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| 1. A distributed database management system (DDBMS) governs the storage and processing of logically related data over interconnected computer systems.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-1 The Evolution of Distributed Database Management Systems | | *LEARNING OBJECTIVES:* | 12.01 - Explain the purpose and function of distributed database management systems (DDBMSs) | |

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| 2. Distributed data access was needed to support geographically dispersed business units.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-1 The Evolution of Distributed Database Management Systems | | *LEARNING OBJECTIVES:* | 12.01 - Explain the purpose and function of distributed database management systems (DDBMSs) | |

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| 3. Rapid ad hoc data became unnecessary in the quick-response decision-making environment.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-1 The Evolution of Distributed Database Management Systems | | *LEARNING OBJECTIVES:* | 12.01 - Explain the purpose and function of distributed database management systems (DDBMSs) | |

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| 4. The web is the repository for distributed data.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-1 The Evolution of Distributed Database Management Systems | | *LEARNING OBJECTIVES:* | 12.01 - Explain the purpose and function of distributed database management systems (DDBMSs) | |

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| 5. Current distributed database management system (DDBMS) are subject to some problems, such as the complexity of management and control.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-2 DDBMS Advantages and Disadvantages | | *LEARNING OBJECTIVES:* | 12.02 - Summarize the advantages and disadvantages of DDBMSs | |

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| 6. Distributed processing shares a database's logical processing among two or more physically independent sites that are connected through a network.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-3 Distributed Processing and Distributed Databases | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 7. One of the advantages of a distributed database management system (DDBMS) is that the data is located near the site with the least demand.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 12-2 DDBMS Advantages and Disadvantages | | *LEARNING OBJECTIVES:* | 12.02 - Summarize the advantages and disadvantages of DDBMSs | |

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| 8. One of the advantages of a distributed database management system (DDBMS) is security.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-2 DDBMS Advantages and Disadvantages | | *LEARNING OBJECTIVES:* | 12.02 - Summarize the advantages and disadvantages of DDBMSs | |

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| 9. Distributed processing does not require a distributed database, and a distributed database does not require distributed processing.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 12-3 Distributed Processing and Distributed Databases | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 10. In order to manage distributed data, copies or parts of the database processing functions must be distributed to all data storage sites.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-3 Distributed Processing and Distributed Databases | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 11. A database management system (DBMS) must have validation, transformation, and mapping functions, as well as other functions, in order to be classified as distributed.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-4 Characteristics of Distributed Database Management Systems | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 12. A fully distributed database management system (DBMS) must perform all the functions of a centralized DBMS, and it must handle all necessary functions imposed by the distribution of data and processing.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-4 Characteristics of Distributed Database Management Systems | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 13. The transaction processor (TP) is the software component found in each computer that requests data.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-5 DDBMS Components | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 14. A distributed database management system (DDBMS) must be communications-media-dependent.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 12-5 DDBMS Components | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 15. A transaction processor (TP) is the software component residing on each computer that stores and retrieves data located at the site.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-5 DDBMS Components | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 16. In the single-site processing, single-site data (SPSD) scenario, all processing must be done on the end user's side of the system.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 12-6a Single-Site Processing, Single-Site Data | | *LEARNING OBJECTIVES:* | 12.04 - Explain how database implementation is affected by different levels of data and process distribution | |

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| 17. Performance transparency ensures that the system finds the most cost-effective path to access remote data.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-7 Distributed Database Transparency Features | | *LEARNING OBJECTIVES:* | 12.04 - Explain how database implementation is affected by different levels of data and process distribution | |

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| 18. The level of transparency supported by the distributed database management system remains the same for all systems.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-8 Distribution Transparency | | *LEARNING OBJECTIVES:* | 12.04 - Explain how database implementation is affected by different levels of data and process distribution | |

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| 19. Distribution transparency is supported by a distributed data dictionary.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-8 Distribution Transparency | | *LEARNING OBJECTIVES:* | 12.04 - Explain how database implementation is affected by different levels of data and process distribution | |

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| 20. Distributed database systems do not require complex mechanisms to manage transactions and ensure the database's consistency and integrity.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-9 Transaction Transparency | | *LEARNING OBJECTIVES:* | 12.05 - Explain how Extensible Markup Language (XML) is used for web database development | |

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| Multiple Choice |

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| 21. A centralized database management is subject to a problem such as \_\_\_\_\_.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | growing numbers of remote locations | b. | maintaining and operating small database systems | |  | c. | dependence on multiple sites | d. | organizational flexibility of the database |  |  |  | | --- | --- | | *ANSWER:* | a | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 12-1 The Evolution of Distributed Database Management Systems | | *LEARNING OBJECTIVES:* | 12.01 - Explain the purpose and function of distributed database management systems (DDBMSs) | |

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| 22. A disadvantage of a distributed database management system (DDBMS) is:   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | slower data access. | b. | site additions affects other operations. | |  | c. | processor dependence. | d. | lack of standards. |  |  |  | | --- | --- | | *ANSWER:* | d | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-2 DDBMS Advantages and Disadvantages | | *LEARNING OBJECTIVES:* | 12.02 - Summarize the advantages and disadvantages of DDBMSs | |

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| 23. A distributed database is composed of several parts known as database \_\_\_\_\_.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | sections | b. | fragments | |  | c. | partitions | d. | parts |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-3 Distributed Processing and Distributed Databases | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 24. Distributed processing does not require:   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | processing function distribution to all storage sites. | b. | an existing distributed database. | |  | c. | interconnected networks of components. | d. | multiple sites to share processing chores. |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-3 Distributed Processing and Distributed Databases | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 25. A database management system needs \_\_\_\_\_ to prepare the data for presentation to the end user or to an application program.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | security | b. | concurrency control | |  | c. | formatting | d. | I/O interface |  |  |  | | --- | --- | | *ANSWER:* | c | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-4 Characteristics of Distributed Database Management Systems | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 26. The \_\_\_\_\_ processor is the software component found in each computer that requests data. It receives and processes the application's data requests.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | database | b. | transaction | |  | c. | data | d. | network |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-5 DDBMS Components | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 27. In theory, a(n) \_\_\_\_\_ can be an independent centralized database management system with proper interfaces to support remote access from other independent database management systems in the network.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | transaction processor | b. | application processor | |  | c. | transaction manager | d. | data processor |  |  |  | | --- | --- | | *ANSWER:* | d | | *DIFFICULTY:* | Difficutly: Moderate | | *REFERENCES:* | 12-5 DDBMS Components | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 28. Under the \_\_\_\_\_ scenario, all record- and file-locking activities are performed at the end-user location.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | single-site processing, single-site data | b. | multiple-site processing, single-site data | |  | c. | single-site processing, multiple-site data | d. | multiple-site processing, multiple-site data |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-6b Multiple-Site Processing, Single-Site Data | | *LEARNING OBJECTIVES:* | 12.04 - Explain how database implementation is affected by different levels of data and process distribution | |

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| 29. \_\_\_\_\_ distributed database management systems (DDBMS) integrate multiple instances of the same DBMS over a network.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Homogeneous | b. | Heterogeneous | |  | c. | Fully heterogeneous | d. | Combination |  |  |  | | --- | --- | | *ANSWER:* | a | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 12-6c Multiple-Site Processing, Multiple-Site Data | | *LEARNING OBJECTIVES:* | 12.04 - Explain how database implementation is affected by different levels of data and process distribution | |

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| 30. A \_\_\_\_\_ distributed database system will support different database management systems (DBMS) that may even support different models running under different computer systems.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | fully heterogeneous | b. | fully homogeneous | |  | c. | homogeneous | d. | heterogeneous |  |  |  | | --- | --- | | *ANSWER:* | a | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 12-6c Multiple-Site Processing, Multiple-Site Data | | *LEARNING OBJECTIVES:* | 12.04 - Explain how database implementation is affected by different levels of data and process distribution | |

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| 31. A DDBMS is subject to which restriction?   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Multiple instances of the same database should be integrated over a network. | b. | All database processing must be done at a single site. | |  | c. | Rapid ad hoc data access is not possible. | d. | Remote data access is provided on a read-only basis. |  |  |  | | --- | --- | | *ANSWER:* | d | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-6c Multiple-Site Processing, Multiple-Site Data | | *LEARNING OBJECTIVES:* | 12.04 - Explain how database implementation is affected by different levels of data and process distribution | |

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| 32. \_\_\_\_\_ transparency allows a physically dispersed database to be managed as though it were centralized.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Distribution | b. | Transaction | |  | c. | Failure | d. | Performance |  |  |  | | --- | --- | | *ANSWER:* | a | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-7 Distributed Database Transparency Features | | *LEARNING OBJECTIVES:* | 12.05 - Explain how Extensible Markup Language (XML) is used for web database development | |

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| 33. \_\_\_\_\_ transparency allows data to be updated simultaneously at several network sites.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Transaction | b. | Distribution | |  | c. | Failure | d. | Performance |  |  |  | | --- | --- | | *ANSWER:* | a | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-7 Distributed Database Transparency Features | | *LEARNING OBJECTIVES:* | 12.05 - Explain how Extensible Markup Language (XML) is used for web database development | |

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| 34. \_\_\_\_\_ transparency allows the system to operate as if it were a centralized database management system.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Heterogeneity | b. | Distribution | |  | c. | Performance | d. | Failure |  |  |  | | --- | --- | | *ANSWER:* | c | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-7 Distributed Database Transparency Features | | *LEARNING OBJECTIVES:* | 12.05 - Explain how Extensible Markup Language (XML) is used for web database development | |

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| 35. \_\_\_\_\_ transparency is the highest level of transparency. The end user or programmer does not need to know that a database is partitioned.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Performance | b. | Fragmentation | |  | c. | Location | d. | Local mapping |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-8 Distribution Transparency | | *LEARNING OBJECTIVES:* | 12.05 - Explain how Extensible Markup Language (XML) is used for web database development | |

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| 36. \_\_\_\_\_ transparency exists when the end user or programmer must specify the database fragment names but does not need to specify where these fragments are located.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Transaction | b. | Location | |  | c. | Local mapping | d. | Fragmentation |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-8 Distribution Transparency | | *LEARNING OBJECTIVES:* | 12.05 - Explain how Extensible Markup Language (XML) is used for web database development | |

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| 37. A distributed \_\_\_\_\_ contains the description of the entire database as seen by the database administrator.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | global index | b. | data dictionary | |  | c. | global catalog | d. | data thesaurus |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-8 Distribution Transparency | | *LEARNING OBJECTIVES:* | 12.05 - Explain how Extensible Markup Language (XML) is used for web database development | |

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| 38. A \_\_\_\_\_ lets a single SQL statement access the data that are to be processed by a single remote database processor.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | remote request | b. | remote transaction | |  | c. | distributed request | d. | distributed transaction |  |  |  | | --- | --- | | *ANSWER:* | a | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-9a Distributed Requests and Distributed Transactions | | *LEARNING OBJECTIVES:* | 12.05 - Explain how Extensible Markup Language (XML) is used for web database development | |

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| 39. A distributed \_\_\_\_\_ can reference several different local or remote data processing sites.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | request | b. | site | |  | c. | data location | d. | transaction |  |  |  | | --- | --- | | *ANSWER:* | d | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-9a Distributed Requests and Distributed Transactions | | *LEARNING OBJECTIVES:* | 12.05 - Explain how Extensible Markup Language (XML) is used for web database development | |

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| 40. A \_\_\_\_\_ request lets a single SQL statement reference data located at several different local or remote DP sites.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | distributed | b. | transaction | |  | c. | fragmented | d. | remote |  |  |  | | --- | --- | | *ANSWER:* | a | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-9a Distributed Requests and Distributed Transactions | | *LEARNING OBJECTIVES:* | 12.05 - Explain how Extensible Markup Language (XML) is used for web database development | |

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| 41. The \_\_\_\_\_ guarantees that if a portion of a transaction operation cannot be committed, all changes made at the other sites participating in the transaction will be undone to maintain a consistent database state.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | DO-UNDO-REDO protocol | b. | two-phase commit protocol (2PC) | |  | c. | coordinator protocol | d. | write-ahead protocol |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-9c Two-Phase Commit Protocol | | *LEARNING OBJECTIVES:* | 12.05 - Explain how Extensible Markup Language (XML) is used for web database development | |

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| 42. The objective of \_\_\_\_\_ optimization is to minimize the total cost associated with the execution of a request.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | data | b. | remote | |  | c. | transaction | d. | query |  |  |  | | --- | --- | | *ANSWER:* | d | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-10 Performance and Failure Transparency | | *LEARNING OBJECTIVES:* | 12.06 - Describe how distributed database design balances performance, scalability, and availability | |

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| 43. \_\_\_\_\_ is the delay imposed by the amount of time required for a data packet to make a round trip from point A to point B.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Data distribution | b. | Replica transparency | |  | c. | Network latency | d. | Network partitioning |  |  |  | | --- | --- | | *ANSWER:* | c | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-10 Performance and Failure Transparency | | *LEARNING OBJECTIVES:* | 12.06 - Describe how distributed database design balances performance, scalability, and availability | |

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| 44. \_\_\_\_\_ fragmentation allows a user to break a single object into two or more segments, or fragments.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Horizontal | b. | Vertical | |  | c. | Data | d. | Request |  |  |  | | --- | --- | | *ANSWER:* | c | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-11a Data Fragmentation | | *LEARNING OBJECTIVES:* | 12.06 - Describe how distributed database design balances performance, scalability, and availability | |

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| 45. \_\_\_\_\_ fragmentation refers to the division of a relation into subsets of tuples.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Vertical | b. | Horizontal | |  | c. | Data | d. | Mixed |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-11a Data Fragmentation | | *LEARNING OBJECTIVES:* | 12.06 - Describe how distributed database design balances performance, scalability, and availability | |

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| 46. \_\_\_\_\_ fragmentation refers to the division of a relation into attribute subsets.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Data | b. | Horizontal | |  | c. | Vertical | d. | Mixed |  |  |  | | --- | --- | | *ANSWER:* | c | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-11a Data Fragmentation | | *LEARNING OBJECTIVES:* | 12.06 - Describe how distributed database design balances performance, scalability, and availability | |

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| 47. The \_\_\_\_\_ rule requires that all copies of data fragments be identical.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | shared fragment | b. | mutual consistency | |  | c. | horizontal fragmentation | d. | replication |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-11b Data Replication | | *LEARNING OBJECTIVES:* | 12.06 - Describe how distributed database design balances performance, scalability, and availability | |

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| 48. A(n) \_\_\_\_\_ database stores each database fragment at a single site.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | partially replicated | b. | unreplicated | |  | c. | fully replicated | d. | partitioned |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-11b Data Replication | | *LEARNING OBJECTIVES:* | 12.06 - Describe how distributed database design balances performance, scalability, and availability | |

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| 49. During \_\_\_\_\_ data allocation, the database is divided into two or more disjointed parts (fragments) and stored at two or more sites.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | mixed | b. | replicated | |  | c. | centralized | d. | partitioned |  |  |  | | --- | --- | | *ANSWER:* | d | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 12-11c Data Allocation | | *LEARNING OBJECTIVES:* | 12.06 - Describe how distributed database design balances performance, scalability, and availability | |

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| 50. Which property of the CAP theorem assumes that all transaction operations take place at the same time in all nodes, as if they were executing in a single-node database?   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Consistency | b. | Partition tolerance | |  | c. | Availability | d. | Performance transparency |  |  |  | | --- | --- | | *ANSWER:* | a | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 12-12 The CAP Theorem | | *LEARNING OBJECTIVES:* | 12.06 - Describe how distributed database design balances performance, scalability, and availability | |

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| 51. In a basic distributed processing environment, the distributed processing system shares the database chores among three sites connected through a(n) \_\_\_\_\_.   |  |  | | --- | --- | | *ANSWER:* | communications network | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-3 Distributed Processing and Distributed Databases | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 52. One of the advantages of a distributed database management system (DDBMS) is \_\_\_\_\_ operating cost.   |  |  | | --- | --- | | *ANSWER:* | reduced  lower | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-2 DDBMS Advantages and Disadvantages | | *LEARNING OBJECTIVES:* | 12.02 - Summarize the advantages and disadvantages of DDBMSs | |

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| 53. A user-friendly \_\_\_\_\_ is one advantage of a distributed database management system (DDBMS) .   |  |  | | --- | --- | | *ANSWER:* | interface | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-2 DDBMS Advantages and Disadvantages | | *LEARNING OBJECTIVES:* | 12.02 - Summarize the advantages and disadvantages of DDBMSs | |

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| 54. One of the advantages of a distributed database management system (DDBMS) is less danger of a single-\_\_\_\_\_ failure.   |  |  | | --- | --- | | *ANSWER:* | point | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-2 DDBMS Advantages and Disadvantages | | *LEARNING OBJECTIVES:* | 12.02 - Summarize the advantages and disadvantages of DDBMSs | |

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| 55. One of the advantages of a distributed database management system (DDBMS) is processor \_\_\_\_\_.   |  |  | | --- | --- | | *ANSWER:* | independence | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-2 DDBMS Advantages and Disadvantages | | *LEARNING OBJECTIVES:* | 12.02 - Summarize the advantages and disadvantages of DDBMSs | |

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| 56. \_\_\_\_\_ management ensures that data move from one consistent state to another.   |  |  | | --- | --- | | *ANSWER:* | Transaction | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-4 Characteristics of Distributed Database Management Systems | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 57. In a distributed database management system (DDBMS), \_\_\_\_\_ occurs to determine the data location of local and remote fragments.   |  |  | | --- | --- | | *ANSWER:* | mapping | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-4 Characteristics of Distributed Database Management Systems | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 58. In a distributed database management system (DDBMS), query \_\_\_\_\_ is used to find the best access strategy.   |  |  | | --- | --- | | *ANSWER:* | optimization | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-4 Characteristics of Distributed Database Management Systems | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 59. In a distributed database management system (DDBMS), \_\_\_\_\_ control is used to manage simultaneous data access and ensure data consistency across database fragments.   |  |  | | --- | --- | | *ANSWER:* | concurrency | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-4 Characteristics of Distributed Database Management Systems | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 60. A transaction processor is also known as the \_\_\_\_\_ processor.   |  |  | | --- | --- | | *ANSWER:* | application | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-5 DDBMS Components | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 61. The distributed database system must be \_\_\_\_\_ of the computer system hardware.   |  |  | | --- | --- | | *ANSWER:* | independent | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-5 DDBMS Components | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 62. The \_\_\_\_\_ scenario is typical of most mainframe and midrange UNIX/LINUX server database management systems (DBMS).   |  |  | | --- | --- | | *ANSWER:* | single-site processing, single-site data  SPSD  single-site processing, single-site data (SPSD) | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-6a Single-Site Processing, Single-Site Data | | *LEARNING OBJECTIVES:* | 12.04 - Explain how database implementation is affected by different levels of data and process distribution | |

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| 63. Typically, the \_\_\_\_\_ scenario requires a network file server running conventional applications that are accessed through a network.   |  |  | | --- | --- | | *ANSWER:* | multiple-site processing, single-site data  MPSD  multiple-site processing, single-site data (MPSD) | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-6b Multiple-Site Processing, Single-Site Data | | *LEARNING OBJECTIVES:* | 12.04 - Explain how database implementation is affected by different levels of data and process distribution | |

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| 64. The \_\_\_\_\_ fragment condition indicates that no row has a duplicate, regardless of the fragment in which it is located.   |  |  | | --- | --- | | *ANSWER:* | unique | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 12-8 Distribution Transparency | | *LEARNING OBJECTIVES:* | 12.05 - Explain how Extensible Markup Language (XML) is used for web database development | |

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| 65. The database description, known as the distributed \_\_\_\_\_ schema, is the common database schema used by local transaction processors (TPs) to translate user requests into subqueries that will be processed by different data processors (DPs).   |  |  | | --- | --- | | *ANSWER:* | global | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-8 Distribution Transparency | | *LEARNING OBJECTIVES:* | 12.05 - Explain how Extensible Markup Language (XML) is used for web database development | |

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| 66. The \_\_\_\_\_ protocol is used by a DP to roll transactions back and forward with the help of the system's transaction log entries.   |  |  | | --- | --- | | *ANSWER:* | DO-UNDO-REDO  DO UNDO REDO  do-undo-redo  do undo redo | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-9c Two-Phase Commit Protocol | | *LEARNING OBJECTIVES:* | 12.05 - Explain how Extensible Markup Language (XML) is used for web database development | |

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| 67. The \_\_\_\_\_ forces the log entry to be written to permanent storage before the actual operation takes place.   |  |  | | --- | --- | | *ANSWER:* | write-ahead protocol | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-9c Two-Phase Commit Protocol | | *LEARNING OBJECTIVES:* | 12.05 - Explain how Extensible Markup Language (XML) is used for web database development | |

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| 68. Data \_\_\_\_\_ describes the process of deciding where to locate data.   |  |  | | --- | --- | | *ANSWER:* | allocation | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 12-11c Data Allocation | | *LEARNING OBJECTIVES:* | 12.06 - Describe how distributed database design balances performance, scalability, and availability | |

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| 69. After an update, the originating DP node sends the changes to the replica nodes to ensure that data is immediately updated, during \_\_\_\_\_ replication.   |  |  | | --- | --- | | *ANSWER:* | push | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 12-11b Data Replication | | *LEARNING OBJECTIVES:* | 12.06 - Describe how distributed database design balances performance, scalability, and availability | |

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| 70. During \_\_\_\_\_ replication, after an update, the originating DP node sends “messages” to the replica nodes to notify them of the update.   |  |  | | --- | --- | | *ANSWER:* | pull | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 12-11b Data Replication | | *LEARNING OBJECTIVES:* | 12.06 - Describe how distributed database design balances performance, scalability, and availability | |

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| 71. A fully distributed database management system must perform all of the functions of a centralized database management system (DBMS). What are these functions?   |  |  | | --- | --- | | *ANSWER:* | 1. Receive the request of an application or end user.  2. Validate, analyze, and decompose the request. The request might include mathematical and logical operations such as the following: Select all customers with a balance greater than $1,000. The request might require data from only a single table, or it might require access to several tables.  3. Map the request’s logical-to-physical data components.  4. Decompose the request into several disk I/O operations.  5. Search for, locate, read, and validate the data.  6. Ensure database consistency, security, and integrity.  7. Validate the data for the conditions, if any, specified by the request.  8. Present the selected data in the required format. | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 12-4 Characteristics of Distributed Database Management Systems | | *LEARNING OBJECTIVES:* | 12.03 - Describe the characteristics and components of DDBMSs | |

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| 72. Explain the difference between homogeneous and heterogeneous distributed database management systems (DDBMS).   |  |  | | --- | --- | | *ANSWER:* | Homogeneous DDBMSs integrate multiple instances of the same DBMS over a network—for example, multiple instances of Oracle 11g running on different platforms. In contrast, heterogeneous DDBMSs integrate different types of DBMSs over a network, but all support the same data model. A fully heterogeneous DDBMS will support different DBMSs, each one supporting a different data model, running under different computer systems. | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 12-6c Multiple-Site Processing, Multiple-Site Data | | *LEARNING OBJECTIVES:* | 12.04 - Explain how database implementation is affected by different levels of data and process distribution | |

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| 73. Describe performance transparency and heterogeneity transparency.   |  |  | | --- | --- | | *ANSWER:* | Performance transparency allows the system to perform as if it were a centralized DBMS. The system will not suffer any performance degradation due to its use on a network or because of the network’s platform differences. Performance transparency also ensures that the system will find the most cost-effective path to access remote data. The system should be able to “scale out” in a transparent manner, or increase performance capacity by adding more transaction or data-processing nodes, without affecting the overall performance of the system.  ​  Heterogeneity transparency (relational, network, and hierarchical) under a common, or global, schema. The DDBMS is responsible for translating the data requests from the global schema to the local DBMS schema.allows the integration of several different local DBMSs | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 12-7 Distributed Database Transparency Features | | *LEARNING OBJECTIVES:* | 12.05 - Explain how Extensible Markup Language (XML) is used for web database development | |

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| 74. What is transaction transparency? What are some of the basic concepts that one should know to understand how transactions are managed in a distributed database management system (DDBMS)?   |  |  | | --- | --- | | *ANSWER:* | Transaction transparency is a DDBMS property that ensures database transactions will maintain the distributed database’s integrity and consistency. It should be remembered that a DDBMS database transaction can update data stored in many different computers connected in a network. Transaction transparency ensures that the transaction will be completed only when all database sites involved in the transaction complete their part of the transaction.    Distributed database systems require complex mechanisms to manage transactions and ensure the database’s consistency and integrity. To understand how the transactions are managed, the basic concepts governing remote requests, remote transactions, distributed transactions, and distributed requests should be known. | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 12-7 Distributed Database Transparency Features 12-9 Transaction Transparency | | *LEARNING OBJECTIVES:* | 12.05 - Explain how Extensible Markup Language (XML) is used for web database development | |

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| 75. Explain the three types of operations defined by the DO-UNDO-REDO protocol.   |  |  | | --- | --- | | *ANSWER:* | 1. DO performs the operation and records the “before” and “after” values in the transaction log. 2. UNDO reverses an operation, using the log entries written by the DO portion of the sequence. 3. REDO redoes an operation, using the log entries written by the DO portion of the sequence. | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 12-9c Two-Phase Commit Protocol | | *LEARNING OBJECTIVES:* | 12.05 - Explain how Extensible Markup Language (XML) is used for web database development | |