



Name: _____ **Solution** _____

ID: _____

ABET outcome (e) Ability to identify, formulate and solve engineering problems.

1. Which of the following instructions should be privileged and which can be performed in user mode?

- | | |
|---|---------------|
| a. Turn off interrupts. | kernel |
| b. Modify entries in device-status table. | Kernel |
| c. Switch from user to kernel mode. | user |
| d. Access I/O device. | kernel |

2. 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.

An argument in favor of including popular applications with the operating system is that if the application is embedded within the operating system, it is likely to be better able to take advantage of features in the kernel and therefore have performance advantages over an application that runs outside of the kernel.

Arguments against embedding applications within the operating system typically dominate however:

- a) the applications are applications- and not part of an operating system,**
- b) any performance benefits of running within the kernel are offset by security vulnerabilities,**
- c) it leads to a bloated operating system.**

3. What is the purpose of system calls?

System calls allow user-level processes to request services of the operating system.

4. What are the three major activities of an operating system with regard to secondary-storage management?

The three major activities are:

- a) Free-space management.**
- b) Storage allocation.**
- c) Disk scheduling.**