Multiple Choice Q&A

1. What is the primary purpose of semaphores in synchronization?

   a) Mutual Exclusion

   b) Interprocess Communication

   c) Resource Allocation

   d) Deadlock Avoidance

   Answer: a)

   Explanation: Semaphores are often used to enforce mutual exclusion to prevent multiple processes from accessing shared resources simultaneously.

2. Which classical synchronization problem involves two processes trying to write to the same shared resource simultaneously?

   a) Readers-Writers Problem

   b) Dining Philosophers Problem

   c) Producer-Consumer Problem

   d) Bounded-Buffer Problem

   Answer: a)

   Explanation: The Readers-Writers Problem deals with multiple processes trying to read and write to a shared resource concurrently.

3. In the context of synchronization, what is a critical region?

   a) A region with critical code

   b) A region that is highly sensitive

   c) A region of shared resources

   d) A region prone to deadlocks

   Answer: c)

   Explanation: A critical region is a part of the code where shared resources are accessed, and mutual exclusion must be enforced.

4. What is the role of a monitor in synchronization?

   a) Enforce mutual exclusion

   b) Provide a visual display of processes

   c) Manage system resources

d) Ensure fair scheduling

Answer: a)

Explanation: A monitor is a synchronization construct that encapsulates shared resources and provides mechanisms for mutual exclusion.

5. Which IPC mechanism is suitable for communication between processes on the same computer system?

   a) Pipes

   b) FIFOs

   c) Message Queues

   d) Shared Memory

   Answer: d)

   Explanation: Shared Memory allows processes to communicate by sharing a portion of memory accessible to both processes.

6. In the context of interprocess communication, what is a pipe?

   a) A physical connector

   b) A file descriptor

   c) A communication channel

   d) A synchronization primitive

   Answer: c)

   Explanation: A pipe is a communication channel that allows processes to communicate by sending data through a unidirectional stream.

7. Which IPC mechanism is a named pipe with a file-like interface?

   a) Pipes

   b) FIFOs

   c) Message Queues

   d) Shared Memory

   Answer: b)

   Explanation: FIFOs (First-In-First-Out) are named pipes that provide a communication channel between processes.

8. What is the primary advantage of message queues in IPC?

a) Low latency

b) Simple implementation

c) Asynchronous communication

d) Direct memory access

Answer: c)

Explanation: Message queues allow asynchronous communication, where processes can send and receive messages independently.

9. Which IPC mechanism is suitable for communication between processes on different computer systems?

a) Pipes

b) FIFOs

c) Message Queues

d) Shared Memory

Answer: c)

Explanation: Message Queues can facilitate communication between processes on different systems, providing a standardized interface.

10. In the context of IPC, what does RPC stand for?

a) Remote Procedure Call

b) Read-Process-Write

c) Reliable Process Communication

d) Resource Provisioning and Control

Answer: a)

Explanation: RPC allows a process to execute procedures on another address space as if it were a local procedure call.

11. Which IPC mechanism involves sending messages directly between processes without using a kernel buffer?

a) Pipes

b) FIFOs

c) Message Passing

d) Shared Memory

Answer: c)

Explanation: Message Passing involves processes communicating by sending messages directly to each other.

12. What is a semaphore's initial value typically set to for mutual exclusion?

    a) 0

    b) 1

    c) -1

    d) Infinity

    Answer: b)

    Explanation: Setting the initial value of a semaphore to 1 ensures that only one process can access the critical section at a time.

13. Which classical synchronization problem involves philosophers sitting around a dining table, thinking and eating?

    a) Readers-Writers Problem

    b) Dining Philosophers Problem

    c) Producer-Consumer Problem

    d) Bounded-Buffer Problem

    Answer: b)

    Explanation: The Dining Philosophers Problem illustrates the challenges of resource allocation and avoiding deadlock.

14. What is the purpose of a mutex in synchronization?

    a) Mutual Exclusion

    b) Deadlock Prevention

    c) Priority Inversion

    d) Starvation Avoidance

    Answer: a)

    Explanation: Mutex (Mutual Exclusion) is a synchronization mechanism used to ensure that only one process can access a critical section at a time.

15. Which IPC mechanism involves mapping a portion of memory between processes?

a) Pipes

b) FIFOs

c) Message Queues

d) Shared Memory

Answer: d)

Explanation: Shared Memory allows processes to share a portion of memory, facilitating fast communication.

16. What happens if a process tries to enter a critical section when a semaphore's value is zero?

a) Process gets suspended

b) Process enters critical section

c) Process is terminated

d) Process goes into sleep mode

Answer: a)

Explanation: A semaphore value of zero indicates that the critical section is currently being used, so the process attempting to enter gets suspended.

17. Which synchronization problem involves a bounded buffer that can hold a limited number of items?

a) Readers-Writers Problem

b) Dining Philosophers Problem

c) Producer-Consumer Problem

d) Barber Shop Problem

Answer: c)

Explanation: The Producer-Consumer Problem deals with the efficient synchronization of producers and consumers sharing a fixed-size buffer.

18. What is the primary purpose of a condition variable in synchronization?

a) Notify waiting processes

b) Provide mutual exclusion

c) Implement semaphores

d) Ensure deadlock avoidance

Answer: a)

Explanation: Condition variables are used to signal and notify waiting processes that a certain condition has been met.

19. Which IPC mechanism is commonly used for communication in a client-server architecture?

    a) Pipes

    b) FIFOs

    c) Message Queues

    d) Remote Procedure Call

    Answer: d)

    Explanation: RPC is commonly used for communication between a client and a server in a distributed system.

20. What does the "starvation" problem refer to in synchronization?

    a) Processes waiting indefinitely

    b) Inadequate resource allocation

    c) Lack of mutual exclusion

    d) Priority inversion

    Answer: a)

    Explanation: Starvation occurs when a process is unable to gain access to a critical section or resource, leading to indefinite waiting.

21. Which IPC mechanism is considered a lightweight form of interprocess communication?

    a) Pipes

    b) FIFOs

    c) Message Passing

    d) Shared Memory

    Answer: c)

    Explanation: Message Passing is often considered lightweight as it involves direct communication between processes without complex buffer management.

22. What is the purpose of a semaphore's "wait" operation?

a) Increment semaphore value

b) Decrement semaphore value

c) Set semaphore to zero

d) Reset semaphore to initial value

Answer: b)

Explanation: The "wait" operation decreases the semaphore value, potentially causing the calling process to wait if the value becomes zero.

23. In the context of IPC, what is a socket?

a) A physical connector

b) A file descriptor

c) A communication endpoint

d) A synchronization primitive

Answer: c)

Explanation: A socket is an endpoint for sending or receiving data across a computer network.

24. What is the primary advantage of using message queues over shared memory for IPC?

a) Lower latency

b) Simplicity of implementation

c) Greater flexibility

d) Direct memory access

Answer: c)

Explanation: Message queues provide a more flexible and structured way for processes to communicate, as compared to shared memory.

25. Which classical synchronization problem involves customers waiting for services from a limited number of resources?

a) Readers-Writers Problem

b) Dining Philosophers Problem

c) Producer-Consumer Problem

d) Barber Shop Problem

Answer: d)

Explanation: The Barber Shop Problem deals with synchronization issues in a scenario where customers are waiting for services from a limited number of barbers.

26. What is the purpose of virtual memory in a computer system?

    a) Increase RAM size

    b) Extend the physical memory

    c) Enhance CPU performance

    d) Reduce disk space usage

    Answer: b)

    Explanation: Virtual memory extends the physical memory by using disk space.

27. In logical versus physical address space, which represents the addresses generated by the CPU?

    a) Logical

    b) Physical

    c) Both

    d) None of the above

    Answer: a)

    Explanation: Logical addresses are generated by the CPU.

28. Swapping is a technique used for

    a) Memory Allocation

    b) Process Scheduling

    c) File Organization

    d) Disk Management

    Answer: b)

    Explanation: Swapping involves moving processes between main memory and disk.

29. Contiguous Allocation is characterized by

    a) Random allocation

b) Non-contiguous allocation

c) Sequential allocation

d) Dynamic allocation

Answer: c)

Explanation: Contiguous allocation assigns memory in a sequential manner.

30. Paging is a memory management scheme that divides the physical memory into

a) Fixed-sized blocks

b) Variable-sized blocks

c) Pages

d) Segments

Answer: a)

Explanation: Paging divides physical memory into fixed-sized blocks known as pages.

31. What is the advantage of using Paging over Contiguous Allocation?

a) Reduced external fragmentation

b) Better CPU utilization

c) Improved process creation time

d) All of the above

Answer: d)

Explanation: Paging reduces external fragmentation and offers other advantages.

32. Segmentation is a memory management scheme that divides the logical memory into

a) Fixed-sized blocks

b) Variable-sized blocks

c) Pages

d) Segments

Answer: d)

Explanation: Segmentation divides logical memory into variable-sized segments.

33. Combining Segmentation with Paging is known as

    a) Hybrid Memory Management

    b) Memory Mapping

    c) Virtual Memory

    d) Segmented Paging

    Answer: d)

    Explanation: Segmentation with Paging combines the benefits of both schemes.

34. What is Demand Paging?

    a) Loading pages on-demand

    b) Loading all pages at once

    c) Swapping processes on-demand

    d) Loading pages after a delay

    Answer: a)

    Explanation: Demand Paging loads pages into memory only when they are needed.

35. In Page Replacement, the algorithm decides which page to replace based on

    a) Least Recently Used (LRU)

    b) First In First Out (FIFO)

    c) Optimal Page Replacement

    d) All of the above

    Answer: d)

    Explanation: Page replacement algorithms decide which page to replace based on certain criteria.

36. Which page replacement algorithm uses the principle of removing the page that will not be used for the longest time?

    a) LRU

    b) FIFO

c) Optimal

d) Clock

Answer: a)

Explanation: LRU (Least Recently Used) replaces the page that has not been used recently.

37. What is the primary drawback of the FIFO page replacement algorithm?

a) Complexity

b) Poor performance

c) Belady's Anomaly

d) Limited applicability

Answer: c)

Explanation: FIFO may suffer from Belady's Anomaly, where increasing frames doesn't always improve performance.

38. The Clock page replacement algorithm is also known as

a) LRU

b) Second Chance

c) FIFO with Aging

d) Optimal Clock

Answer: b)

Explanation: Clock is often referred to as the Second Chance page replacement algorithm.

39. Which page replacement algorithm uses a circular list and a hand pointer?

a) LRU

b) FIFO with Aging

c) Clock

d) Optimal

Answer: c)

Explanation: The Clock algorithm uses a circular list and a hand pointer.

40. The Optimal page replacement algorithm serves as a reference for comparing other algorithms but is

a) Impossible to implement

b) Feasible but impractical

c) Easy to implement

d) Limited applicability

Answer: b)

Explanation: Optimal is often impractical as it requires knowledge of future page accesses.

41. What is the goal of the Thrashing phenomenon in memory management?

a) Efficient memory usage

b) Increased CPU utilization

c) Frequent page faults

d) Improved process execution time

Answer: c)

Explanation: Thrashing results in excessive page faults, indicating inefficient memory usage.

42. Which memory management technique aims to avoid Thrashing?

a) Contiguous Allocation

b) Paging

c) Segmentation

d) Working Set Model

Answer: d)

Explanation: The Working Set Model aims to prevent Thrashing by maintaining a working set of pages.

43. What is the purpose of the Translation Lookaside Buffer (TLB) in virtual memory?

a) Store page table entries

b) Speed up address translation

c) Manage page replacement

d) Control disk access

Answer: b)

Explanation: TLB caches recently used page table entries, speeding up address translation.

44. In a Demand Paging system, when is a page brought into memory?

    a) Only when it is first referenced

    b) After a delay

    c) At the start of the program

    d) Only when all pages are referenced

    Answer: a)

    Explanation: Demand Paging loads pages only when they are first referenced.

45. Which of the following is a disadvantage of Segmentation with Paging?

    a) Simplicity

    b) Fragmentation issues

    c) Efficient use of memory

    d) Improved process isolation

    Answer: b)

    Explanation: Segmentation with Paging may suffer from fragmentation issues.

46. The page table in virtual memory is used for

    a) Storing page contents

    b) Address translation

    c) Disk management

    d) Process scheduling

    Answer: b)

    Explanation: The page table is used for translating virtual addresses to physical addresses.

47. What is External Fragmentation?

    a) Unused memory in a process

    b) Holes in the free memory

    c) Allocation of pages in memory

    d) Disk fragmentation

Answer: b)

Explanation: External Fragmentation refers to memory holes that cannot be used for allocation.

48. Which memory management technique supports dynamic allocation of memory partitions?

    a) Contiguous Allocation

    b) Paging

    c) Segmentation

    d) Demand Paging

    Answer: c)

    Explanation: Segmentation supports dynamic allocation of variable-sized memory segments.

49. Which of the following is an advantage of Demand Paging?

    a) Faster program startup

    b) Lower page fault rate

    c) Reduced memory utilization

    d) Decreased CPU utilization

    Answer: b)

    Explanation: Demand Paging can lead to a lower page fault rate.

50. The term "Thrashing" in memory management refers to

    a) Frequent page faults

    b) Efficient memory usage

    c) Disk fragmentation

    d) Dynamic memory allocation

    Answer: a)

    Explanation: Thrashing is characterized by excessive page faults.

51. Which page replacement algorithm approximates optimal page replacement but is easier to implement?

    a) LRU

    b) FIFO with Aging

c) Clock

d) Optimal

Answer: b)

Explanation: FIFO with Aging approximates optimal replacement but is easier to implement.

52. The main goal of Memory Management is to

a) Maximize CPU utilization

b) Minimize page faults

c) Maximize disk space usage

d) Optimize process execution time

Answer: a)

Explanation: The main goal is to efficiently utilize memory resources, including CPU.

53. In Demand Paging, if a page is not found in memory, what occurs?

a) The program terminates

b) A page fault is triggered

c) The CPU is halted

d) The program continues running

Answer: b)

Explanation: A page fault occurs, leading to page retrieval from disk.

54. Which memory management technique requires contiguous allocation of memory?

a) Paging

b) Segmentation

c) Contiguous Allocation

d) Demand Paging

Answer: c)

Explanation: Contiguous Allocation requires allocating contiguous blocks of memory.

55. The Working Set Model helps prevent Thrashing by

a) Increasing the number of frames

b) Adjusting the page size

c) Monitoring the program's working set

d) Disabling Demand Paging

Answer: c)

Explanation: The Working Set Model monitors the program's working set to prevent Thrashing.

56. The concept of "Locality of Reference" is related to

a) Memory Access Patterns

b) Page Replacement Algorithms

c) Virtual Memory

d) Disk Organization

Answer: a)

Explanation: Locality of Reference describes patterns in memory access.

57. Which of the following is a disadvantage of Contiguous Allocation?

a) Fragmentation issues

b) Inefficient memory usage

c) Difficulty in implementing

d) Enhanced process isolation

Answer: a)

Explanation: Contiguous Allocation may suffer from fragmentation issues.

58. What is the purpose of a Page Table Entry (PTE) in virtual memory?

a) Store page contents

b) Manage page replacement

c) Translate virtual addresses

d) Control disk access

Answer: c)

Explanation: The Page Table Entry translates virtual addresses to physical addresses.

59. Which algorithm replaces the page that will be used at the furthest point in the future?

    a) FIFO

    b) Optimal

    c) LRU

    d) Clock

    Answer: b)

    Explanation: Optimal page replacement replaces the page used furthest in the future.

60. The term "Swapping" in memory management refers to

    a) Moving pages between disk and memory

    b) Exchanging pages between processes

    c) Allocating pages in memory

    d) Reducing page faults

    Answer: a)

    Explanation: Swapping involves moving pages between disk and memory.

61. Which memory management technique supports dynamic allocation of fixed-sized blocks?

    a) Contiguous Allocation

    b) Paging

    c) Segmentation

    d) Demand Paging

    Answer: b)

    Explanation: Paging supports dynamic allocation of fixed-sized blocks known as pages.

62. The clock hand in the Clock page replacement algorithm moves in what fashion?

    a) Counter-clockwise

    b) Clockwise

    c) Random

d) Bidirectional

Answer: b)

Explanation: The clock hand in the Clock algorithm moves in a clockwise fashion.

63. In a Segmented Paging system, which address is translated first?

a) Logical Address

b) Physical Address

c) Segment Address

d) Page Address

Answer: a)

Explanation: Segmented Paging first translates the logical address.

64. What is the primary purpose of a Page Fault?

a) Efficient memory usage

b) Improved CPU utilization

c) Handling invalid memory references

d) Preventing Thrashing

Answer: c)

Explanation: A Page Fault occurs when a program references invalid memory.

65. Which memory management technique divides the logical memory into variable-sized pages?

a) Contiguous Allocation

b) Paging

c) Segmentation

d) Demand Paging

Answer: b)

Explanation: Paging divides logical memory into variable-sized pages.

66. In the Clock page replacement algorithm, what does the hand point to when a page is selected for replacement?

a) The page to be replaced

b) The next page to be checked

c) The first page in memory

d) The last page in memory

Answer: b)

Explanation: The hand points to the next page to be checked in the Clock algorithm.

67. The concept of "Thrashing" is most likely to occur when

a) The CPU is idle

b) The system is underloaded

c) The number of frames is too low

d) The working set is small

Answer: c)

Explanation: Thrashing is more likely with insufficient memory frames.

68. Which page replacement algorithm uses a reference bit for each page?

a) LRU

b) FIFO with Aging

c) Clock

d) Optimal

Answer: b)

Explanation: FIFO with Aging uses a reference bit for each page to approximate LRU.

69. What is the purpose of the Anticipatory Paging technique?

a) Predict page accesses in advance

b) Speed up the page replacement process

c) Allocate pages dynamically

d) Prevent Thrashing

Answer: a)

Explanation: Anticipatory Paging aims to predict page accesses in advance.

70. Which of the following is a characteristic of the FIFO page replacement algorithm?

a) Simplicity

b) Complexity

c) Optimal replacement strategy

d) Ability to prevent Thrashing

Answer: a)

Explanation: FIFO is simple but may not be optimal in all situations.

71. What does the Aging technique involve in page replacement algorithms?

a) Assigning an age to each page

b) Increasing the age of the oldest page

c) Reducing the age of all pages

d) Randomly selecting pages to age

Answer: a)

Explanation: Aging involves assigning an age to each page and adjusting it over time.

72. Which of the following is a disadvantage of Segmentation?

a) Efficient use of memory

b) Fragmentation issues

c) Dynamic allocation of memory segments

d) Improved process isolation

Answer: b)

Explanation: Segmentation may suffer from

73. How does demand paging contribute to better system performance?

a) Reducing memory overhead

b) Increasing page faults

c) Loading all pages into memory at once

d) Minimizing disk I/O

Answer: D)

Explanation: Demand paging minimizes disk I/O by loading only the required pages into memory.

74. Which memory management technique allows processes to share code and data?

a) Contiguous allocation

b) Paging

c) Segmentation

d) Swapping

Answer: C)

Explanation: Segmentation allows processes to share code and data segments.

75. What is the main limitation of using fixed-size pages in paging?

a) Inefficient use of memory

b) Fragmentation

c) Complex address translation

d) Limited address space

Answer: B)

Explanation: Fixed-size pages can lead to internal fragmentation.

76. What is the primary purpose of a file system?

a) Data storage

b) Program execution

c) User authentication

d) Network communication

Answer: A)

Explanation: File systems primarily handle data storage.

77. Which access method allows direct access to any block on the storage device?

a) Sequential Access

b) Random Access

c) Indexed Access

d) Serial Access

Answer: B)

Explanation: Random access allows direct access to any block on the storage device.

78. What is the role of a directory structure in a file system?

    a) Organize files

    b) Execute programs

    c) Allocate memory

    d) Manage network connections

    Answer: A)

    Explanation: Directory structures organize and categorize files.

79. Which protection mechanism ensures that only authorized users can access a file?

    a) Encryption

    b) Authentication

    c) Authorization

    d) Compression

    Answer: C)

    Explanation: File protection is achieved through authorization mechanisms.

80. In a file system structure, what is the purpose of the File Control Block (FCB)?

    a) Store file metadata

    b) Execute file operations

    c) Allocate memory

    d) Manage network connections

    Answer: A)

    Explanation: The FCB contains metadata about the file, such as size, location, and permissions.

81. What is the purpose of allocation methods in file systems?

    a) Assigning storage to files

    b) Authenticating users

    c) Creating directories

    d) Managing network connections

    Answer: A)

Explanation: Allocation methods determine how storage space is assigned to files.

82. Which free-space management technique maintains a list of free disk blocks?

    a) Contiguous allocation

    b) Linked allocation

    c) Indexed allocation

    d) Free list allocation

    Answer: D)

    Explanation: Free list allocation maintains a list of free disk blocks.

83. What does the open system call do in file operations?

    a) Create a new file descriptor

    b) Read data from a file

    c) Write data to a file

    d) Close a file

    Answer: A)

    Explanation: The open system call creates a new file descriptor for a file.

84. Which system call is used to create a new file in a file system?

    a) create()

    b) makefile()

    c) newfile()

    d) open()

    Answer: A)

    Explanation: The create system call is used to create a new file.

85. What is the purpose of the read system call in file operations?

    a) Write data to a file

    b) Close a file

    c) Read data from a file

    d) Create a new file descriptor

    Answer: C)

Explanation: The read system call is used to read data from a file.

86. In file operations, what does the write system call do?

    a) Create a new file descriptor

    b) Read data from a file

    c) Write data to a file

    d) Close a file

    Answer: C)

    Explanation: The write system call is used to write data to a file.

87. What is the function of the close system call in file operations?

    a) Close a file

    b) Write data to a file

    c) Read data from a file

    d) Create a new file descriptor

    Answer: A)

    Explanation: The close system call is used to close a file.

88. Which system call is used for repositioning the read/write pointer within a file?

    a) seek()

    b) move()

    c) lseek()

    d) position()

    Answer: C)

    Explanation: The lseek system call is used for repositioning the read/write pointer within a file.

89. What information does the stat system call provide about a file?

    a) File size and modification time

    b) File name and permissions

    c) File content and creation time

    d) File type and access time

Answer: A)

Explanation: The stat system call provides information about a file, including size and modification time.

90. What is the purpose of the ioctl system call in file operations?

    a) Input/output control operations

    b) File creation and deletion

    c) File reading and writing

    d) File opening and closing

    Answer: A)

    Explanation: The ioctl system call is used for input/output control operations on files.

91. Which access method involves reading the file from the beginning to the end?

    a) Sequential Access

    b) Random Access

    c) Indexed Access

    d) Serial Access

    Answer: A)

    Explanation: Sequential access involves reading the file from the beginning to the end.

92. In file systems, what is the primary purpose of a link?

    a) Connect files in the same directory

    b) Establish network connections

    c) Create shortcuts to programs

    d) Move files between directories

    Answer: A)

    Explanation: Links connect files in the same directory.

93. Which directory structure organizes files and folders in a tree-like hierarchy?

    a) Hierarchical Structure

    b) Flat Structure

    c) Sequential Structure

d) Linked Structure

Answer: A)

Explanation: Hierarchical directory structures organize files and folders in a tree-like hierarchy.

94. What is the purpose of the 'chmod' command in file systems?

a) Change file permissions

b) Change file ownership

c) Change file size

d) Change file content

Answer: A)

Explanation: The 'chmod' command is used to change file permissions.

95. Which allocation method allows a file to be stored in non-contiguous blocks?

a) Contiguous allocation

b) Linked allocation

c) Indexed allocation

d) Variable allocation

Answer: B)

Explanation: Linked allocation allows non-contiguous storage of files.

96. What is the primary role of the FAT (File Allocation Table) in file systems?

a) Manage file permissions

b) Maintain a list of free disk blocks

c) Organize file metadata

d) Control file access

Answer: B)

Explanation: The FAT maintains a list of free disk blocks in the file system.

97. Which command is used to display the structure of directories in Unix/Linux?

a) ls

b) cd

c) mkdir

d) pwd

Answer: A)

Explanation: The 'ls' command is used to display the structure of directories in Unix/Linux.

98. What is the purpose of the 'umask' command in Unix/Linux?

a) Set default file permissions

b) Change directory permissions

c) Display file sizes

d) Rename files

Answer: A)

Explanation: The 'umask' command sets the default file permissions in Unix/Linux.

99. Which of the following is not a valid file protection mode in Unix/Linux?

a) rw-r--r--

b) rwxr-xr-x

c) -r-x--x--x

d) -rw-rw-r--

Answer: C)

Explanation: '-r-x--x--x' is not a valid file protection mode in Unix/Linux.

100. What is the purpose of the 'chown' command in Unix/Linux?

a) Change file ownership

b) Change file permissions

c) Display file sizes

d) Rename files

Answer: A)

Explanation: The 'chown' command is used to change file ownership in Unix/Linux.

101. Which command is used to create a symbolic link in Unix/Linux?

a) ln -s

b) ln -h

c) link -s

d) symlink

Answer: A)

Explanation: The 'ln -s' command creates a symbolic link in Unix/Linux.

102. In Unix/Linux, what is the purpose of the 'df' command?

a) Display file system space usage

b) Delete files

c) Display file sizes

d) Change directory permissions

Answer: A)

Explanation: The 'df' command is used to display file system space usage in Unix/Linux.

103. Which file system structure allows files to be stored in fixed-size blocks?

a) Contiguous Allocation

b) Linked Allocation

c) Indexed Allocation

d) Clustered Allocation

Answer: D)

Explanation: Clustered allocation allows files to be stored in fixed-size blocks.

104. What is the purpose of the 'du' command in Unix/Linux?

a) Display file sizes

b) Delete files

c) Display file system space usage

d) Change directory permissions

Answer: C)

Explanation: The 'du' command is used to display file system space usage in Unix/Linux.

105. Which file system structure maintains a table of pointers for each file?

a) Contiguous Allocation

b) Linked Allocation

c) Indexed Allocation

d) Clustered Allocation

Answer: C)

Explanation: Indexed allocation maintains a table of pointers for each file.

106. Which allocation method has the potential for external fragmentation?

a) Contiguous Allocation

b) Linked Allocation

c) Indexed Allocation

d) Variable Allocation

Answer: A)

Explanation: Contiguous allocation has the potential for external fragmentation.

107. What is the purpose of the 'touch' command in Unix/Linux?

a) Update file access and modification time

b) Create a new file

c) Change file permissions

d) Display file sizes

Answer: B)

Explanation: The 'touch' command is used to update file access and modification time or create a new file in Unix/Linux.

108. Which system call is used to change the attributes of a file in Unix/Linux?

a) chattr

b) chmod

c) chown

d) setattr

Answer: B)

Explanation: The 'chmod' system call is used to change the attributes of a file in Unix/Linux.

109. In Unix/Linux, what does the 'sticky bit' do when set on a directory?

a) Prevents users from deleting files

b) Allows only the owner to write

c) Allows only the owner to execute

d) Prevents users from renaming files

Answer: A)

Explanation: The sticky bit on a directory prevents users from deleting files they do not own.

110. What is the purpose of the 'sync' command in Unix/Linux?

a) Synchronize file changes with disk

b) Display file sizes

c) Delete files

d) Change file permissions

Answer: A)

Explanation: The 'sync' command is used to synchronize file changes with the disk in Unix/Linux.

111. Which file system structure is susceptible to the "single point of failure" problem?

a) Hierarchical Structure

b) Flat Structure

c) Sequential Structure

d) Indexed Structure

Answer: D)

Explanation: Indexed structure is susceptible to the "single point of failure" problem.

112. What is the purpose of the 'fsck' command in Unix/Linux?

a) File system check and repair

b) Display file sizes

c) Delete files

d) Change file permissions

Answer: A)

Explanation: The 'fsck' command is used for file system check and repair in Unix/Linux.

113. In Unix/Linux, what is the purpose of the 'mount' command?

    a) Attach a file system to the directory

    b) Display file sizes

    c) Delete files

    d) Change file permissions

    Answer: A)

    Explanation: The 'mount' command is used to attach a file system to a directory in Unix/Linux.

114. Which command is used to remove a directory in Unix/Linux?

    a) rmdir

    b) rm

    c) remove

    d) delete

    Answer: A)

    Explanation: The 'rmdir' command is used to remove a directory in Unix/Linux.

115. What is the purpose of the 'ln' command in Unix/Linux?

    a) Create hard links between files

    b) Display file sizes

    c) Change file permissions

    d) Delete files

    Answer: A)

    Explanation: The 'ln' command is used to create hard links between files in Unix/Linux.

116. Which access method involves reading the file one record at a time?

    a) Sequential Access

    b) Random Access

    c) Indexed Access

d) Serial Access

Answer: A)

Explanation: Sequential access involves reading the file one record at a time.

117. What is the purpose of the 'tar' command in Unix/Linux?

a) Archive and compress files

b) Display file sizes

c) Delete files

d) Change file permissions

Answer: A)

Explanation: The 'tar' command is used to archive and compress files in Unix/Linux.

118. Which of the following is an example of a non-volatile storage device?

a) RAM

b) SSD

c) Cache memory

d) Register

Answer: B)

Explanation: SSD (Solid State Drive) is an example of a non-volatile storage device.

119. What is the purpose of the 'mkfs' command in Unix/Linux?

a) Create a file system on a disk

b) Display file sizes

c) Delete files

d) Change file permissions

Answer: A)

Explanation: The 'mkfs' command is used to create a file system on a disk in Unix/Linux.

120. Which of the following is a characteristic of a journaling file system?

a) Faster file access

b) Reduced risk of data corruption

c) Increased file storage capacity

d) Simpler file organization

Answer: B)

Explanation: Journaling file systems reduce the risk of data corruption.

121. In a linked allocation file system, what does each file have?

a) A list of pointers to data blocks

b) A contiguous block of disk space

c) An index to the file's content

d) A table of file metadata

Answer: A)

Explanation: In linked allocation, each file has a list of pointers to its data blocks.

122. Which file system structure allows files to be stored in multiple locations on the disk?

a) Contiguous Allocation

b) Linked Allocation

c) Indexed Allocation

d) Multilevel Allocation

Answer: B)

Explanation: Linked allocation allows files to be stored in multiple locations on the disk.

123. What is the primary role of the inode in Unix/Linux file systems?

a) Store file metadata

b) Manage file permissions

c) Allocate disk space

d) Control file access

Answer: A)

Explanation: In Unix/Linux, the inode stores file metadata such as permissions and pointers to data blocks.

124. Which file system structure has a hierarchical organization with a single root directory?

a) Hierarchical Structure

b) Flat Structure

c) Sequential Structure

d) Linked Structure

Answer: A)

Explanation: Hierarchical structure has a single root directory.

125. In Unix/Linux, what is the purpose of the 'ln -d' command?

a) Create a symbolic link

b) Create a hard link

c) Create a directory link

d) Delete a link

Answer: C)

Explanation: The 'ln -d' command is hypothetically designed to create a link specifically for directories.