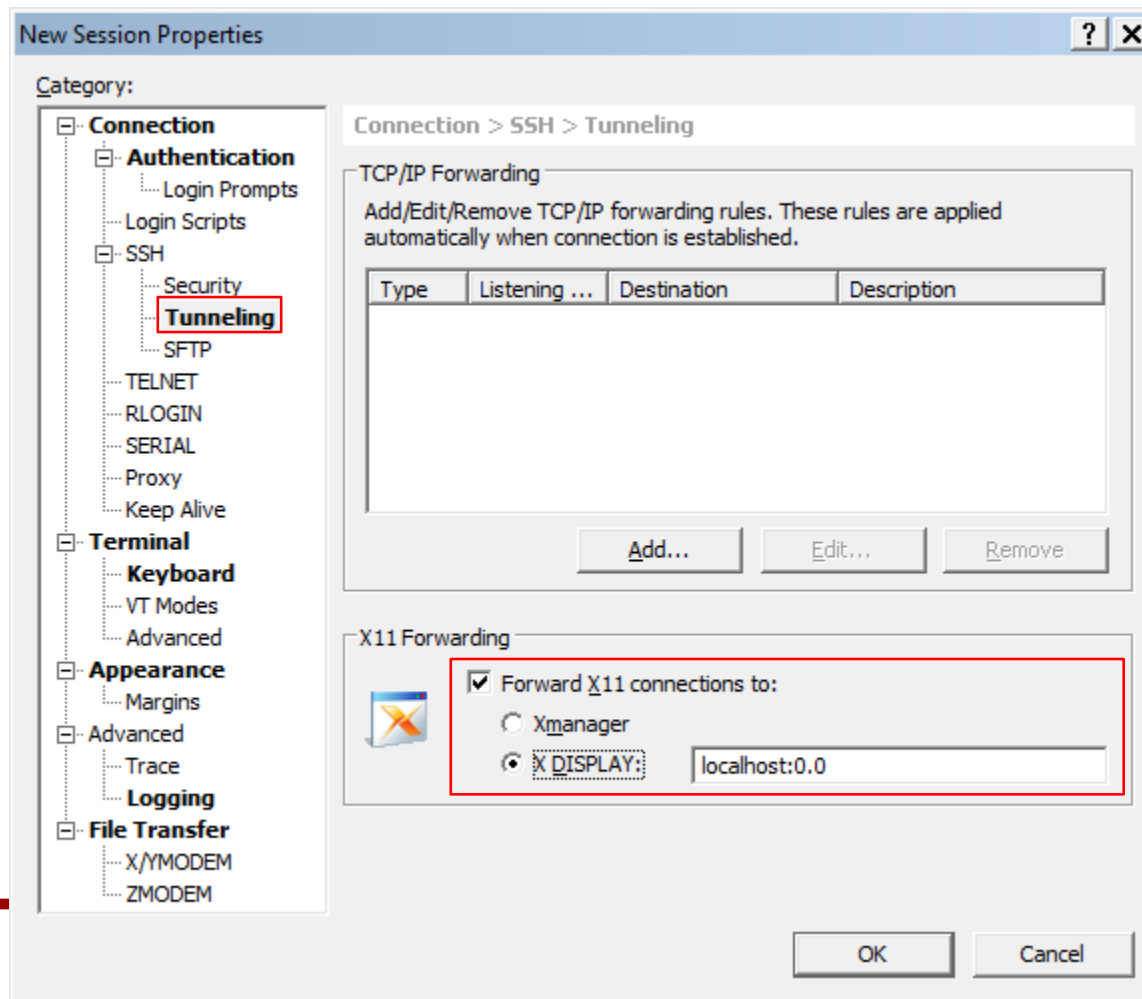- Download and install a free client program. I'm using Xshell.

Xshell

- Create a session.
- In the "Sessions" window, click "New".
  - Enter a name for the session and a host (server) address.
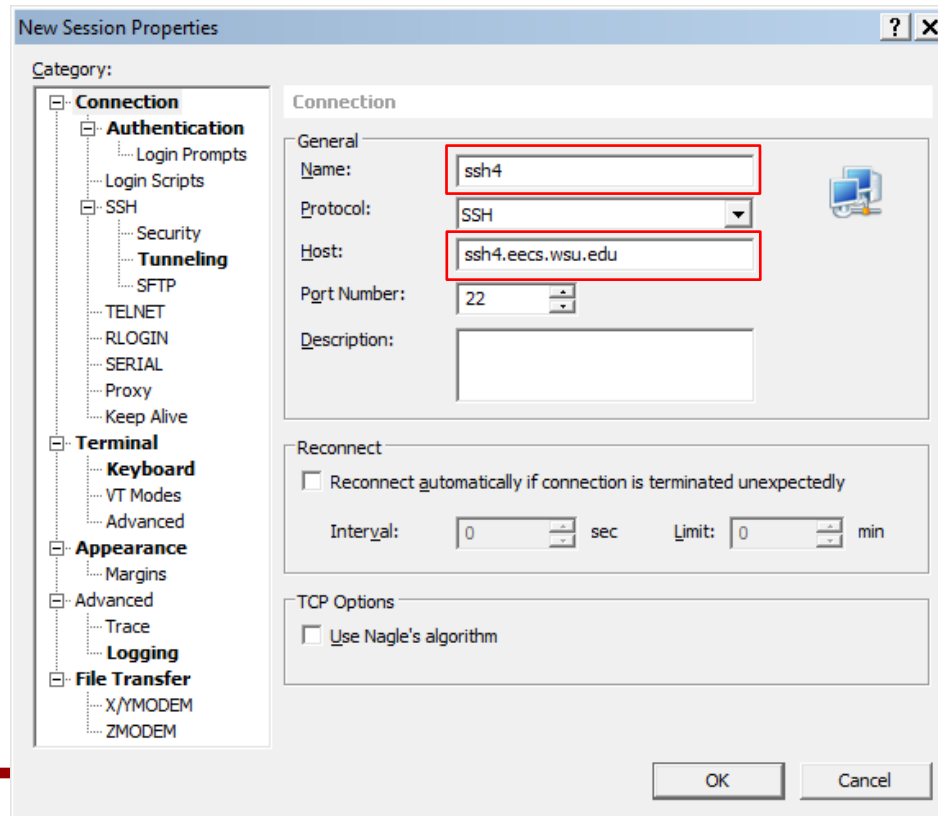
Xshell

- Click "Tunneling" and turn on the "X11 Forwarding" option.

Xshell

- Click ok to save the session. From the next time, you can just double-click this session to connect to the server.

- Double-click the session.
  - If you are asked some questions, click "Accept and Save".
  - Then, enter your id and passwd.

```
#-------------------------------
  Welcome to ssh4.eecs.wsu.edu!
#-------------------------------
Other ssh hosts available:
ssh1.eecs.wsu.edu
ssh2.eecs.wsu.edu
ssh3.eecs.wsu.edu

You might consider using nxclient to connect.
The client for Windows users can be downloaded here:
https://mail.eecs.wsu.edu/home/apg@eecs.wsu.edu/Briefcase/nomachine

[daehyun@ssh4 ~]$ █
```

Linux Commands

- Unfortunately, you cannot use GUI at this moment because you are remotely connecting to a server.

- However, we can do whatever we want.

- Create a directory (folder).
  – mkdir directory_name
  – example: mkdir ee434

- Go to the directory.
  – cd directory_name
  – example: cd ee434

Linux Commands

- List all the files in the current directory.
  - ls –al

- Zip some files.
  - tar cvzf dest_file_name file1 file2 ...
  - example: tar cvzf hw1.tar.gz src1.vhd src2.vhd cap1.jpg cap2.jpg
    - This will create "hw1.tar.gz" and zip the four files into the file.

X-Window

- Now, you can run whatever you want in your terminal.

- X-Window will help you run GUI programs remotely.

- For this, you need a X-Window broadcasting program.

- I use Xming for this. It's a freeware.

Xming

- Download, install, and run it.

- You will see a small icon in your icon box.

- Now, you are ready to run GUI programs.

- Run the following line in your terminal:
  - source /net/ictools/sh/mentor-modelsim.sh

- Then run ModelSim:
  - vsim

- You will see a ModelSim window. This is exactly the same as running GUI programs in the lab.