Operating System Design

Homework:

- Operating System Review 1

NAME:
STUDENT ID:
DATE:

Questions

1. What is the purpose of interrupts? What are the differences between a synchronous and an asynchronous interrupt? Give examples of each type.

2. What is the purpose of system calls?

3. What is the purpose of system programs?

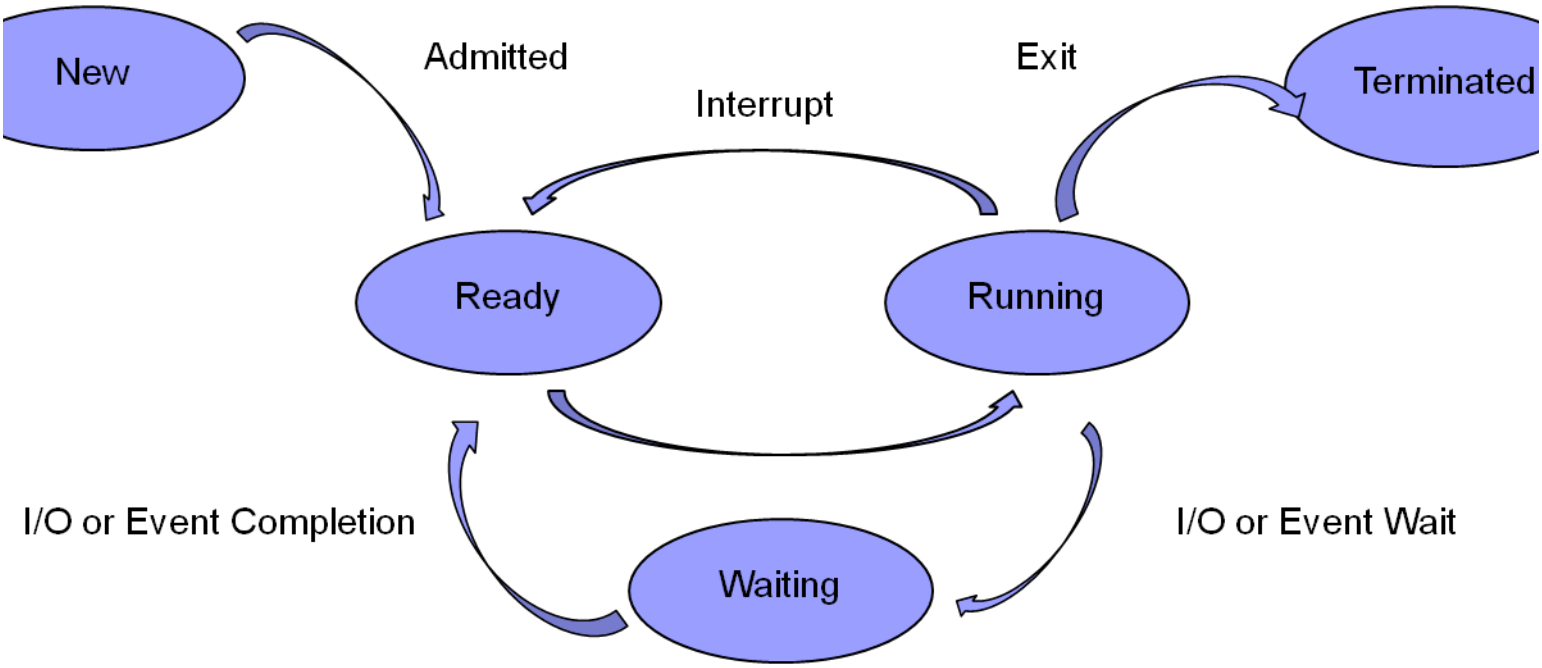
4. List five services provided by an operating system. Give a short description about what each service provides.

5. Describe the microkernel approach to system design? How do user programs and system services interact in a microkernel architecture? What are the disadvantages of using the microkernel approach?

6. What is the relationship between a guest operating system and a host operating system in a system like VMware? Name 3 benefits in using Virtual Machines in your computer system.

7. When a process creates a new process using the fork() operation, which of the following states is NOT shared between the parent process and the child process after the parent and child process is executing?
   a. Stack
   b. Heap
   c. Shared memory segments

8. Describe each of the process state below.



The states have the following meaning:

New =

Ready =

Waiting =

Running =

Terminated =

9. Describe the following Client-Server communications:

Sockets =

Remote Procedure Calls (RPC) =

Pipes =

Named Pipes =

10. Which of the following components of program state are shared across threads in a multithreaded process?

    a. Register

    b. Heap Memory

    c. Global Variables

    d. Stack Memory

11. Can a multithreaded solution using multiple user-level threads achieve better performance on a multiprocessor system than on a singleprocessor system? Explain.

12. Multicore or Multiprocessor Computer Systems means that processes or threads can run in parallel, as the Operating System assigns a separate process or thread to each core. Name 3 challenges in programming a Multicore or Multiprocessor Computer System.