CS 471 - Fall 2004 - Assignment 2

Name: _____ Date: _____

1. Strictly speaking, a program is a(n)
   A) active entity.
   B) process.
   C) passive entity
   D) None of the above

2. UNIX treats the command interpreter as a special program and is not included in the kernel for the system.
   A) True
   B) False

3. Which of the following is an example of a system program?
   A) command interpreter
   B) Web browser
   C) text formatter
   D) database system

4. In a virtual machine, each program believes that
   A) it has multiple processors.
   B) it has its own memory.
   C) it has another "virtual" computer to assist in its operations.
   D) it has more memory than is physically available on the machine.

5. A message passing model is
   A) easier to implement than a shared memory model for intercomputer communication.
   B) is faster than the shared memory model.
   C) a network protocol and does not apply to operating systems.
   D) is only useful for small simple operating systems.

6. The major difficulty in designing a layered operating system approach is
   A) appropriately defining the various layers.
   B) making sure that each layer hides certain data structures, hardware, and operations from higher-level layers.
   C) debugging a particular layer.
   D) making sure each layer is easily converted to modules.

7. ROM is convenient for storing the bootstrap program because it
   A) is a faster form of memory.
   B) is a cheaper form of memory.
   C) requires no initialization.
   D) is easily obtainable in large quantities at low cost.

8. Explain why a modular kernel may be the best of the current operating system design techniques.

9. A system disk is a disk with a boot partition.
   A) True
   B) False

10. An operating system performs resource allocations. Here, resources refer to
    A) memory.
    B) file storage.
    C) CPU cycles.
    D) All of the above

11. Explain why EPROM may be used to store the bootstrap program over ROM.

12. Explain how Java achieves platform independence.

13. A microkernel is
    A) a kernel containing many components that are optimized to reduce resident memory size.
    B) a kernel that is compressed before loading in order to reduce its resident memory size.
    C) a kernel that is compiled to produce the smallest size possible when stored to disk.
    D) a kernel that is stripped of all nonessential components.

14. Explain why resource allocation is an important service for an operating system to provide.

15. The I/O subsystem
    A) hides the peculiarities of the I/O devices
    B) consists of a general device-driver interface
    C) Both of the above
    D) None of the above

16. The bootstrap program always directly loads the kernel of an operating system.
    A) True
    B) False

17. Which of the following statements is incorrect?
    A) Applications programs are provided for solving common problems or performing rarely used operations.
    B) A system utility is used for solving common problems or performing common operations.
    C) The command interpreter is an example of a system program.
    D) The command interpreter is an example of a system utility.

18. The main advantage to a layered operating system approach is modularity.
    A) True
    B) False

19. Which of the following is not one of the three essential components of Java technology?
    A) programming-language specification
    B) application-programming interface
    C) platform specific byte code
    D) virtual-machine specification

20. Explain why a virtual machine is useful for operating system development.