Unit I Introduction to Operating System | Process Management

1. What is the primary function of an operating system?

A. Running applications

B. Managing hardware resources

C. Providing user interfaces

D. Storing data

Answer: B. Managing hardware resources

2. In computer organization, what is the purpose of the Supervisor Mode in an operating system?

A. Executes user programs

B. Manages system resources

C. Provides a user interface

D. Handles I/O operations

Answer: B. Manages system resources

3. Which operating system follows a multi-user, multi-tasking model and was developed at Bell Labs in the 1970s?

A. Windows

B. UNIX

C. MacOS

D. Linux

Answer: B. UNIX

4. What is the key characteristic that distinguishes Supervisor Mode from User Mode?

A. Speed of execution

B. Access to privileged instructions

C. User interface design

D. Memory management

Answer: B. Access to privileged instructions

5. What does PCB stand for in the context of process management?

A. Process Control Block

B. Program Code Buffer

C. Processor Control Byte

D. Peripheral Control Bus

Answer: A. Process Control Block

6. Which of the following is an example of an independent process?

A. Two threads sharing the same data

B. A parent process and its child process

C. Two processes that do not share resources

D. A process waiting for an I/O operation to complete

Answer: C. Two processes that do not share resources

7. What is the purpose of Inter-Process Communication (IPC) in an operating system?

A. Managing process states

B. Allowing processes to communicate and share data

C. Allocating memory to processes

D. Controlling access to hardware resources

Answer: B. Allowing processes to communicate and share data

8. In the context of process states, what is the state of a process that is ready to execute but waiting for the CPU?

A. Running

B. Blocked

C. Ready

D. New

Answer: C. Ready

9. What operation on processes involves temporarily suspending a currently executing process and saving its state?

A. Blocking

B. Preemption

C. Swapping

D. Forking

Answer: B. Preemption

10. Which operating system is known for its emphasis on simplicity and portability and is widely used in embedded systems?

A. Windows

B. Linux

C. MacOS

D. Minix

Answer: D. Minix

11. What is the primary role of the Process Control Block (PCB) in process management?

A. Managing inter-process communication

B. Storing the executable code of a process

C. Controlling access to hardware resources

D. Holding information about a process's state and resource usage

Answer: D. Holding information about a process's state and resource usage

12. Which operation on processes involves creating a new process that is a copy of the current process?

A. Forking

B. Executing

C. Suspending

D. Blocking

Answer: A. Forking

13. In the context of process life cycle, what is the initial state of a process when it is first created?

A. Ready

B. Running

C. New

D. Terminated

Answer: C. New

14. What is the primary difference between a process and a thread?

A. Processes run in user mode, threads in supervisor mode

B. Processes have their own memory space, threads share the same memory space

C. Processes are created by the operating system, threads are created by applications

D. Processes are single-threaded, threads can be multi-threaded

Answer: B. Processes have their own memory space, threads share the same memory space

15. Which system call is responsible for creating a new process in UNIX-like operating systems?

A. create_process()

B. fork()

C. new_process()

D. spawn()

Answer: B. fork()

16. What is the primary advantage of using threads in a multi-threaded process?

A. Increased security

B. Improved resource utilization

C. Simplified program design

D. Better I/O performance

Answer: B. Improved resource utilization

17. What is a critical section in the context of process synchronization?

A. A section of code that must be executed atomically

B. A section of code that is rarely used

C. A section of code that is executed by the supervisor mode

D. A section of code that is not allowed in multi-threaded processes

Answer: A. A section of code that must be executed atomically

18. Which scheduling algorithm aims to minimize the waiting time of processes in the ready queue?

A. First-Come, First-Served (FCFS)

B. Shortest Job Next (SJN)

C. Round Robin (RR)

D. Priority Scheduling

Answer: B. Shortest Job Next (SJN)

19. What is the purpose of a system call in the context of an operating system?

A. Managing system resources

B. Providing a user interface

C. Allowing user programs to request services from the operating system

D. Running applications

Answer: C. Allowing user programs to request services from the operating system

20. In the context of process termination, what does the 'exit()' system call do?

A. Exits the operating system

B. Terminates the currently executing process

C. Suspends the process temporarily

D. Creates a new process

Answer: B. Terminates the currently executing process

Unit II CPU Scheduling

1. What is the primary purpose of CPU scheduling in an operating system?

A. Allocating memory to processes

B. Managing input/output operations

C. Distributing CPU time among multiple processes

D. Providing a user interface

Answer: C. Distributing CPU time among multiple processes

2. Which scheduling algorithm assigns the CPU to the process that arrives first in the ready queue?

A. Shortest Job First (SJF)

B. Round Robin (RR)

C. First Come First Serve (FCFS)

D. Priority Scheduling

Answer: C. First Come First Serve (FCFS)

3. What is the main disadvantage of the First Come First Serve (FCFS) scheduling algorithm?

A. It is difficult to implement

B. It may lead to a phenomenon known as "convoy effect"

C. It favors short processes over long processes

D. It requires a large amount of memory

Answer: B. It may lead to a phenomenon known as "convoy effect"

4. Which scheduling algorithm aims to minimize the total time a process spends waiting in the ready queue?

A. First Come First Serve (FCFS)

B. Shortest Job First (SJF)

C. Priority Scheduling

D. Round Robin (RR)

Answer: B. Shortest Job First (SJF)

5. In Round Robin scheduling, what is the significance of the time quantum or time slice?

A. It is the maximum burst time allowed for a process

B. It is the time a process is allowed to run before being preempted

C. It is the total time a process spends in the ready queue

D. It is the time required to switch between processes

Answer: B. It is the time a process is allowed to run before being preempted

6. What is the key characteristic of a preemptive scheduling algorithm?

A. Processes cannot be interrupted once they start executing

B. Processes can be interrupted and moved back to the ready queue

C. Processes are assigned a fixed time slice for execution

D. Processes are executed in the order they arrive in the ready queue

Answer: B. Processes can be interrupted and moved back to the ready queue

7. What is the role of a Dispatcher in the context of CPU scheduling?

A. Allocates memory to processes

B. Manages input/output operations

C. Selects a process from the ready queue for execution

D. Provides a user interface

Answer: C. Selects a process from the ready queue for execution

8. In Priority Scheduling, how is priority assigned to processes?

A. By the order in which processes arrive

B. By the total time a process has spent in the ready queue

C. By the burst time of a process

D. By a predefined priority value associated with each process

Answer: D. By a predefined priority value associated with each process

9. What is the primary advantage of Round Robin (RR) scheduling over First Come First Serve (FCFS)?

A. Lower average waiting time

B. Fairness in CPU allocation

C. Simplicity of implementation

D. Improved throughput

Answer: B. Fairness in CPU allocation

10. What scheduling algorithm allows a process to be executed only if its priority is higher than the priority of the currently executing process?

A. Round Robin (RR)

B. Priority Scheduling

C. Shortest Job First (SJF)

D. First Come First Serve (FCFS)

Answer: B. Priority Scheduling

11. What is the primary disadvantage of Priority Scheduling?

A. It may lead to starvation of low-priority processes

B. It favors short processes over long processes

C. It requires a large amount of memory

D. It is difficult to implement

Answer: A. It may lead to starvation of low-priority processes

12. Which scheduling algorithm is designed to handle both real-time and non-real-time processes?

A. Priority Scheduling

B. Round Robin (RR)

C. Multi-level Feedback Queue

D. First Come First Serve (FCFS)

Answer: C. Multi-level Feedback Queue

13. What is the purpose of a multiprocessor scheduling algorithm in an operating system?

A. Distributing CPU time among multiple processes

B. Managing input/output operations

C. Allocating memory to processes

D. Coordinating the execution of processes on multiple CPUs

Answer: D. Coordinating the execution of processes on multiple CPUs

14. Which scheduling criterion aims to achieve maximum CPU utilization and throughput?

A. CPU Burst Time

B. Turnaround Time

C. Response Time

D. Fairness

Answer: A. CPU Burst Time

15. In real-time scheduling, what is the primary concern?

A. Maximum CPU utilization

B. Fairness in CPU allocation

C. Meeting deadlines

D. Minimizing turnaround time

Answer: C. Meeting deadlines

16. What is the primary goal of the Shortest Job First (SJF) scheduling algorithm?

A. Minimizing turnaround time

B. Maximizing CPU utilization

C. Fairness in CPU allocation

D. Minimizing waiting time

Answer: A. Minimizing turnaround time

17. In multiprocessor scheduling, what is load balancing?

A. Allocating memory to processes

B. Distributing processes among multiple CPUs to ensure equal workload

C. Selecting processes based on their priority

D. Coordinating the execution of processes on multiple CPUs

Answer: B. Distributing processes among multiple CPUs to ensure equal workload

18. What is the primary characteristic of a non-preemptive scheduling algorithm?

A. Processes can be interrupted and moved back to the ready queue

B. Once a process starts executing, it cannot be interrupted

C. Processes are assigned a fixed time slice for execution

D. Processes are executed in the order they arrive in the ready queue

Answer: B. Once a process starts executing, it cannot be interrupted

19. What is the purpose of a Multi-level Feedback Queue in CPU scheduling?

A. Assigning priorities to processes

B. Distributing CPU time among multiple processes

C. Handling both real-time and non-real-time processes

D. Adapting to the behavior of processes by adjusting priority levels

Answer: D. Adapting to the behavior of processes by adjusting priority levels

20. Which thread scheduling algorithm allows a thread to run until it voluntarily releases the CPU?

A. Preemptive Scheduling

B. Non-preemptive Scheduling

C. Round Robin Scheduling

D. Priority Scheduling

Answer: B. Non-preemptive Scheduling

UNIT III Process Synchronisation | Threads

1. What is the primary challenge addressed by the Critical Section Problem in process synchronization?

A. Allocating memory to processes

B. Managing input/output operations

C. Ensuring exclusive access to shared resources

D. Distributing CPU time among multiple processes

Answer: C. Ensuring exclusive access to shared resources

2. What is the purpose of a semaphore in the context of process synchronization?

A. Allocating memory to processes

B. Controlling access to hardware resources

C. Handling inter-process communication

D. Ensuring exclusive access to shared resources

Answer: D. Ensuring exclusive access to shared resources

3. In the context of concurrent processes, what are cooperating processes?

A. Processes that do not share any resources

B. Processes that share the same memory space

C. Processes that execute independently

D. Processes that are waiting for I/O operations

Answer: B. Processes that share the same memory space

4. What is the role of a precedence graph in process synchronization?

A. Controlling access to hardware resources

B. Representing the order in which processes were created

C. Modeling dependencies among processes

D. Allocating memory to processes

Answer: C. Modeling dependencies among processes

5. In the context of process synchronization, what is the purpose of the Hierarchy of Processes?

A. Determining the priority of processes

B. Controlling access to hardware resources

C. Representing the order in which processes were created

D. Managing inter-process communication

Answer: B. Controlling access to hardware resources

6. What is a Monitor in the context of process synchronization?

A. A visual representation of the CPU scheduler

B. A hardware primitive for synchronization

C. A high-level abstraction that encapsulates shared data and operations

D. A tool for debugging concurrent processes

Answer: C. A high-level abstraction that encapsulates shared data and operations

7. What classic synchronization problem involves a group of philosophers sitting around a dining table, each thinking and eating with chopsticks?

A. Critical Section Problem

B. Reader-Writer Problem

C. Dining Philosopher Problem

D. Producer-Consumer Problem

Answer: C. Dining Philosopher Problem

8. In the Reader-Writer Problem, what type of access is exclusive to writers?

A. Read access

B. Write access

C. Both read and write access

D. No access

Answer: B. Write access

9. What is the primary challenge addressed by the Producer-Consumer Problem in synchronization?

A. Ensuring exclusive access to shared resources

B. Controlling access to hardware resources

C. Managing input/output operations

D. Coordinating the work of processes

Answer: D. Coordinating the work of processes

10. What is the classical solution to the Two-Process Critical Section Problem?

A. Semaphore

B. Test-and-Set Instruction

C. Monitor

D. Message Passing

Answer: B. Test-and-Set Instruction

11. In the n-process solution to the Critical Section Problem, what is the significance of the variable 'turn'?

A. It indicates the order in which processes were created

B. It represents the number of processes in the system

C. It specifies which process is allowed to enter the critical section

D. It controls the priority of processes

Answer: C. It specifies which process is allowed to enter the critical section

12. What is the purpose of hardware primitives for synchronization in concurrent programming?

A. Coordinating the work of processes

B. Providing a user interface

C. Controlling access to hardware resources

D. Managing input/output operations

Answer: C. Controlling access to hardware resources

13. What is the key characteristic of the Reader-Writer Problem in synchronization?

A. Readers and writers can access the critical section simultaneously

B. Only one reader or writer can access the critical section at a time

C. Readers and writers are not allowed to access the critical section

D. Writers have priority over readers in accessing the critical section

Answer: B. Only one reader or writer can access the critical section at a time

14. What is the primary goal of the scheduler activations model in multithreading?

A. Maximizing CPU utilization

B. Minimizing response time

C. Coordinating the execution of processes on multiple CPUs

D. Providing a high-level abstraction for synchronization

Answer: A. Maximizing CPU utilization

15. In multithreading, what is a key advantage of the many-to-one model?

A. Improved parallelism

B. Simplified program design

C. Better utilization of multiple CPUs

D. Enhanced fault tolerance

Answer: B. Simplified program design

16. What is an example of a threaded program?

A. A text editor that runs in a single thread

B. A web server that handles multiple requests concurrently

C. A compiler that executes sequentially

D. An operating system kernel

Answer: B. A web server that handles multiple requests concurrently

17. What is the primary purpose of the Test-and-Set instruction in synchronization?

A. Allocating memory to processes

B. Providing a user interface

C. Ensuring exclusive access to shared resources

D. Coordinating the work of processes

Answer: C. Ensuring exclusive access to shared resources

18. In the context of process synchronization, what is the purpose of a condition variable?

A. Indicating the order in which processes were created

B. Signaling a change in the state of shared data

C. Allocating memory to processes

D. Providing a high-level abstraction for synchronization

Answer: B. Signaling a change in the state of shared data

19. What is the key characteristic of the many-to-many model in multithreading?

A. Each thread has its own kernel-level thread

B. Threads are bound to a specific CPU

C. Multiple user-level threads map to a smaller or equal number of kernel-level threads

D. Each process has only one thread

Answer: C. Multiple user-level threads map to a smaller or equal number of kernel-level threads

20. In the context of process synchronization, what is the main challenge addressed by the Two-Phase Locking protocol?

A. Ensuring exclusive access to shared resources

B. Coordinating the work of processes

C. Handling inter-process communication

D. Managing input/output operations

Answer: A. Ensuring exclusive access to shared resources

UNIT IV Deadlock | Protection & Security

1. What is a characteristic feature of a deadlock in an operating system?

A. High CPU utilization

B. Processes waiting indefinitely for resources

C. Efficient resource allocation

D. Simultaneous execution of multiple processes

Answer: B. Processes waiting indefinitely for resources

2. What is the primary goal of deadlock prevention in operating systems?

A. Identifying deadlocks and recovering from them

B. Minimizing the occurrence of deadlocks

C. Detecting deadlocks and avoiding them

D. Recovering resources from deadlocked processes

Answer: B. Minimizing the occurrence of deadlocks

3. What is the key idea behind deadlock avoidance in operating systems?

A. Identifying and recovering from deadlocks

B. Dynamically allocating resources to avoid potential deadlocks

C. Proactively preventing processes from entering a deadlock state

D. Detecting deadlocks and terminating the involved processes

Answer: B. Dynamically allocating resources to avoid potential deadlocks

4. In the context of deadlock recovery, what is the role of process termination?

A. Identifying and preventing deadlocks

B. Dynamically allocating resources

C. Terminating processes to break the deadlock

D. Recovering resources from deadlocked processes

Answer: C. Terminating processes to break the deadlock

5. What is the concept of starvation in the context of process scheduling and resource allocation?

A. Processes waiting indefinitely for resources

B. Efficient resource allocation

C. Processes being terminated to break a deadlock

D. Unequal access to resources, leading to some processes being deprived

Answer: D. Unequal access to resources, leading to some processes being deprived

6. Why is protection needed in an operating system environment?

A. To maximize CPU utilization

B. To minimize response time

C. To prevent unauthorized access and ensure data integrity

D. To manage input/output operations efficiently

Answer: C. To prevent unauthorized access and ensure data integrity

7. What is a security vulnerability known as "Buffer Overflow"?

A. Unauthorized access to system resources

B. A type of malware attack

C. Exploiting a program's input handling to exceed allocated memory space

D. Intercepting communication between two processes

Answer: C. Exploiting a program's input handling to exceed allocated memory space

8. What is a trapdoor in the context of security vulnerabilities?

A. An unintentional flaw in a program's logic

B. A hidden entry point allowing unauthorized access

C. A type of computer virus

D. A technique to buffer overflow

Answer: B. A hidden entry point allowing unauthorized access

9. What is the primary goal of authentication in computer security?

A. Maximizing CPU utilization

B. Ensuring efficient resource allocation

C. Verifying the identity of users or entities

D. Detecting and recovering from deadlocks

Answer: C. Verifying the identity of users or entities

10. In password-based authentication, what is the purpose of password maintenance?

A. Maximizing CPU utilization

B. Ensuring efficient resource allocation

C. Changing passwords regularly to enhance security

D. Identifying and preventing deadlocks

Answer: C. Changing passwords regularly to enhance security

11. What is an example of secure communication in computer networks?

A. Sending plaintext passwords over the network

B. Using encryption to protect data during transmission

C. Allowing unrestricted access to network resources

D. Sharing sensitive information on public forums

Answer: B. Using encryption to protect data during transmission

12. What is the primary goal of protection principles in computer security?

A. Maximizing CPU utilization

B. Ensuring efficient resource allocation

C. Safeguarding against unauthorized access and ensuring data integrity

D. Detecting and recovering from deadlocks

Answer: C. Safeguarding against unauthorized access and ensuring data integrity

13. What is the access matrix in the context of protection in operating systems?

A. A visual representation of CPU scheduling

B. A high-level abstraction for synchronization

C. A matrix defining access rights for subjects and objects

D. A tool for debugging concurrent processes

Answer: C. A matrix defining access rights for subjects and objects

14. How is the access matrix implemented in operating systems?

A. Using a linked list structure

B. As a two-dimensional array

C. Through a binary tree

D. With a hash table

Answer: B. As a two-dimensional array

15. What is the domain of protection in the context of computer security?

A. The range of access rights assigned to a user

B. A region of memory allocated to a process

C. The set of processes that share the same memory space

D. A user's identification information

Answer: A. The range of access rights assigned to a user

16. What are examples of system and network threats in computer security?

A. Buffer overflow and trapdoors

B. Authentication and secure communication

C. Deadlocks and protection principles

D. Two-Phase Locking and Multithreading

Answer: A. Buffer overflow and trapdoors

17. What is a common goal of protection in computer security?

A. Maximizing CPU utilization

B. Minimizing response time

C. Ensuring efficient resource allocation

D. Preventing unauthorized access and ensuring data integrity

Answer: D. Preventing unauthorized access and ensuring data integrity

18. What is an example of a program threat in computer security?

A. Password-based authentication

B. A virus infecting executable files

C. Changing passwords regularly

D. Deadlock prevention

Answer: B. A virus infecting executable files

19. What is the primary goal of protection principles in computer security?

A. Maximizing CPU utilization

B. Ensuring efficient resource allocation

C. Safeguarding against unauthorized access and ensuring data integrity

D. Detecting and recovering from deadlocks

Answer: C. Safeguarding against unauthorized access and ensuring data integrity

20. What is an example of a security vulnerability related to network communication?

A. Starvation

B. Cache poisoning

C. Two-Phase Locking

D. Round Robin Scheduling

Answer: B. Cache poisoning

UNIT V Memory Management

1. What is the primary purpose of memory management in an operating system?

A. Allocating CPU time to processes

B. Managing input/output operations

C. Controlling access to hardware resources

D. Managing the use of main memory

Answer: D. Managing the use of main memory

2. What is the logical address space of a process?

A. The actual physical addresses used by the process

B. The set of addresses generated by the CPU

C. The range of addresses assigned to the process by the operating system

D. The addresses used in input/output operations

Answer: B. The set of addresses generated by the CPU

3. What is the purpose of swapping in memory management?

A. Allocating memory to processes

B. Dynamically adjusting the size of the logical address space

C. Transferring processes between main memory and secondary storage

D. Controlling access to hardware resources

Answer: C. Transferring processes between main memory and secondary storage

4. In contiguous memory allocation, how are processes placed in memory?

A. Processes can be placed anywhere in memory

B. Processes are allocated non-contiguous blocks of memory

C. Processes are allocated consecutive blocks of memory

D. Processes are placed based on priority levels

Answer: C. Processes are allocated consecutive blocks of memory

5. What is the primary advantage of paging over contiguous memory allocation?

A. Reduced internal fragmentation

B. Simplicity of implementation

C. Improved CPU utilization

D. Efficient use of secondary storage

Answer: A. Reduced internal fragmentation

6. In segmentation, what is a segment?

A. A block of contiguous memory

B. A unit of address space defined by the operating system

C. A unit of time allocated to a process

D. A type of secondary storage

Answer: B. A unit of address space defined by the operating system

7. What is a page fault in the context of demand paging?

A. A page of memory is successfully retrieved from secondary storage

B. A page of memory is not present in main memory and must be brought in

C. A page is swapped out to secondary storage

D. A segment of memory is released by the operating system

Answer: B. A page of memory is not present in main memory and must be brought in

8. What is the purpose of a page replacement algorithm in demand paging?

A. Allocating memory to processes

B. Dynamically adjusting the size of the logical address space

C. Selecting a page to be replaced when a page fault occurs

D. Transferring processes between main memory and secondary storage

Answer: C. Selecting a page to be replaced when a page fault occurs

9. What is internal fragmentation in the context of memory management?

A. Wasted space within a page or segment

B. Fragmentation caused by the allocation of non-contiguous memory

C. The difference between logical and physical address space

D. The space occupied by the operating system in memory

Answer: A. Wasted space within a page or segment

10. How does multi-level paging differ from simple paging?

A. Multi-level paging uses a single level of page tables

B. Simple paging allows for more efficient page replacement

C. Multi-level paging uses multiple levels of page tables

D. Simple paging is not suitable for modern computer architectures

Answer: C. Multi-level paging uses multiple levels of page tables

11. What is the concept of virtual memory in memory management?

A. Allocating memory to processes

B. Using secondary storage to extend the address space of main memory

C. Dynamically adjusting the size of the logical address space

D. Controlling access to hardware resources

Answer: B. Using secondary storage to extend the address space of main memory

12. What is the primary advantage of demand paging over pure paging?

A. Reduced internal fragmentation

B. Simplicity of implementation

C. Improved CPU utilization

D. Efficient use of secondary storage

Answer: C. Improved CPU utilization

13. What is the purpose of overlays in memory management?

A. Dynamically adjusting the size of the logical address space

B. Transferring processes between main memory and secondary storage

C. Allocating memory to processes

D. Swapping portions of a program in and out of main memory

Answer: D. Swapping portions of a program in and out of main memory

14. How does segmentation with paging combine the benefits of both segmentation and paging?

A. By reducing external fragmentation

B. By simplifying the page replacement process

C. By providing protection and flexibility

D. By eliminating the need for secondary storage

Answer: C. By providing protection and flexibility

15. What is the goal of memory protection in an operating system?

A. Maximizing CPU utilization

B. Minimizing response time

C. Preventing unauthorized access and ensuring data integrity

D. Dynamically adjusting the size of the logical address space

Answer: C. Preventing unauthorized access and ensuring data integrity

16. What is the purpose of a page table in memory management?

A. Controlling access to hardware resources

B. Dynamically adjusting the size of the logical address space

C. Mapping logical addresses to physical addresses

D. Managing input/output operations

Answer: C. Mapping logical addresses to physical addresses

17. How does the access matrix relate to memory protection in operating systems?

A. It represents the range of access rights assigned to a user

B. It is a visual representation of CPU scheduling

C. It defines access rights for subjects and objects

D. It is used for implementing overlays

Answer: A. It represents the range of access rights assigned to a user

18. What is the primary goal of page replacement algorithms in demand paging?

A. Maximizing CPU utilization

B. Minimizing response time

C. Reducing internal fragmentation

D. Efficiently managing the use of secondary storage

Answer: D. Efficiently managing the use of secondary storage

19. How does segmentation differ from paging in memory management?

A. Segmentation allows for more efficient use of secondary storage

B. Paging provides protection and flexibility, while segmentation does not

C. Segmentation uses a single level of page tables

D. Paging involves dividing the logical address space into fixed-size blocks

Answer: B. Paging provides protection and flexibility, while segmentation does not

20. What is a key disadvantage of external fragmentation in memory management?

A. Wasted space within a page or segment

B. Inefficient use of secondary storage

C. Processes waiting indefinitely for resources

D. Unallocated memory scattered throughout the system

Answer: B. Inefficient use of secondary storage

UNIT VI File Management | Device management |Inter process communication

1. What is the fundamental purpose of file management in an operating system?

A. Allocating memory to processes

B. Managing input/output operations

C. Controlling access to hardware resources

D. Organizing and storing data on storage devices

Answer: D. Organizing and storing data on storage devices

2. What is an access method in file management?

A. The method used to allocate memory to files

B. The technique for organizing and retrieving data from files

C. The method used for directory implementation

D. The process of mounting and sharing files in a file system

Answer: B. The technique for organizing and retrieving data from files

3. How does file system mounting contribute to file management?

A. It controls access to hardware resources

B. It organizes and stores data on storage devices

C. It provides a way to access files in a directory

D. It makes file systems available for use by associating them with a directory

Answer: D. It makes file systems available for use by associating them with a directory

4. What is the purpose of file protection in file management?

A. Allocating memory to processes

B. Managing input/output operations

C. Controlling access to hardware resources

D. Ensuring authorized access and preventing unauthorized access to files

Answer: D. Ensuring authorized access and preventing unauthorized access to files

5. What are the primary allocation methods used in file management?

A. Contiguous and non-contiguous

B. Dedicated and shared

C. Serial access and direct access

D. Mounting and sharing

Answer: A. Contiguous and non-contiguous

6. What is the purpose of free-space management in file systems?

A. Allocating memory to processes

B. Managing input/output operations

C. Organizing and storing data on storage devices

D. Keeping track of available space on storage devices for file allocation

Answer: D. Keeping track of available space on storage devices for file allocation

7. What is the difference between dedicated and shared devices in device management?

A. Dedicated devices are exclusively assigned to a single process, while shared devices are used by multiple processes.

B. Dedicated devices are used for direct access, while shared devices are used for serial access.

C. Dedicated devices allow virtual access, while shared devices do not.

D. Dedicated devices are more reliable than shared devices.

Answer: A. Dedicated devices are exclusively assigned to a single process, while shared devices are used by multiple processes.

8. How are direct access devices different from serial access devices?

A. Direct access devices allow access to data in a sequential manner, while serial access devices provide random access.

B. Direct access devices allow multiple processes to access data simultaneously, while serial access devices allow only one process at a time.

C. Direct access devices are used for printing, while serial access devices are used for reading and writing data.

D. Direct access devices have a single access point, while serial access devices have multiple access points.

Answer: B. Direct access devices allow multiple processes to access data simultaneously, while serial access devices allow only one process at a time.

9. What is the purpose of disk scheduling methods in device management?

A. Allocating memory to processes

B. Managing input/output operations

C. Controlling access to hardware resources

D. Optimizing the order in which requests are serviced to improve disk efficiency

Answer: D. Optimizing the order in which requests are serviced to improve disk efficiency

10. What is the role of channels and control units in direct access storage devices?

A. Allocating memory to processes

B. Managing input/output operations

C. Controlling access to hardware resources

D. Facilitating communication between the CPU and storage devices

Answer: D. Facilitating communication between the CPU and storage devices

11. What is the primary goal of interprocess communication (IPC) in operating systems?

A. Allocating memory to processes

B. Managing input/output operations

C. Enabling communication and data exchange between processes

D. Controlling access to hardware resources

Answer: C. Enabling communication and data exchange between processes

12. How do pipes contribute to interprocess communication?

A. They allocate memory to processes

B. They enable communication between processes through a unidirectional channel

C. They control access to hardware resources

D. They manage input/output operations

Answer: B. They enable communication between processes through a unidirectional channel

13. What functions do popen and pclose perform in interprocess communication using pipes?

A. Opening and closing files

B. Spawning new processes and terminating them

C. Creating and deleting directories

D. Reading and writing data between processes

Answer: B. Spawning new processes and terminating them

14. What is the purpose of co-processes in interprocess communication?

A. Managing input/output operations

B. Enabling parallel processing

C. Facilitating communication and collaboration between processes

D. Allocating memory to processes

Answer: C. Facilitating communication and collaboration between processes

15. How does shared memory contribute to interprocess communication?

A. It enables processes to share the same memory space

B. It provides a secure channel for communication between processes

C. It manages input/output operations efficiently

D. It controls access to hardware resources

Answer: A. It enables processes to share the same memory space

16. What is a FIFO in interprocess communication?

A. First In, First Out data structure

B. File Input/Output

C. First In, Last Out data structure

D. Flexible Input/Output

Answer: A. First In, First Out data structure

17. How do message queues facilitate interprocess communication?

A. By enabling processes to share the same memory space

B. By providing a mechanism for processes to exchange messages

C. By controlling access to hardware resources

D. By managing input/output operations efficiently

Answer: B. By providing a mechanism for processes to exchange messages

18. What is the significance of passing file descriptors in interprocess communication?

A. It enables processes to share the same memory space

B. It allows processes to communicate without using files

C. It provides a secure channel for communication between processes

D. It allows processes to share information about open files

Answer: D. It allows processes to share information about open files

19. What is the purpose of semaphores in interprocess communication?

A. Allocating memory to processes

B. Managing input/output operations

C. Controlling access to hardware resources

D. Synchronizing and coordinating the execution of processes

Answer: D. Synchronizing and coordinating the execution of processes

20. What is the role of demand paging in interprocess communication?

A. Allocating memory to processes

B. Enabling communication and data exchange between processes

C. Dynamically adjusting the size of the logical address space

D. Controlling access to hardware resources

Answer: B. Enabling communication and data exchange between processes