

**CSEN 602-Operating Systems, Spring 2015**  
**Practice Assignment 1**  
Discussion: 7.2.2015 - 12.2.2015

**Exercise 1-1: Reading**

Read Chapter 1 of the text book.

**Exercise 1-2**

What are the three main purposes of an operating systems?

**Exercise 1-3**

What are the functions of the following OS components?

1. Scheduler
2. File manager
3. Memory Manager
4. Resource allocator
5. Dispatcher

**Exercise 1-4**

Explain how the distinction between kernel mode and user mode function as a rudimentary form of protection system.

**Exercise 1-5**

Keeping in mind the various definitions of operating system, consider whether the operating system should include applications such as web browsers and mail programs. Argue both that it should and that it should not, and support your answers.

**Exercise 1-6**

What is the key difference between a trap and an interrupt?

### Exercise 1-7

Which of the following instructions should be allowed only in kernel mode?

1. Disable all interrupts.
2. Read the time-of-day clock.
3. Set the time-of-day clock.
4. Change the memory map.

### Exercise 1-8

When a user program makes a system call to read or write a disk file, it provides an indication of which file it wants, a pointer to the data buffer, and the count. Control is then transferred to the operating system, which calls the appropriate driver. Suppose that the driver starts the disk and terminates until an interrupt occurs. In the case of reading from the disk, obviously the caller will have to be blocked (because there are no data for it). What about the case of writing to the disk? Need the caller be blocking awaiting completion of the disk transfer?

### Exercise 1-9

To a programmer, a system call looks like any other call to a library procedure. Is it important that a programmer know which library procedures result in system calls? Under what circumstances and why?

### Exercise 1-10

A file whose file descriptor is `fd` contains the following sequence of bytes: `{3,1,4,1,5,9,2,6,5,3,5}`. The following system calls are made:

- `lseek(fd,3,SEEK_SET);`
- `read(fd,&buffer,4);`

where the `lseek` call makes a seek to byte 3 of the file. What does `buffer` contain after the read has completed?