

# Computer Organization 2022

## Lab1 – Introduction & Environment Lab

### ( **Part II : Basic Server Usage Guide** )

**Video link** : <https://youtu.be/s2p7TAJEAY4>

# **Part II**

# **Basic Server Usage Guide**

# Outline

- Environment Setup
- NC – Verilog
- nWave
- RISC -V Toolchain
- Appendix - Linux commands



# Environment Setup

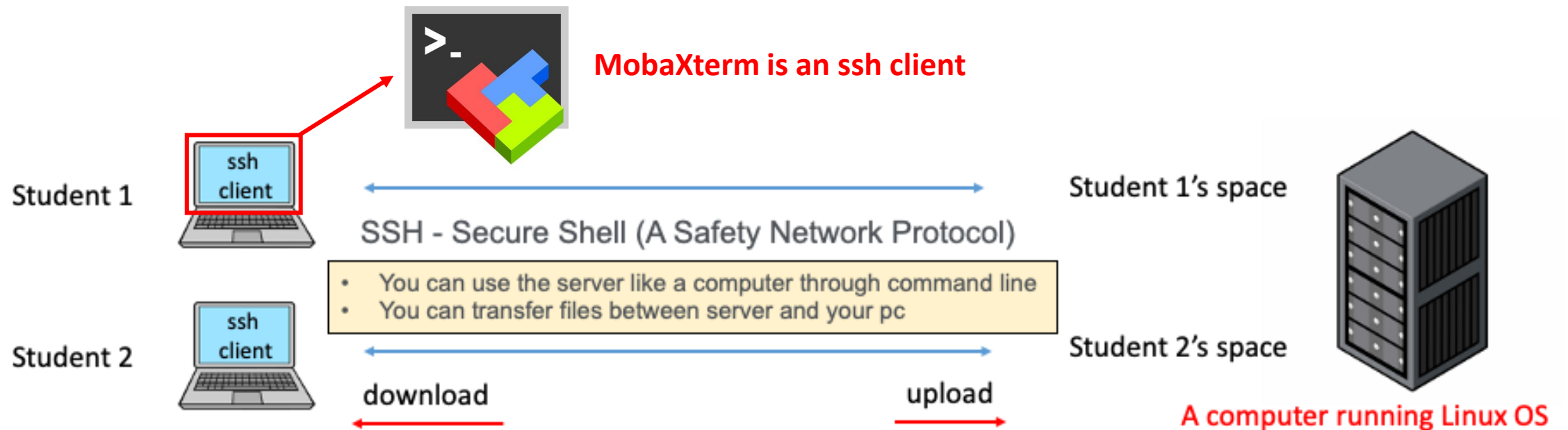
- Login to the Linux Server
- NCKU CO Server
- Introduction to MobaXterm
- Session Settings
- Command Line shell



# Environment Setup



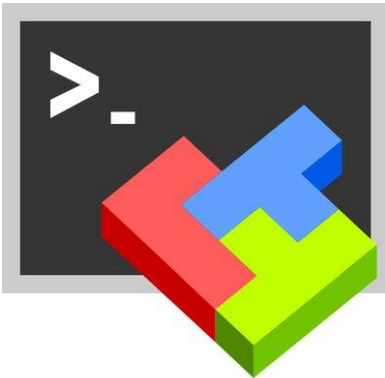
- Login to the Linux Server
  - Many EDA tools are provided only for the Linux OS.
  - So we need to use **MobaXterm** on our local computer to login to the linux server and use the EDA tools on it.



# 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](#)



A screenshot of the MobaXterm website's pricing page. The page has a navigation bar at the top with links for Home, Demo, Features, Download, Plugins, Help, and Contact, along with social media icons and buttons for 'Customer area' and 'Buy'. The main content area is divided into two columns. The left column is for the 'Home Edition', which is 'Free'. It lists features such as Full X server and SSH support, Remote desktop (RDP, VNC, Xdmcp), Remote terminal (SSH, telnet, rlogin, Mosh), X11-Forwarding, Automatic SFTP browser, Master password protection, Plugins support, Portable and installer versions, Full documentation, and session/tunnel/macro limits. A 'Download now' button is highlighted with a red rectangle. The right column is for the 'Professional Edition', priced at '\$69 / 49€ per user\*'. It lists additional features like customizing startup messages, removing unwanted games, unlimited sessions, tunnels, and macros, enhanced security, 12-month updates, and a lifetime right to use. A 'Subscribe online / Get a quote' button is at the bottom.

# Environment Setup



- Before using MobaXterm

## 成功大學 TWAREN SSL VPN 服務使用說明

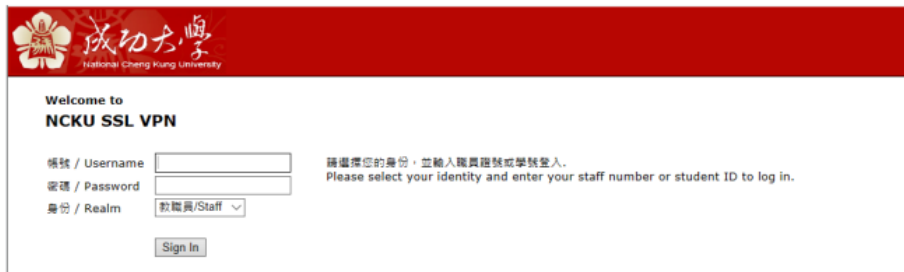
因授權限制、資訊安全考量等因素，本校提供的部分網路資源及服務限制須使用校內 IP 位址才可以使用，如校園授權軟體…等。為了使本校教職員工生在校園以外，如同在校園內一樣使用這些網路資源及服務，本中心向台灣高品質學術研究網路(TWAREN)申請 SSL VPN 服務。

### 一、操作說明(線上安裝)：

**註：電腦若有安裝舊版 VPN 程式(如：Juniper)或是其他 VPN 軟體，建議先移除。**

1. 請開啟您的瀏覽器(如：Google Chrome)，輸入以下網址：

<https://ncku.twaren.net>



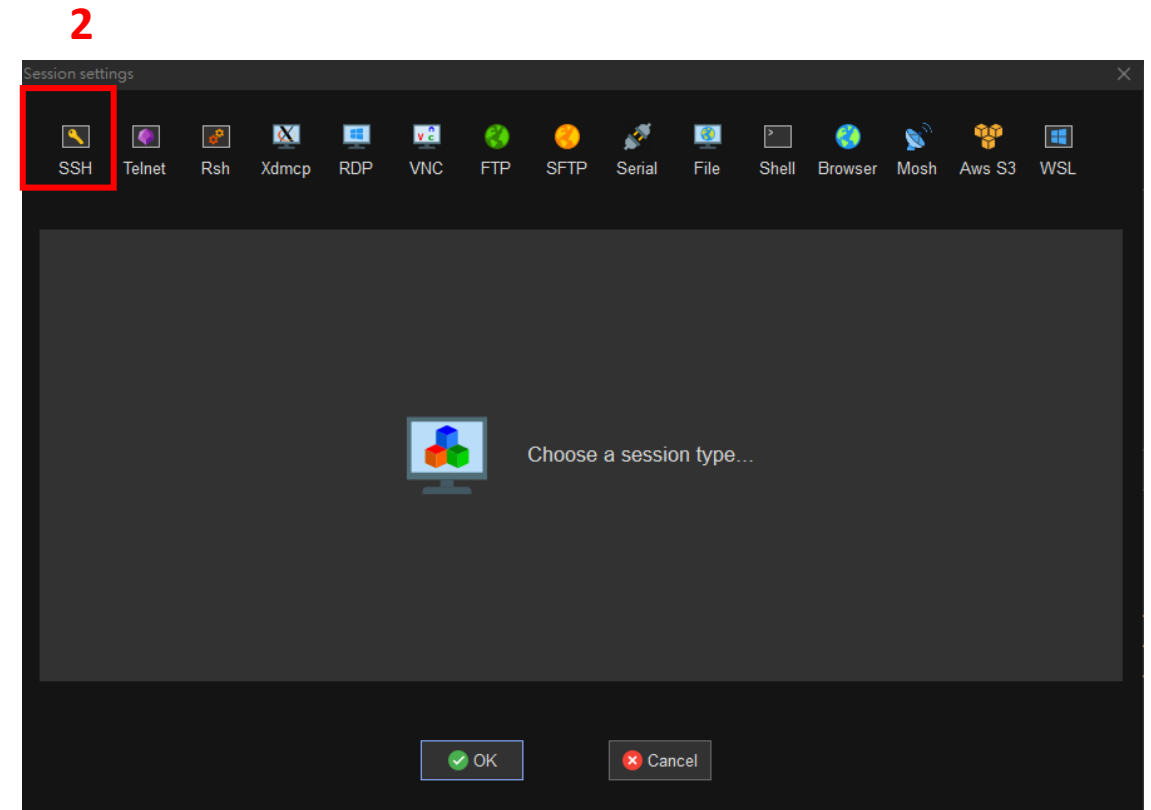
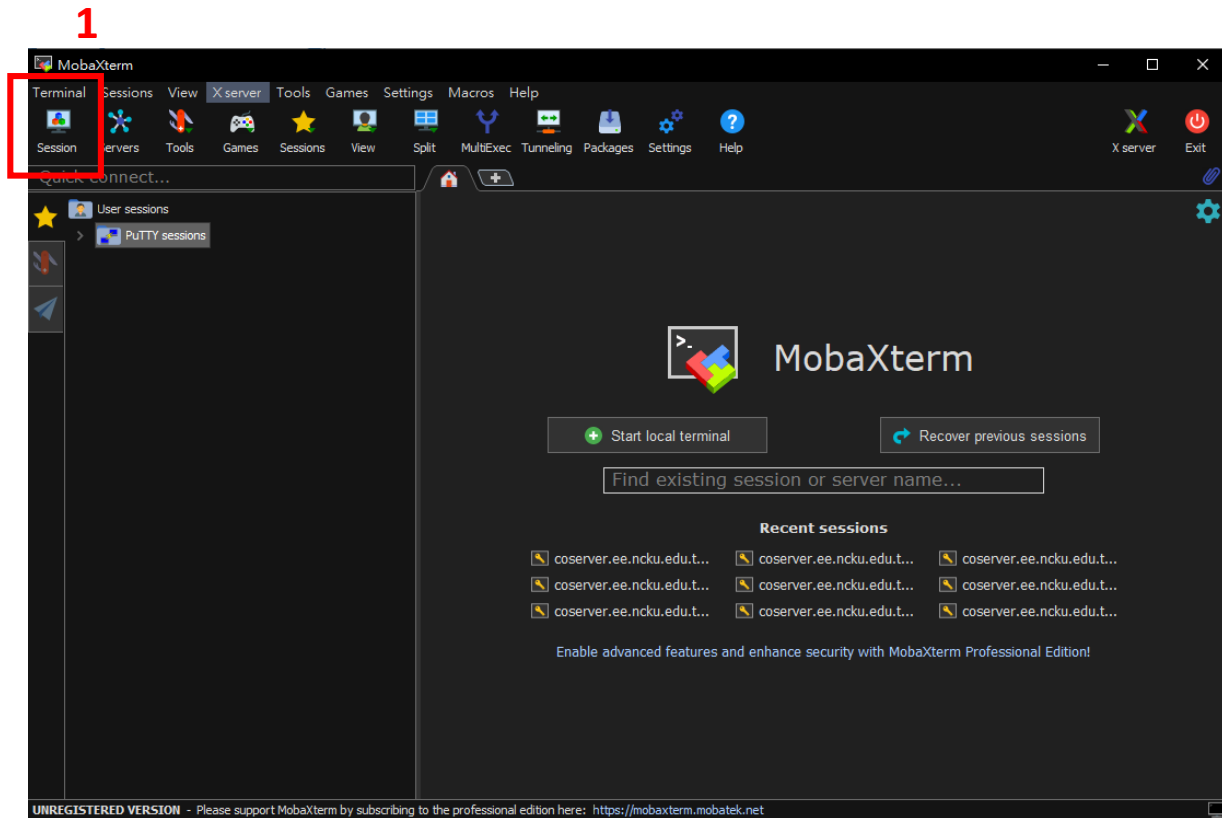
The screenshot shows the login interface for NCKU SSL VPN. At the top is the NCKU logo and name in Chinese and English. Below it, the text 'Welcome to NCKU SSL VPN' is displayed. The login form includes fields for '帳號 / Username' and '密碼 / Password'. To the right of these fields is a note in Chinese and English: '請選擇您的身份，並輸入職員證號或學號登入。 Please select your identity and enter your staff number or student ID to log in.' Below the password field is a dropdown menu for '身份 / Realm' with '教職員/Staff' selected. A 'Sign In' button is located at the bottom of the form.

Link: <https://cc.ncku.edu.tw/var/file/2/1002/img/237/582085960.pdf>

# Environment Setup



- Session Settings
  - Click the session button
  - Click the SSH button





# Environment Setup



- NCKU CO Server
  - Co Server IP : [ais01.ee.ncku.edu.tw](http://ais01.ee.ncku.edu.tw)
- Server List

| Num | 名字   | 學號  | User帳號     |
|-----|------|-----|------------|
| 1   | OXXX |     | co2022_001 |
| 2   | XOXX |     | co2022_002 |
| 3   | XXOX |     | co2022_003 |
| 4   | XXXO |     | co2022_004 |
| ... | ...  | ... | ...        |
| 152 | ABCD |     | co2022_152 |

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Session settings

SSH Telnets Rsh Xdmcp RDP VNC FTP SFTP Serial File Shell Browser Mosh Aws S3 WSL

Warning: you have reached the maximum number of saved sessions for the personal edition of MobaXterm.  
You can start a new session but it will not be automatically saved.  
Please support MobaXterm by subscribing to the Professional edition here: <https://mobaxterm.mobatek.net>

Basic SSH settings

Remote host:  ☒ Specify username:  Port:

Advanced SSH settings

☒ X11-Forwarding ☒ Compression Remote environment:

Execute command:

SSH-browser type:

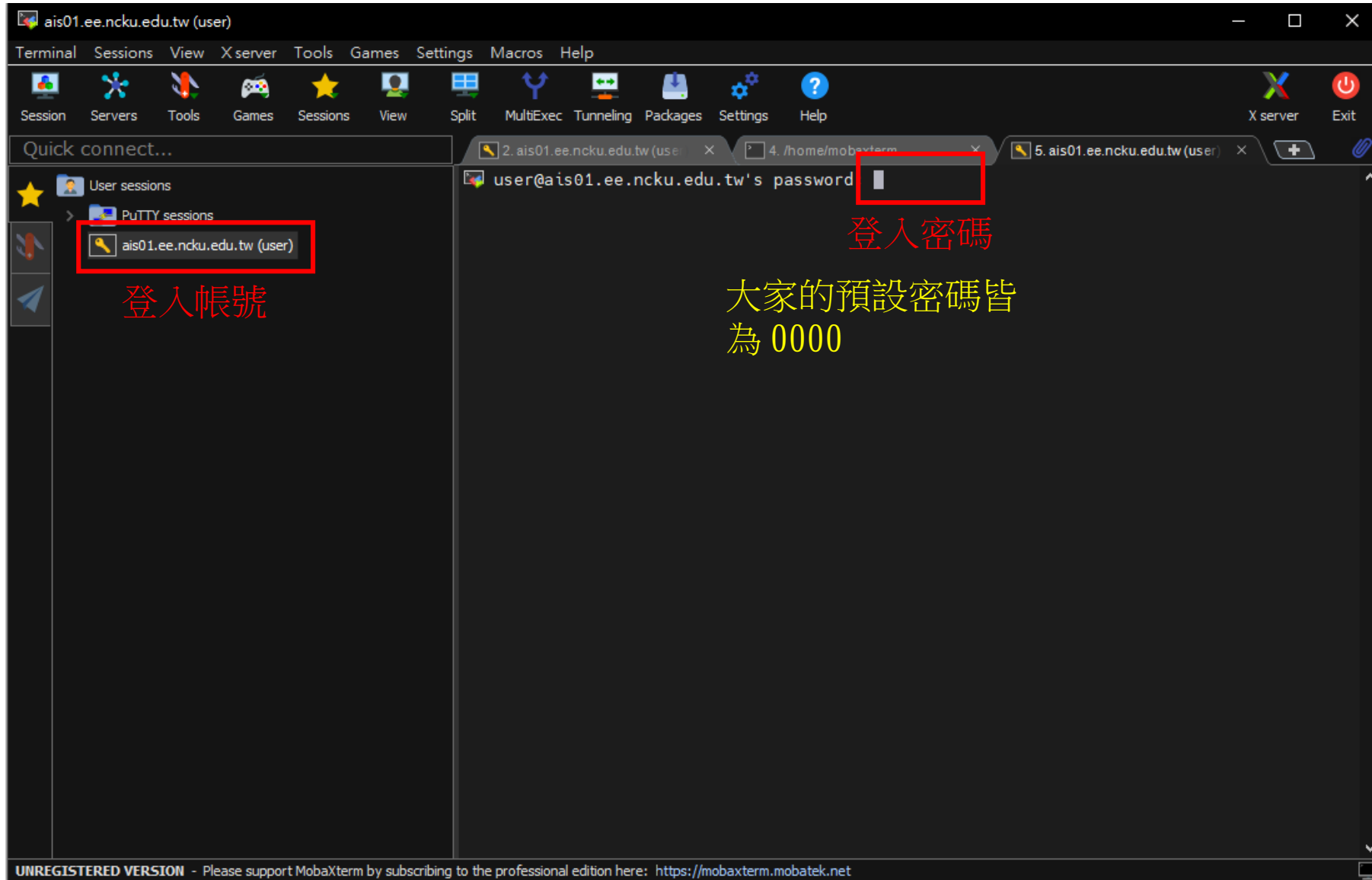
☐ Use private key

☐ Do not exit after command ends

☐ Follow SSH path (experimental)

☐ Adapt locales on remote server

Execute macro at session start:

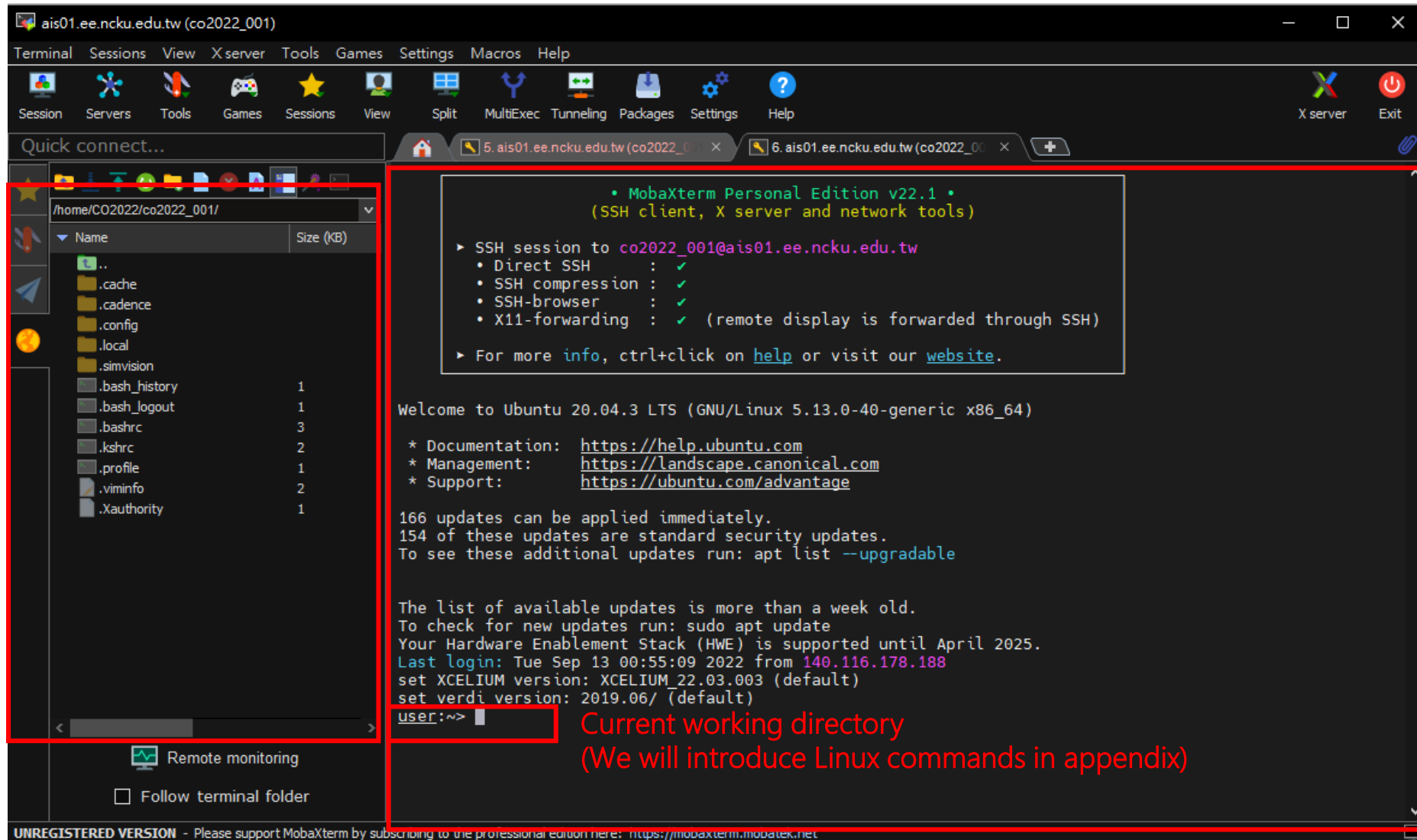


# Environment Setup

- Change your passwd(重要!! 重要!! 重要!!)
  - 預設密碼為 0000
  - 第一次登入帳號後，務必修改個人密碼
  - 修改方式：
    - passwd

```
co2022_001@user:~$ passwd
Changing password for co2022_001.
Current password: █
```

home目錄

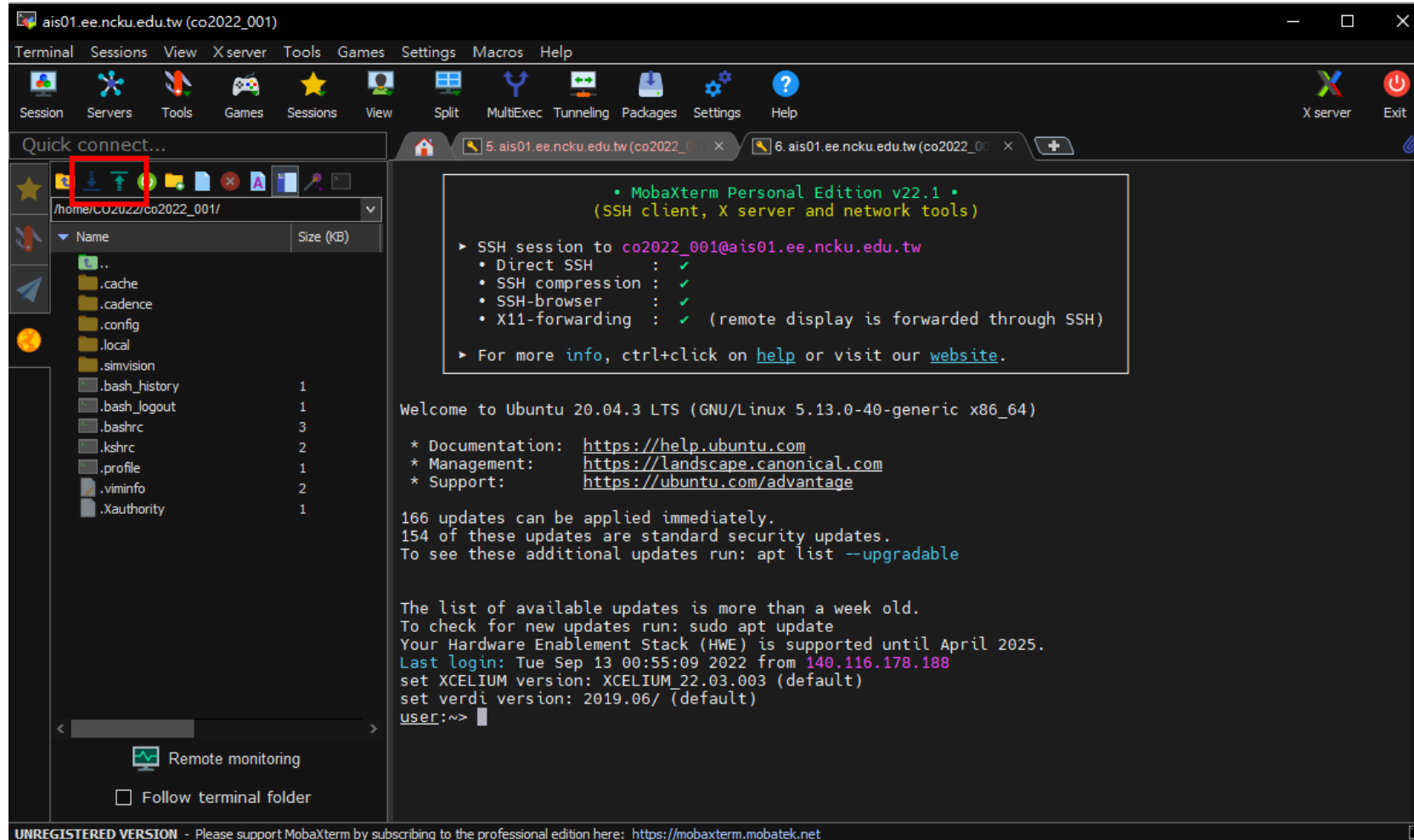


Terminal

# Environment Setup

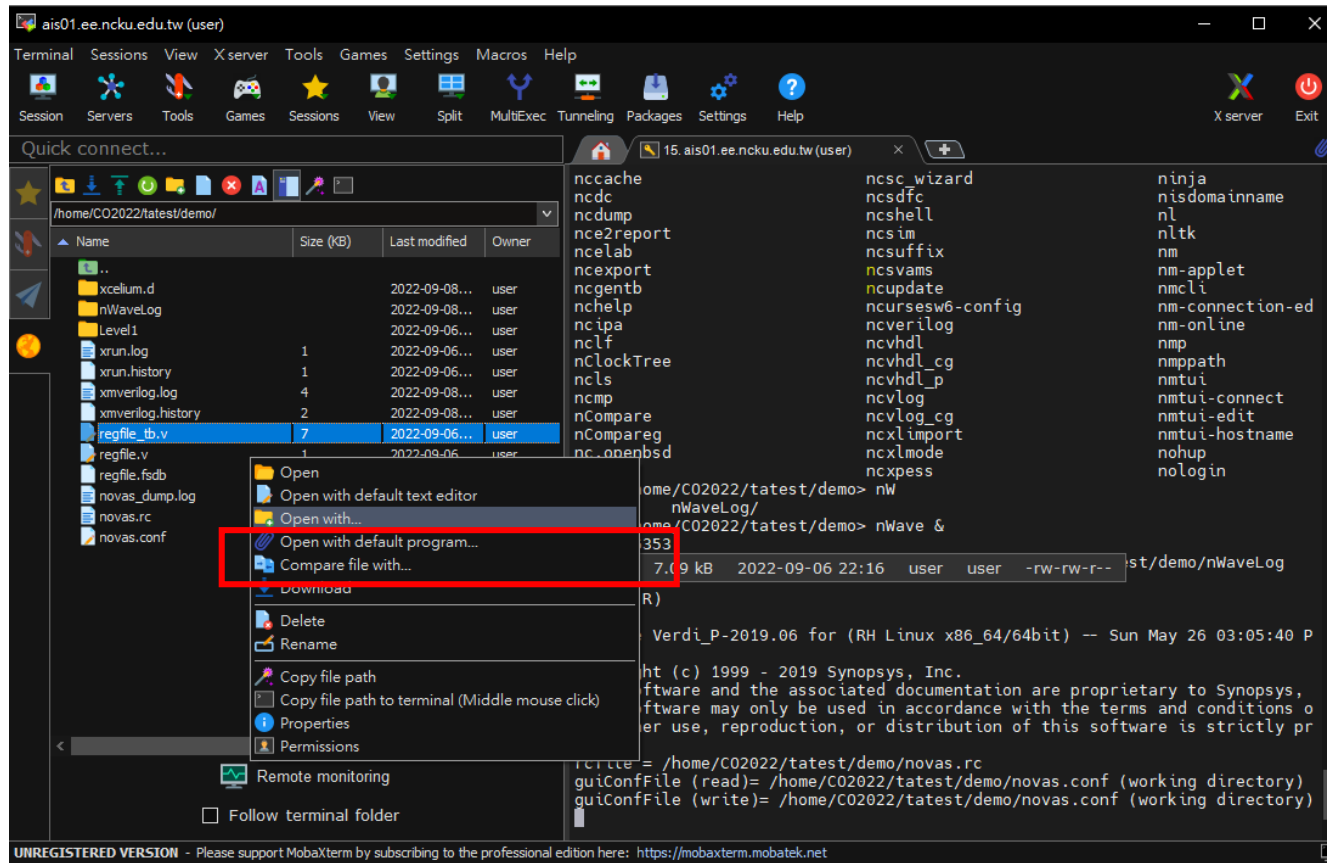


- Upload /Download Files

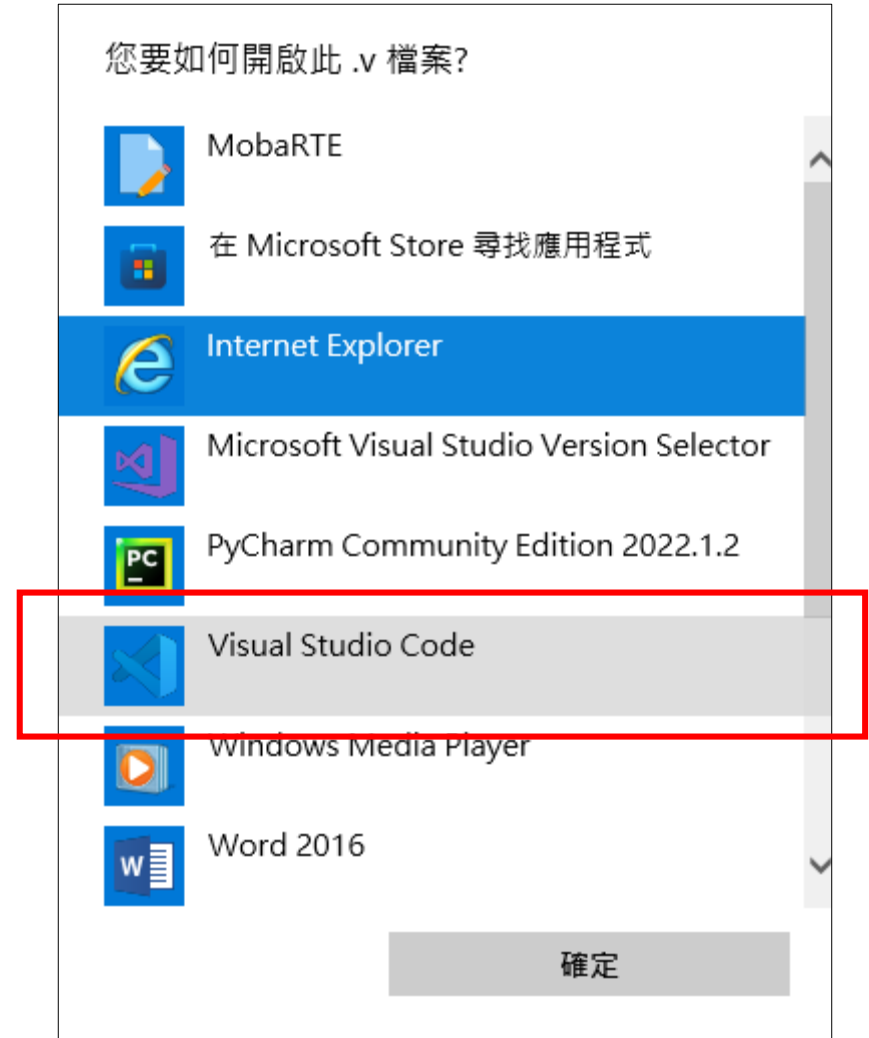


# Environment Setup

- Visual Studio Code



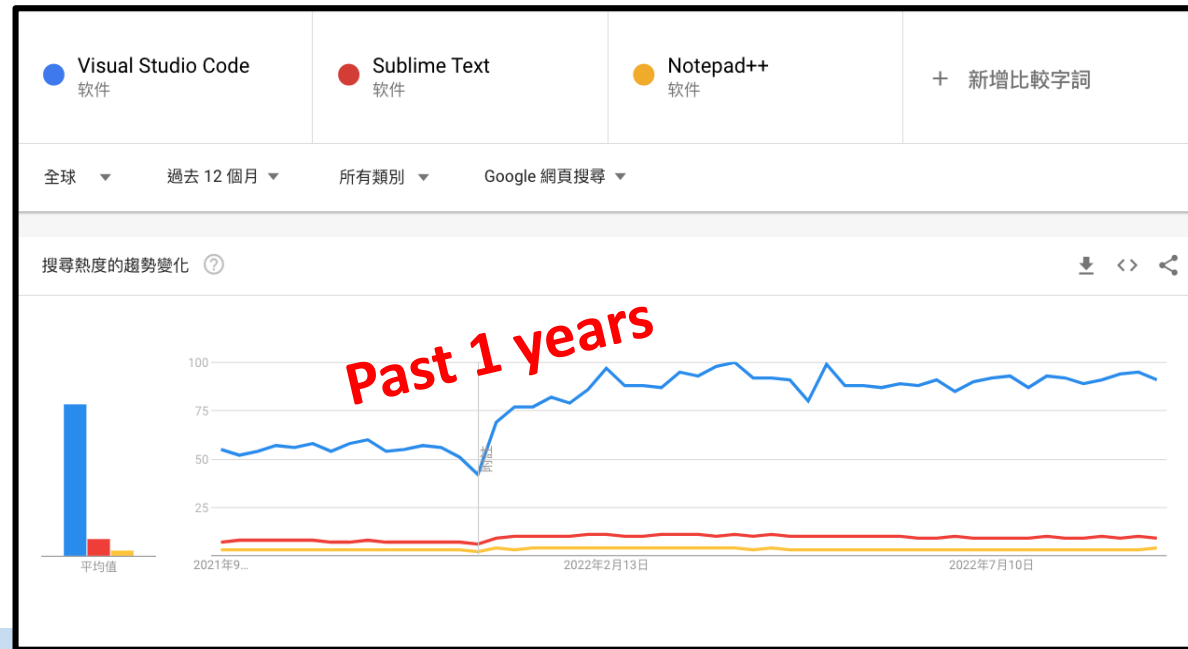
- [Download Link - Visual Studio Code](#)



由微軟開發，同時支援Windows、Linux和macOS等操作系統的免費**程式碼編輯器**。  
 支援多種程式語言，整合終端，可以在編輯器中執行指令碼、編譯軟體、除錯指令碼、  
 設定斷點、做版本管理。  
 支援用戶個性化組態，同時還在編輯器中內建了擴充程式管理的功能。

1. 擁有所有文本編輯器的功能
2. 可任意安裝擴充套件進行編譯執行 (文本編輯器做不到)

## 2016年正式發布





# Appendix - Linux commands

- **Reference:**
  1. [Linux经验技巧系列 - YouTube](#)
  2. [linux教學-linux指令集 \(pcnet.idv.tw\)](#)

# Linux commands - Representations of paths



- **Terminal**

```
• MobaXterm Personal Edition v22.1 •
(SSH client, X server and network tools)

► SSH session to co2022_001@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

166 updates can be applied immediately.
154 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

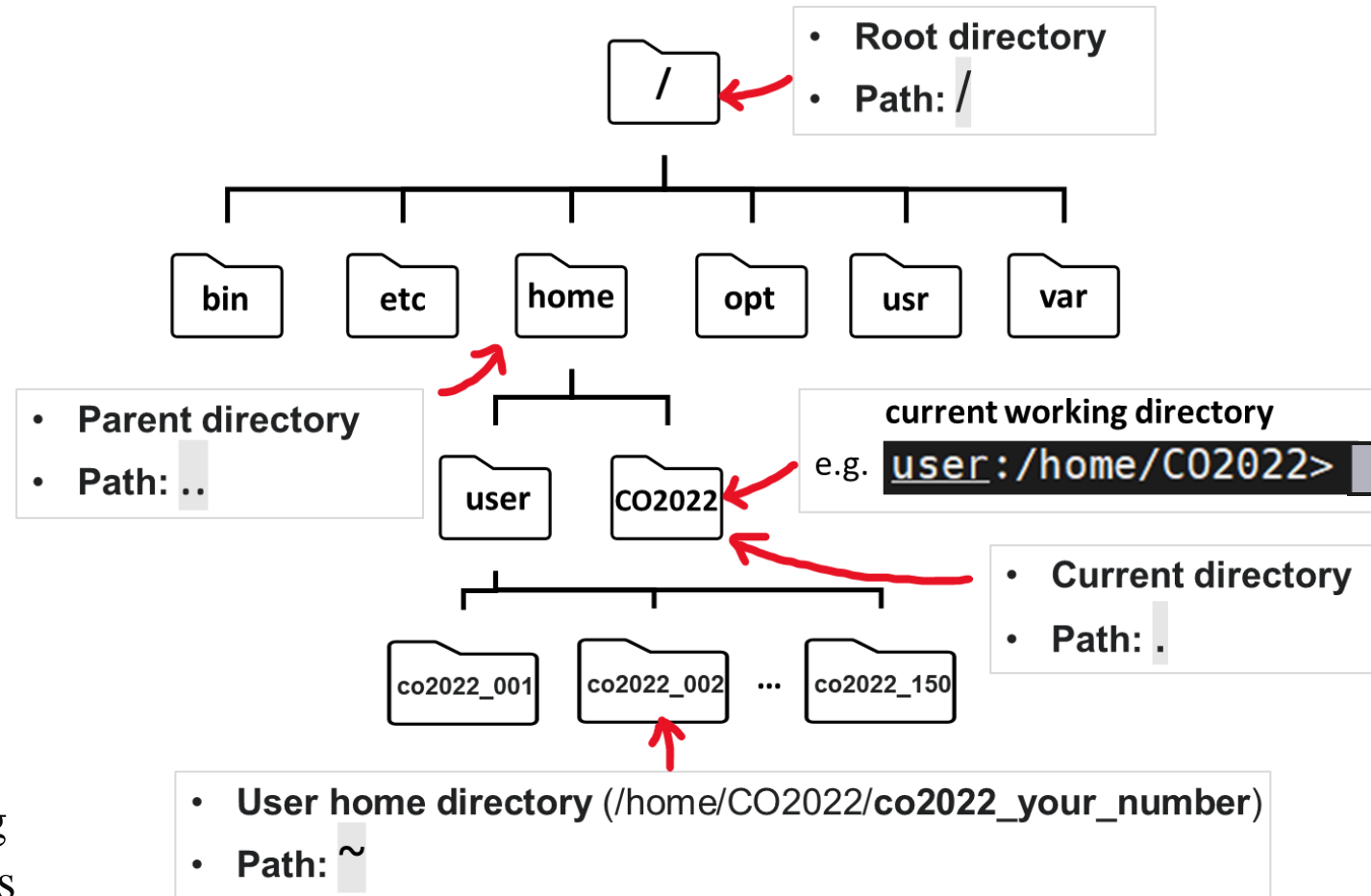
The list of available updates is more than a week old.
To check for new updates run: sudo apt update
Your Hardware Enablement Stack (HWE) is supported until April 2025.
Last login: Tue Sep 13 00:55:09 2022 from 140.116.178.188
set XCELIUM version: XCELIUM_22.03.003 (default)
set verdi version: 2019.06/ (default)
user:~>
```

Current working directory

- **Current working directory**

The directory where the user is in the operating system, under this directory, the user can access files with relative file names.

- **Directory structure example**



# Linux commands - pwd (Print Working Directory)

- Display the **full pathname** of the **current working directory**.

- pwd

```
user:~> pwd  
/home/C02022/co2022_ta14
```

# Linux commands - ls (List)

- List the file & directory in **current working directory**.

- ls

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

# Linux commands - ls (List)

- List the (all) **hidden files & directories** in current working directory.
- Start with `.` is the hidden file or directory

- `ls -a`

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

# Linux commands - ls (List)

- List file & directory with **long format**
- Display [Unix file types](#), permissions, number of [hard links](#), owner, group, size, last-modified date-time and name.

- `ls -l`

```
user:~> ls -l  
total 4  
-rw-rw-r-- 1 co2022_ta14 co2022_ta14    0  九  15 01:42 test1.txt  
-rw-rw-r-- 1 co2022_ta14 co2022_ta14    0  九  15 01:50 test2.txt  
drwxrwxr-x 2 co2022_ta14 co2022_ta14 4096  九  15 01:49 test_dir1
```

# Linux commands - ls (List)

- Mix -a and -l

- `ls -la`

```
user:~> ls -la
total 48
drwxr-xr-x  6 co2022_ta14 co2022_ta14 4096 九  15 01:50 .
drwxr-xr-x 178 root      root      4096 九   9 01:15 ..
-rw-----  1 co2022_ta14 co2022_ta14  147 九   9 23:01 .bash_history
-rw-r--r--  1 co2022_ta14 co2022_ta14  220 二  25 2020 .bash_logout
-rw-r--r--  1 co2022_ta14 co2022_ta14 3870 九   9 21:53 .bashrc
drwx-----  4 co2022_ta14 co2022_ta14 4096 九   9 21:50 .cache
drwx-----  4 co2022_ta14 co2022_ta14 4096 九   9 21:50 .config
-rw-r--r--  1 co2022_ta14 co2022_ta14 2278 一  27 2020 .kshrc
drwxr-xr-x  3 co2022_ta14 co2022_ta14 4096 九   9 21:50 .local
-rw-r--r--  1 co2022_ta14 co2022_ta14  807 二  25 2020 .profile
-rw-rw-r--  1 co2022_ta14 co2022_ta14    0 九  15 01:42 test1.txt
-rw-rw-r--  1 co2022_ta14 co2022_ta14    0 九  15 01:50 test2.txt
drwxrwxr-x  2 co2022_ta14 co2022_ta14 4096 九  15 01:49 test_dir1
-rw-----  1 co2022_ta14 co2022_ta14  100 九  15 01:31 .Xauthority
```

# Linux commands - cd (Change Directory)

- **Change the current working directory**

- cd + Path(relative path)
- cd ..
- cd user

```
user:/home/C02022> cd ..  
user:/home>
```

```
user:/home> ls  
C02022  user  
user:/home> cd user  
user:/home/user>
```

```
user:/usr> cd /home/C02022/  
user:/home/C02022>
```

- **Change directory to previous directory**

- cd -

```
user:/usr> cd /home/C02022/  
user:/home/C02022> cd -  
user:/usr>
```



# Linux commands - mkdir (Make Directory)

- **Create a new directory**

(relative or absolute path)

- `mkdir + new_directory_name`
  - `mkdir dirdir`

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

# Linux commands - cp (Copy)

- **Copy a file** (relative or absolute path)
- **cp + file + new\_file\_name**
  - cp test1.txt abc.txt
- **Copy a file to a directory**
- **cp + file + directory\_path** (relative or absolute path)
  - cp test1.txt dirdir
- **Copy a directory**
- **cp + -rf + directory\_name + new\_directory\_name** (relative or absolute path)
  - cp -rf dirdir ddd

```
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
```

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

```
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 - mv (Move)

- **Change the name** (relative or absolute path)
- mv + file\_name + new\_file\_name
  - mv abc.txt xyz.txt

```
user:~> ls
abc.txt  ddd  dirdir  test1.txt  test2.txt  test_dir1
user:~> mv abc.txt xyz.txt
user:~> ls
ddd  dirdir  test1.txt  test2.txt  test_dir1  xyz.txt
```

- **Move a file** (relative or absolute path)
- mv + file\_name + directory\_path
  - mv test1.txt ..

```
user:~/dirdir> ls
test1.txt
user:~/dirdir> mv test1.txt ..
user:~/dirdir> ls no file in $ ~/dirdir/
user:~/dirdir> cd ..
user:~> ls
ddd  dirdir  test1.txt  test2.txt  test_dir1  xyz.txt
```

# Linux commands - rm (Remove)

- **Remove a file** (relative or absolute path)
- **rm + file\_name**
  - `rm test2.txt`

```
user:~> ls
ddd dirdir test1.txt test2.txt test_dir1 xyz.txt
user:~> rm test2.txt
user:~> ls
ddd dirdir test1.txt test_dir1 xyz.txt
```

- **Remove a directory** (relative or absolute path)
- **rm + -rf + directory\_name**
  - `rm -rf test_dir1/`

```
user:~> ls
ddd dirdir test1.txt test_dir1 xyz.txt
user:~> rm -rf test_dir1/
user:~> ls
ddd dirdir test1.txt xyz.txt
```

# Linux commands - touch



- **Create an empty file**

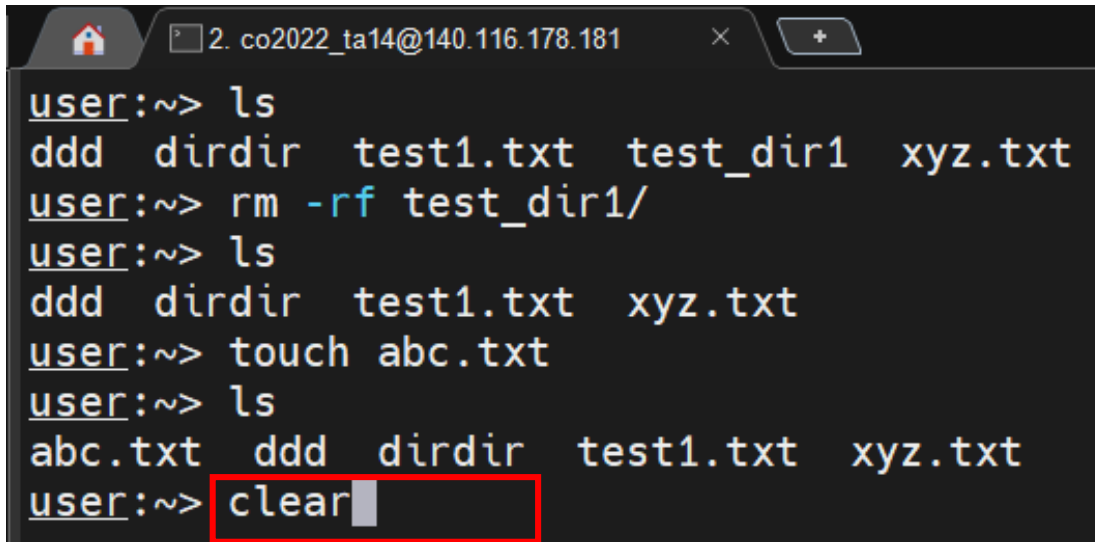
- touch + file\_name (relative or absolute path)
- touch abc.txt

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

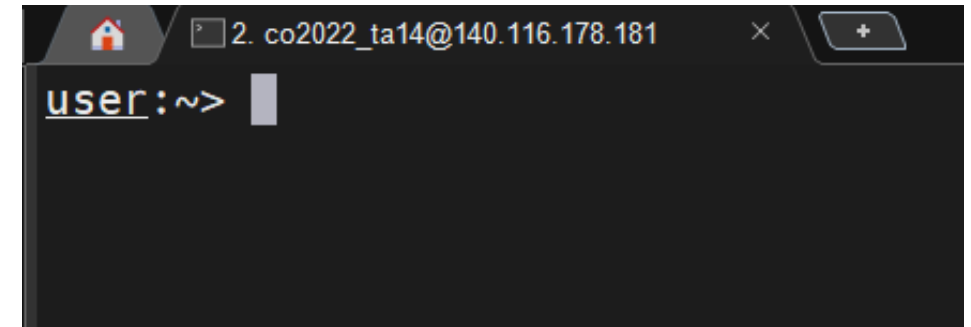
# Linux commands - clear

- **Clear the terminal screen**

- `clear`

A terminal window with a dark background and light text. The window title is "2. co2022\_ta14@140.116.178.181". The commands and output are as follows:

```
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
```

The word "clear" is highlighted with a red rectangular box.A terminal window with a dark background and light text. The window title is "2. co2022\_ta14@140.116.178.181". The screen is now clear, showing only the prompt:

```
user:~>
```

# Linux commands - Other



- tab
  - **Autocomplete** commands, filenames or folder names.

`user:~> rm ab`  `user:~> rm abc.txt`

- ↑, ↓ (up and down arrow key)
  - Linux maintains a history of commands you have entered.
  - **Recall previously-entered commands** to the command line.
- ctrl + c (It's not a copy function.)
  - Terminate the current running process