Quiz 1, CSCI U511, Fall 2019 **Name: _____Key_____**

Instructions: You must show your work and put your final answers in the blanks. If you round a numerical answer, you must give at least 3 significant digits.

1) In computer system, what roles does an operating systems (OS) play? What are the major activities of an operating system in regard to process management?

ANS:

Operating systems manage resources shared between different applications running on the same physical machine.

OS provide an abstraction of physical hardware to simplify application design.

OS provide a set of common service that facilitate sharing among applications.

Major activities:

1. The creation and deletion of both user and system processes
2. The suspension and resumption of processes
3. The provision of mechanisms for process synchronization
4. The provision of mechanisms for process communication
5. The provision of mechanisms for deadlock handling

2) What is the difference between a process and a program? What hardware enables the operating systems to efficiently implement the process abstraction?

ANS: A process is an instance of a program with restricted rights. A program is a set of instruction that is waiting to be executed by the user. It cannot do anything until it is called. The hardware, like, memory, input-output devices, help to create abstraction as the OS can group them together to create high level abstractions for easier use.

3) How should operating system support communication between applications? Explain your reasoning.

ANS:

There an operating systems communicate between applications in three ways: producer-consumer-model, client-server-model, and file-system. In producer-consumer-model, the communication is one way where the producer writes and the consumer reads. The client-server-model allows two way communication between processes. The file system allows for communication that can be separated in time.