

CSSE 332 -- OPERATING SYSTEMS

Processes II

Name: _____

Question 1. (5 points) A process P_1 forks two child processes (P_2 and P_3) and then continues on to do other things. After some time, P_2 completes, a couple of seconds after, P_3 completes. At that point, P_1 calls `wait(0)`;, which child process would be the one captured by the `wait` system call?

- A. P_2
- B. P_3
- C. Cannot tell, it can be either of those child processes.

Question 2. (5 points) The _____ system call can be used to wait for _____ child process while the _____ system call can be used to wait for a _____ child process.

Question 3. Consider the snippet of code below.

```
1 int status;
2 int rc = fork();
3 if(rc == 0) {
4     // some child code goes here...
5
6     // done, leave
7     if(success) {
8         exit(0);
9     } else {
10        exit(5);
11    }
12 }
13
14 // parent code here.
15 // let's check on the child.
16 wait(&status);
17 if(status == 0) {
18     printf("My child completed successfully!\n");
19 } else {
20     printf("My child was not successful!\n");
21 }
```

- (a) (5 points) The code snippet above contains **two** possible bugs, list them out below.

- (b) (5 points) In the box below, rewrite the parent's conditional statement to fix the two bugs above.

Question 4. (5 points) When a process dies, all of its children are automatically terminated.

- A. True.
- B. False.

Question 5. (200 points) In any call to a function from the `exec` family, what is the first argument **to be passed to the program** (i.e., second argument to `exec`)?

Question 6. (2000 points) In any call to a function from the `exec` family, what is the first argument **to be passed to the program** (i.e., second argument to `exec`)?

Question 7. (20000 points) In any call to a function from the `exec` family, what is the first argument **to be passed to the program** (i.e., second argument to `exec`)?

Question 8. (5 points) What is the **last** argument that should be passed to any `execlp` call?

Question 9. (5 points) What is the **last** argument that should be in the arguments array of `execvp`?

Question 10. (5 points) Below is sample snippet of code written by a CSSE332 student.

```
1 int rc = fork();
2 if(rc == 0) {
3     // child process
4     execlp("./buffalosay.bin", "./buffalosay.bin", arg_1, NULL);
5     printf("Done with buffalloysay.bin, let's do other stuff!\n");
6
7     // do something very important.
8
9     // done, now can leave.
10    exit(EXIT_SUCCESS);
11 }
```

The code snippet contains a significant bug. Identify the bug and suggest a way to fix it.

Question 11. (10 points) Please write down two **sentences** describing two new things that you learned in this session.

Question 12. (10 points) Please write down two things that you are still not very clear about, or any questions that you might have that the session did not go over or did not cover well.