German University in Cairo
Faculty of Media Engineering and Technology
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CSEN 602-Operating Systems, Spring 2018
Mini-project 1
Deadline: 22.2.2018

Part 1: System calls

In this part you are required to use a set of system calls each for a different operation. You need to identify the systems calls relevant to the tasks described below, invoke these system calls from the terminal and include in your report a screen shot of the result of the system call on your terminal. You must also include a detailed description of the system call output. You can find a template for the report that you have to follow in the project folder. The following are the operations required:

1. A system call that gets the active running processes (process table)
2. A system call to get all running processes along with PIDs(process ID). This time you should include both active users and root processes.
3. Start your browser, go back to the termina, get the process ID of the newly created browser process from the process table (first requirement). Execture a system call to **terminate** the browser process from the terminal. Show the output of the first system call before and after terminating the browser process.
   Hint: Do not terminate any of your root processes, as this may cause your operating system to malfunction.

Part 2: Directory duplication process in C

In this part you are going to write a program in C that will take as input a name in string format and create a directory with this name in the current path. You can find a C file *baseline.c* in the project folder as a baseline to use.

The *mkdir* system call already provides this functionality. However, your program will modify the default behavior of *mkdir*. When a directoy with the same name exists in the current path, your program will append a numeric index to the name and create a directory with this new name.

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For example, when making a new directory called *movies* in the path *"/usr/local/"*, where a directory *movies* already exists, you program will create directory with the name *movies1* . However, had a directory *movies1* already exited, your program would have incremented the index and created a directory *movies2* instead.

Your program should do the following:

1. Scan the directories that exist in the current working path and search if a directory with the same name string exists.
2. If the search result is false, then create a new directory.
3. If a directory with the same name exits, count the number of directories with the same name, and append the correct index value to the name, before creating the new directory.

Hints:

1. Try searching for the *scandir*, *getwd* and the *mkdir* system calls.
2. When working with the terminal, you can use:
"***man*** name_of_system_call_or_command", where ***man*** stands for manual, to display detailed description of the system call or the command. For example "***man*** *ls*" will output a full description of the *ls* system call.
3. The following is a guideline link on how to run and compile your C code using the terminal (mac or Ubuntu): `https://goo.gl/tMAEX4`
4. In the project folder you will find a C file as a baseline for your project. The main function in the file takes an array of arguments as input. When running the C file, the name of the directory to be created is be passed to the file as an input parameter.

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Deadline:

- The project deadline is on 22/2 at 11:59 PM .
- **No late** submissions will be accepted.
- Cheating cases will be graded by 0 for all teams involved.
- It is your responsibility to make sure that the files were uploaded successfully to the website.

Submission guidelines:

- The submission will be through the following link: `https://goo.gl/1EXxAW`
- The project files should be uploaded on a google drive and you will be submitting the link to this drive file.
- The drive should have both your C file and report(pdf).
- Please check the updated teams list on the MET website for your team number.