2017 Architecture

Project – Environment Setting

Outline

- Workstation setting : MobaXterm
- Makefile

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- Workstation setting : MobaXterm
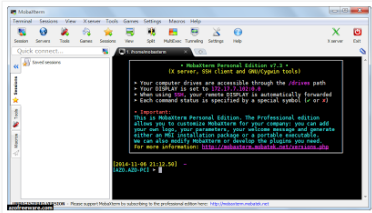- Makefile

MobaXterm Download

◉ Download the free version of MobaXterm

- http://www.azofreeware.com/2014/11/mobaxterm-portable.html

MobaXterm Installation

▣ Installation
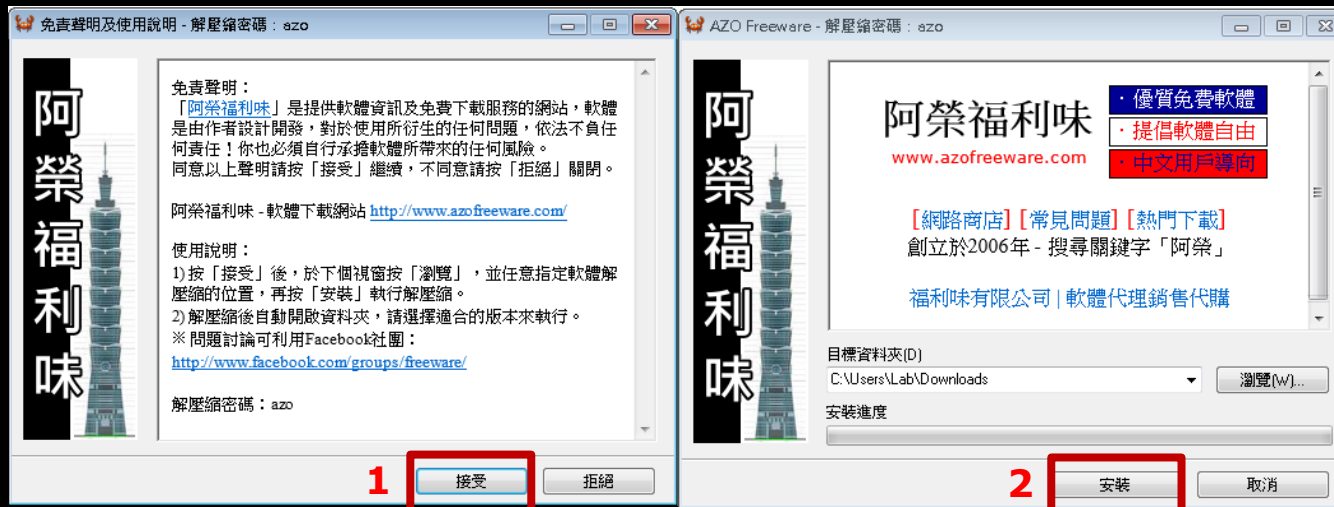
▣ Click the icon in the folder
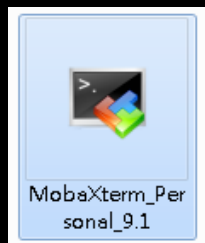
Workstation Setup

Workstation Setup (Cont.)

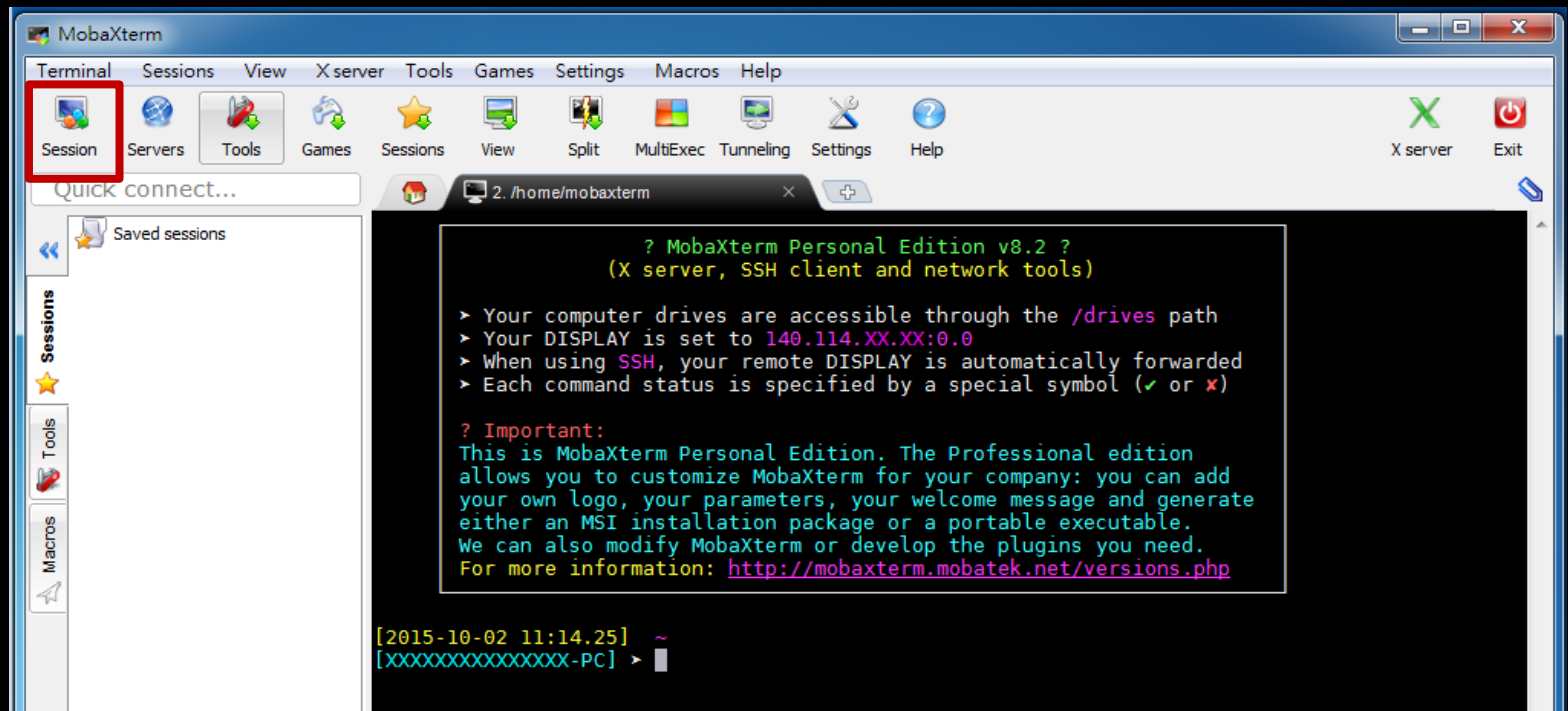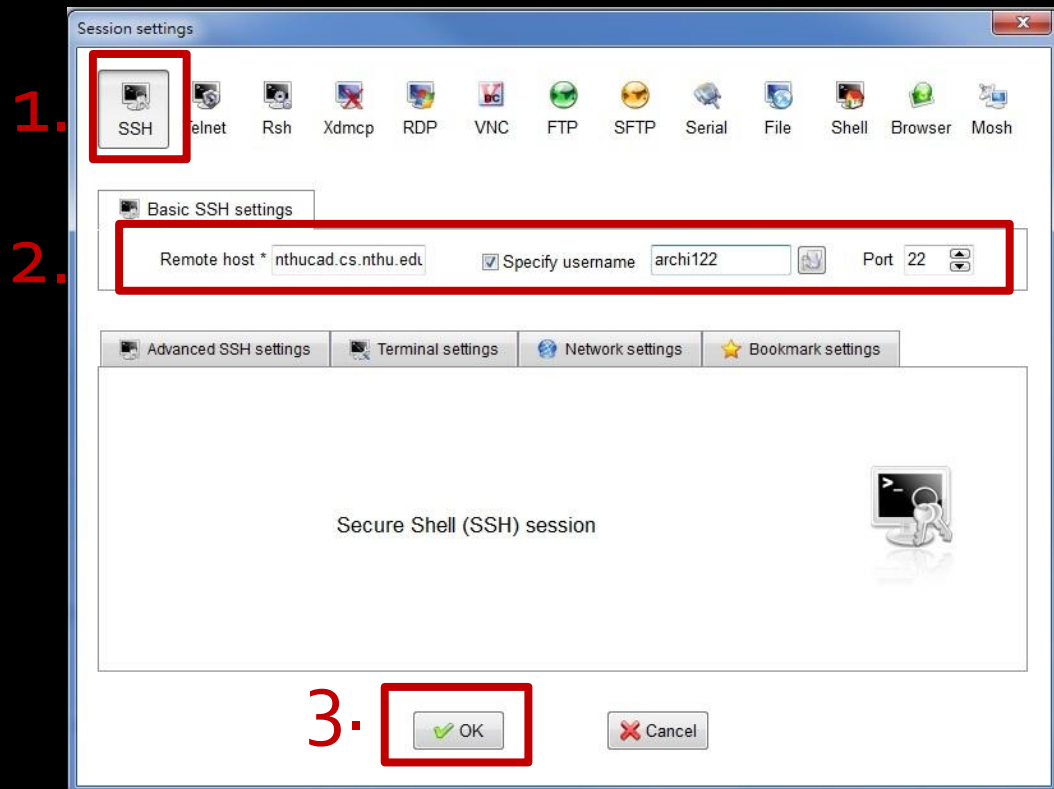- ☑ Enter the following blank
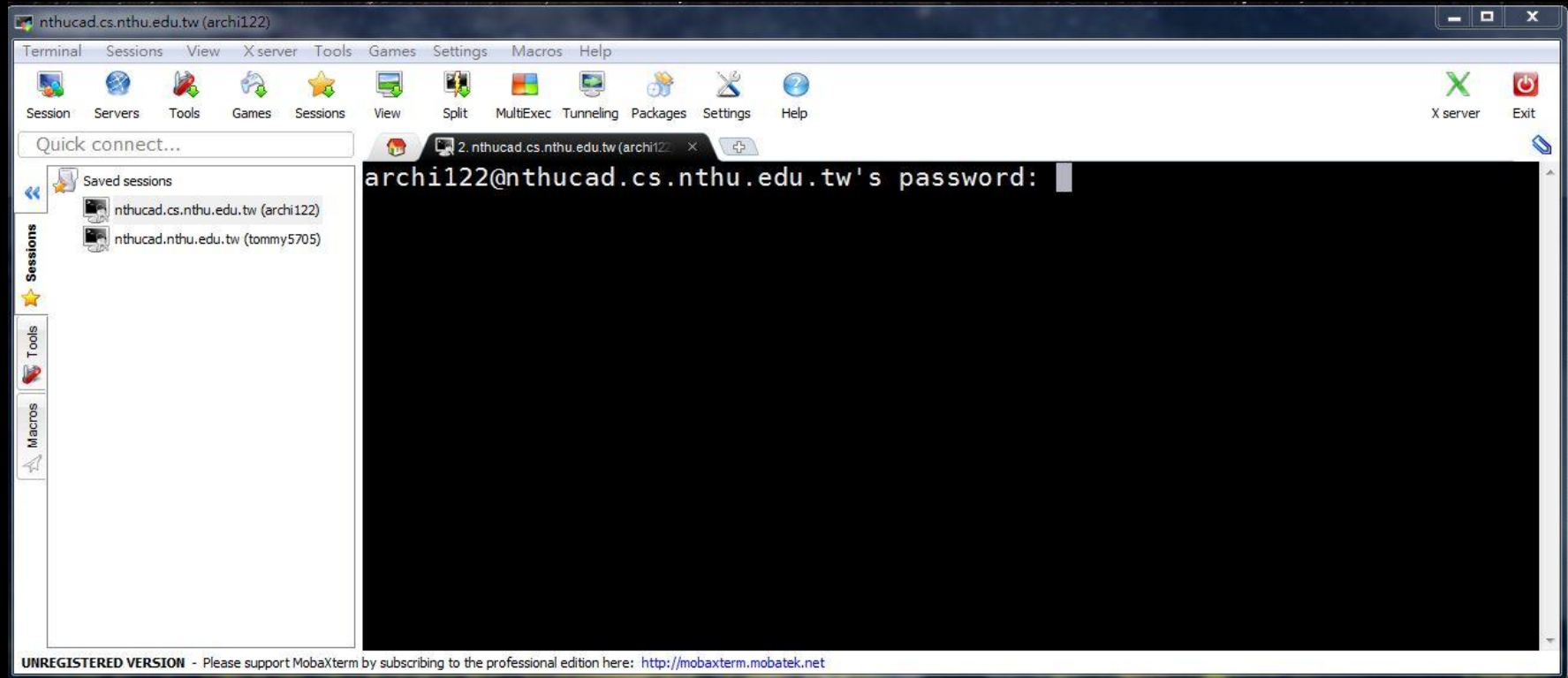 - ● Remote host : nthucad.cs.nthu.edu.tw
  - ● Specify username : archXX (your account)
  - ● Port : 22
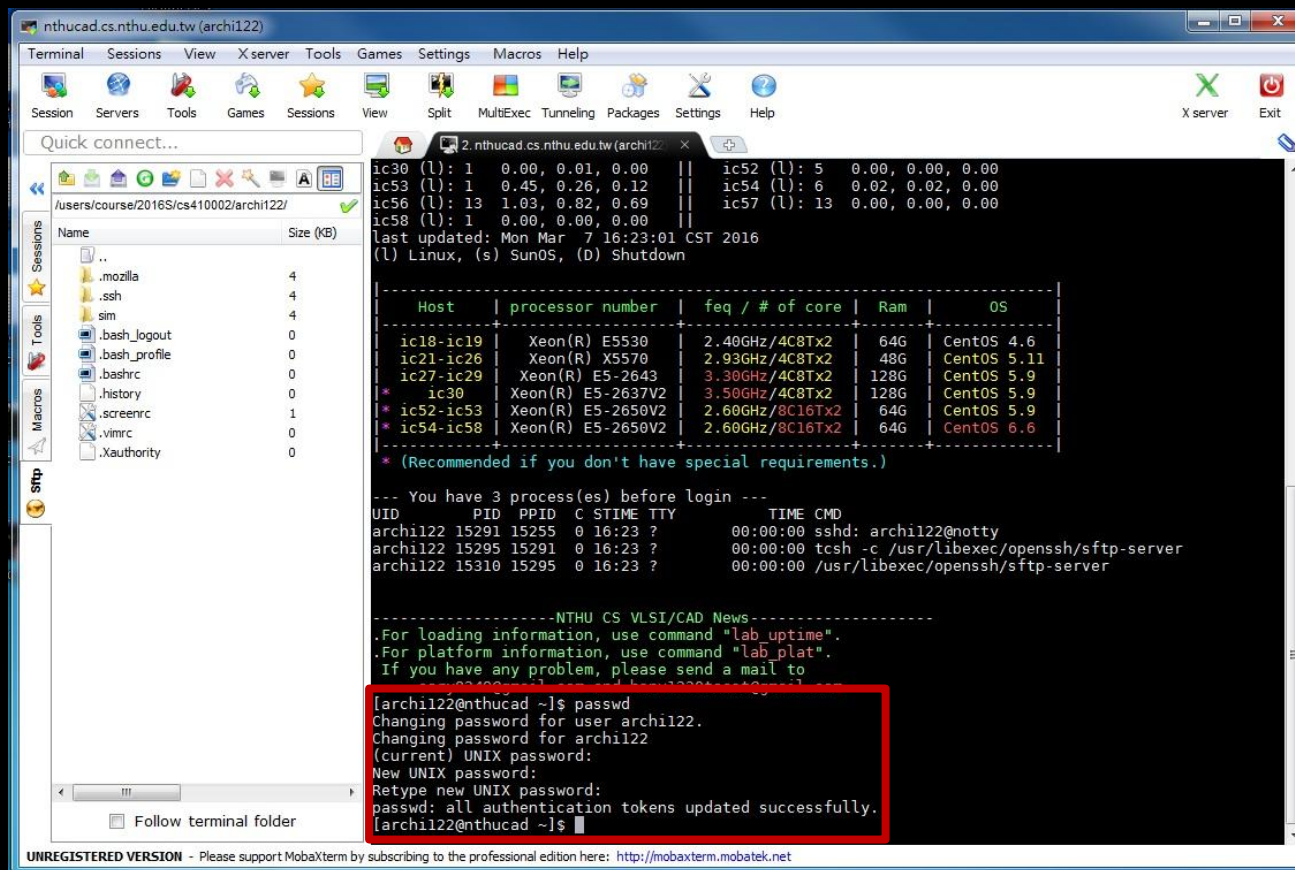
- ☑ Click "OK"

Login at the First Time

☑ Key in your initial password from e-mail

Change Your Password

□ Type "passwd" to change your password

Connecting to Workstation

- You can only choose on workstation from ic21 ~ ic29
- Find a workstation with less user

These are the only workstation you can use (ic21~ic29)

# of users on the workstation

Connecting to Workstation (Cont.)

◘ Connect to a workstation (Important)

● ssh -X icXX

Create directory

- ▣ Right click to create new directory "*sim*" or by command line "*mkdir sim*"

Uploading .v Files

▣ Upload files

- Upload your .v files by dragging them into directory

Edit files in workstation

- ◼ Right click → open with mobaXterm's editor
- ◼ Vim is available in workstation
- ◼ You can also edit in Windows then upload it
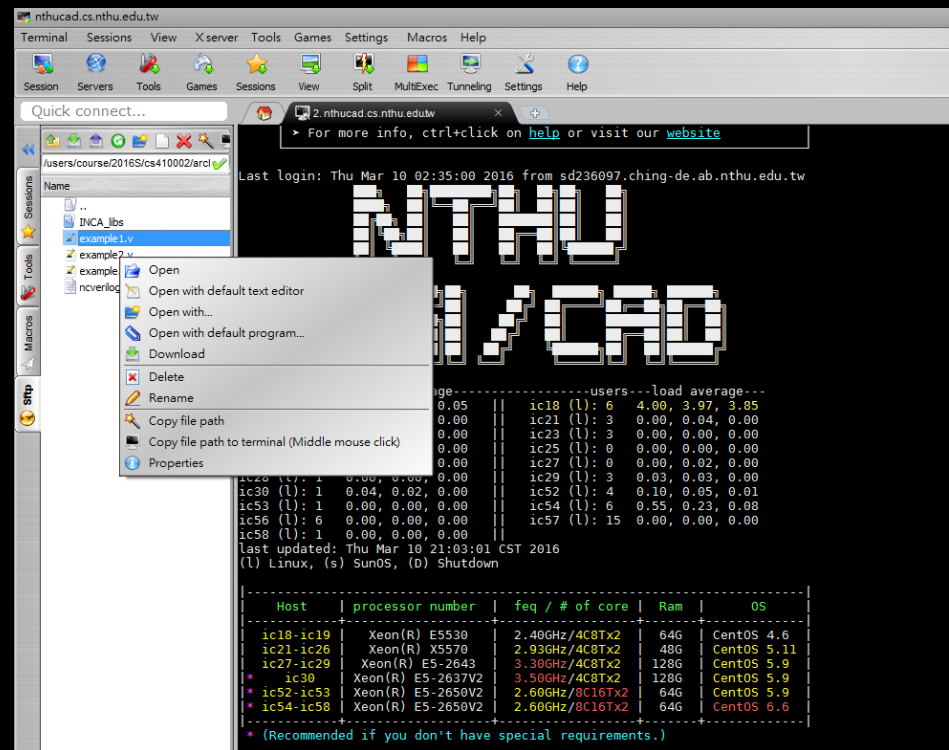
Run simulation

- Use "NC verilog" as standard simulation platform
  - Commercial software by Cadence

- You can use any IDE/Editor to program

Run simulation

▣ $ ncverilog *all .v file you need*

● i.e. $ncverilog Simulator.v Test_Bench.v

```
                    Initial blocks:        2        2
                    Pseudo assignments:    1        1
                    Simulation timescale:  1ps
          Writing initial simulation snapshot: worklib.Test_Bench:v
Loading snapshot worklib.Test_Bench:v .................... Done
*Verdi3* Loading libsscore_ius141.so
*Verdi3* : Enable Parallel Dumping.
ncsim> source /usr/cad/cadence/INCISIV/cur/tools/inca/files/ncsimrc
ncsim> run
$0: 0
$1: 0
$2: 0
$3: 0
$4: 0
$5: 0
$6: 0
$7: 0
$8: 0
$9: 0
$10: 0
$11: 0
$12: 0
$13: 0
$14: 0
$15: 0
$16: 0
$17: 0
$18: 0
$19: 0
$20: 0
$21: 0
$22: 0
$23: 0
$24: 0
$25: 0
$26: 0
$27: 0
$28: 0
$29: 0
$30: 0
$31: 0
Simulation complete via $finish(1) at time 2010 NS + 0
./Test_Bench.v:45     #(`CYCLE_TIME*`END_CYCLE) $finish;
ncsim> exit
```

Outline

- Workstation setting : MobaXterm
- Makefile

Makefile - introduction

- ◘ A tool helps you compile your program
  with multiple commands and arguments

- ◘ We provide you a simple makefile for the projects in this course

- ◘ Put the makefile in your project directory so that it works for you

Makefile - purpose

- ☐ Multiple source files in a project
  - you have to type a lot in a single command
  - i.e. $ncverilog file1.v file2.v file3.v ….. testbench.v

- ☐ Additional function with any tool/complier
  - you have to add some parameters at the end
  - i.e. $ncverilog (all .v files) +access+r +gui

- ☐ Makefile can do the things above for us !

Makefile – simple syntax

```
1  VLOG = ncverilog
2  Test = Test_bench.v       } Variables
3  CPU = Simulator.v

4

5  all:                       } [target]:
6      $(VLOG) $(CPU) $(Test)   [TAB][rule]
```

- **all** is the default target name
  - You can define other targets
- $make or $make all
  - This makefile will do : ncverilog Simulator.v Test_bench.v
- For detailed and advanced makefile writing skills, please find them online