1 Computer Interaction

1.1 Windows, MacOS, and Linux

- Windows, or Microsoft Windows, is "a group of several non-free graphical operating system families developed and marketed by Microsoft".[1]

- Mac OS is "a non-free graphical operating system developed and marketed by Apple Inc and the primary operating system for Apple's Mac computers".[2]

- Linux is an open-source operating system which is free and highly flexible. It has strong performance, stability and security. It is also less demanding for hardware and storage. Yet, it has immature graphical user interface (GUI) and is only compatible with a few softwares, which makes it uncommon in use for most people. However, it is friendly to developers due to its characteristics.

1.2 What is a terminal?

- "The **terminal** is a program that opens a window and lets you interact with the **shell**. The **shell** on the other hand is a program that takes commands from the keyboard and passes them to the operating system to perform."[3]

- It enables direct execution of tasks without the use of graphical user interface.

- It is especially useful in cases when GUI is unavailable or when remote access to other hosts is required, etc.

- How to open the terminal

  - Windows: press Win+R on the keyboard and enter 'cmd'.
  - MacOS: press Command+Space on the keyboard and search for 'Terminal'.
  - Linux: press Ctrl+Alt+T on the keyboard.

1.3 What is a package manager?

- "Package manager is a kind of tools that **automates** the process of installing, upgrading, configuring and removing computer programs."[4]

- Package manager is intended to eliminate the need of manual install and updates, which is very useful if you have hundreds and thousands of software (big companies).

- We will use package manager to download compilers for C/C++ later, as well as other programming tools.

- Linux has prepared users with a package manager **rpm/dpkg/apt-get**. Windows users can install **msys2**. Mac users can install **brew**.

1.4 Useful terminal commands

- Enter a disk on Windows, E disk for example: **E:**

- Enter a directory: **cd [directory]**

- (Powershell, Linux & Mac OS; cmd not applicable) For folder with space in its name, you should quote its name with single quotation marks. For example, for a folder named 2021 FA, we should type: **cd '2021 FA'**. So it is recommended to replace space with _ when naming your files.

- Enter a folder: **cd [name]**

- Return to last directory: **cd ..**

- Return to root directory: **cd ** for Windows and **cd /** for MacOS and Linux

- Check content under current directory: **dir** for Windows and **ls** for MacOS and Linux

- Create a folder: **md [name]** for Windows and **mkdir [name]** for MacOS and Linux

- Delete an empty folder: **rd [name]** for Windows and **rmdir [name]** for MacOS and Linux. **rm -rf [name]** is dangerous, think twice before using it!

- Copy a file: **copy [original directory]\[name] [target directory]\[name]** for Windows and **cp [original directory]/[name] [target directory]/[name]** for MacOS and Linux

- Move a file: **move [original directory]\[name] [target directory]\[name]** for Windows and **mv [original directory]/[name] [target directory]/[name]** for MacOS and Linux

- Delete a file : **del [name]** for Windows and **rm [name]** for MacOS and Linux

1.5   An easy demo

Suppose we have a file named new_file in a folder named dest. Our tasks are:

- Copy the file to a new folder named new_folder with file name copy_file.

- Move the file to new_folder with file name move_file.

- Delete the original empty folder dest.

1. cmd (not recommended in following courses)

```
1  md new_folder
2  copy dest\new_file new_folder\copy_file
3  move dest\new_file new_folder\move_file
4  rd dest
```

2. Linux/MacOS

```
1  mkdir new_folder
2  cp dest/new_file new_folder/copy_file
3  mv dest/new_file new_folder/move_file
4  rmdir dest/
```

2 SSH tips

- In Step2:

```
1 ssh-keygen -t ed25519 -C "your_email@example.com"
```

Here your_email@example.com should be replaced by your sjtu email. For example, if your sjtu email is vg151@sjtu.edu.cn, in this step, you should type:

```
1 ssh-keygen -t ed25519 -C "vg151@sjtu.edu.cn"
```

in the bash.

- In Step4: It is normal that you type something but you cannot see the input passphrase on the screen. You can treat it as a protected mechanism of bash. Just assume you are registering a new account in which you should set your password and confirm it.

- Which file contents should be copied & pasted? You should copy your **public** key which is the file with extension .pub.

- Where is .ssh folder? The default path should be at c:/Users/your user name/. [5]

References

[1] Wikipedia contributors. "Microsoft Windows." Wikipedia, The Free Encyclopedia. Wikipedia, The Free Encyclopedia, 8 Sep. 2021. Web. 13 Sep. 2021.

[2] Wikipedia contributors. "MacOS." Wikipedia, The Free Encyclopedia. Wikipedia, The Free Encyclopedia, 22 Aug. 2021. Web. 13 Sep. 2021.

[3] What is "the Shell"? http://www.linuxcommand.org/lc3_lts0010.php

[4] Package Manager. https://codedocs.org/what-is/package-manager

[5] Generating a new SSH key and adding it to the ssh-agent

https://docs.github.com/en/github/authenticating-to-github/connecting-to-github-with-ssh/generating-a-new-ssh-key-and-adding-it-to-the-ssh-agent