

Chapter 2 – Operating System Overview

TRUE/FALSE QUESTIONS:

- T F 1) An OS should be constructed in such a way as to permit the effective development, testing, and introduction of new system functions without interfering with service.
- T F 2) The OS masks the details of the hardware from the programmer and provides the programmer with a convenient interface for using the system.
- T F 3) The ABI gives a program access to the hardware resources and services available in a system through the user ISA.
- T F 4) The OS frequently relinquishes control and must depend on the processor to allow it to regain control.
- T F 5) One of the driving forces in operating system evolution is advancement in the underlying hardware technology.
- T F 6) The processor itself is not a resource so the OS is not involved in determining how much of the processor time is devoted to the execution of a user program.
- T F 7) A process consists of three components: an executable program, the associated data needed by the program, and the execution context of the program.
- T F 8) Uniprogramming typically provides better utilization of system resources than multiprogramming.
- T F 9) A monolithic kernel is implemented as a single process with all elements sharing the same address space.
- T F 10) The user has direct access to the processor with a batch-processing type of OS.
- T F 11) Both batch processing and time-sharing use multiprogramming.
- T F 12) The phrase "control is passed to a job" means that the processor is now fetching and executing instructions from the monitor program.
- T F 13) In a time-sharing system, a user's program is preempted at regular intervals, but due to relatively slow human reaction time this occurrence is usually transparent to the user.

- 5) A special type of programming language used to provide instructions to the monitor is _____ .
- A) FPL B) CL
- C) DML D) SML
- 6) Hardware features desirable in a batch-processing operating system include memory protection, timer, privileged instructions, and _____ .
- A) clock cycles B) associated data
- C) interrupts D) kernels
- 7) A user program executes in a _____ , in which certain areas of memory are protected from the user's use, and in which certain instructions may not be executed.
- A) kernel mode B) user mode
- C) task mode D) batch mode
- 8) Multiprogramming operating systems are fairly sophisticated compared to single-program or _____ systems.
- A) uniprogramming B) time-sharing
- C) multitasking D) memory management
- 9) One of the first time-sharing operating systems to be developed was the _____ .
- A) Compatible Time-Sharing System B) Real Time Transaction System
- C) Multiple-Access System D) Multiprogramming Operation System
- 10) The technique where a system clock generates interrupts, and at each clock interrupt the OS regains control and assigns the processor to another user, is _____ .
- A) time slicing B) multithreading
- C) round robin D) clock cycle

- 11) The _____ is the internal data by which the OS is able to supervise and control the process.
- A) executable program B) associated data
C) nucleus D) execution context
- 12) _____ is where the OS must prevent independent processes from interfering with each other's memory, both data and instructions.
- A) Support of modular programming B) Process isolation
C) Automatic allocation and management D) Protection and access control
- 13) _____ is concerned with the proper verification of the identity of users and the validity of messages or data.
- A) Availability B) Confidentiality
C) Authenticity D) Data integrity
- 14) A common strategy to give each process in the queue some time in turn is referred to as a _____ technique.
- A) multithreading B) round-robin
C) time slicing D) serial processing
- 15) The key to the success of Linux has been its character as a free software package available under the auspice of the _____ .
- A) World Wide Web Consortium B) Free Software Foundation
C) Berkeley Software Distribution D) GNU Public License

SHORT ANSWER QUESTIONS:

- 1) An _____ is a program that controls the execution of application programs and acts as an interface between applications and the computer hardware.
- 2) The portion of the monitor that is always in main memory and available for execution is referred to as the _____ .

- 3) SEP _____ is a technique in which a process, executing an application, is divided into threads that can run concurrently.
- 4) SEP Two major problems with early serial processing systems were scheduling and _____ .
- 5) SEP The central idea behind the simple batch-processing scheme is the use of a piece of software known as the _____ .
- 6) SEP Any resource allocation and scheduling policy must consider three factors: Fairness, Differential responsiveness, and _____ .
- 7) SEP A _____ is set at the beginning of each job to prevent any single job from monopolizing the system.
- 8) SEP The OS has five principal storage management responsibilities: process isolation, automatic allocation and management, support of modular programming, protection and access control, and _____ .
- 9) SEP The earliest computers employed _____ processing, a name derived by the way the users have access to the systems.
- 10) SEP _____ was designed to keep the processor and I/O devices, including storage devices, simultaneously busy to achieve maximum efficiency.
- 11) SEP In a time-sharing, multiprogramming system, multiple users simultaneously access the system through _____ .
- 12) SEP The principal objective of _____ is to maximize processor use.
- 13) SEP Three major lines of computer system development created problems in timing and synchronization that contributed to the development of the concept of the process: multiprogramming batch operation, time sharing, and _____ .
- 14) SEP _____ is a facility that allows programs to address memory from a logical point of view, without regard to the amount of main memory physically available.
- 15) SEP Security and protection as it relates to operating systems is grouped into four categories: Availability, Data integrity, Authenticity, and _____ .