Computer Programming 1 Lab

2022-09-15

Rules - Assignments

- DO NOT CHEAT!

- Both cheater and his partner will be punished.

- Lock your assignment directory!

- Discuss, BUT not copy.

- Exercise will be announced in TA class.

Rules - Mailing Convention

- Asking questions via e-mail

- The subject of mail shall begin with **[1111cp1]** and make it clear.

- `Hi, my code doesn't work` -----> (X) wrong subject.

- `[1111cp1] help!!` -----> (X) help what?

- `[1111cp1] for-loop did't stop!` -----> (O) nice and clear !!

- Include your signature
  - Remember to append your **studentID** and your **name** to the mail.

Rules – Personal Message

- Asking questions via Personal Message (PM) **(New!)**
- Ask freely, but don't forget your manners!

for example:

- 助教我作業跑不動，可以幫我嗎😂 -----> (X) Which HW? What error message did you get? Who are you? Why should I help you?
- 助教好，我是cp1的學生，我的hw2跑不動，可以幫我看看嗎？ (-) OK, but not what I expected.
- 助教好，我是cp1的學生。我嘗試把hw2的範例測資放進去跑，結果都對，但上傳到OJ之後測資2、3卻是錯的，請問這可能是哪部分出錯了？ (O) Nice, let's check your code.

Rules - Asking a Question in a Smart Way

Before You Ask

- Try to find an answer by searching the archives of the FB Group or class resources.
- Try to find an answer by searching the Web.
- Try to find an answer by asking a skilled friend.

When You Ask

- Use meaningful, specific subject headers
- Be explicit about your question
  - Have you tried any test? What problem you think you are facing?
  - **DON'T JUST PASTE YOUR CODE SNIPPETS.**

Outline

- Working Environment

- Basic Unix Command

- Basic Vim

- Lock directory

- Assignment 0

Working Environment

Windows 10 & 11

1. Download Windows Terminal

WSL (optional)

2. Follow instructions from Microsoft to install WSL2 for your OS.

... or using Git Bash (optional)

2. Install git for windows from official website.

Working Environment

Other Windows builds

1. Install PieTTY from official website.

MacOS

Your OS already includes ssh client.

Linux Distributions

Your OS already includes ssh client.

8

Working Environment

Visual Studio Code (optional)

1. Download VSCode from official website.

C Compiler (optional)

WSL & Linux Users

0. type `gcc --version` to check if you already have GCC installed.
1. If you haven't install GCC, type `sudo apt install gcc` in your terminal.

Working Environment

Git bash

1. download gcc via Sourceforge.

2. choose "x86_64" for your architecture during install.

MacOS Users

1. Please follow the instructions on Apple's forum.

Ghost Environment

1. `telnet -l s111xx ghost.cs.nccu.edu.tw`

> -l <- This is small "L", not one.
>
> s111XX is your ID, the "XX" is the latest two digits of your StudentID
> Your default password is the last 4 characters of your citizenID

2. Change your password using: `passwd`

3. Setting your enviorment

```
cp ~g10611/.profile ~
cp ~g10611/.vimrc ~
cp ~g10611/.bashrc ~
```

Ghost Environment

4. Activate your mail service: `elm`

5. Close telnet connection and login with ssh

   `ssh s111xx@ghost.cs.nccu.edu.tw`

> Please use your new password to login
>
> Only use telnet at the first time setup.

Basic UNIX Command

`~` => your home directory

`~x` => x's home directory

`.` => current directory

`..` => parent directory

Absolute path: Start with "/"

- /usr/share/bin

- /home1/student/stud107/s107xx

Relative path: Path relate to current directory.

- If current dir is /usr
  test/bin => /usr/test/bin
  li/public => /usr/li/public

Basic UNIX Command

- `ls` list files in current directory.

```
ls
ls -l  # list files details in current directory.
ls -a  # list all files (include hidden files).
ls -la # Both of listing all files with details
```

Basic UNIX Command

How to create/delete/copy files or directories?

```
touch a.txt
# Create an empty file named "a.txt" in current directory.
mkdir test
# Create a directory named "test" in current directory.
cp fileX dirY/dirZ
# Copy fileX from current directory to ./dirY/dirZ
cp fileX dirY/fileZ
# Copy fileX from current directory to dirY and rename to fileZ.
cp -r dirX dirY
# Copy dirX from current directory to dirY.
# If dirY doesn't exist, dirY is a copy of dirX.
# If dirY is a directory then there will be a copy of dirX under dirY.
```

Basic UNIX Command

How to create/delete/copy files or directories?

```
mv fileA dirB
# Move fileA to dirB.
mv dirA dirB
# If dirB exist, then move dirA under dirB.
# If dirB does not exist, dirA is rename to dirB.
rm fileA
# Remove file fileA (Only for file)
rm -r dirA
# Remove directory dirA and all its contents
```

Basic UNIX Command - Your Round

1. Please create a directory named "1111cp1"

2. Enter directory "1111cp1"

3. Please create a directory named "abc"

4. Please rename "abc" to "xyz"

5. Copy "xyz" and rename it as "jqk"

6. Please delete directory "xyz" and "jqk"

Basic UNIX Command - Answer

1. Please create a directory named "1111cp1"

   ```
   mkdir 1111cp1
   ```

2. Enter directory "1111cp1"

   ```
   cd 1111cp1
   ```

3. Please create a directory named "abc"

   ```
   mkdir abc
   ```

4. Please rename "abc" to "xyz"

   ```
   mv abc xyz
   ```

5. Copy "xyz" and rename it as "jqk"

   ```
   cp -r xyz jqk
   ```

6. Please delete directory "xyz" and "jqk"

   ```
   rm -r xyz jqk
   ```

Basic UNIX Command - Recap

- Use `mkdir` to create a directory
- Use `mv` to move a directory/file or rename a directory/file
- Use `cp` to copy a file and `cp -r` to copy a directory
- Use `rm` for removing file and `rm -r` for removing directory

Basic UNIX Command - Others

- The path used on cp, mv, rm, mkdir can be absolute path or relative path.
- Use `echo $PWD` to see what the current directory is.
- Use `whoami` to see your account's name.
- Use `logout` to logout the system. (you can press Ctrl+D either)
- Type `clear` to clean your screen (you can press Ctrl+L either)
- Remember, whenever you have problems using commands, try "man" command.
  - Press q to exit man page.

```
man ls
man cp
# man stands for manual.
```

Basic Vim

- Vim is a text editor that you can write texts, codes just like notepad.exe
- To use it, you just need to type `vim` with a filename folowing it, e.g. `vim test.txt`

  > If the file doesn't exist, Vim will create one. Otherwise, it will open it.

```
                VIM - Vi IMproved

                version 8.1.2269
              by Bram Moolenaar et al.
       Modified by team+vim@tracker.debian.org
      Vim is open source and freely distributable

              Become a registered Vim user!
      type  :help register<Enter>    for information

      type  :q<Enter>                to exit
      type  :help<Enter>  or  <F1>   for on-line help
      type  :help version8<Enter>    for version info
```
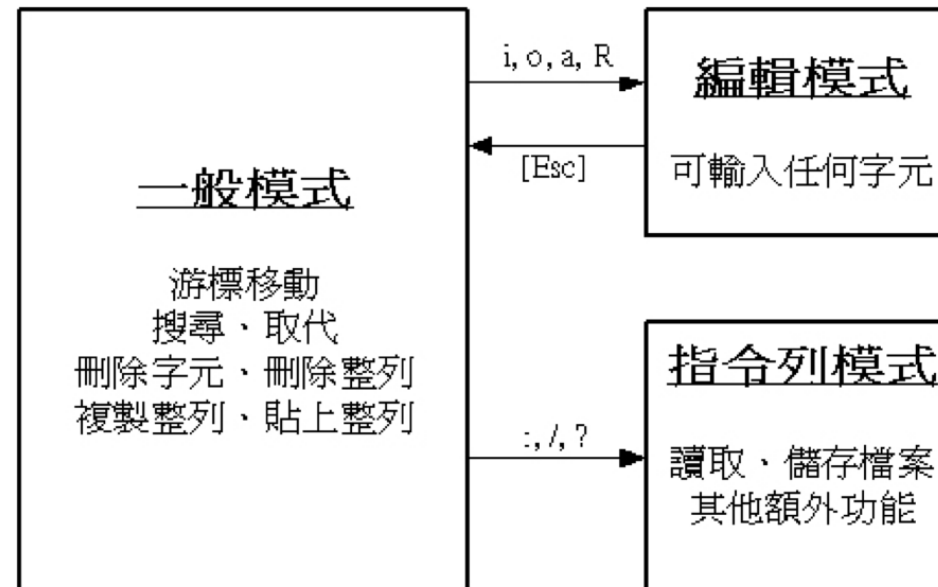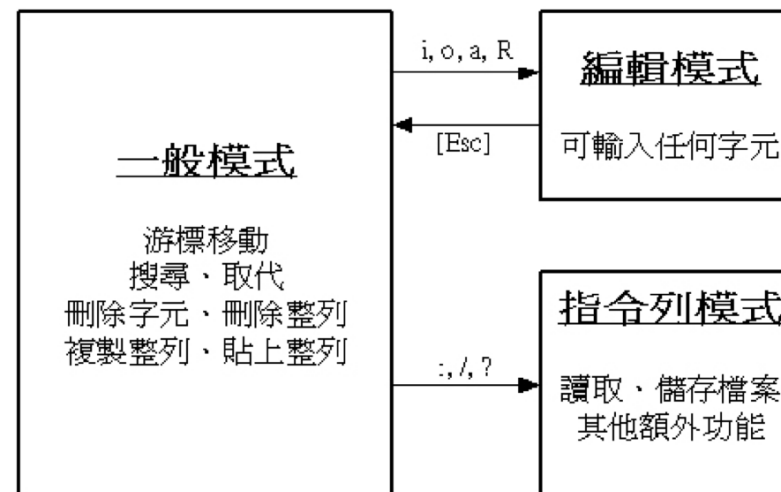
Basic Vim

- Vim basically has three modes:
  - Normal Mode:
    - Navigate, Search, Replace, Copy, Paste
  - Insert Mode:
    - Typing
  - Command-Line Mode:
    - Read, Write File…

一般模式

游標移動
搜尋、取代
刪除字元、刪除整列
複製整列、貼上整列

i, o, a, R

[Esc]

編輯模式

可輸入任何字元

:, /, ?

指令列模式

讀取、儲存檔案
其他額外功能

Basic Vim

1. Vim starts in normal mode.

2. Press `i` to change to Insert mode.

3. *Smashing Keyboard*

4. Press `ESC` back to normal mode.

5. Press `:` or `/` to enter command-line mode. (Save, open file, search text, indenting...etc.)

一般模式

游標移動
搜尋、取代
刪除字元、刪除整列
複製整列、貼上整列

i, o, a, R

[Esc]

編輯模式

可輸入任何字元

:, /, ?

指令列模式

讀取、儲存檔案
其他額外功能

Basic Vim

1. In the normal mode of vim, press `i` to insert mode and type some texts.

2. When you have done our work, press `ESC` back to normal mode.

3. Then type `:w xxx.txt` to save our work to xxx.txt

4. Now type `:q` to exit vim.

5. `ls` your files to check if the `xxx.txt` exists

Basic Vim - Others

- Use `:q!` to quit Vim forcibly no matter if you have written your files.

  > If you quit without saving you will get a warning, using this will quit without warning.

- Use `:x` or `:wq` to write your file and quit Vim with only one command.

- Use `:!` to commaand shell command in VI, e.g. `:!ls`

- Use `:xxx` to move cursor to the specific line.

  > xxx is the line number

Basic Vim - Your Round

1. Please open / create a file named "test.txt".

2. Please insert "hello world".

3. Please save the file.

4. Please quit the file.

Basic Vim - Answer

1. Please open / create a file named "test.txt".
   `vim test.txt`

2. Please insert "hello world".
   `i` -> Type `hello world`

3. Please save the file.
   `:w`

4. Please quit the file.
   `:q`

How to Lock Your Directory?

1. Create a directory named `1111cp1` at your home directory

```
mkdir ~/1111cp1
cd ~
```

2. Enter `chmod -R 700 1111cp1` to lock your directory.

How to Lock Your Directory?

In UNIX, There are three access levels?

- Owner => You

- Group => Accounts in the same group, say, stud111

- Others => Other guys...

For each level, you can set it permissions:

- Read (r)

- Write (w)

- Execute (x)

How to Lock Your Directory?

Take a look at following `ls -l` output:

- `s10815` is the owner

- `stud108` is the group

- The first letter will show `-` or `d` which are representing a `file` or a `directory` separately.

```
[s10815@ghost]~/private/codes# ls -la
total 22
drwx------    7 s10815    stud108        8 Sep 23 14:46 .
drwx------   10 s10815    stud108       14 Jul 28 20:34 ..
drwx------   29 s10815    stud108       30 Apr  2 14:03 c++
drwxrwxr-x    6 s10815    stud108        6 Dec  8  2020 cp1
-rw-rw-r--    1 s10815    stud108        0 Sep 23 14:46 main.c
drwxrwxr-x    9 s10815    stud108        9 Dec 27  2020 oop
drwx------    5 s10815    stud108        5 Jun 17 18:35 python
drwxr-xr-x    2 s10815    stud108       15 Sep 23 14:44 testcase
```

How to Lock Your Directory?

- The following 9 letters like `rwxr-----` indicates the file's permission
- The first 3 letters indicate the permission of owner
  - In case `rwx`, it means user `s10815` can read, write, and execute
- The middle 3 letters indicate the permission of group
  - In case `r--`, it means the users in group `stud108` only can read
- The last 3 letters indicate the permission of others
  - In case `---`, it means others don't have any permission.

How to Lock Your Directory?

- r w x r – x – – –

2^2 2^1 2^0 2^2 2^1 2^0 2^2 2^1 2^0

1 1 1 1 0 1 0 0 0

---

4 + 2 + 1   4 + 0 +1   0 + 0 + 0

7   5   0

If we have this permission then 1, else 0

Assignment 0

Link

useful tool

oj-cli -- hand in your homework without opening your browser!

Join FB Group

Any Question?

Course? Assignment? Exercise? TA?