# CPE 460 Quiz 01: String Manipulation & Unix Processes

Department of Computer Engineering
Yarmouk University

## Spring 2017

The output on the next page is from a lightly-used Linux system on the recent weekend. Use the output and your knowledge of Linux systems to answer the following questions:

1. Which process (PID or name) is the oldest process on this system?

2. Which process (PID or name) has created the most child processes on this system?

3. What is the absolute path where the `fork.c` file is currently in?

4. What is the name of the executable file for `fork.c` file?

5. Draw the process tree resulting from running the program in `fork.c` file?

6. What is the output of the program in `str.c`?

```
[enas@cpe]~$ ps -eal
F S   UID   PID  PPID  C PRI  NI ADDR SZ WCHAN  TTY          TIME CMD
4 S     0     1     0  0  80   0 - 29916 -      ?        00:00:00 systemd
1 S     0     2     1  0  80   0 -     0 -      ?        00:00:00 kthreadd
1 S     0     3     2  0  80   0 -     0 -      ?        00:00:00 ksoftirqd/0
4 S  1000  1190  1051  0  80   0 - 13387 poll_s ?        00:00:00 upstart
0 S  1000  1350  1190  0  80   0 - 70398 poll_s ?        00:00:00 gvfsd
1 S  1000  1355  1190  0  80   0 - 91307 poll_s ?        00:00:00 ibus-daemon
0 S  1000  1372  1355  0  80   0 - 71184 poll_s ?        00:00:00 ibus-dconf
0 S  1000  1373  1355  0  80   0 - 119859 poll_s ?        00:00:00 ibus-ui-gtk3
0 S  1000  1377  1190  0  80   0 - 107456 poll_s ?        00:00:00 ibus-x11
0 S  1000  1385  1368  0  80   0 - 10725 ep_pol ?        00:00:00 dbus-daemon
0 S  1000  1388  1190  0  80   0 - 51743 poll_s ?        00:00:00 at-spi2-registr
0 S  1000  2332  2325  0  80   0 -  7434 wait   pts/4    00:00:00 bash
0 R  1000  2413  2332  0  80   0 -  8996 -      pts/4    00:00:00 ps
[enas@cpe]~$ cd
[enas@cpe]~$ cd lab-quiz
[enas@cpe]~/lab-quiz$ cd fork-quiz
[enas@cpe]~/lab-quiz/fork-quiz$ pwd
/home/enas/lab-quiz/fork-quiz
[enas@cpe]~/lab-quiz/fork-quiz$ cat fork.c
#include <stdio.h>
#include <stdlib.h>
void main(){
    if(fork() > 0){
        if(fork() > 0){
            if(fork() == 0){
                if(fork() > 0){
                    wait();
                }
            }else{
                wait();
            }
        }
    }
}
[enas@cpe]~/lab-quiz/fork-quiz$ gcc -o quiz fork.c
[enas@cpe]~/lab-quiz/fork-quiz$ cat str.c
#include <stdio.h>
void main(){
    char str[11] = "hello";
    char *str1 = "world";
    strcat(str, str1);
    printf("%s %d", str, strlen(str1));
}
```