

OPERATING SYSTEMS
ASSIGNMENT
MCQs

GROUP 8

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CHAPTER 1

INTRODUCTION

1. A program that manages a computer's hardware. It also provides a basis for application programs and acts as an intermediary between the computer user and the computer hardware
 - a. Expert System
 - b. **Operating System**
 - c. Microsoft Word
 - d. Information Systems
 - e. Hardware management System

2. A computer system can be divided roughly into components:
 - a. 1
 - b. 2
 - c. 3
 - d. **4**
 - e. 5

3. A program that manages the execution of user programs to prevent errors and improper use of the computer and is especially concerned with the operation and control of I/O devices is called:
 - a. **Control program**
 - b. I/O program
 - c. Server
 - d. Workstation
 - e. Touch Screen

4. In Operating Systems, the occurrence of an event is usually signaled by an from either the hardware or the software.
 - a. Daemon
 - b. **Interrupt**
 - c. Pause
 - d. System call
 - e. Monitor call

5. The basic unit of computer storage is the
- Byte
 - Word
 - Array
 - Bit**
 - Kilobyte
6. understands the device controller and provides the rest of the operating system with a uniform interface to the device.
- Device driver**
 - Interpreter
 - Compiler
 - Device software
 - Small Computer Systems Interface (SCSI)
7. Which type of computer system architecture has one main CPU capable of executing a general-purpose instruction set, including instructions from user processes?
- Single processor Systems**
 - Multi Processor Systems
 - General Purpose Systems
 - Unit Processing Systems
 - Instruction Set Processing Systems
8. In multiprocessing systems, which type has each processor assigned a specific task.
- Symmetric multiprocessing
 - Asymmetric multiprocessing**
 - Tandem System
 - Fault Tolerant
 - One to One processing
9. In multiprocessing systems, which type has each processor perform all tasks within the operating system?
- Symmetric multiprocessing**
 - Asymmetric multiprocessing
 - Tandem System
 - Fault Tolerant
 - One to One processing

10. is a type of computing that delivers computing, storage, and even applications as a service across a network.
- a. Service computing
 - b. Network computing
 - c. Cloud computing**
 - d. Space computing
 - e. SaaS

CHAPTER 2

OPERATING SYSTEM STRUCTURES

1. A\An..... provides an environment for the execution of programs.
 - a. **Operating system**
 - b. Cache
 - c. Process
 - d. Storage
 - e. Program

2.provide an interface to the services made available by an operating system.
 - a. System management
 - b. Shells
 - c. **System calls**
 - d. System prompts
 - e. Computer systems

3. System calls can be grouped into how many categories?
 - a. 3
 - b. 5
 - c. 4
 - d. 9
 - e. **6**

4. One does not include the categories into which system calls are grouped
 - a. Communications
 - b. **Security**
 - c. Information maintenance
 - d. Process control
 - e. Device manipulation

5. A system program may also be referred to as
 - a. System process
 - b. System management
 - c. System interrupt
 - d. **System utilities**
 - e. System run

6. The main function of the is to provide communication between the client program and the various services that are also running in user space.
- a. **Microkernel**
 - b. Shell
 - c. Hardware
 - d. Program
 - e. Utilities
7. The procedure of starting a computer by loading the kernel is known as the system.
- a. Slapping
 - b. Kicking
 - c. **Booting**
 - d. Pulling
 - e. Beating
8. is the activity of finding and fixing errors in a system, both in hardware and in software.
- a. Correction
 - b. **Debugging**
 - c. Compiling
 - d. Running
 - e. Fixing
9. A failure in the kernel is called a
- a. Accident
 - b. Error
 - c. Bug
 - d. **Crash**
 - e. Clash
10. When a\an occurs, error information is saved to a and the memory state is saved to a
- a. Clash, error file, clash dump
 - b. Accident, record file, accident dump
 - c. Bug, bug file, bug dump
 - d. Error, error file, error dump
 - e. **Crash, log file, crash dump**

CHAPTER 3

PROCESSES

1. A program is execution is referred to as a
 - a. File
 - b. Software
 - c. Thread
 - d. Frame
 - e. **Process**
2. A batch system executes..... while time-shared systems have.....
 - a. Programs, processes
 - b. **Jobs, tasks**
 - c. Work, threads
 - d. Threads, Software
 - e. Files, Folders

As a process executes, it changes state. The state of a process is defined in part by the current activity of that process. Determine the state by the following activities

3. The process is being created
 - a. **New**
 - b. Running
 - c. Waiting
 - d. Ready
 - e. Terminated
4. The process has finished executing
 - a. New
 - b. Running
 - c. Waiting
 - d. Ready
 - e. **Terminated**
5. Instructions are being executed
 - a. New
 - b. **Running**
 - c. Waiting
 - d. Ready
 - e. Terminated

6. The process is waiting to be assigned to a processor
 - a. New
 - b. Running
 - c. Waiting
 - d. Ready**
 - e. Terminated
7. The process is waiting for some event to occur (such as an I/O completion or reception of a signal)
 - a. New
 - b. Running
 - c. Waiting**
 - d. Ready
 - e. Terminated
8. Each process is represented in the operating system by a
 - a. Heap
 - b. Data section
 - c. Program
 - d. Process control block**
 - e. Thread
9. The list of processes waiting for a particular I/O device is called
 - a. Job queue
 - b. Device queue**
 - c. I/O queue
 - d. Ready queue
 - e. I/O-bound process queue
10. The number of process in memory is called
 - a. Degree of multiprogramming**
 - b. Process level
 - c. Memory Width
 - d. Modularity
 - e. Process number (P_n)

CHAPTER 4

THREADS

1. A is a basic unit of CPU utilization.
 - a. **Thread**
 - b. Process
 - c. Line
 - d. Program
 - e. Rope
2. A system is if it can perform more than one task simultaneously.
 - a. Serial
 - b. Symmetric
 - c. Asymmetric
 - d. **Parallel**
 - e. Uniform
3. In general areas present challenges in programming for multicore systems.
 - a. 2
 - b. 3
 - c. **5**
 - d. 9
 - e. 4
4. The areas that present challenges in programming for multicore systems include the following except
 - a. Identifying tasks
 - b. **Evaluation**
 - c. Balance
 - d. Data splitting
 - e. Data dependency
5. and are the two types of parallelism.
 - a. Information parallelism, data parallelism
 - b. Task parallelism, information parallelism
 - c. Data parallelism, information parallelism
 - d. Information parallelism, job parallelism
 - e. **Data parallelism, task parallelism**

6. focuses on distributing subsets of the same data across multiple computing cores and performing the same operation on each core
- a. **Data parallelism**
 - b. Information parallelism
 - c. Process parallelism
 - d. Program parallelism
 - e. Utilities parallelism
7. involves distributing not tasks (threads) across multiple computing cores.
- a. Utilities parallelism
 - b. Program parallelism
 - c. **Task parallelism**
 - d. Job parallelism
 - e. Process parallelism
8. A is used in UNIX systems to notify a process that a particular event has occurred
- a. Sign
 - b. **Signal**
 - c. Call
 - d. Message
 - e. Flash
9. One scheme for communication between the user-thread library and the kernel is known as
- a. Scheduler prompts
 - b. Scheduler calls
 - c. Scheduler messages
 - d. **Scheduler activation**
 - e. Scheduler process
10. The register set, stacks, and private storage area are known as the of the thread
- a. Switch
 - b. Format
 - c. Process
 - d. Programs
 - e. **Context**

CHAPTER 5

PROCESS SYNCHRONIZATION

1. Which process can be affected by other processes executing in the system?
 - a. Child process
 - b. Init process
 - c. Parent process
 - d. Cooperating process
 - e. Semaphore

Answer: d. Cooperating Process

2. When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place, is called
 - a. Race condition
 - b. Essential condition
 - c. Dynamic condition
 - d. Critical condition
 - e. Critical exclusion

Answer: a. Race Condition

3. If a process is executing in its critical section, then no other process can be executing in their critical section. This condition is called
 - a. Asynchronous exclusion
 - b. Critical exclusion
 - c. Mutual exclusion
 - d. Synchronous exclusion
 - e. Mutex lock

Answer: c. Mutual Exclusion

4. Which of the following is a synchronization tool?
 - a. Thread
 - b. Socket
 - c. Pipe
 - d. Synchronous exclusion
 - e. Semaphore

Answer: e. Semaphore

5. A semaphore is a shared integer variable

- a. That cannot drop below zero
- b. That cannot be more than zero
- c. That cannot drop below one
- d. That cannot be more than one
- e. Must be one

Answer: a. that cannot drop below zero

6. Mutual exclusion can be provided by the

- a. Priority removal
- b. Hardware level
- c. Binary semaphores
- d. Shared data structures
- e. Software level

Answer: c. Binary Semaphores

7. When high priority task is indirectly pre-empted by medium priority task effectively inverting the relative priority of the two task, the scenario is called

- a. Priority removal
- b. Priority exchange
- c. Priority modification
- d. Priority inversion
- e. Mutex lock

Answer: d. Priority Inversion

8. Process synchronization can be done on

- a. Software and hardware level
- b. Shared data structures
- c. Sockets
- d. Semaphores
- e. Condition variables

Answer: a. Software and Hardware Level

9. A monitor is a module that encapsulates

- a. Semaphores
- b. Shared data structures
- c. Software level
- d. Hardware level
- e. Threads

Answer: b. Shared Data Structures

10. To enable a process to wait within a monitor,

- a. Semaphores must be used
- b. Condition variables must be used as Boolean objects
- c. Sockets must be used
- d. Priority must be removed
- e. Condition variable must be declared as a condition

Answer: e. Condition variable must be declared as a condition

CHAPTER 6

CPU SCHEDULING

1. is the basis of multi-programmed operating systems.
 - a. **CPU scheduling**
 - b. Process scheduling
 - c. Task scheduling
 - d. Program scheduling
 - e. Thread scheduling
2. The is the module that gives control of the CPU to the process selected by the short-term scheduler.
 - a. Process module
 - b. Program module
 - c. Task
 - d. **Dispatcher**
 - e. Thread
3. The time it takes for the dispatcher to stop one process and start another running is known as the
 - a. Dispatch start
 - b. Dispatch lag
 - c. Dispatch time
 - d. **Dispatch latency**
 - e. Dispatch abort
4. The criteria for comparing CPU scheduling algorithms include all but
 - a. CPU utilization
 - b. **Evaluation**
 - c. Throughput
 - d. Turnaround time
 - e. Waiting time
5. Preemptive SJF scheduling is sometimes called shortest-remaining-time-first scheduling.
 - a. Longest-remaining-time-first scheduling
 - b. Shortest-remaining-time-last scheduling
 - c. Shortest-remaining-time-longest scheduling
 - d. Middle-remaining-time-first scheduling
 - e. **Shortest-remaining-time-first scheduling**

6. SJF algorithm is a special case of the general algorithm
- a. **Priority-scheduling**
 - b. Thread-scheduling
 - c. Process-scheduling
 - d. Program scheduling
 - e. Utilities scheduling
7. A major problem with priority scheduling algorithms is indefinite blocking, or
- a. Paralysis
 - b. Abortion
 - c. **Starvation**
 - d. Termination
 - e. Activation
8. A solution to the problem of indefinite blockage of low-priority processes is
- a. **Aging**
 - b. Scheduling
 - c. Prompting
 - d. Abortion
 - e. Pregnancy
9. One scheme for communication between the user-thread library and the kernel is known as
- a. Scheduler prompts
 - b. Scheduler calls
 - c. Scheduler messages
 - d. **Scheduler activation**
 - e. Scheduler process
10. The—that is, a process has an affinity for the processor on which it is currently running
- a. Switch affinity
 - b. Format affinity
 - c. Process affinity
 - d. Programs affinity
 - e. **Processor affinity**

CHAPTER 7

DEADLOCKS

1. When a waiting process is never able to change state because the resources it requested are held by other waiting processes, this situation is called
 - a. System Crash
 - b. Frozen state
 - c. Deadlock**
 - d. Semaphore
 - e. Mutex lock

2. A process may utilize a resource in only the following sequence:
 - i. Use
 - ii. Request
 - iii. Release
 - a. I, II, III.
 - b. I, III, II
 - c. II, I, III**
 - d. III, II, I
 - e. II and III only

3. The condition where at least one resource must be held in a non sharable mode; that is, only one process can use the resource at a time is called
 - a) Circular wait
 - b) Hold and wait
 - c) No Preemption
 - d) Mutual Exclusion**
 - e) Resource Instance

4. The condition where a process must be holding at least one resource and waiting to acquire additional resources that are currently being held by other processes is called
 - a) Circular wait
 - b) Hold and wait**
 - c) No Preemption
 - d) Mutual Exclusion
 - e) Resource Instance

5. The condition where a resource can be released only voluntarily by the process holding it, after that process has completed its task is called
 - a) Circular wait
 - b) Hold and wait
 - c) No Preemption**
 - d) Mutual Exclusion
 - e) Resource Instance

6. Which of the following is **not** one of the conditions that must hold for a deadlock to occur
- a) Circular wait
 - b) Hold and wait
 - c) No Preemption
 - d) Mutual Exclusion
 - e) Resource Instance**
7. A system state is if the system can allocate resources to each process (up to its maximum) in some order and still avoid a deadlock.
- a) Stable
 - b) Safe**
 - c) Unsafe
 - d) Secure
 - e) Protected
8. Which of the following are issues involved with Resource Preemption
- a) Starvation**
 - b) Aborting all deadlocked processes
 - c) Recovery
 - d) Priority of process
 - e) Number of terminated processes
9. Which is a method of recovering from deadlocks
- a) Process Termination**
 - b) Banker's algorithm
 - c) Taking single instance of resource type.
 - d) Taking several instances of a resource type.
 - e) Safety algorithm.
10. Which deadlock avoidance algorithm is applicable to resource allocation systems with multiple instances of each resource type?
- a) Bankers algorithm**
 - b) Resource-allocation-graph algorithm
 - c) Safety algorithm
 - d) Simple recursive algorithm
 - e) Preemptive SJF algorithm

CHAPTER 8

MEMORY MANAGEMENT

1. Registers that are built into the CPU are generally accessible within one cycle of the
 - a. **CPU clock**
 - b. Address Holder
 - c. Process life cycle
 - d. ALU
 - e. Program Counter

2. is accessed via a transaction on the memory bus.
 - a. **Main Memory**
 - b. VRAM
 - c. PROM
 - d. EPROM
 - e. Virtual Memory

3. The Holds the smallest legal physical memory address
 - a. Limit register
 - b. **Base register**
 - c. Buffer register
 - d. Accumulator
 - e. Memory Data Register (MDR)

4. The Specifies the size of the range
 - a. **Limit register**
 - b. Base register
 - c. Buffer register
 - d. Accumulator
 - e. Memory Data Register (MDR)

5. If the base register holds 300040 and the limit register is 120900, then the program can legally access all addresses from 300040 to (Inclusive)
 - a. **420939**
 - b. 420930
 - c. 179140
 - d. 179939
 - e. 420900

6. The processes on the disk that are waiting to be brought into memory for execution form the
 - a. Process queue
 - b. Assembly line
 - c. Input queue**
 - d. Decision table
 - e. Waiting queue
7. An address generated by the CPU is commonly referred to as a.....
 - a. Logical address**
 - b. Physical address
 - c. Memory address register
 - d. Local address
 - e. Virtual address
8. The address loaded into the memory address register of the memory is referred to as
 - a. Logical address
 - b. Physical address**
 - c. Memory address register
 - d. Local address
 - e. Virtual address
9. makes it possible for the total physical address space of all processes to exceed the real physical memory of the system
 - a. Sharing
 - b. Concurrency
 - c. Timesharing
 - d. Overclocking
 - e. Swapping**
10. In which of the following solutions to dynamic storage allocation problems do we allocate the smallest hole that is big enough
 - a. Best-Fit**
 - b. Worst-Fit
 - c. First-Fit
 - d. Largest hole First-Fit
 - e. Smallest hole First-Fit

CHAPTER 9

VIRTUAL MEMORY

1. can be referred to as a technique that allows the execution of processes that are not completely in memory.
 - a. Physical memory
 - b. Virtual memory**
 - c. Swapping
 - d. Logical memory
 - e. Fragmentation

2. When loading an executable from disk into memory, the technique where pages are only loaded as needed is called
 - a. Sparse paging
 - b. Lazy swapping
 - c. Page directory pointer
 - d. Relocation
 - e. Demand paging**

3. Never swaps a page into memory unless that page will be needed.
 - a. Sparse paging
 - b. Lazy swapping**
 - c. Page directory pointer
 - d. Sparse swapping
 - e. Demand paging

4. Access to a page marked invalid causes a
 - a. Page fault**
 - b. Page error
 - c. I/O Error
 - d. Page access error
 - e. Null pointer exception

5. This table has the ability to mark an entry invalid through a valid-invalid bit or a special value of protection bits.
 - a. GTP table
 - b. MBR table
 - c. Page table**
 - d. Memory address Table
 - e. Directory table

6. This memory holds those pages that are not present in main memory.
 - a. Primary Memory
 - b. Secondary Memory**
 - c. Tertiary Memory
 - d. Swap Memory
 - e. Memory Annex

7. When starting processes quickly using demand paging, a technique which work by allowing the parent and child initially to share the same pages
 - a. Copy-on-write**
 - b. Page replacement
 - c. Page-Sharing
 - d. Zero-fill-on-demand
 - e. Pooling

8. Like optimal replacement, LRU replacement does not suffer from Belady's anomaly. Both belong to a class of page-replacement algorithms, called
 - a. Backtracking algorithm
 - b. Greedy algorithm
 - c. Additional-Reference-Bits algorithm
 - d. Stack algorithm**
 - e. Second Chance algorithm

9. A is an algorithm for which it can be shown that the set of pages in memory for n frames is always a **subset** of the set of pages that would be in memory with $n + 1$ frames
 - a. Backtracking algorithm
 - b. Greedy algorithm
 - c. Additional-Reference-Bits algorithm
 - d. Stack algorithm**
 - e. Second-Chance algorithm

10. A process is thrashing if it is
 - a. Spending more time paging than executing.**
 - b. Skipping frames
 - c. Losing control of its threads
 - d. Taking frames from a running process
 - e. Decreasing the degree of multiprogramming

CHAPTER 10

MASS STORAGE STRUCTURE

1) In _____, information is recorded magnetically on platters.

- a) Magnetic disks
- b) Electrical disks
- c) Assemblies
- d) Cylinders
- e) Laser

Answer: a

2) The disk bandwidth is:

- a) The total number of bytes transferred
- b) Total time between the first request for service and the completion on the last transfer
- c) The total number of bytes transferred divided by the total time between the first request for service and the completion on the last transfer
- d) None of these
- e) Total number of bits transferred

Answer: c

3) Consider a disk queue with requests for I/O to blocks on cylinders:

98 183 37 122 14 124 65 67

i) Considering FCFS (first come first served) scheduling, the total number of head movements is..... if the disk head is initially at 53:

- a) 600
- b) 620
- c) 630
- d) 640
- e) 660

Answer: d

ii) Considering SSTF (shortest seek time first) scheduling, the total number of head movements is if the disk head is initially at 53:

- a) 224
- b) 236
- c) 245
- d) 240
- e) 220

Answer: b

5) Using swap space significantly _____ system performance.

- a) Increases
- b) Decreases
- c) Maintains
- d) Does not affect
- e) None of the above

Answer: b

6) RAID level 3 supports a lower number of I/Os per second, because _____.

- a) Every disk has to participate in every I/O request
- b) Only one disk participates per I/O request
- c) I/O cycle consumes a lot of CPU time
- d) All of these
- e) None of these

Answer: a

7) RAID level 5 is also known as:

- a) Bit-interleaved parity organization
- b) Block-interleaved parity organization
- c) Block-interleaved distributed parity
- d) Memory-style ECC organization
- e) None of the above

Answer: c

8) The _____ program initializes all aspects of the system, from CPU registers to device controllers and the contents of main memory, and then starts the operating system.

- a) Main
- b) Bootloader
- c) Bootstrap
- d) ROM
- e) RAM

Answer: c

9) RAID stands for :

- a) Redundant Allocation of Inexpensive Disks
- b) Redundant Array of Important Disks
- c) Redundant Allocation of Independent Disks
- d) Redundant Array of Independent Disks
- e) Reduced Allocation of Independent Disks

Answer: d

10) In the ____ algorithm, the disk arm starts at one end of the disk and moves toward the other end, servicing requests till the other end of the disk. At the other end, the direction is reversed and servicing continues.

- a) LOOK
- b) SCAN
- c) C-SCAN
- d) C-LOOK
- e) B-LOOK

Answer: b