Due: Thursday, September 26, 2024, 11:59 PM

CSCE 356: Operating Systems
Homework 01

Please submit a Word doc or a PDF file with your answers. For the discussion questions for this assignment you are expected to reference your text and try to find at least one additional outside reference. Please cite where appropriate.

From Chapter 1

1. (10 points) What are the three main purposes of an operating system?

2. (10 points) How does the distinction between kernel mode and user mode function as a rudimentary form of protection (security) system?

3. (10 points) Which of the following instructions should be privileged?

    a. Issue a trap instruction.

    b. Turn off interrupts.

    c. Modify entries in device-status table.

    d. Switch from user to kernel mode.

    e. Access I/O device.

From Chapter 2

4. (10 points) What are the five major activities of an operating system with regard to process management?

5. (10 points) What are the three major activities of an operating system with regard to memory management?

6. (10 points) The services and functions provided by an operating system can be divided into two main categories. Briefly describe the two categories, and discuss how they differ.

7. (10 points) What is the main advantage of the layered approach to system design? What are the disadvantages of the layered approach?

From Chapter 3

8. (10 points) Describe the actions taken by a kernel to context-switch between processes.

9. (10 points) Including the parent process, how many processes are created by the following code?

```
#include <stdio.h>
#include <unistd.h>
int main() {
```

```
    int i;
    for (i = 0; i < 5; i++) {
        fork();

    }

    return 0;
}
```

10. (10 points) Explain the role of the init process on UNIX and Linux systems in regard to process termination.

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