3. Homework
3.1 Do following steps.

1) Install VirtualBox+ubuntu or Cygwin in your PC (For Mac, open the terminal window and do the homework there). Refer to lect1 for installing Cygwin. For ubuntu, refer to Internet.

2) Log in to a Linux server. Find your login directory with "pwd". Find your user ID with "whoami".
$ pwd
$ whoami

```
kyumin@DESKTOP-NUDFAPK /
$ whoami
kyumin

kyumin@DESKTOP-NUDFAPK /
$ pwd
/
```

Whoami 를 통해 이름 확인이 가능하다. Pwd 를 통해 현재 directory 확인이 가능하다.

3) Make a file, confirm the contents, and check its permission mode

```
kyumin@DESKTOP-NUDFAPK /
$ echo hello > f1

kyumin@DESKTOP-NUDFAPK /
$ ls
Cygwin-Terminal.ico  Cygwin.ico  cygdrive  etc  home  proc  tmp  var
Cygwin.bat           bin         dev       f1   lib   sbin  usr

kyumin@DESKTOP-NUDFAPK /
$ cat f1
hello

kyumin@DESKTOP-NUDFAPK /
$ ls -l
total 366
-rw-r--r-- 1 kyumin Administrators  53342 Mar  1 17:20 Cygwin-Terminal.ico
-rwxr-xr-x 1 kyumin Administrators     88 Mar  1 17:18 Cygwin.bat
-rw-r--r-- 1 kyumin Administrators 157097 Mar  1 17:20 Cygwin.ico
drwxr-xr-x 1 kyumin Administrators      0 Mar  1 17:19 bin
dr-xr-xr-x 1 kyumin 없음                0 Mar  4 10:08 cygdrive
drwxr-xr-x 1 kyumin Administrators      0 Mar  1 17:16 dev
drwxr-xr-x 1 kyumin Administrators      0 Mar  1 17:19 etc
-rw-r--r-- 1 kyumin 없음                6 Mar  4 10:06 f1
drwxrwxrwt 1 kyumin Administrators      0 Mar  1 17:16 home
drwxr-xr-x 1 kyumin Administrators      0 Mar  1 17:17 lib
dr-xr-xr-x 9 kyumin 없음                0 Mar  4 10:08 proc
drwxr-xr-x 1 kyumin Administrators      0 Mar  1 17:17 sbin
drwxrwxrwt 1 kyumin Administrators      0 Mar  1 17:16 tmp
drwxr-xr-x 1 kyumin Administrators      0 Mar  1 17:17 usr
drwxr-xr-x 1 kyumin Administrators      0 Mar  1 17:17 var

kyumin@DESKTOP-NUDFAPK /
$
```

Echo hello > f1 은 f1 파일의 내용을 hello 라고 쓸 수 있다. Cat f1 은 f1 의 내용을 출력한다.

4) Change the permission mode of f1
The current mode is 110 100 100 (644). 1 means enabled while 0 disabled. First three bits are for the owner, the next three for group members, and the last three for all others. 110 for the owner means read, write bits are enabled but not execute bit; so the owner can read or write this file but cannot execute it.

```
$ chmod 000 f1
$ ls -l
............
---------- 1 inha inha 6 Feb 27 11:47 f1
............
```
Now no one including the owner cannot read, write, nor execute this file.
```
$ cat f1
cat: f1: Permission denied

$ chmod 777 f1
$ ls -l
............
-rwxrwxrwx 1 inha inha 6 Feb 27 11:47 f1
............
```
Now anyone can read/write/execute this file

5) Find out your current location again with "pwd".
```
$ pwd
```
6) Go to the root directory with "cd /" and make sure you are really at the top directory with "pwd".
```
$ cd /
$ pwd
```
7) How many files you have in the root directory? Some of them are not directory files. Find them with "ls -l". Use "file" command to see more detailed info.
```
$ ls -l
$ file *
$ file lib
```
8) * is a wild card character meaning it will be replaced by all file names in the current directory.
```
$ file *
```
is same as
```
$ file app bin boot dev .... (all file names in the current directory)
$ file b*
```
is same as
```
$ file bin boot
```
9) You can move around the file tree with cd.
Use just "cd" without path to go back to the login directory.
```
$ cd
$ pwd
/home/inha
$ cd /
$ pwd
/
$ cd
$ pwd
/home/inha
```

Make some directories and move inside.
$ mkdir d1
$ cd d1
$ pwd
/home/inha/d1
Use ".." to move up.
$ cd ..
$ pwd
/home/inha
$ cd ..
$ pwd
/home
You can go to any location using "absolute path". A path is absolute whenever it starts with "/".
$ cd /home/inha/d1
$ pwd
/home/inha/d1
If the path doesnot start with "/", it is "relative path". The system will find the destination starting at the current location.
$ cd
$ pwd
/home/inha
$ cd home/inha/d1
-bash: cd: home/inha/d1: No such file or directory
"home/inha/d1" is a relative path since it doesnot start with "/", so the system looks for "home" (the first directory in home/inha/d1") starting at "/home/inha" (the current location). There is no "home" in "/home/inha", so the system gives an error message.
$ cd inha/d1
-bash: cd: inha/d1: No such file or directory
Again error because there is no "inha" in the current location(/home/inha).
$ cd d1
$ pwd
/home/inha/d1
"d1" is ok because we have "d1" in /home/inha".

10) Go back to the login directory and Confirm your current location with "pwd".
$ cd
$ pwd
11) List all files in your directory with "ls" command.
12) Try "echo" command.
$ echo korea
korea
$ echo hello
hello
11) Try "echo" with ">" symbol. ">" is called "standard output redirection".
$ echo hello there > f2
">" sends "hello there" to file "f2" so there is no output shown in the terminal but you will have a new file f2 in the current directory.
$ ls
$ cat f2

12) Do "ls" to see you can find f1 in the current directory. Show its content with "cat".

```
$ ls
$ cat f1
13) Make a directory, d2, with "mkdir".
$ mkdir d2
14) Copy f1 into directory d2.
$ cp f1 d2   -- make a copy of f1 inside directory d2 under the same name.
$ cd d2
$ ls
$ cat f1
$ cd ..
$ cp f1 d1/f2  -- make a copy of f1 inside d1 under another name f2
$ cd d1
$ ls
```