Lab #4

Chapter 4:

`ls3` and `spwd`

Young-Kyoon Suh

Kyungpook National University

Lab #4-1: `ls3` - A Program to Set All the Three Special Bits and Initialize Modified Time on a Certain File

- For a given file (named `sample`), your program (named `ls3`) has to do the following tasks:

  Task 1) Set and show all the three special bits, and

  Task 2) Initialize and show the modification time.

Lab #4-1: `ls3` - A Program to Set All the Three Special Bits and Initialize Modified Time on a Certain File

- Here are the steps you need to take for the program.

  Step 1) Copy `ls2.c` to `ls3.c`, which will be the base code for this lab.

  Step 2) Create an empty file, named '`sample`'. Just type '`touch sample`'.

  Step 3) Set the three special bits (set-user-id, set-group-id, and sticky bits) on the `sample` file.

  Also, initialize the modification time of the sample file to zero.

  To do these, modify `show_file_info(char*, struct stat*)` in `ls3.c` (as shown on Slide 32 in Chapter 3).

  [Note] You cannot use "`chmod`" to set the bits outside. Instead, utilize the second parameter of `show_file_info()`.

  Step 4) For `sample` only, print out *i*) the three special bits that are set and *ii*) the altered modified time in the program (`ls3`). To show the three bits, you need to change `mode_to_letters()`.

- Compile the source code, `ls3.c`, and do '`gcc -o ls3 ls3.c`' to create an executable, named `ls3`.

Lab #4-1: `ls3` (Cont'd)

- Expected output:

```
yksuh@ubuntu:~/elec462/labs/lab3$ touch sample
yksuh@ubuntu:~/elec462/labs/lab3$ ls -l sample
-rw-rw-r-- 1 yksuh yksuh 0  9월  21 19:22 sample
yksuh@ubuntu:~/elec462/labs/lab3$ ./ls3
...

-rwxr-xr-x   1 yksuh    yksuh    8864     Oct 12 23:35 fileinfo

-rwSrwSr-T   1 yksuh    yksuh    0        Jan  1 09:00 sample

-rwxr-xr-x   1 yksuh    yksuh    2102     Oct 12 23:35 who1.c
yksuh@ubuntu:~/elec462/labs/lab3$
```

(You now see the three bits set and the initialized modified time for `sample` only unlike `fileinfo` and `who1.c`.)

- Submission: `ls3.c` and `ls3`

Lab #4-2: Write your own version of "`pwd`".

- Write `spwd.c` on slides 46-51 in Chapter 4.
- Compile `spwd.c` and compare its result with `pwd`.
  - Make sure its output should be (almost) the same as `pwd`'s output.
- Submission: `spwd.c`, and `spwd`

Lab #4: Submission

- Deadline: **Tomorrow Midnight** (03/24/2023)
  - Create a directory named `lab4_s`<*StudentID*>.
  - Copy all the source and executable code into that directory.
  - Zip the directory and name it like: `lab4_s2018112544.zip`.
  - Upload your zip file into LMS.