Introduction

There are some programs or simply applications which you can run on your own computer such as Microsoft Word, Calculator, Photoshop and etc. However, in EE209 we use Cadence® tools that are installed on USC UNIX servers. To use them, you should connect to one of these servers (e.g. Viterbi-scf1, aludra) with a user which has been already given to you (refer to this ITS page for user information).

This tutorial will teach you how to:
1st: Connect to USC UNIX servers from your own machine (e.g. your laptop or USC public PCs at libraries) with *Windows* or *OS X*.
2nd: Setup your UNIX user so you can use Cadence® tools with appropriate license file and libraries.

Some notes:
- USC Information Technology Service (ITS) customer support service provides support to the USC community for connecting to the USC Network and using supported applications.
- You can use software freely distributed by ITS for different operating systems here.
- Almost all Computer Aided Design (CAD) tools are based on UNIX. Being familiar with UNIX system and its commands is necessary. If you are not familiar with UNIX this course would be a good starting point for you.
- If you have any license issues when you run X-Win32, you can either try to connect to USC Secure Wireless (how-to link: http://itservices.usc.edu/wireless/) or use USC VPN (how-to link: http://itservices.usc.edu/vpn/).

1. Connecting to Server:

## Windows:

If you are using Windows operating system, you have to download two different applications from USC free software website. For remote login you will need **X-Win32** and for transferring files between your own machine and your user in server you will need **FileZilla**. Download these and install them on your machine.
**X-Wind32:** To remote login using X-Win32, select **Manual** and choose **ssh**:
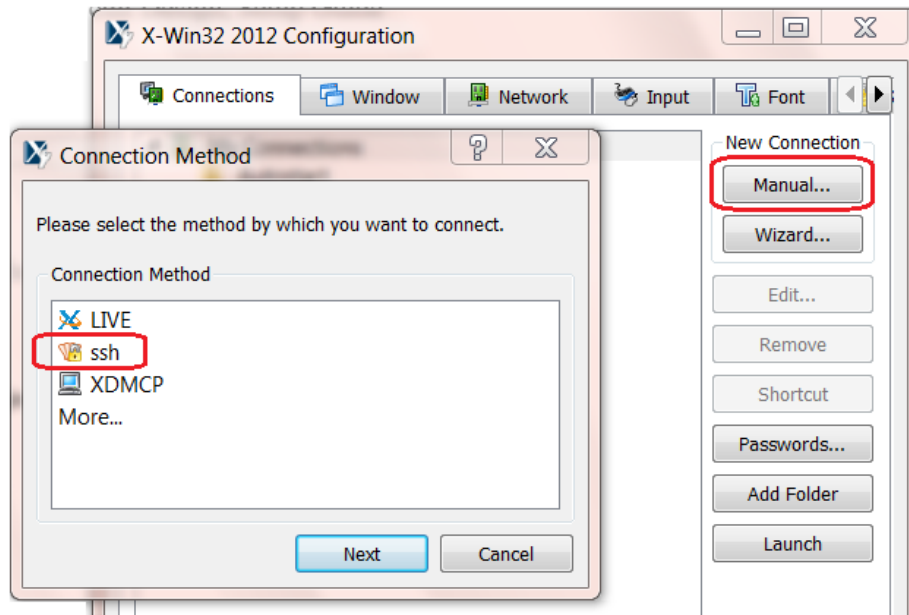
Based on the server you are using, complete the information as shown below.
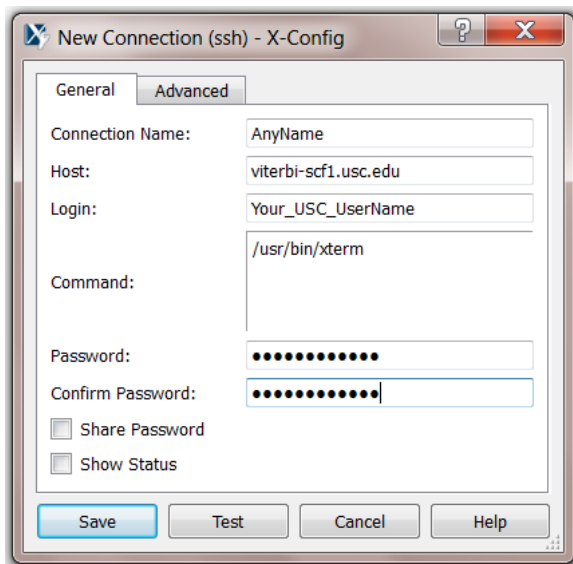
| Server:	Host	Login	Command	Password
Viterbi-scf	Viterbi-scf1.usc.edu	The same as	/usr/bin/xterm	The same as
Aludra	Aludra.usc.edu	my.usc.edu user	/usr/openwin/bin /xterm -ls	my.usc.edu pass

When you are done, save your connection and **Launch** it from X-Win32. Do you see the **xterm** window like below? If yes, congratulations!! Your X-Win32 is all setup.
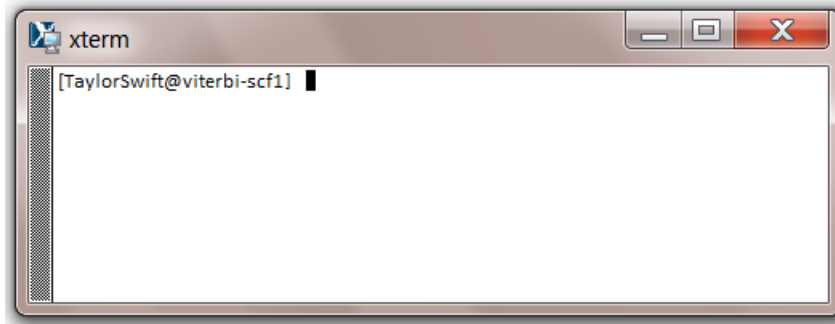
Filezilla: To transfer files between your machine and your user, open Filezilla, use **viterbi-scf1.usc.edu** as host and **22** as Port. The username and password are the same as your X-Win32 connection.
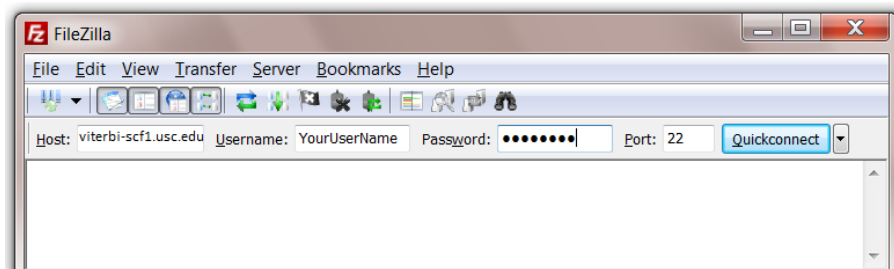
After completing information, press **Quickconnect**. FileZilla shows **Local site** which is your own personal machine, and **Remote site** which is your user in viterbi-scf1 server. ReNavigate and choose files from the left window to upload and files from the right window to download.
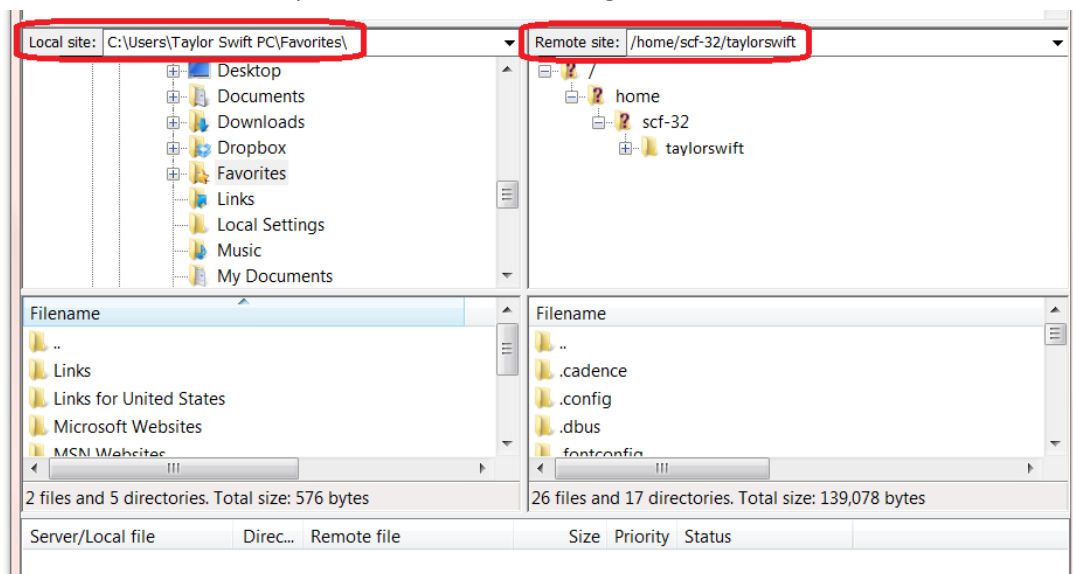
2. Cadence setup guide

Note: *If you are not familiar with basic linux commands, take a look into part 3.*
Note: *Please do not open the downloaded linux files in Windows. If you need to edit them, just open them in linux with editors like gedit.*

Download **cshrc_linux,** **tsmc.spice,** and **vlsi_tools.csh** from course website under Labs. Use Filezilla (or scp if you have OS X) to upload these files to your home folder on viterbi-scf1. Make sure the files are completely copied by using **ls** (list command).

You need to rename cshrc_linux file to **.cshrc**, use **mv** (move command) to rename cshrc_linux to .cshrc. Make sure they are exactly named .cshrc or vlsi_tools.csh by using **ls –a** command.

```
mv      cshrc_linux    .cshrc
ls      -a
```

Convert the encoding of those two files by dos2unix command:

```
dos2unix        .cshrc
dos2unix        vlsi_tools.csh
```

Create a folder named cds:

```
mkdir   cds
```

Copy useful files to your cds directory:

```
cp  ~ee577/design_pdk/tsmc25/files/*        ./cds/
cp  ~ee577/design_pdk/tsmc25/files/.cds*    ./cds/
```

Check you have the following files in the cds folder:

```
ls  -a  ./cds/
.cdsinit            // Cadence initialized file
.cdsplotinit        // Cadence printing setup file
cds.lib             // Cadence library setup file
schBindKeys.il      // Binding key files for shortcut keys
tsmc25.spice        // TSMC 25 spice parameters
leBindKeys.il       // Binding key files for shortcut keys
```

Copy the cadence environment files to your cds working directory:

```
cp   ~ee577/design_pdk/ncsu-cdk-1.6.0.beta/cdssetup/cdsinit   ./cds/.cdsinit
```
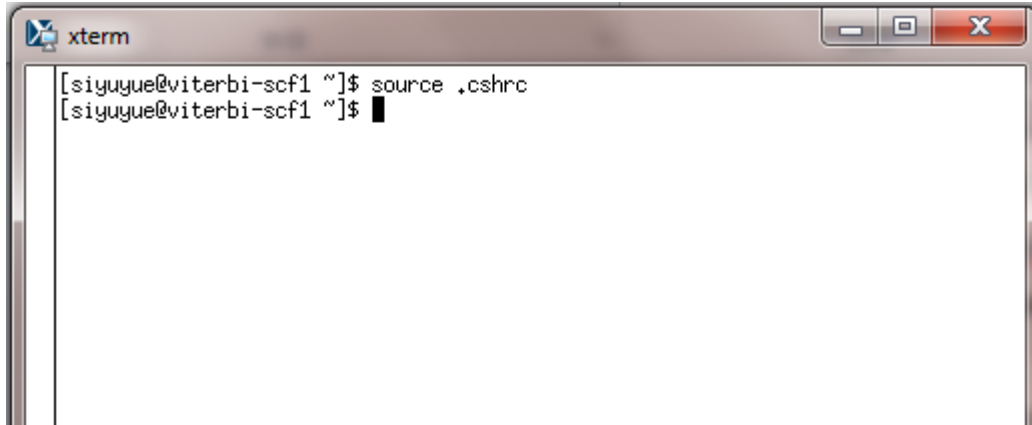
Copy the .simrc file to your cds directory:

```
cp   ~ee577/design_pdk/ncsu-cdk-1.6.0.beta/cdssetup/simrc   ./cds/.simrc
```

Then you can source .cshrc file:

```
source .cshrc
```

If nothing comes out, then you're successful:
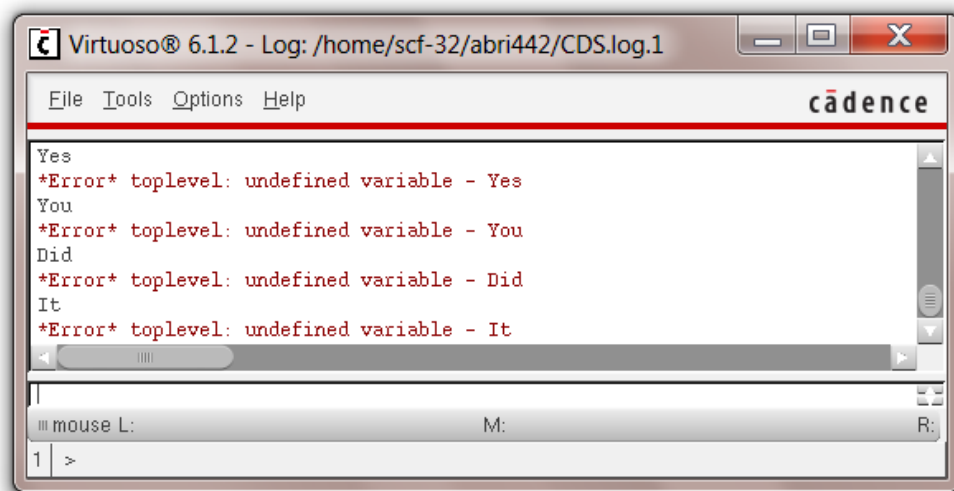
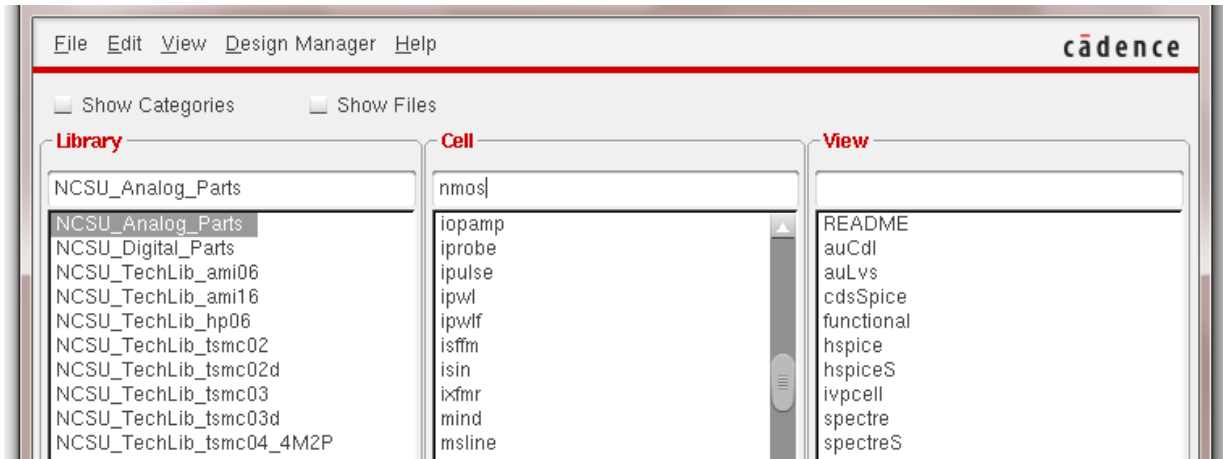To run virtuoso, now go to cds directory: (*always run virtuoso in the cds directory*)
`cd cds`

And open virtuoso: (by adding **&** you can use virtuoso and xterm at the same time)
`virtuoso &`

If you can see something like this, it Cadence® is at your service.

By Opening the Tools > Library Manager, make sure NCSU Libraries are linked correctly and are available:

3. Basic Linux Commands:

If you are not familiar with basic commands in linux part would help you, but remember these are just some basic commands and you have to learn linux by working with it. These are used to navigate in folders and do simple functions with files:

pwd	**// Show your current directory**
cd	**// Navigate to some directory**
ls	**// List files**
mv	**// Move**
cp	**// Copy**
rm	**// Remove**
mkdir	**// Create a directory**
ls -a	**// Listing all the files in this folder, including system and hidden files**

Google them for more information about their usage if needed.