

**FIRST PARTIAL EXAM** (Nov, 29<sup>th</sup>, 2023)

**PART 1 - MULTIPLE-CHOICE QUESTION (MCQ)**

Choose the correct option from the choices provided.

- 1. What is a distributed system?**
  - a) A group of interconnected computers working together to achieve a common goal. X
  - b) A single computer performing various tasks simultaneously.
  - c) A standalone computer without any network connections.
  - d) A network of computers that do not communicate with each other.
- 2. In the Linda Tuple Space model, what is a tuple space used for?**
  - a) Representing distributed objects
  - b) Coordinating processes through shared memory
  - c) Enforcing strict synchronization
  - d) Storing and retrieving tuples through associative memory X
- 3. What does transparency in a distributed system refer to?**
  - a) The ability to handle data without encryption.
  - b) The visibility of each computer in the network.
  - c) The system's ability to operate without the user's knowledge of its internal workings. X
  - d) The simplicity in data transmission between computers.
- 4. Which architectural style is known for its simplicity and scalability, making it suitable for the web?**
  - a) Monolithic architecture
  - b) Microservices architecture
  - c) RESTful architecture X
  - d) Peer-to-peer architecture
- 5. What does "transparency" refer to in distributed systems?**
  - a) The invisibility of system operations.
  - b) The ability of the system to handle multiple tasks.
  - c) The system's capability to mask failures.
  - d) The user's unawareness of the system's inner workings. X
- 6. What is a key characteristic of the publish-subscribe style in distributed systems?**
  - a) Direct point-to-point communication
  - b) Centralized control
  - c) Asynchronous communication X
  - d) Synchronous communication
- 7. What is "Access Transparency" in distributed systems?**
  - a) The ability to access data without authorization.
  - b) The concealment of system complexity.
  - c) The system's ability to grant access rights.
  - d) The illusion of direct access to resources without intermediaries. X
- 8. Which type of transparency ensures that users can't detect the underlying complexity of the system?**
  - a) Access
  - b) Location X

- c) Mobility
- d) Concurrency

**9. Which transparency type refers to the system's ability to access data regardless of its physical location?**

- a) Location X
- b) Access
- c) Concurrency
- d) Mobility

**10. What does the term "tuple space" refer to in the context of Linda Tuple Space?**

- a) A storage space for tuples X
- b) A space reserved for data consistency
- c) A space for storing hierarchical data
- d) A mechanism for enforcing tight coupling

**11. What does "Replication Transparency" aim to achieve in distributed systems?**

- a) The hiding of redundant data. X
- b) The system's ability to handle multiple data access requests simultaneously.
- c) The concealment of changes in data locations.
- d) The system's capacity to replicate data without errors.

**12. What is "Concurrency Transparency" in distributed systems?**

- a) The system's capability to handle multiple tasks.
- b) The system's ability to replicate data across nodes.
- c) The hiding of data access conflicts. X
- d) The concealment of system complexity.

**13. Which transparency type focuses on the user's unawareness of the system's internal structures and data handling?**

- a) Location
- b) Access X
- c) Mobility
- d) Concurrency

**14. What does "Failure Transparency" imply in distributed systems?**

- a) The system's concealment of fault occurrences. X
- b) The ability to fail without affecting user operations.
- c) The system's ability to handle multiple failures.
- d) The hiding of user-induced failures.

**15. Which design goal refers to the ability of a system to continue operating even when faults occur?**

- a) Fault tolerance X
- b) Security
- c) Scalability
- d) Interoperability

**16. Scalability in a distributed system indicates:**

- a) The system's ability to adapt to different programming languages.
- b) The system's capacity to handle a growing amount of work by adding resources. X
- c) The system's security against external attacks.
- d) The network's speed for data transmission.

**17. Well-defined interfaces in distributed systems aid in:**

- a) Encouraging complex and non-standard communication.
- b) Establishing communication boundaries between systems. X
- c) Limiting access to system functionalities.
- d) Isolating systems from external integrations.

**18. Policy and mechanism in distributed systems primarily focus on:**

- a) Enforcing strict restrictions on system operations.
- b) The regulation of access control and behavior within the system. X
- c) Promoting an open and accessible environment for all users.
- d) Encouraging unregulated system communications.

**PART 2 : MULTIPLE-SELECT MULTIPLE-CHOICE QUESTION (MSMCQ) (Select all that apply)**

**19. Which of the following are advantages of distributed systems?**

- a) Improved reliability X
- b) Lower development cost
- c) Increased performance X
- d) Centralized control

**20. Select the statements that are true regarding fault tolerance in distributed systems.**

- a) Fault tolerance is not essential in distributed systems.
- b) Redundancy is a common technique for achieving fault tolerance. X
- c) Fault tolerance ensures that failures never occur.

**21. What are characteristics of peer-to-peer (P2P) distributed systems?**

- a) Centralized control
- b) Scalability X
- c) Decentralization X
- d) Low latency

**22. Select the characteristics of Layered Architecture.**

- a) Each layer performs a specific set of functions X
- b) Easy to modify or replace individual layers X
- c) Communication typically only occurs between adjacent layers X

**23. Select the characteristics of Publish-Subscribe Architecture.**

- a) Subscribers directly request data from publishers
- b) Loose coupling between publishers and subscribers X
- c) All subscribers receive the same data
- d) Publishers are unaware of the identity of subscribers X

**24. Select the aspects associated with transparency in distributed systems.**

- a) Access Transparency X
- b) Communication Transparency X
- c) High Latency
- d) Fault Transparency X

**25. Select the characteristics of Failure Transparency.**

- a) Detection and handling of failures are visible to users X
- b) Failures are completely hidden from users
- c) Automatic recovery mechanisms in case of failure X
- d) Users must manually handle failures

**26. Which of the following are challenges to achieving Replication Transparency?**

- a) Maintaining consistent data across replicas
- b) Automatic load balancing in a replicated environment X
- c) Users are aware of the replication strategy X
- d) Hidden failures in replicated systems


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