CSI3131 – Operating Systems
Tutorial 1

1. What are three main purposes of an operating system?
2. Consider the various definitions of *operating systems*. 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 answer.
3. How does the distinction between kernel mode and user mode function as a rudimentary form of protection (security) system?
4. Which of the following instructions should be privileged?
    a. Set value of timer.
    b. Read the clock.
    c. Clear memory.
    d. Issue a trap instruction.
    e. Turn off interrupts.
    f. Modify entries in device-status table.
    g. Switch from user to kernel mode.
    h. Access I/O device.
5. Timers could be used to compute the current time. Provide a short description of how this could be accomplished.
6. What is the purpose of system calls?
7. What are five major activities of an operating system in regard to process management?
8. What are three major activities of an operating system in regard to memory management?
9. What are three major activities of an operating system in regard to secondary-storage management?
10. What is the purpose of the command interpreter?
11. What system calls in the UNIX system, have to be executed by a command interpreter or shell in order to start a new process?
12. What is the purpose of system programs?
13. What is the main advantage of the layered approach to system design? What are the disadvantages of using the layered approach?
14. For each of the following five services offered by the operating system, explain how each provides convenience to the users. Explain also in which cases it would be impossible for user-level programs to provide these services.
    - Program execution**.**
    - I/O operations.
    - File-system manipulation**.**
    - Communications.
    - Error detection.