1. Which factor is crucial for achieving efficient data access in computing systems?

a) CPU clock speed
b) Data storage capacity
c) Data access latency
d) Network bandwidth

Answer: c) Data access latency

Explanation: Data access latency refers to the time it takes to retrieve information from memory or storage. Minimizing this latency is crucial for efficient data access in computing systems.

2. Which optimization technique focuses on rearranging data in storage to improve access performance?

a) Parallel processing
b) Data compression
c) Storage order optimization
d) Algorithmic complexity reduction

Answer: c) Storage order optimization

Explanation: Storage order optimization involves arranging data in a manner that reduces access times, such as grouping related data together or utilizing techniques like cache-friendly memory layouts.

3. Which type of computer architecture relies on a single shared memory pool accessible by

all processors?

a) Distributed memory computers
b) Hybrid systems
c) Network computers
d) Shared memory computers

Answer: d) Shared memory computers

Explanation: Shared memory computers allow multiple processors to access a single shared memory pool, enabling efficient data sharing and communication among processors.

4. In a distributed memory computer, how do processors communicate with each other?

a) Through a shared memory pool
b) Via a high-speed interconnection network
c) Using parallel processing algorithms
d) Through dedicated communication channels

Answer: b) Via a high-speed interconnection network

Explanation: In distributed memory computers, processors communicate with each other through a high-speed interconnection network, as they have separate memory spaces.

5. Which optimization technique involves breaking down tasks into smaller subtasks that can be executed simultaneously?

a) Data compression

b) Algorithmic complexity reduction
c) Parallel processing
d) Cache optimization

Answer: c) Parallel processing

Explanation: Parallel processing involves dividing tasks into smaller parts that can be executed simultaneously by multiple processors, thus improving overall performance.

6. Which factor is a primary consideration for optimizing data access in network computers?

a) CPU clock speed
b) Network bandwidth
c) Storage capacity
d) Cache size

Answer: b) Network bandwidth

Explanation: In network computers, optimizing data access involves maximizing network bandwidth to ensure efficient communication between nodes.

7. Which optimization technique aims to reduce the amount of data transferred over a network?

a) Data compression
b) Parallel processing
c) Storage order optimization
d) Cache optimization

Answer: a) Data compression

Explanation: Data compression reduces the size of data, thereby reducing the amount of data transferred over a network and improving efficiency.

8. Which type of computer architecture combines the features of both shared and distributed memory systems?

a) Shared memory computers
b) Distributed memory computers
c) Hybrid systems
d) Network computers

Answer: c) Hybrid systems

Explanation: Hybrid systems integrate features from both shared and distributed memory architectures to leverage their respective advantages.

9. Which optimization technique involves storing frequently accessed data closer to the processor for faster access?

a) Cache optimization
b) Data compression
c) Parallel processing
d) Storage order optimization

Answer: a) Cache optimization

Explanation: Cache optimization involves utilizing fast, temporary storage (cache) to store frequently accessed data, reducing access latency.

10. Which type of computer architecture typically utilizes message passing for inter-processor communication?

a) Shared memory computers
b) Distributed memory computers
c) Hybrid systems
d) Network computers

Answer: b) Distributed memory computers

Explanation: In distributed memory computers, processors typically communicate via message passing due to their separate memory spaces.

11. Which optimization technique aims to reduce the time it takes to execute algorithms?

a) Cache optimization
b) Data compression
c) Algorithmic complexity reduction
d) Parallel processing

Answer: c) Algorithmic complexity reduction

Explanation: Algorithmic complexity reduction involves optimizing algorithms to reduce their time complexity, leading to faster execution.

12. In which type of computer architecture do processors have their own dedicated memory?

a) Shared memory computers
b) Distributed memory computers
c) Hybrid systems
d) Network computers

Answer: b) Distributed memory computers

Explanation: In distributed memory computers, each processor has its own dedicated memory space, distinct from other processors.

13. Which optimization technique focuses on minimizing the amount of data transferred between the processor and memory?

a) Cache optimization
b) Data compression
c) Parallel processing
d) Storage order optimization

Answer: a) Cache optimization

Explanation: Cache optimization reduces the need to transfer data between the processor and memory by storing frequently accessed data in a fast cache memory.

14. Which type of computer architecture is characterized by a high degree of scalability and flexibility?

a) Shared memory computers
b) Distributed memory computers
c) Hybrid systems
d) Network computers

Answer: d) Network computers

Explanation: Network computers offer scalability and flexibility by connecting multiple nodes over a network, allowing for dynamic resource allocation.

15. Which optimization technique involves rearranging the sequence of operations to improve efficiency?

a) Cache optimization
b) Data compression
c) Algorithmic complexity reduction
d) Storage order optimization

Answer: c) Algorithmic complexity reduction

Explanation: Algorithmic complexity reduction involves optimizing the sequence of operations within algorithms to improve efficiency.

16. Which type of computer architecture is typically associated with high-performance computing clusters?

a) Shared memory computers
b) Distributed memory computers

c) Hybrid systems
d) Network computers

Answer: b) Distributed memory computers

Explanation: Distributed memory computers, often in the form of high-performance computing clusters, are used for parallel processing and large-scale computations.

17. Which optimization technique aims to minimize the time spent waiting for data to be retrieved from memory?

a) Cache optimization
b) Data compression
c) Parallel processing
d) Storage order optimization

Answer: a) Cache optimization

Explanation: Cache optimization reduces data access latency by storing frequently accessed data in a faster cache memory closer to the processor.

18. Which type of computer architecture is most suitable for applications requiring high-speed inter-processor communication?

a) Shared memory computers
b) Distributed memory computers
c) Hybrid systems
d) Network computers

Answer: a) Shared memory computers

Explanation: Shared memory computers facilitate high-speed inter-processor communication due to their shared memory architecture.

19. Which optimization technique involves minimizing the movement of data between different levels of memory hierarchy?

a) Cache optimization
b) Data compression
c) Parallel processing
d) Storage order optimization

Answer: a) Cache optimization

Explanation: Cache optimization minimizes data movement between different levels of memory hierarchy by storing frequently accessed data in faster cache memory.

20. Which type of computer architecture typically exhibits a lower communication overhead among processors?

a) Shared memory computers
b) Distributed memory computers
c) Hybrid systems
d) Network computers

Answer: a) Shared memory computers

Explanation: Shared memory computers have lower communication overhead among processors compared to distributed memory systems, as they access a single shared memory pool.

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