AI On Chip 2023

Environment Lab

Advisor: Tsai, Chia-Chi

TA: 羅祥睿 (stevensoar303203@gmail.com)

LAB: 92508 & 92526

Email: course.aislab@gmail.com

Outline

- Environment Setup
- Change your passwd
- Introduction to Linux commands
- How to run Verilog code?
- 如何看波形

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- **Environment Setup**
- Change your passwd
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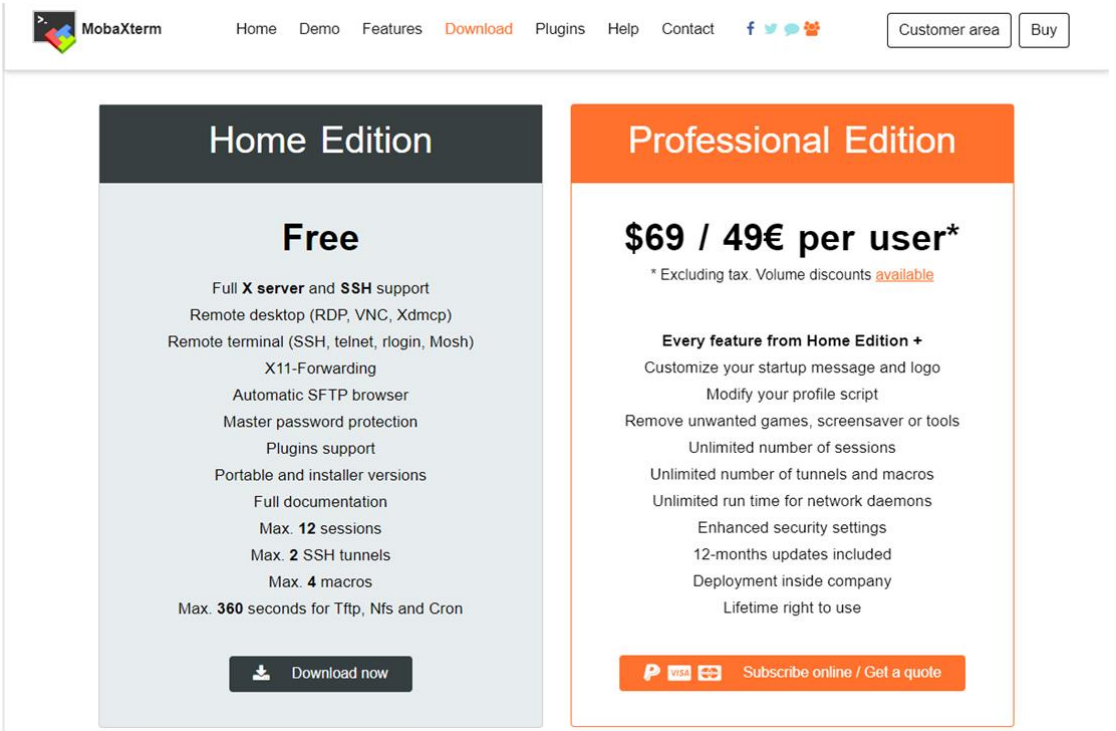
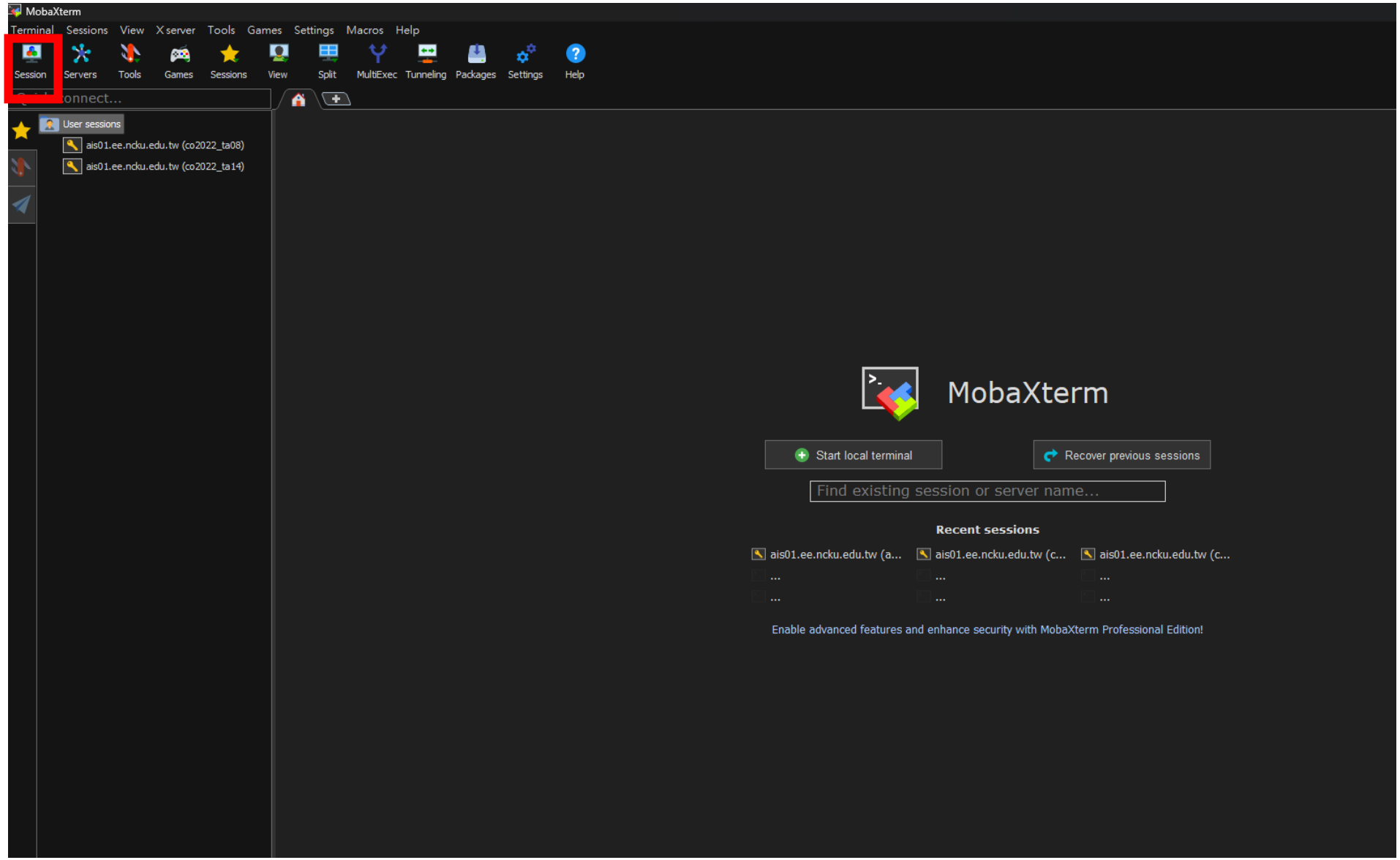
Environment Setup

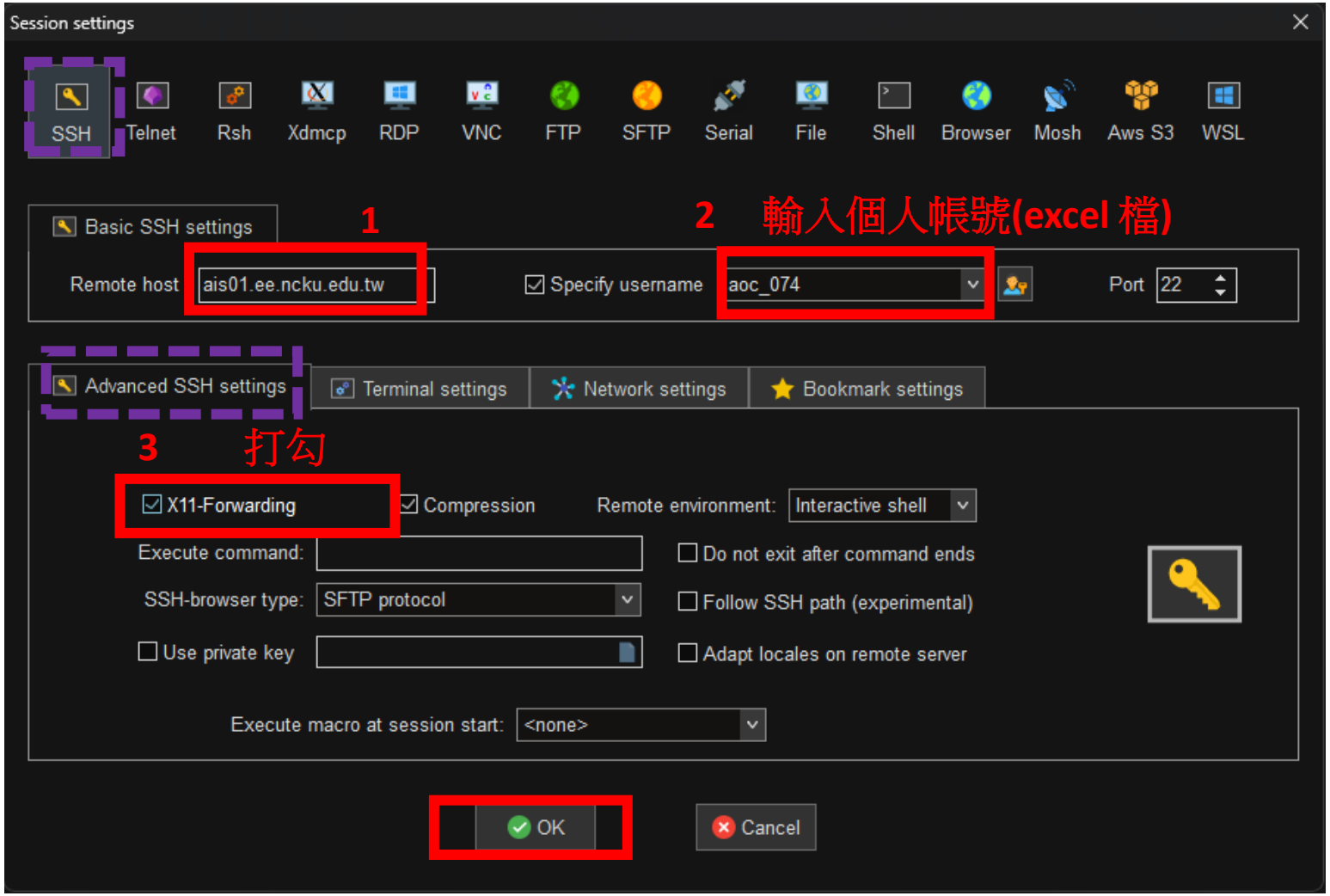
- Introduction to MobaXterm
  - MobaXterm is a free software for remote computing.
  - It provides a graphical user interface and command line shell for the server
- Download
  - MobaXterm download



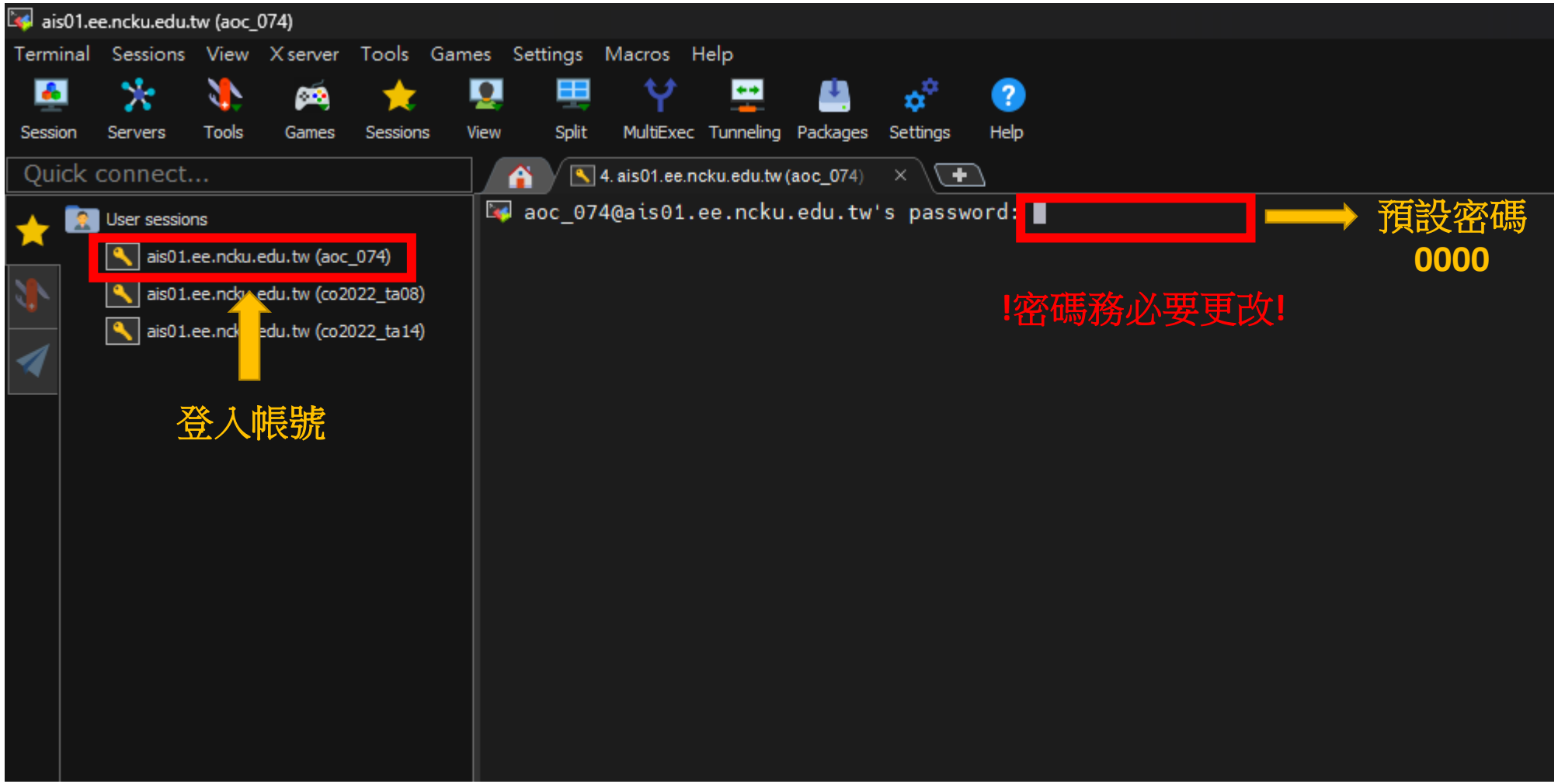
Environment Setup



Environment Setup



Environment Setup



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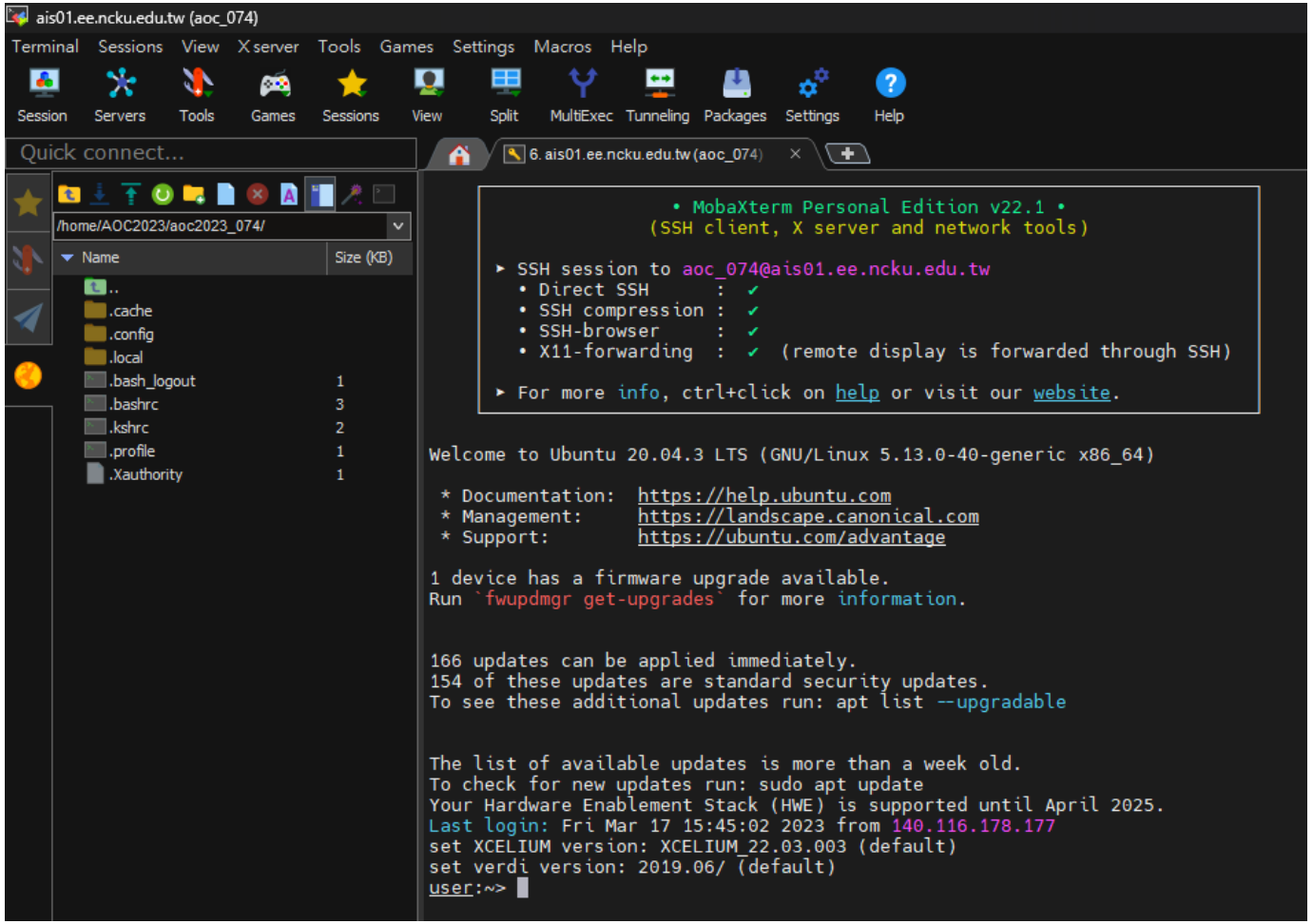
Change your passwd (重要)

- 第一次登入密碼: 0000

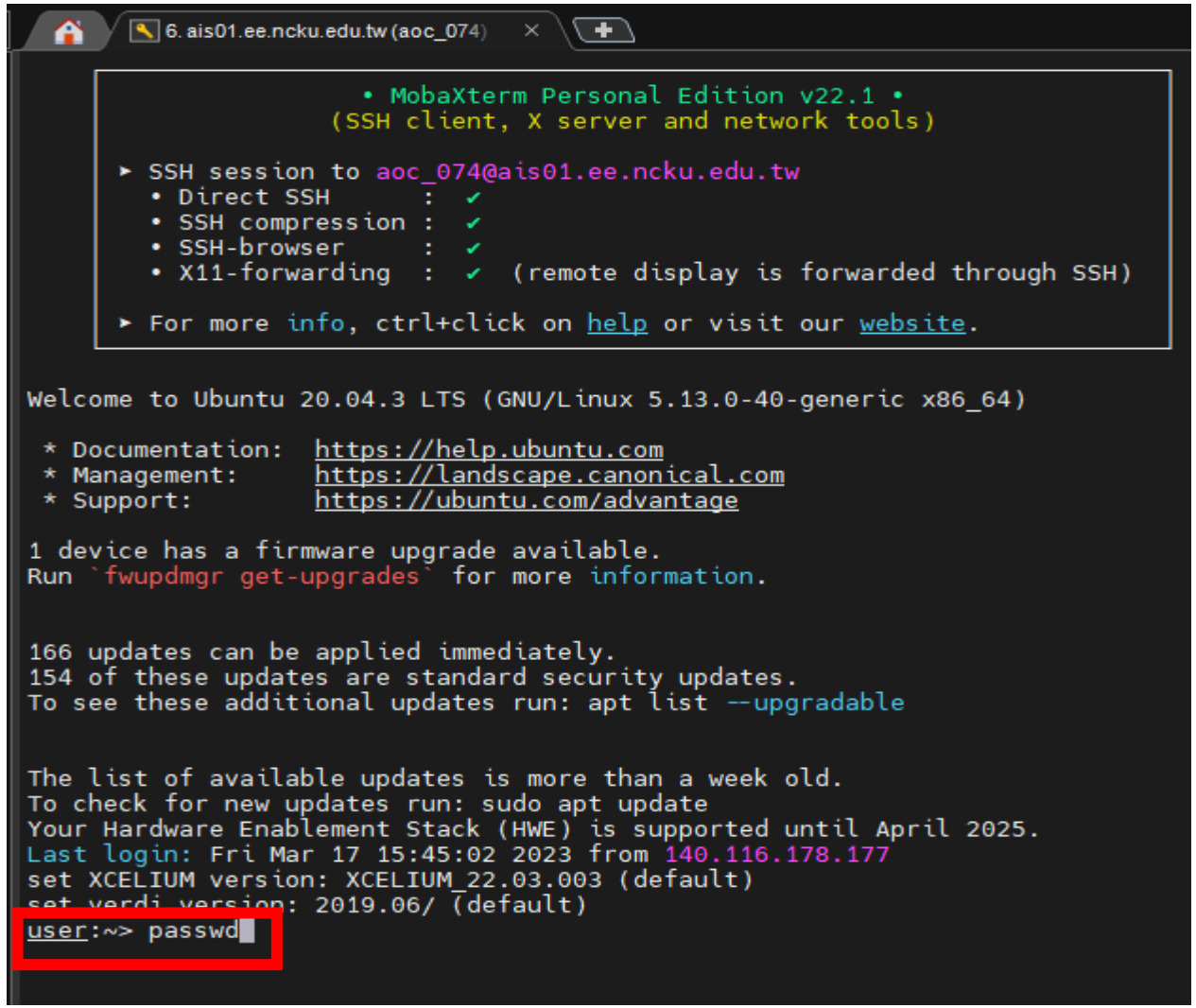
- 登入結果，如右圖



Change your passwd (重要)

- 修改方式:

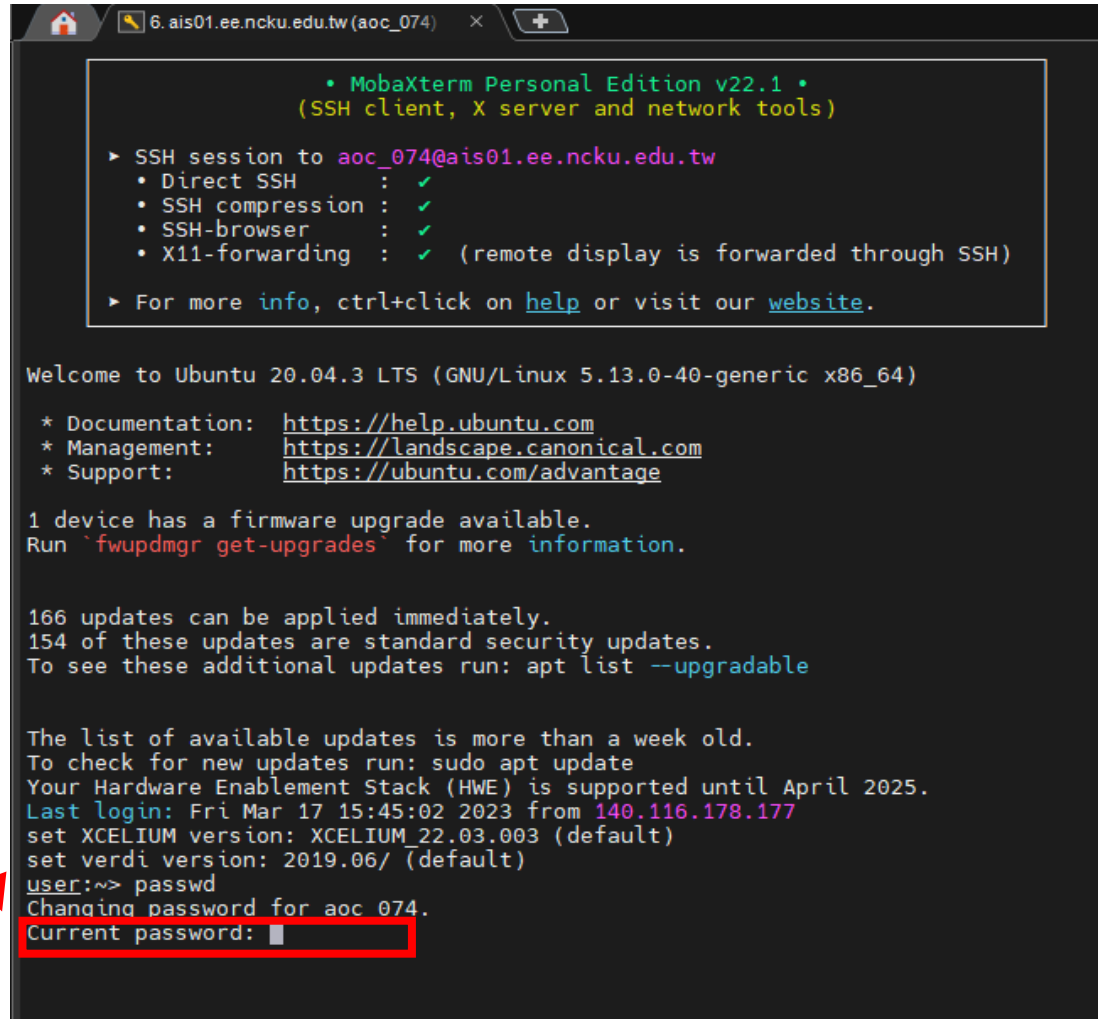
輸入指令 passwd



Change your passwd (重要)

- 修改方式:

Current password 0000



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- Environment Setup
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- **Introduction to Linux commands(有需要再回來用就好)**
- How to run Verilog code?
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Linux commands

- **pwd (Print Working Directory) :**

```
user:~> pwd
/home/AOC2023/aoc2023_074
```

Display the full pathname of the current working directory.

- **ls (List) :**

```
user:~> ls
test1.txt  test2.txt  test_dir1
```

List the file & directory in current working directory.

- **ls -a (List All) :**

```
user:~> ls -a
.   .bash_history  .bashrc  .config  .local    test1.txt  test_dir1
..  .bash_logout   .cache   .kshrc   .profile  test2.txt  .Xauthority
```

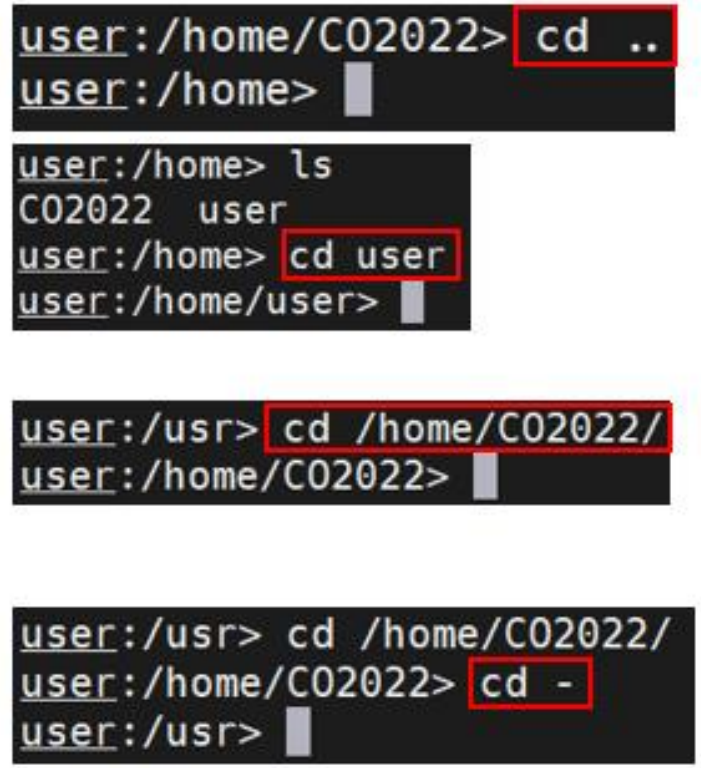
List the (all) hidden files & directories in current working directory.

Linux commands

- **cd (Change Directory) :**

1. Change the current working directory
    - **cd + Path(relative path)**
    - **cd ..**
    - **cd user**
    - **cd + Path(absolutive path)**

2. Change directory to previous directory
    - **cd -**



Linux commands

- **mkdir (Make Directory) :**

mkdir + new_directory_name

(e.g. mkdir dirdir)

```
user:~> ls
test1.txt  test2.txt  test_dir1
user:~> mkdir dirdir
user:~> ls
dirdir  test1.txt  test2.txt  test_dir1
```

(relative or absolutive path)

- **touch (Create an empty file):**

touch + file_name

```
user:~> ls
ddd  dirdir  test1.txt  xyz.txt
user:~> touch abc.txt
user:~> ls
abc.txt  ddd  dirdir  test1.txt  xyz.txt
```

- **clear :**

```
2. co2022_ta14@140.116.178.181
user:~> ls
ddd  dirdir  test1.txt  test_dir1  xyz.txt
user:~> rm -rf test_dir1/
user:~> ls
ddd  dirdir  test1.txt  xyz.txt
user:~> touch abc.txt
user:~> ls
abc.txt  ddd  dirdir  test1.txt  xyz.txt
user:~> clear
```

```
2. co2022_ta14@140.116.178.181
user:~>
```

Clear the terminal screen

Linux commands

- **Copy a file** (relative or absolutive path)
- cp + file + new_file_name
  - cp test1.txt abc.txt

```
user:~> ls
dirdir  test1.txt  test2.txt  test_dir1
user:~> cp test1.txt abc.txt
user:~> ls
abc.txt  dirdir  test1.txt  test2.txt  test_dir1
```

- **Copy a file to a directory**
- cp + file + directory_path
  (relative or absolutive path)
  - cp test1.txt dirdir

```
user:~> ls
abc.txt  dirdir  test1.txt  test2.txt  test_dir1
user:~> cp test1.txt dirdir
user:~> cd dirdir
user:~/dirdir> ls
test1.txt
```

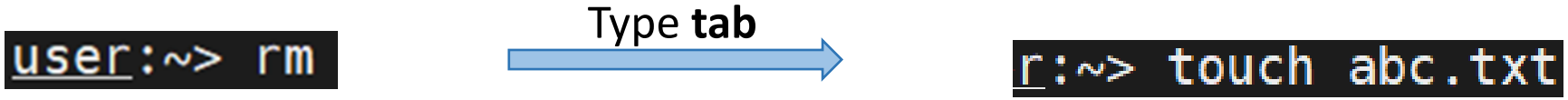
- **Copy a directory**
- cp + -rf + directory_name + new_directory_name
  (relative or absolutive path)
  - cp -rf dirdir ddd

```
user:~> ls
abc.txt  dirdir  test1.txt  test2.txt  test_dir1
user:~> cp -rf dirdir ddd
user:~> ls
abc.txt  ddd  dirdir  test1.txt  test2.txt  test_dir1
user:~>
```

Linux commands

- **tab**

Autocomplete commands, filenames or folder names.



- **↑ , ↓ (up and down arrow key)**

Recall previously-entered commands to the command line.

- **ctrl + c (It's not a copy function.)**

Terminate the current running process

Outline

- Environment Setup
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- Introduction to Linux commands
- **How to run Verilog code?(重要)**
- 如何看波形

How to run verilog code?

- **(必要)Step1—Create/upload folder:**

  AOClab0

- **(必要)Step2—Change Directory :**

  cd AOClab0

- **(非必要)Step3—List the file & directory in current working directory :**

  ls(檢查要執行的.v檔)

- **(必要)Step4—run .v檔：** **格式: ncverilog 檔名.v**

  ncverilog Mux2_1.v

How to run verilog code?

- **(必要)Step5—run testbench測試檔：**

格式:　　ncverilog 測試檔名.v +access+r

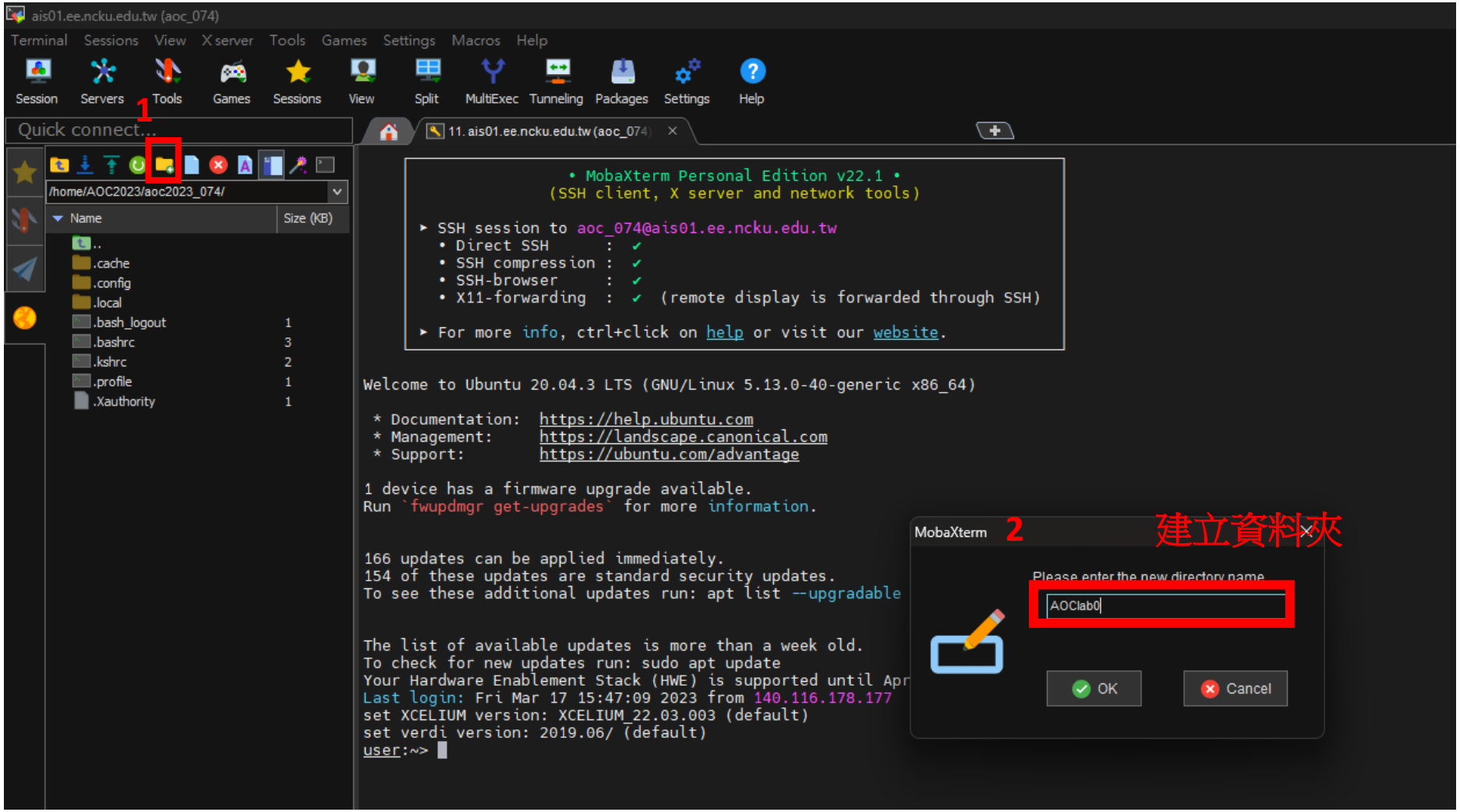
ncverilog tb_Mux2_1.v +access+r

!!!注意注意!!!　　有空一格

- **(必要)Step6—run Wave：**

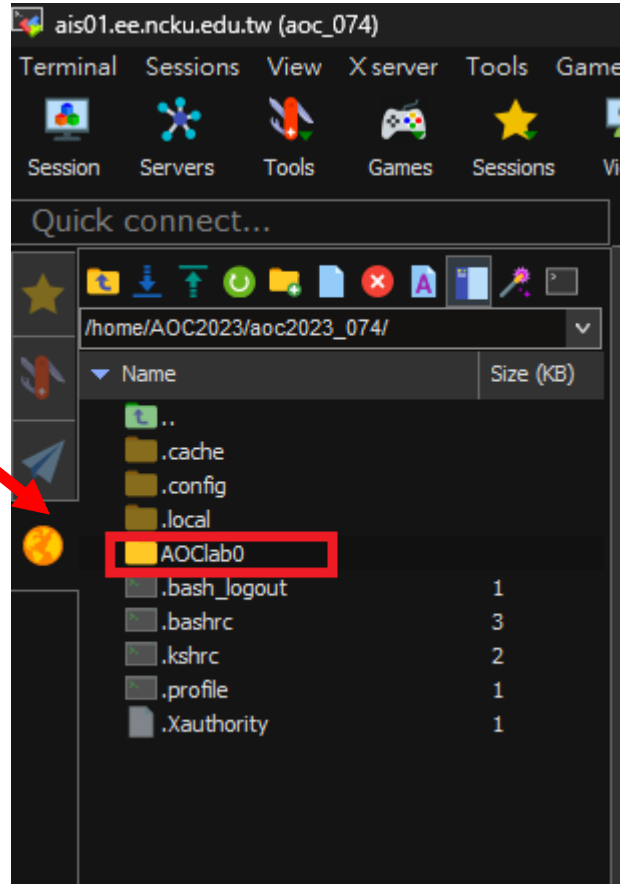
nWave &

Step1


ais01.ee.ncku.edu.tw (aoc_074)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
1
Quick connect...
11. ais01.ee.ncku.edu.tw (aoc_074)
/home/AOC2023/aoc2023_074/
Name
Size (KB)
..
.cache
.config
.local
.bash_logout 1
.bashrc 3
.kshrc 2
.profile 1
.Xauthority 1
• MobaXterm Personal Edition v22.1 •
(SSH client, X server and network tools)
▸ SSH session to aoc_074@ais01.ee.ncku.edu.tw
• Direct SSH : ✔
• SSH compression : ✔
• SSH-browser : ✔
• X11-forwarding : ✔ (remote display is forwarded through SSH)
▸ For more info, ctrl+click on help or visit our website.
Welcome to Ubuntu 20.04.3 LTS (GNU/Linux 5.13.0-40-generic x86_64)
* Documentation: https://help.ubuntu.com
* Management: https://landscape.canonical.com
* Support: https://ubuntu.com/advantage
1 device has a firmware upgrade available.
Run `fwupdmgr get-upgrades` for more information.
166 updates can be applied immediately.
154 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable
The list of available updates is more than a week old.
To check for new updates run: sudo apt update
Your Hardware Enablement Stack (HWE) is supported until Apr
Last login: Fri Mar 17 15:47:09 2023 from 140.116.178.177
set XCELIUM version: XCELIUM_22.03.003 (default)
set verdi version: 2019.06/ (default)
user:~>
MobaXterm
2
建立資料夾
Please enter the new directory name
AOClab0
OK
Cancel

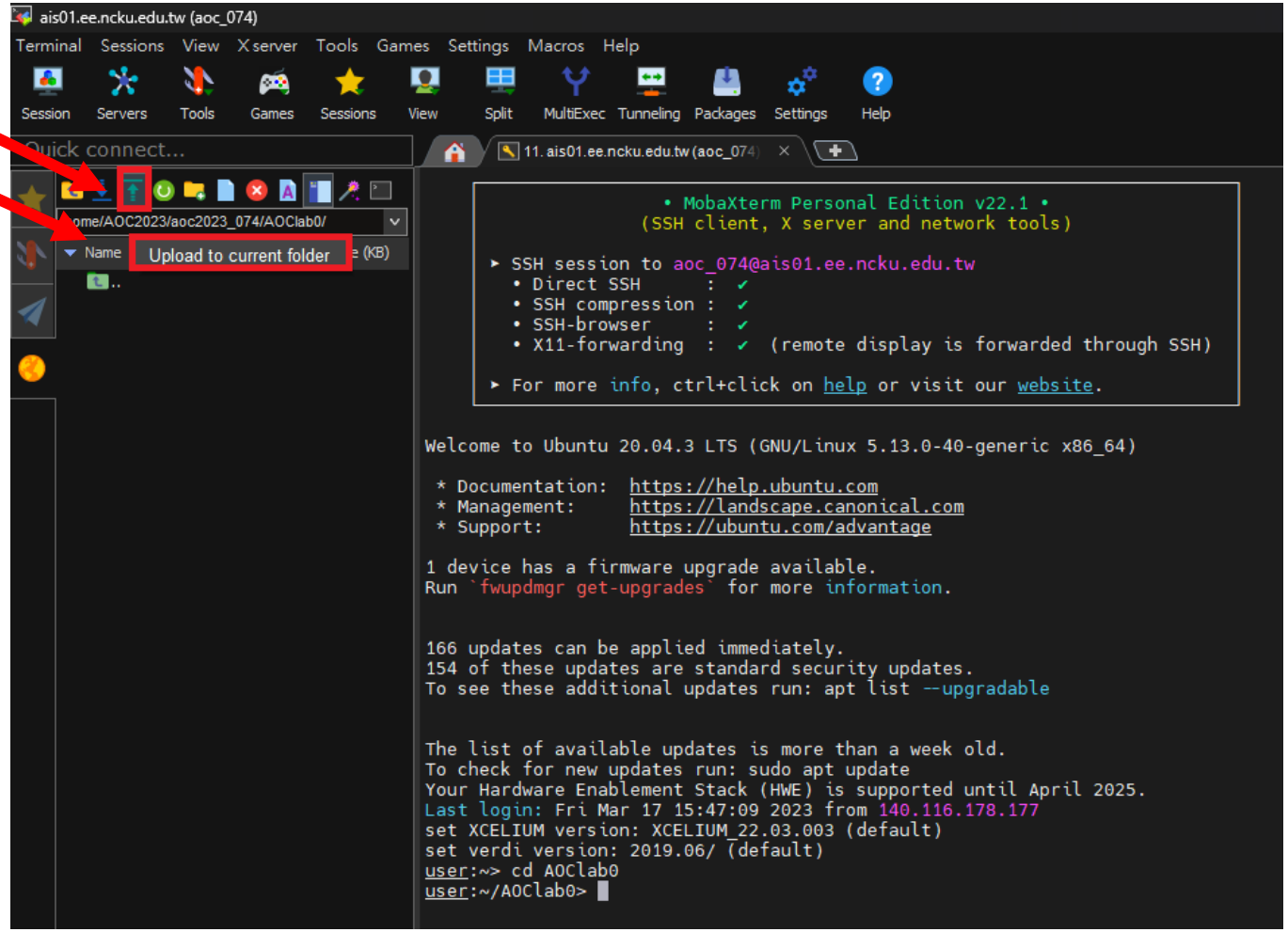
Step1

- 確認所建立的資料夾



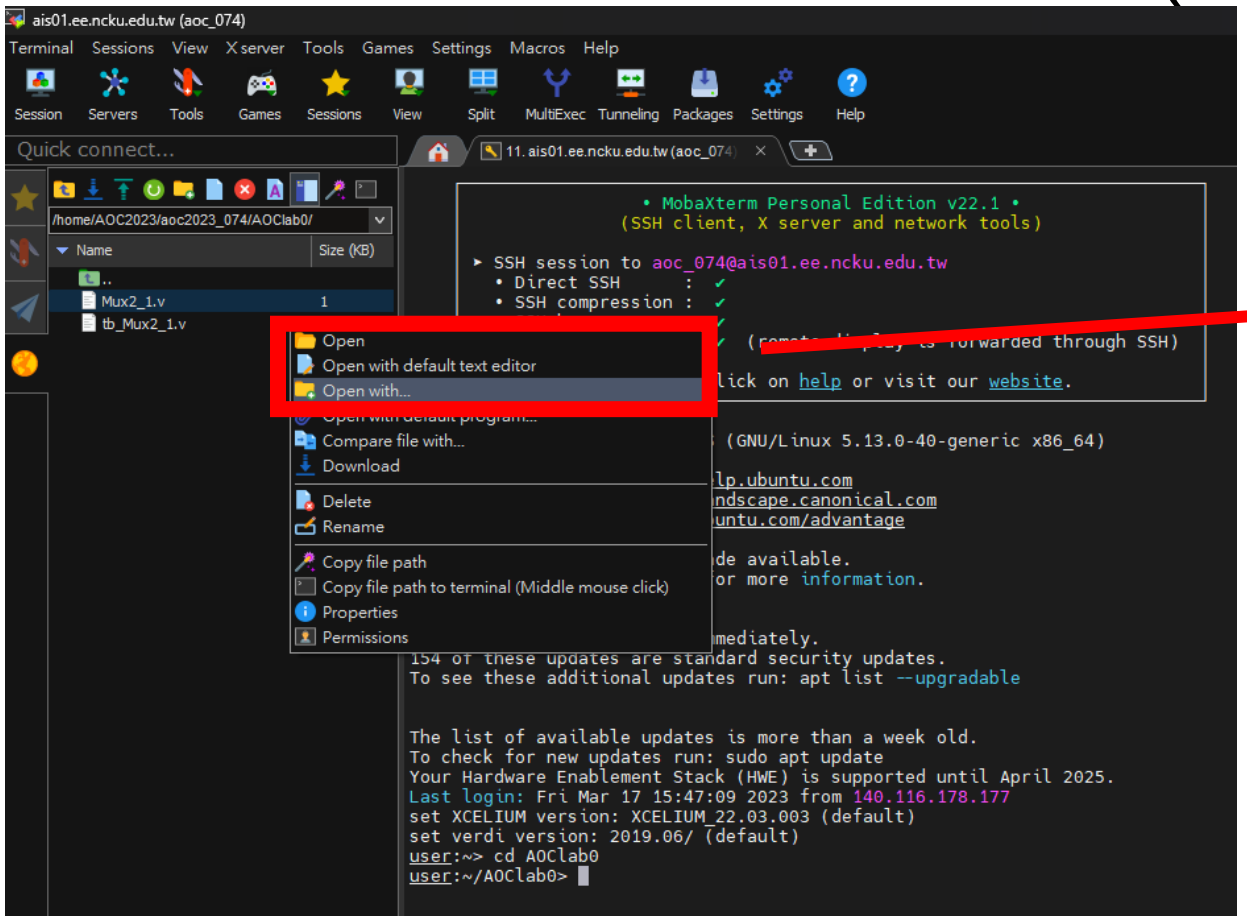
Step1

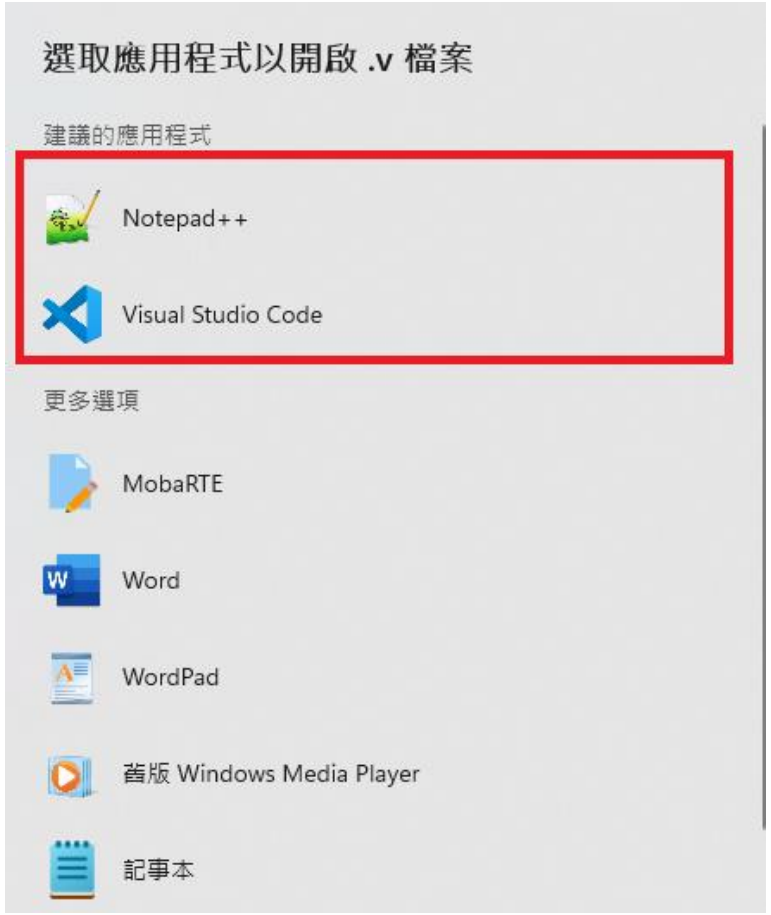
- 上傳.v檔以及測試檔



Step1

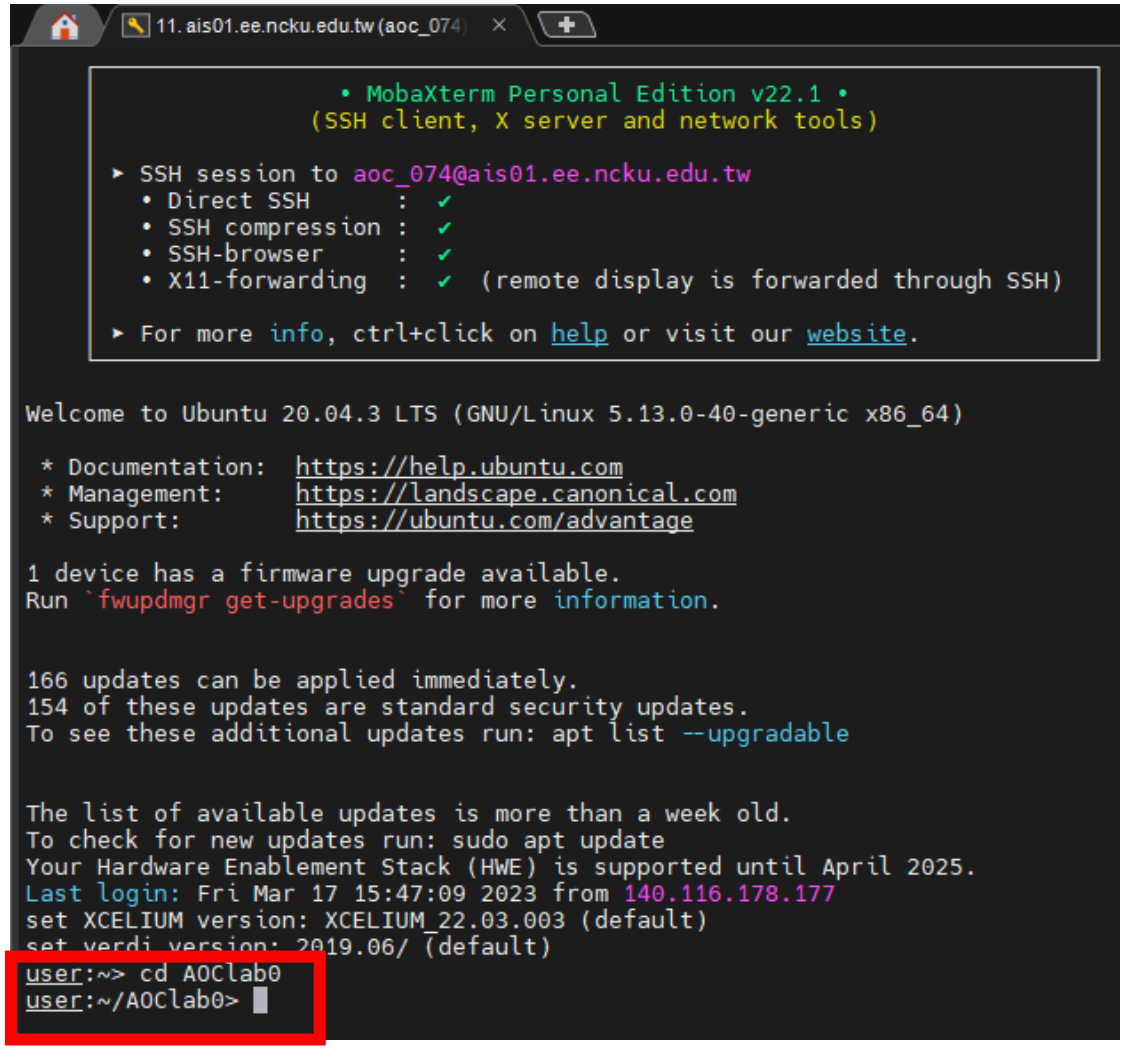
- 依照個人喜好在編輯器上編輯檔案(推薦Notepad++或Visual Studio Code)





Step2

- 切換工作目錄



Step4 (以執行2-to-1 Mux為例)

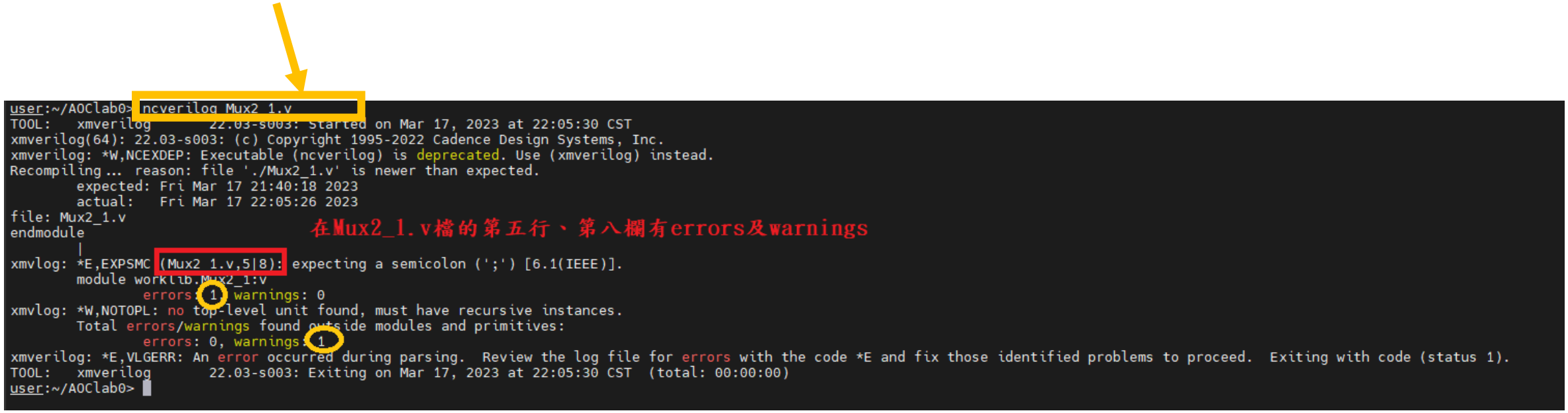
- ncverilog Mux2_1.v

```
user:~/AOClab0> ncverilog Mux2_1.v
TOOL:   xmverilog       22.03-s003: Started on Mar 17, 2023 at 22:02:50 CST
xmverilog(64): 22.03-s003: (c) Copyright 1995-2022 Cadence Design Systems, Inc.
xmverilog: *W,NCEXDEP: Executable (ncverilog) is deprecated. Use (xmverilog) instead.
                Caching library 'worklib' ....... Done
        Elaborating the design hierarchy:
        Building instance overlay tables: .................... Done
        Building instance specific data structures.
        Loading native compiled code:     .................... Done
        Design hierarchy summary:
                            Instances  Unique
                Modules:            1       1
                Vectored wires:     1       -
                Cont. assignments:  0       1
        Writing initial simulation snapshot: worklib.Mux2_1:v
Loading snapshot worklib.Mux2_1:v ..................... Done
*Verdi* Loading libsscore_xcelium171.so
xcelium> source /usr/cad/cadence/XCELIUM/XCELIUM_22.03.003/tools/xcelium/files/xmsimrc
xcelium> run
xmsim: *W,RNQUIE  Simulation is complete.
xcelium> exit
TOOL:   xmverilog       22.03-s003: Exiting on Mar 17, 2023 at 22:02:51 CST  (total: 00:00:01)
user:~/AOClab0>
```

.v檔順利跑過

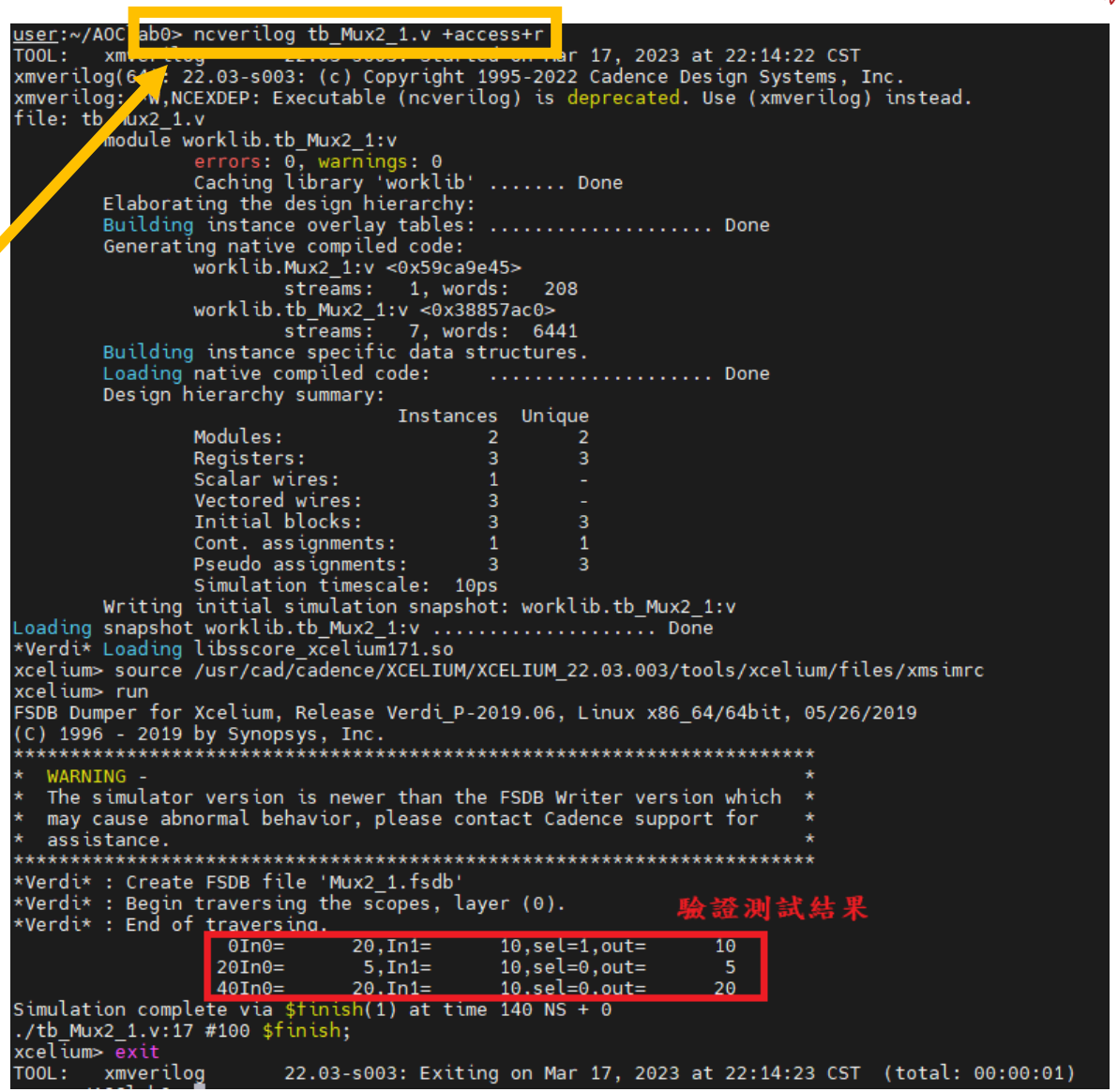
Step4 (以執行2-to-1 Mux為例)

- ncverilog Mux2_1.v



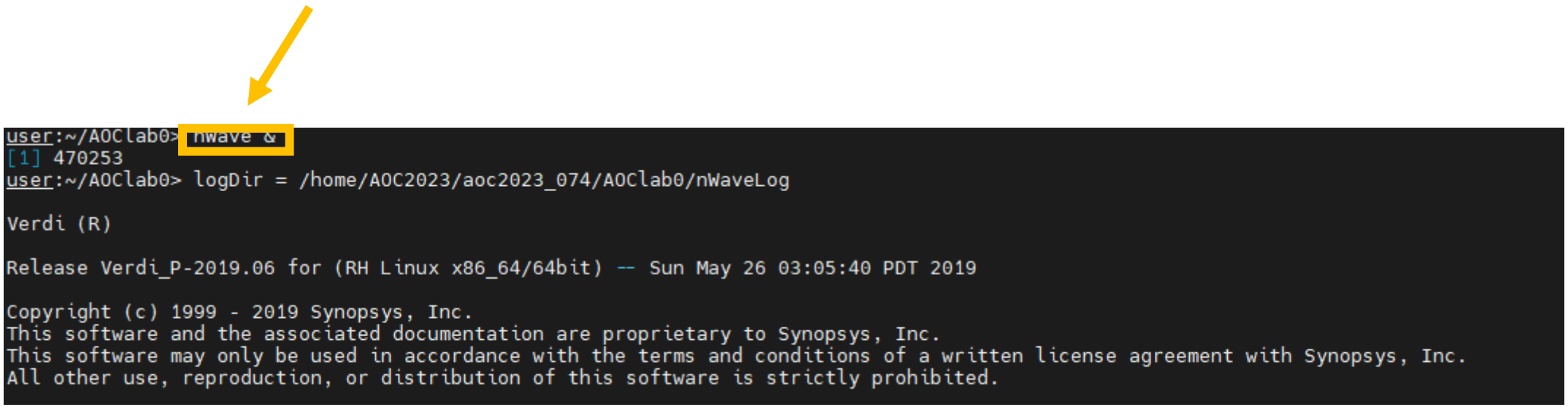
Step5

- ncverilog tb_Mux2_1.v +access+r



Step6

- nWave & 波形驗證



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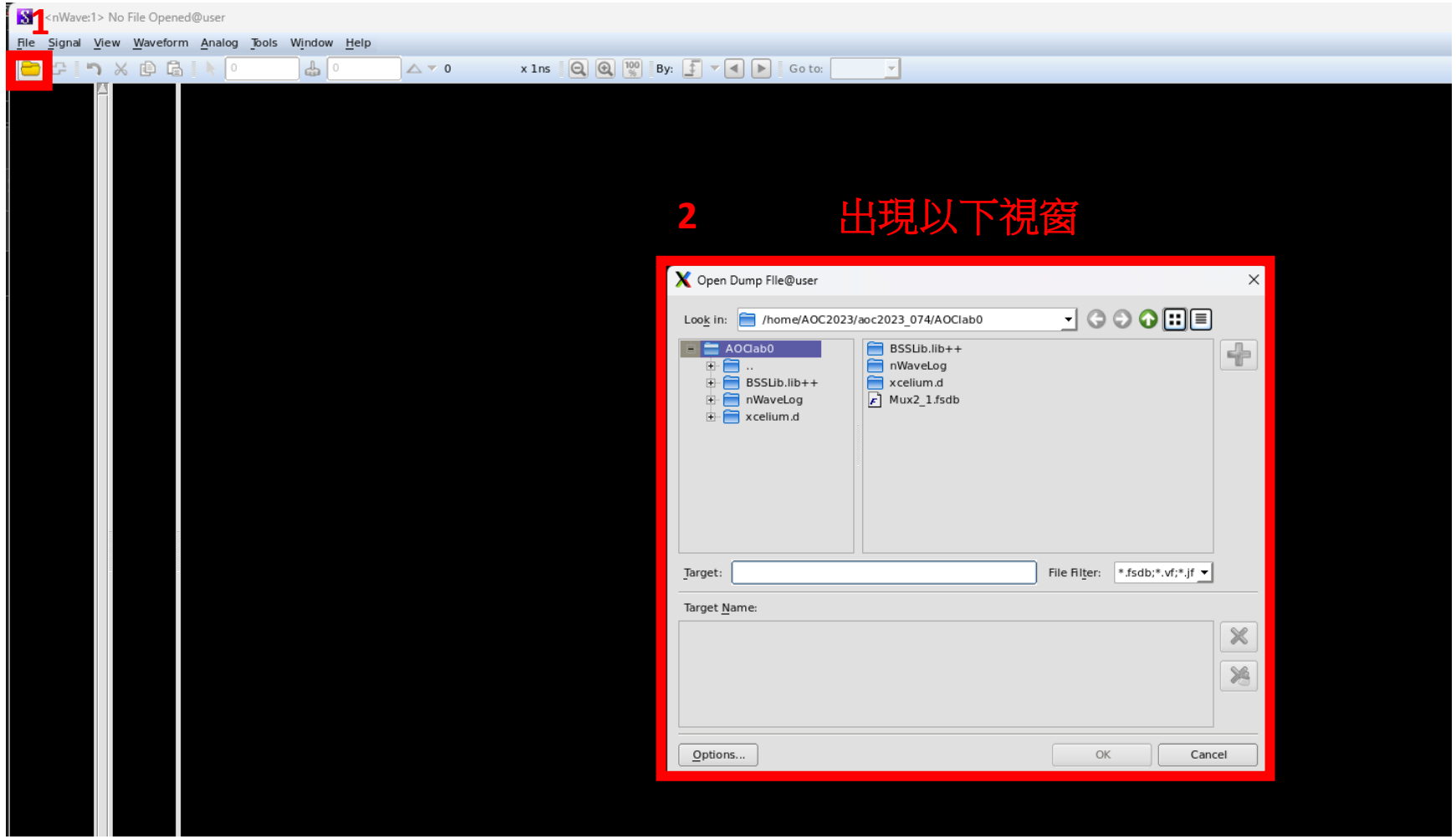
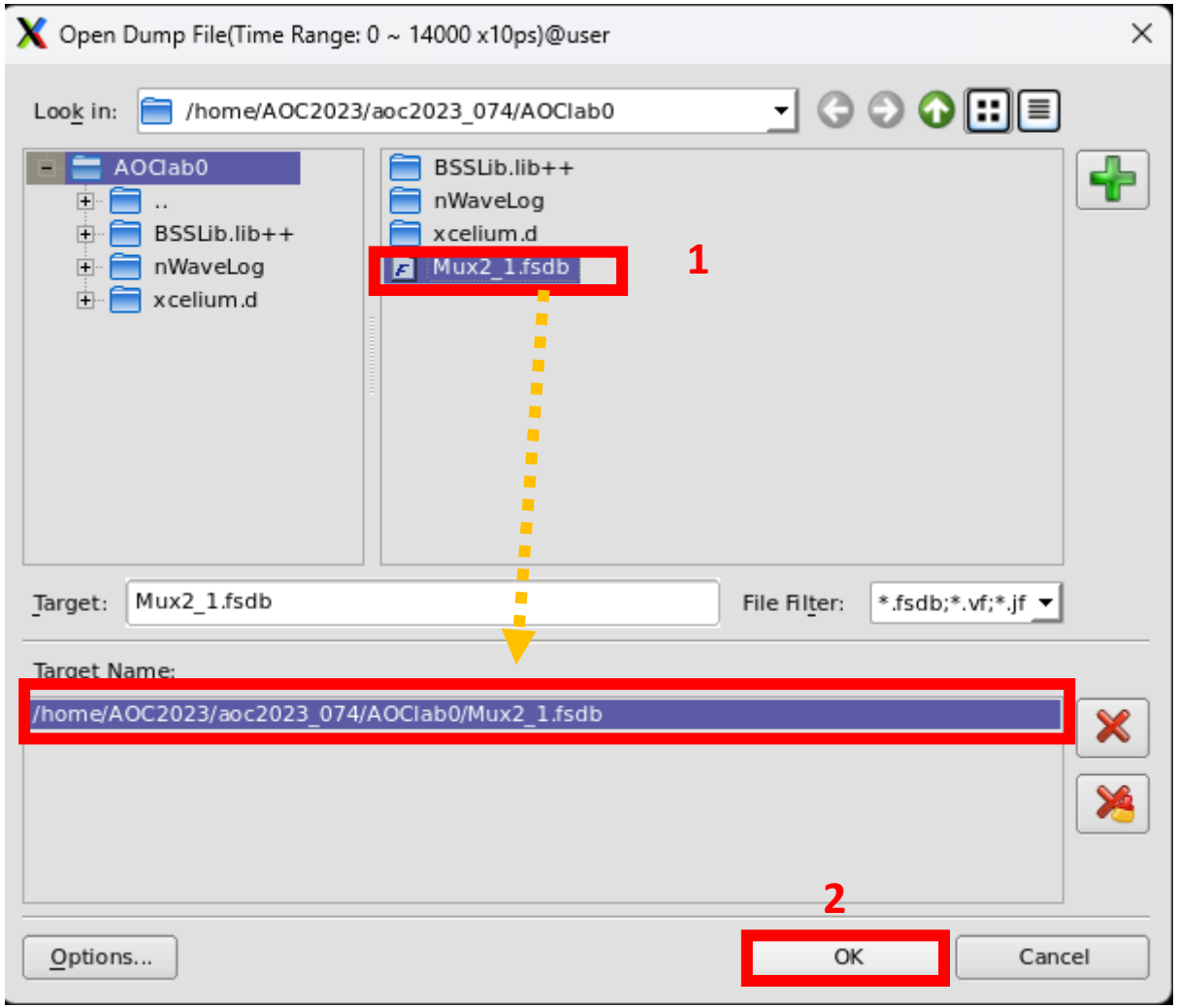
如何看波形

- (i) Open File



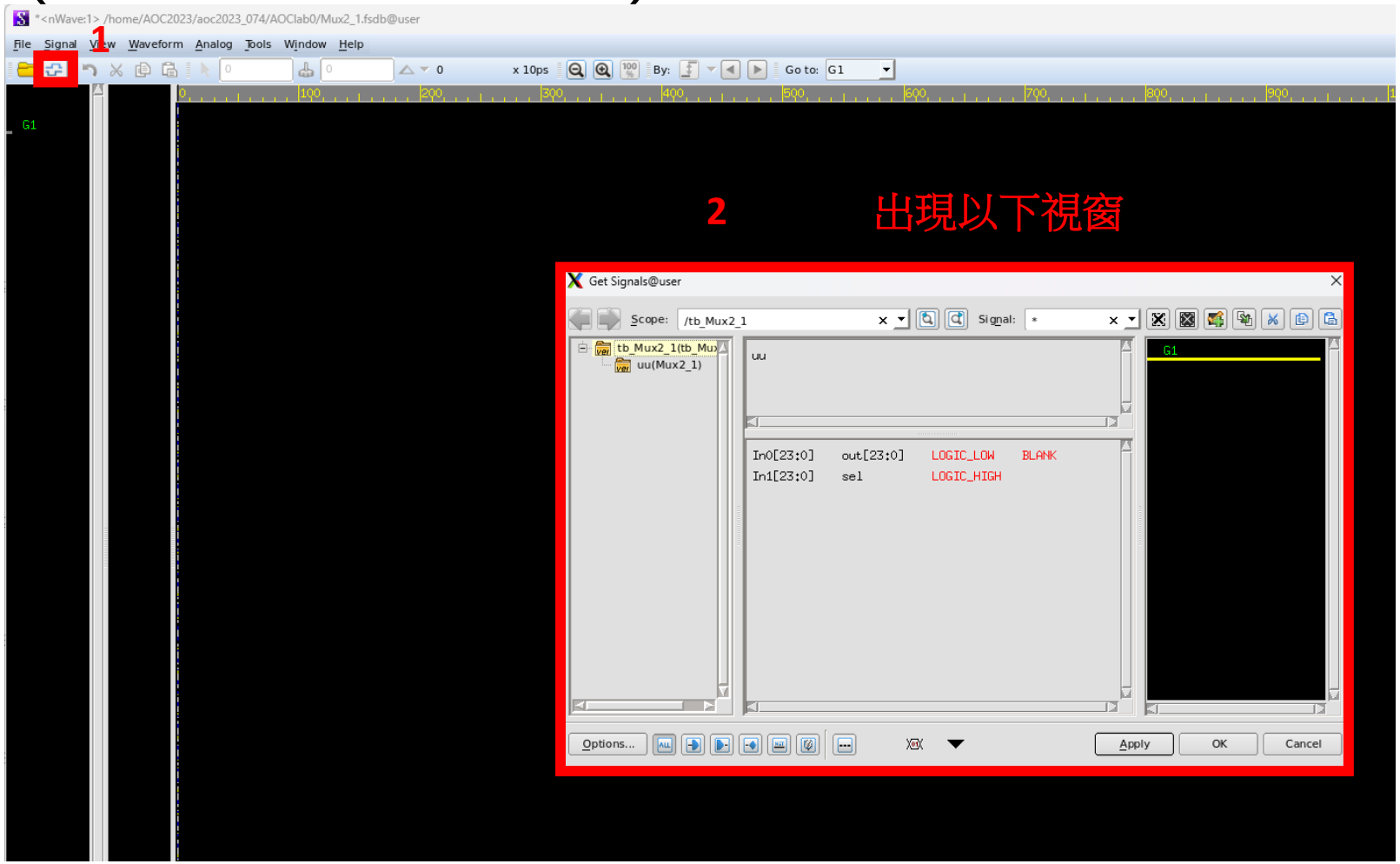
如何看波形

- (ii) Choose Mux2_1.fsdb



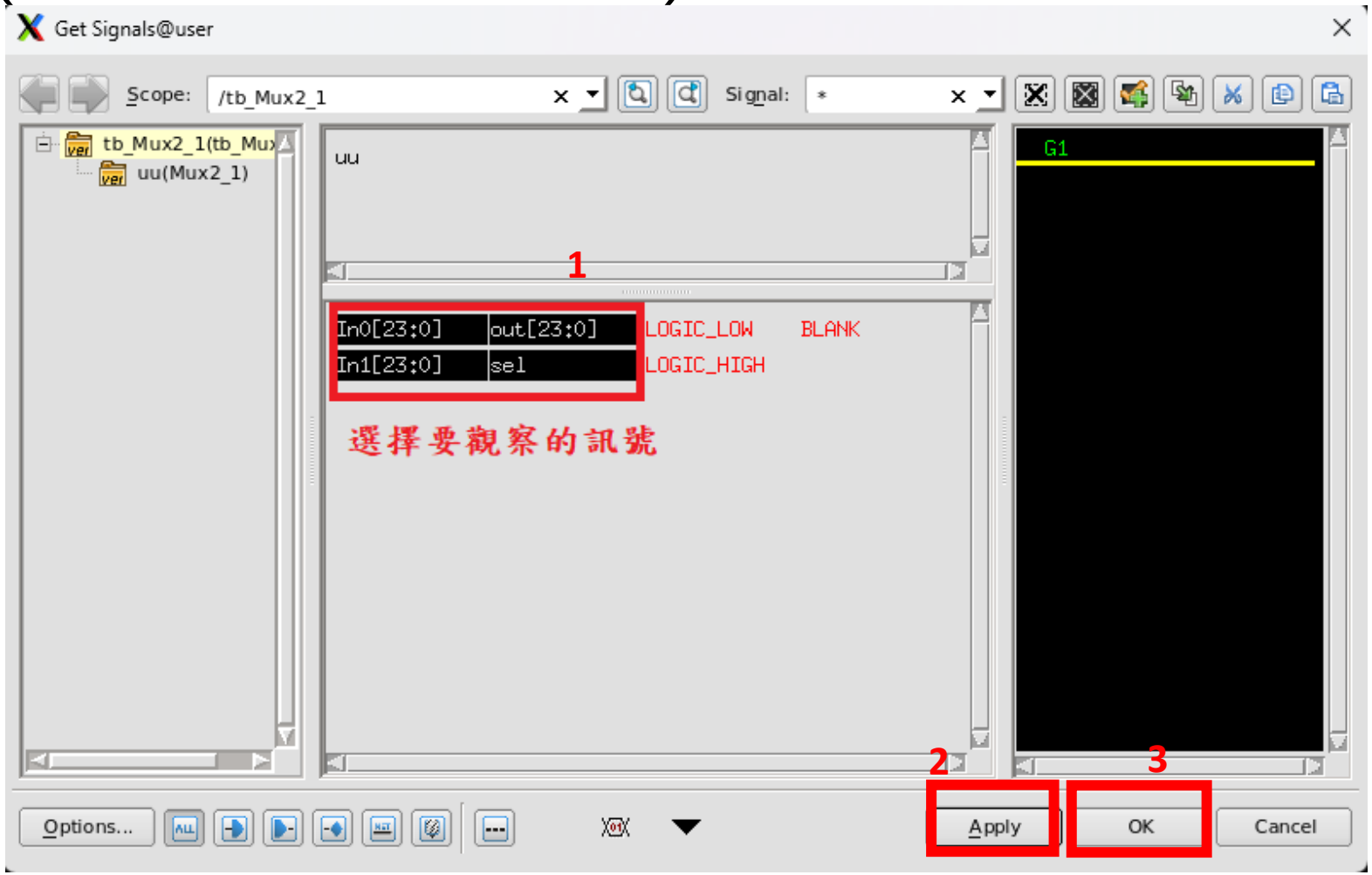
如何看波形

- (iii) Get signals (選擇要看的訊號就好)



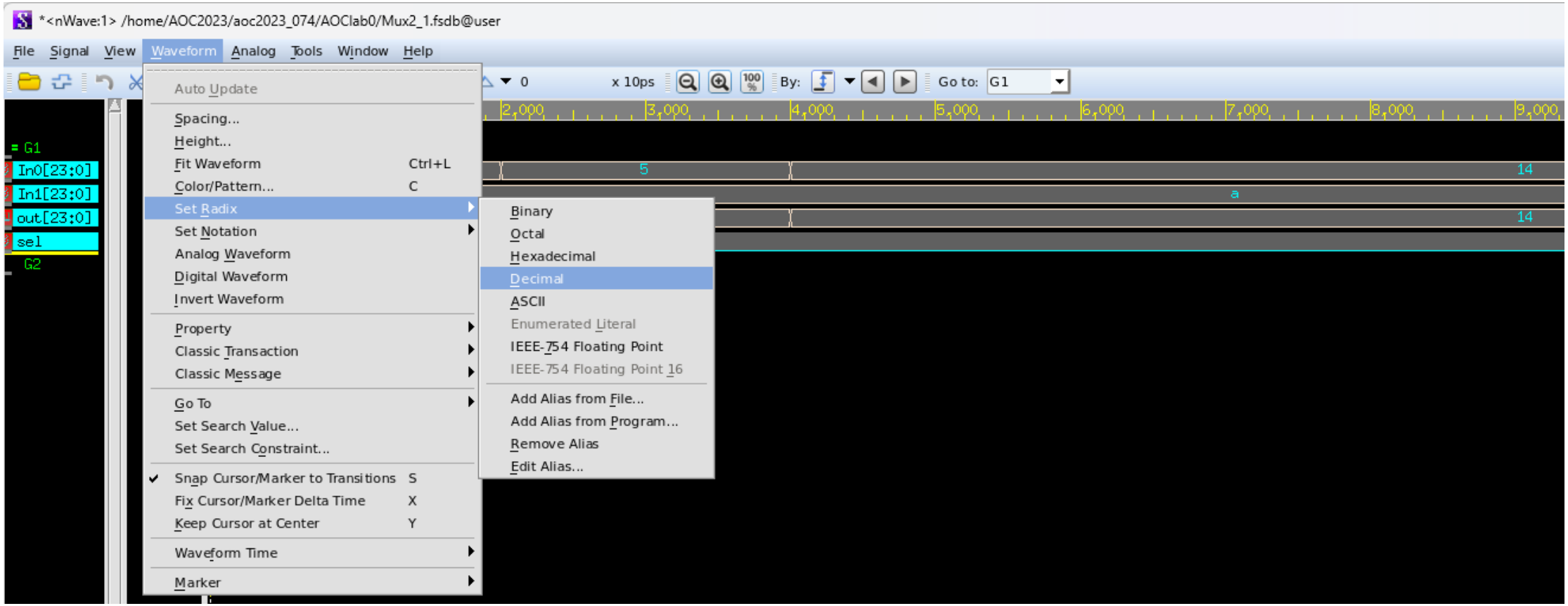
如何看波形

- (iii) Get signals (選擇要觀察的訊號就好)



如何看波形

- (iv) wave (調成十進位方便觀察波形)



如何看波形

- (v) result