Alexandria University
Faculty of Engineering
Comp. & Comm. Engineering
CC373: Operating Systems

جامعة الاسكندرية
كلية الهندسة
برنامج هندسة الحاسب والاتصالات
مادة نظم التشغيل

Sheet1
Process Description and Control

1) What is an instruction trace?
2) What common events lead to the creation of a process?
3) For the 5-state process model, briefly define each state.
4) What is swapping and what is its purpose?
5) In the 7-state process model, why do we have two blocked states?
6) List four characteristics of a suspended process.
7) For what types of entities does the OS maintain tables of information for management purposes?
8) What are the elements of a process image?
9) List three general categories of information in a process control block.
10) Why are two modes (user and kernel) needed?
11) What are the steps performed by an OS to create a new process?
12) What is the difference between an interrupt and a trap?
13) Give three examples of an interrupt.
14) What is the difference between a mode switch and a process switch?
15) You have executed the following C program:
```
main() {
    int pid;
    pid = fork();
    printf ("%d \n", pid);
}
```
What are the possible outputs?
16) The ability of one process to spawn a new process is an important capability, but it is not without its dangers. Consider the consequences of allowing a user to run the process in the following figure. Assume that `fork()` is a system call that spawns a child process.
```
main() {
    while(true)
        fork();
}
```
a) Assuming that a system allowed such a process to run, what would the consequences be?
b) Suppose you decide that it is inappropriate to reject certain processes, and that the best approach is to place certain runtime controls on them. What controls might the operating system use to detect processes like the above at runtime?

How to submit the homework assignments?
- Solve the sheet individually without looking up the solution on the Internet. The sheet is to practice; it is a learning tool not an exam.
- Assignments are to be **handwritten**.

- Papers are to be scanned (I like camscanner app). Put all images in a pdf file (camscanner does that for you)
- Use MS Teams to submit
  - Your filename should be your user id