Computer Programming 1 Lab

2020-09-17

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 EVERY TA’s class.

Rules - Mailing Convention

- Asking questions of TAs via e-mail
- The subject of mail shall begin with **[109cp1]** and make it clear.
- `Hi, my code doesn’t work` -----> (X) wrong subject.
- `[109cp1] help!!` -----> (X) help what?
- `[109cp1] for-loop did’t stop!` -----> (O) nice and clear !!
- Include your signature
    - Remember to append your **studentID** and your **name** to the mail.

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

- Basic Unix Command
- Basic Vim
- Lock directory
- Assignment

Basic UNIX Command

0. Download pietty **(Windows Only)**
1. Connect to `ghost.cs.nccu.edu.tw`

   Windows: Use Telnet first time, and use SSH afterwards.

   ```
   telnet s109XX@ghost.cs.nccu.edu.tw
   ```

   MacOS:

   ```
   ssh s109XX@ghost.cs.nccu.edu.tw
   ```

   > s109XX is your ID, the "XX" is the latest two digits of your StudentID

2. Enter your password

   > It is normal for the password you entered not displaying on your window

Basic UNIX Command

3. Change your password

   $ passwd

4. Activate your mail service

   $ elm

   then press 'y' three times and 'q' to finish

5. Setting your enviorment

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

6. Connenct to `s109XX@ghost.cs.nccu.edu.tw` again **(Use SSH this time)**

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?

```
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 "1091cp1"
   ```
   mkdir 1091cp1
   ```
2. Enter directory "1091cp1"
   ```
   cd 1091cp1
   ```
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 `pwd` to see what the current directory is.
- Use `whoami` to see your account's name.
- Use `logout` to logout the system. (or you can press Ctrl+D either)
- Type `Ctrl+L` to clean your screen
- Remember, whenever you have problems using Unix, try "man" command.

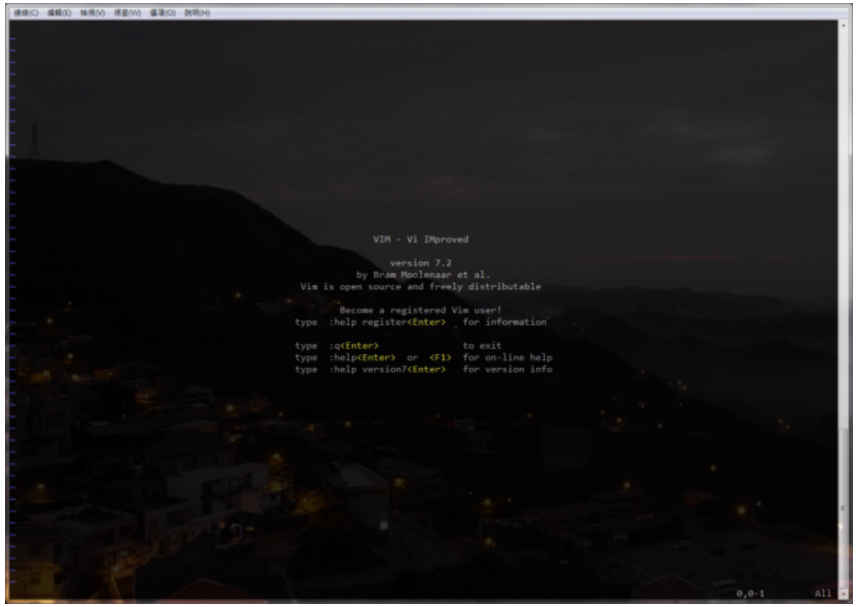
```
man ls
man cp
```

> man stands for manual.

Basic Vim

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

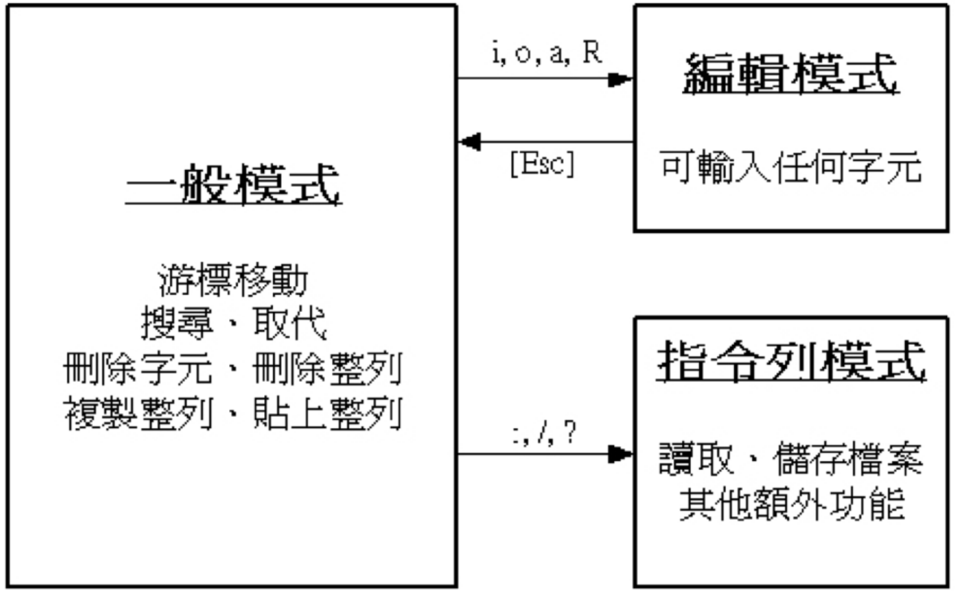
  > If the file exists, Vim will create one. Otherwise, it will open it.



```
                 VIM - Vi IMproved

                    version 7.2
              by Bram Moolenaar et al.
      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 version7<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

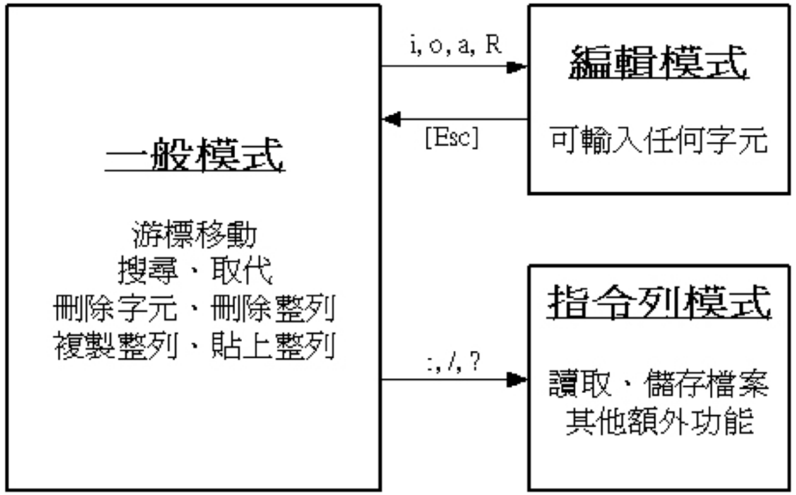
可輸入任何字元

:, /, ?

指令列模式

讀取、儲存檔案
其他額外功能

Basic Vim


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

1. Vim starts in normal mode.
2. Press `i` to change to Insert mode.
3. Type some words…
4. Press `ESC` back to normal mode.
5. Press `:` or `/` to enter command-line mode. (Save, open file, search text, indenting…etc.)

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 your will get a 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 create a file named "abc.txt"

   `vim abc.txt`

2. Please insert “hello world” at line 3

   `i -> Enter Twice` -> 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 `1091cp1` at your home directory

   ```
   mkdir ~/1091cp1
   cd ~
   ```

2. Enter `chmod -R 700 1091cp1` 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, stud109
- 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:

- `g9803` is the owner
- `grad98` is the group
- The first letter will show `-` or `d` which are representing a `file` or a `directory` separately.

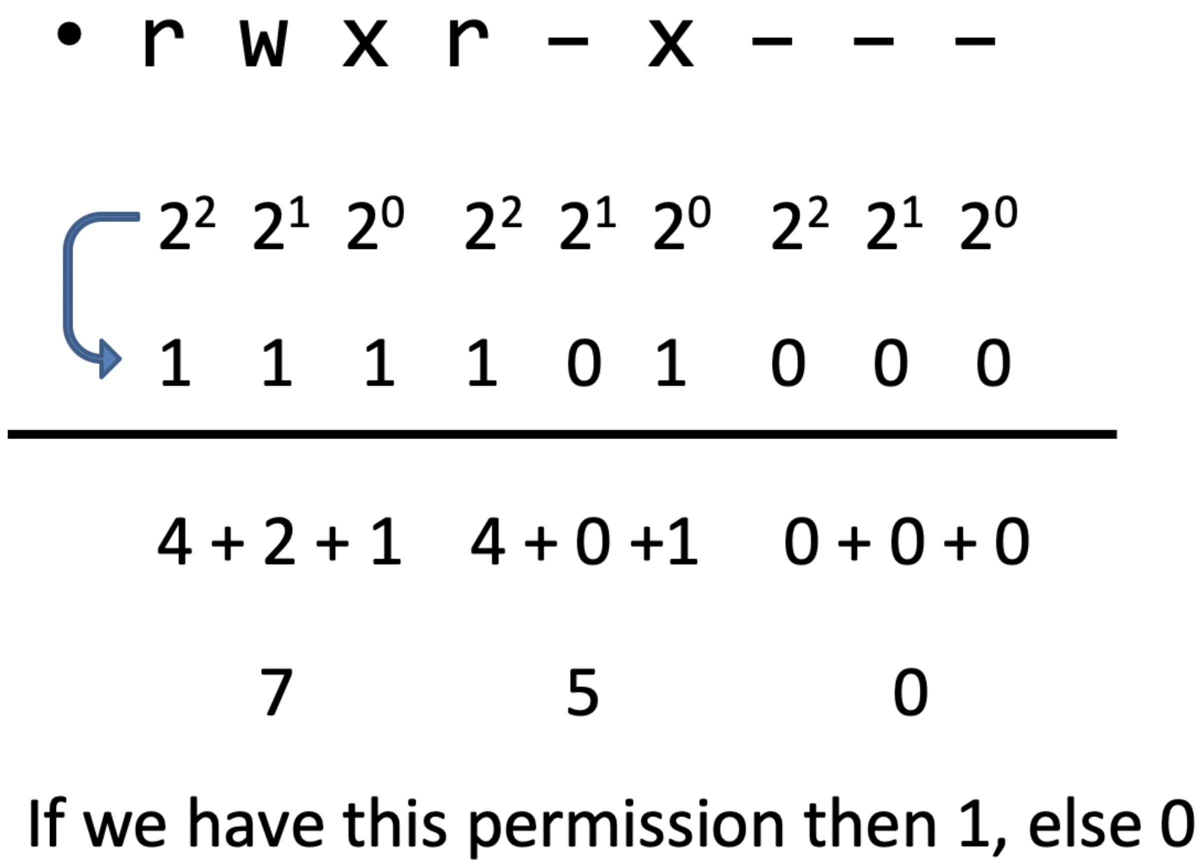
```
[g9803@ghost]~ ls -l
□□ 4
-rw-r--r-- 1 g9803 grad98   74 2010-02-04 02:15 100.in
drwxr-xr-x 3 g9803 grad98  512 2010-09-15 11:41 991cp1/
-rw-r--r-- 1 g9803 grad98  672 2010-02-04 00:04 acm100.c
-rw-r--r-- 1 g9803 grad98  507 2010-03-02 15:50 acronym.cpp
```

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 `g9803` can read, write, and execute
- The middle 3 letters indicate the permission of group
    - In case `r--`, it means the users in group `grad98` only can read
- The last 3 letters indicate the permission of others
    - In case `---`, it means others' permission is none.

```
[g9803@ghost]~ ls -l
□□ 4
-rw-r--r-- 1 g9803 grad98   74 2010-02-04 02:15 100.in
drwxr-xr-x 3 g9803 grad98  512 2010-09-15 11:41 991cp1/
-rw-r--r-- 1 g9803 grad98  672 2010-02-04 00:04 acm100.c
-rw-r--r-- 1 g9803 grad98  507 2010-03-02 15:50 acronym.cpp
```

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

1. Go to NCCU OJ website and sign up

> (Please set your **school ID** as username, e.g. 109701234)

2. Click `Contests` on the menu.
3. Click the assignment you want to submit (In this week, the assignment is `Assignment 0`)
4. Click `Problems` in the right panel
5. Click the problem
6. You could edit the code in VIM, then paste your code at the submit area.
7. Click `Submissions` in the right panel to check if you have submitted successfully.

Join FB Group

Any Question?

Course? Assignment? Exercise? TA?