1. What memory management technique involves dividing the main memory into fixed-size partitions to accommodate multiple processes?

a) Swapping
b) Segmentation
c) Partitioning
d) Paging

Answer: c) Partitioning

Explanation: Partitioning involves dividing the main memory into fixed-size partitions, each assigned to a different process. This allows multiple processes to run concurrently without interfering with each other.

---

2. Which memory management technique involves moving entire processes between main memory and disk?

a) Segmentation
b) Swapping
c) Paging
d) Paged Segmentation

Answer: b) Swapping

Explanation: Swapping involves moving entire processes between main memory and disk,

typically to free up space in memory for other processes.

---

3. Which memory management technique uses logical division of memory into segments of variable sizes?

a) Paging
b) Partitioning
c) Segmentation
d) Paged Segmentation

Answer: c) Segmentation

Explanation: Segmentation divides memory into segments of variable sizes based on logical structure, such as code, data, and stack segments.

---

4. Which memory management technique involves breaking down processes into fixed-size blocks called pages?

a) Segmentation
b) Swapping
c) Paging
d) Partitioning

Answer: c) Paging

Explanation: Paging involves dividing processes into fixed-size blocks called pages, allowing for efficient allocation of memory.

---

5. What memory management technique combines features of both segmentation and paging?

a) Partitioning
b) Paged Segmentation
c) Swapping
d) Overlay

Answer: b) Paged Segmentation

Explanation: Paged Segmentation combines features of both segmentation and paging, providing benefits of both techniques.

---

6. Which technique allows execution of large programs by dividing them into smaller modules loaded into memory only when needed?

a) Swapping

b) Overlay
c) Dynamic Linking and Loading
d) Partitioning

Answer: b) Overlay

Explanation: Overlay allows execution of large programs by dividing them into smaller modules loaded into memory only when needed, conserving memory space.

---

7. What technique involves linking libraries dynamically during program execution rather than at compile time?

a) Swapping
b) Overlay
c) Dynamic Linking and Loading
d) Paging

Answer: c) Dynamic Linking and Loading

Explanation: Dynamic Linking and Loading links libraries dynamically during program execution, allowing for flexibility and efficient memory usage.

---

8. What is the fundamental concept behind virtual memory?

a) Physical separation of memory
b) Logical separation of memory
c) Dynamic allocation of memory
d) Fixed-size allocation of memory

Answer: b) Logical separation of memory

Explanation: Virtual memory provides a logical separation of memory, allowing processes to operate as if they have access to a large, contiguous block of memory.

---

9. Which technique involves loading pages into memory only when needed during program execution?

a) Demand Paging
b) Swapping
c) Paging
d) Segmentation

Answer: a) Demand Paging

Explanation: Demand Paging loads pages into memory only when needed during program execution, reducing the initial memory footprint of processes.

---

10. What is the primary advantage of partitioning in memory management?

a) Efficient use of memory
b) Easy implementation
c) Fast access to processes
d) Elimination of fragmentation

Answer: a) Efficient use of memory

Explanation: Partitioning allows for efficient use of memory by allocating fixed-size partitions to different processes, maximizing memory utilization.

---

11. Which memory management technique suffers from external fragmentation?

a) Segmentation
b) Paging
c) Swapping
d) Partitioning

Answer: d) Partitioning

Explanation: Partitioning can suffer from external fragmentation, where free memory is fragmented into small blocks but cannot be utilized due to being too small for a process.

---

12. Which technique allows multiple processes to share the same memory space without interfering with each other?

a) Paging
b) Partitioning
c) Swapping
d) Segmentation

Answer: a) Paging

Explanation: Paging allows multiple processes to share the same memory space without interference by mapping their pages to physical memory in a controlled manner.

---

13. Which memory management technique allows for efficient allocation of memory by dividing processes into equal-sized blocks?

a) Swapping

b) Segmentation
c) Paging
d) Partitioning

Answer: c) Paging

Explanation: Paging allows for efficient allocation of memory by dividing processes into equal-sized blocks called pages, simplifying memory management.

---

14. What is the purpose of using overlays in memory management?

a) To reduce external fragmentation
b) To increase internal fragmentation
c) To conserve memory space
d) To improve memory access speed

Answer: c) To conserve memory space

Explanation: Overlays are used to conserve memory space by loading only necessary modules of a program into memory at a given time, swapping them as needed.

---

15. Which memory management technique requires moving processes between main

memory and disk to balance system load?

a) Paging
b) Partitioning
c) Swapping
d) Segmentation

Answer: c) Swapping

Explanation: Swapping involves moving processes between main memory and disk to balance system load and manage memory resources effectively.

---

16. What is the primary disadvantage of using dynamic linking and loading?

a) Increased memory overhead
b) Limited flexibility
c) Slower program execution
d) Difficulty in debugging

Answer: a) Increased memory overhead

Explanation: Dynamic linking and loading can lead to increased memory overhead due to the need to load additional libraries dynamically during program execution.

---

17. Which technique aims to reduce the initial loading time of large programs by loading only necessary portions into memory initially?

a) Overlay
b) Demand Paging
c) Swapping
d) Partitioning

Answer: b) Demand Paging

Explanation: Demand Paging reduces the initial loading time of large programs by loading only necessary portions into memory initially, postponing the loading of other parts until needed.

---

18. What is the key benefit of using virtual memory?

a) Increased physical memory size
b) Elimination of memory fragmentation
c) Efficient utilization of memory
d) Faster program execution

Answer: c) Efficient utilization of memory

Explanation: Virtual memory allows for efficient utilization of memory by providing a logical abstraction of memory, enabling processes to access a larger address space than physical memory.

---

19. Which memory management technique involves dividing memory into variable-sized partitions based on program requirements?

a) Paging
b) Segmentation
c) Swapping
d) Partitioning

Answer: b) Segmentation

Explanation: Segmentation divides memory into variable-sized partitions based on program requirements, providing flexibility in memory allocation.

---

20. What is a drawback of using overlays in memory management?

a) Increased memory utilization
b) Difficulty in program execution
c) Limited program size

d) Higher memory access latency

Answer: c) Limited program size

Explanation: Overlays limit the program size as only portions of the program can be loaded into memory at a time, requiring careful management of memory usage.

---

21. Which technique involves breaking down programs into smaller, more manageable units to facilitate execution?

a) Paging
b) Segmentation
c) Partitioning
d) Overlay

Answer: d) Overlay

Explanation: Overlay involves breaking down programs into smaller, more manageable units to facilitate execution, conserving memory space by loading only necessary modules into memory.

---

22. In which memory management technique is the physical memory space divided into

fixed-size blocks?

a) Segmentation
b) Swapping
c) Paging
d) Partitioning

Answer: c) Paging

Explanation: Paging divides physical memory into fixed-size blocks called pages, simplifying memory management and allocation.

---

23. What is the primary purpose of partitioning in memory management?

a) To reduce memory fragmentation
b) To increase memory access speed
c) To enable sharing of memory among processes
d) To allocate memory efficiently

Answer: d) To allocate memory efficiently

Explanation: Partitioning divides memory into fixed-size partitions to allocate memory efficiently among processes, maximizing memory utilization.

---

24. Which memory management technique involves moving parts of a process between main memory and disk based on their usage?

a) Paging
b) Swapping
c) Segmentation
d) Partitioning

Answer: a) Paging

Explanation: Paging involves moving parts of a process between main memory and disk based on their usage, optimizing memory usage and access speed.

---

25. What is the main disadvantage of using paging in memory management?

a) Increased memory overhead
b) Complexity in implementation
c) Fragmentation of memory
d) Limited address space

Answer: a) Increased memory overhead

Explanation: Paging can lead to increased memory overhead due to the need to manage and track page tables, which can consume additional memory resources.

---

26. Which technique involves breaking down programs into smaller modules that are loaded into memory as needed?

a) Overlay
b) Swapping
c) Partitioning
d) Dynamic Linking and Loading

Answer: a) Overlay

Explanation: Overlay involves breaking down programs into smaller modules that are loaded into memory as needed, conserving memory space and improving efficiency.

---

27. Which memory management technique requires constant monitoring and adjustment of memory allocation to maintain system performance?

a) Partitioning
b) Swapping
c) Segmentation

d) Paging

Answer: b) Swapping

Explanation: Swapping requires constant monitoring and adjustment of memory allocation to maintain system performance, as processes are moved between main memory and disk.

---

28. What is a limitation of using segmentation in memory management?

a) Increased memory fragmentation
b) Inefficient memory allocation
c) Limited address space
d) Complexity in implementation

Answer: a) Increased memory fragmentation

Explanation: Segmentation can lead to increased memory fragmentation, where free memory is divided into small, non-contiguous blocks, reducing memory utilization efficiency.

---

29. Which technique involves storing frequently accessed data in a special area of memory for faster access?

a) Paging
b) Caching
c) Swapping
d) Partitioning

Answer: b) Caching

Explanation: Caching involves storing frequently accessed data in a special area of memory called cache, improving access speed and system performance.

---

30. What is the primary goal of demand paging in memory management?

a) To reduce memory fragmentation
b) To increase memory access speed
c) To improve memory utilization
d) To eliminate the need for swapping

Answer: c) To improve memory utilization

Explanation: Demand paging aims to improve memory utilization by loading only necessary pages into memory, reducing the initial memory footprint of processes.

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