OS lecture 1: what do we study?

Reference book: “Understanding Linux Kernel” by Bovet & Cesati

1. Studying OS

Studying the usage of OS

 Studying the usage of utility programs (OS commands) : ls, cat, cp, ....

 Studying the usage of system calls : read, write, fork, .....

Studying the implementation of OS

 Reading/Understanding/Modifying OS kernel code

 Understanding the 5 concepts of OS: interrupt, process, file, memory, I/O

 Confirming their implementation in OS kernel

 Implementing my own OS

2. Linux commands

Following is a simple classification for some of the Linux commands. Read them and do the following lab problems. To access the lab server, you need to download putty.exe from the internet. For korean language support, get 한글 putty and set window>translation to UTF-8. Among the commands, use “man” to find out the meaning/usage of commands or system calls. For example,

 man man -- shows the usage of “man” command

 man ls -- shows the usage of “ls” command

 man read -- shows the usage of “read” system call

 man kill -- shows the usage of "kill" command

 man 2 kill -- shows the usage of "kill" system call

 man 3 printf -- shows the usage of "printf" c-library function

general: man

process:

         ps : listing processes

         gcc : c compiler

         kill  : stop a process

         ^c   : stop a process

file     :

         vi    : editor

         ls    : listing files and directories in the current directory

         cat   : show the contents of a file

         more : show the contents of a file screen by screen

         xxd    : show the contents of a file in binary

         cp, rm, mv : copy, remove, change the name

         echo  : echo

         grep  : search given string in a given file

         cd    : change directory

         rmdir, mkdir : remove a directory, create a directory

3. vi :editor

vi  x.c  : edit file x.c

1) mode: vi has three modes.

  command mode: cursor moving, deleting, copying

  input mode : insertion

  status-line mode: other tasks

2) In the beginning we are at command mode.

   command mode:

       cusor moving: j(down), k(up), h(left), l(right)

       deletion: x(delete one character), dd(delete a line)

       copy and paste:

          3yy : copy 3 lines starting from the current line

          p   : paste them after the current line

       recover

          u   : recover what you have just deleted

   command mode -> insertion mode : i, a, o

                               i: start insertion from the current cursor

                               a: start insertion after the end of the current line

                               o: insert a new line

   insertion mode: now you can type

   insertion mode -> command mode: ESC key

   command mode -> status-line mode: / or :

   status-line mode:

       :q! : quit without saving

       :w : write

       :wq : save and exit

       /pat : search the pattern in "pat"

       :set number : display line numbers

4. gcc : compiler

gcc -o myx x.c

will compile x.c and produce the executable file "myx". You can run "myx" by typing "myx" and hit the enter key. x.c will look like as follows.

    #include <stdio.h>

    int main(){

       printf("hello\n");

       return 0;

    }