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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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p 554 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-1 - LO12-1 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | The Evolution of Distributed Database Management System | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 2. Distributed data access was needed to support geographically dispersed business units.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 555 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-1 - LO12-1 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | The Evolution of Distributed Database Management System | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 3. Rapid ad hoc data became unnecessary in the quick-response decision-making environment.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 555 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-1 - LO12-1 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | The Evolution of Distributed Database Management System | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 4. The Internet is the repository for distributed data.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 555 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-1 - LO12-1 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | The Evolution of Distributed Database Management System | | *KEYWORDS:* | Bloom's: Knowledge | |

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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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 556 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-2 - LO12-2 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | DDBMS Advantages and Disadvantages | | *KEYWORDS:* | Bloom's: Knowledge | |

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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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 556 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-3 - LO12-3 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Processing and Distributed Databases | | *KEYWORDS:* | Bloom's: Knowledge | |

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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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 557 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-2 - LO12-2 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Processing and Distributed Databases | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 8. One of the advantages of a distributed database management system (DDBMS) is growth facilitation.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 557 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-2 - LO12-2 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Processing and Distributed Databases | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 9. One of the advantages of a distributed database management system (DDBMS) is security.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 557 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-2 - LO12-2 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Processing and Distributed Databases | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 10. Distributed processing does not require a distributed database, and a distributed database does not require distributed processing.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 558 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-3 - LO12-3 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Processing and Distributed Databases | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 11. 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 558 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-3 - LO12-3 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Processing and Distributed Databases | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 12. 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 559 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-4 - LO12-4 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Characteristic of Distributed Database Management Systems | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 13. 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 559 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-4 - LO12-4 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Characteristic of Distributed Database Management Systems | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 14. The transaction processor (TP) is the software component found in each computer that requests data.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 560 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-5 - LO12-5 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | DDBMS Components | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 15. A distributed database management system (DDBMS) must be communications-media-dependent.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 560 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-5 - LO12-5 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | DDBMS Components | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 16. 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 560 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-5 - LO12-5 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | DDBMS Components | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 17. 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 561 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-6 - LO12-6 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Levels of Data and process Distribution | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 18. Performance transparency ensures that the system finds the most cost-effective path to access remote data.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 565 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-7 - LO12-7 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Database Transparency Features | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 19. The level of transparency supported by the distributed database management system remains the same for all systems.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 565 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-8 - LO12-8 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distribution Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 20. Distribution transparency is supported by a distributed data dictionary.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 567 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-8 - LO12-8 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distribution Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 21. 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 568 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-9 - LO12-9 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distribution Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 22. A remote transaction, composed of several requests, may access data at multiple sites.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 568 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-9 - LO12-9 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distribution Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 23. A centralized database management is subject to a problem such as \_\_\_\_\_.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | a growing number of remote locations | b. | maintaining and operating small database systems | |  | c. | dependence on multiple sites | d. | organizational flexibility of the database |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | p. 556 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-1 - LO12-1 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | The Evolution of Distributed Database Management Systems | | *KEYWORDS:* | Bloom's: Comprehension | |

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| 24. A disadvantage of a distributed database management system (DDBMS) is that:   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | it is slower in terms of data access. | b. | adding new sites affects other sites' operations. | |  | c. | it is processor dependent. | d. | there are lack of standards. |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 557 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-2 - LO12-2 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Processing and Distributed Databases | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 25. A distributed database is composed of several parts known as database \_\_\_\_\_.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | sections | b. | fragments | |  | c. | partitions | d. | parts |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 557 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-3 - LO12-3 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Processing and Distributed Databases | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 26. Distributed processing does not require:   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | database processing functions to be distributed to all data storage sites. | b. | an existing distributed database. | |  | c. | a network of interconnected components. | d. | multiple sites to share processing chores. |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 558 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-3 - LO12-3 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Processing and Distributed Databases | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 27. 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 559 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-4 - LO12-4 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Characteristics of Distributed Database Management Systems | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 28. 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 560 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-5 - LO12-5 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | DDBMS Components | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 29. 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficutly: Easy | | *REFERENCES:* | p. 561 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-5 - LO12-5 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | DDBMS Components | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 30. 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 562-563 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-6 - LO12-6 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Levels of Data and Process Distribution | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 31. \_\_\_\_\_ distributed database management system (DDBMS) integrate multiple instances of the same DBMS over a network.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Homogeneous | b. | Heterogeneous | |  | c. | Fully heterogeneous | d. | Combination |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 563 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-6 - LO12-6 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Levels of Data and Process Distribution | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 32. 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 563 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-6 - LO12-6 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Levels of Data and Process Distribution | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 33. A DDBMS is subject to which of the following restrictions?   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 564 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-6 - LO12-6 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Levels of Data and Process Distribution | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 34. \_\_\_\_\_ transparency allows a physically dispersed database to be managed as though it were centralized.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Distribution | b. | Transaction | |  | c. | Failure | d. | Performance |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 565 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-7 - LO12-7 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distribution Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 35. \_\_\_\_\_ transparency allows data to be updated simultaneously at several network sites.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Transaction | b. | Distribution | |  | c. | Failure | d. | Performance |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 565 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-7 - LO12-7 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Database Transparency Features | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 36. \_\_\_\_\_ 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 565 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-7 - LO12-7 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Database Transparency Features | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 37. \_\_\_\_\_ 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 565 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-8 - LO12-8 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distribution Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 38. \_\_\_\_\_ 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 565 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-8 - LO12-8 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distribution Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 39. A \_\_\_\_\_ contains the description of the entire database as seen by the database administrator.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | distributed global dictionary | b. | distributed data dictionary | |  | c. | distributed global schema | d. | distributed data schema |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 567 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-8 - LO12-8 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distribution Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 40. 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 568 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-9 - LO12-9 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distribution Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 41. A distributed \_\_\_\_\_ can reference several different local or remote data processing sites.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | request | b. | site | |  | c. | data location | d. | transaction |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 569 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-9 - LO12-9 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distribution Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 42. 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 570 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-9 - LO12-9 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distribution Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 43. 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 571 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-9 - LO12-9 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distribution Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 44. 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 574 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-10 - LO12-10 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Performance and Failure Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 45. \_\_\_\_\_ 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 574 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-10 - LO12-10 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Performance and Failure Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 46. \_\_\_\_\_ 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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 575 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-11 - LO12-11 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Database Design | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 47. \_\_\_\_\_ fragmentation refers to the division of a relation into subsets of tuples.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Vertical | b. | Horizontal | |  | c. | Data | d. | Mixed |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 575 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-11 - LO12-11 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Database Design | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 48. \_\_\_\_\_ fragmentation refers to the division of a relation into attribute subsets.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Data | b. | Horizontal | |  | c. | Vertical | d. | Mixed |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 575 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-11 - LO12-11 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Database Design | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 49. The \_\_\_\_\_ rule requires that all copies of data fragments be identical.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | shared fragment | b. | mutual consistency | |  | c. | horizontal fragmentation | d. | replication |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 578 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-11 - LO12-11 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Database Design | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 50. A(n) \_\_\_\_\_ database stores each database fragment at a single site.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | partially replicated | b. | unreplicated | |  | c. | fully replicated | d. | partitioned |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 580 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-11 - LO12-11 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Database Design | | *KEYWORDS:* | Bloom's: Knowledge | |

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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 \_\_\_\_\_.   |  |  | | --- | --- | | *ANSWER:* | communications network | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 556 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-3 - LO12-3 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | DDBMS Advantage and Disadvantage | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 52. One of the advantages of a distributed database management system (DDBMS) is \_\_\_\_\_ operating cost.   |  |  | | --- | --- | | *ANSWER:* | reduced  lower | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 557 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-2 - LO12-2 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Processing and Distributed Databases | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 53. A user-friendly \_\_\_\_\_ is one advantage of a distributed database management system (DDBMS) .   |  |  | | --- | --- | | *ANSWER:* | interface | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 557 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-2 - LO12-2 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Processing and Distributed Databases | | *KEYWORDS:* | Bloom's: Knowledge | |

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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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 557 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-2 - LO12-2 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Processing and Distributed Databases | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 55. One of the advantages of a distributed database management system (DDBMS) is processor \_\_\_\_\_.   |  |  | | --- | --- | | *ANSWER:* | independence | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 557 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-2 - LO12-2 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Processing and Distributed Databases | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 56. \_\_\_\_\_ management ensures that data move from one consistent state to another.   |  |  | | --- | --- | | *ANSWER:* | Transaction | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 559 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-4 - LO12-4 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Characteristics of Distributed Database Management Systems | | *KEYWORDS:* | Bloom's: Knowledge | |

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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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 559 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-4 - LO12-4 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Characteristics of Distributed Database Management Systems | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 58. In a distributed database management system (DDBMS), query \_\_\_\_\_ is used to find the best access strategy.   |  |  | | --- | --- | | *ANSWER:* | optimization | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 559 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-4 - LO12-4 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Characteristics of Distributed Database Management Systems | | *KEYWORDS:* | Bloom's: Knowledge | |

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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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 559 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-4 - LO12-4 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Characteristics of Distributed Database Management Systems | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 60. A transaction processor is also known as the \_\_\_\_\_ processor.   |  |  | | --- | --- | | *ANSWER:* | application | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 560 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-5 - LO12-5 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | DDBMS Components | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 61. The distributed database system must be \_\_\_\_\_ of the computer hardware system.   |  |  | | --- | --- | | *ANSWER:* | independent | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 560 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-5 - LO12-5 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | DDBMS Components | | *KEYWORDS:* | Bloom's: Knowledge | |

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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) | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 561-562 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-6 - LO12-6 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Levels of Data and Process Distribution | | *KEYWORDS:* | Bloom's: Knowledge | |

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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) | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 562 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-6 - LO12-6 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Levels of Data and Process Distribution | | *KEYWORDS:* | Bloom's: Knowledge | |

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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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 566 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-8 - LO12-8 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distribution Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 567-568 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-8 - LO12-8 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distribution Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 572 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-9 - LO12-9 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distribution Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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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 | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 572 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-9 - LO12-9 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Transaction Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 68. \_\_\_\_\_ describes the process of deciding where to locate data.   |  |  | | --- | --- | | *ANSWER:* | data allocation | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | p. 580 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-7 - LO12-7 | | *NATIONAL STANDARDS:* | United States - BUSPROG: - Analytic | | *TOPICS:* | Distributed Database Design | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 69. 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. | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | p. 559 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-4 - LO12-4 | | *NATIONAL STANDARDS:* | United States - BUSPROG: Analytic | | *TOPICS:* | Characteristics of Distributed Database Management Systems | | *KEYWORDS:* | Bloom's: Comprehension | |

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| 70. 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. | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | p. 563 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-6 - LO12-6 | | *NATIONAL STANDARDS:* | United States - BUSPROG: Analytic | | *TOPICS:* | Levels of Data and process distribution | | *KEYWORDS:* | Bloom's: Comprehension | |

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| 71. 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. | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | p. 565 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-7 - LO12-7 | | *NATIONAL STANDARDS:* | United States - BUSPROG: Analytic | | *TOPICS:* | Distributed Database Transparency Features | | *KEYWORDS:* | Bloom's: Comprehension | |

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| 72. 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. | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | p. 568 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-9 - LO12-9 | | *NATIONAL STANDARDS:* | United States - BUSPROG: Analytic | | *TOPICS:* | Transaction Transparency | | *KEYWORDS:* | Bloom's: Comprehension | |

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| 73. 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. | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | p. 572 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-9 - LO12-9 | | *NATIONAL STANDARDS:* | United States - BUSPROG: Analytic | | *TOPICS:* | Transaction Transparency | | *KEYWORDS:* | Bloom's: Knowledge | |

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| 74. Discuss the CAP Theorem and the three desirable properties it mentions.  ​  ​   |  |  | | --- | --- | | *ANSWER:* | According to Dr. Eric Brewer, there are three commonly desirable properties in any highly distributed data system - ​  consistency, availability, and partition tolerance. However, it is impossible for a system to provide all three at the same  time  ​*Consistency* takes a bigger role in a distributed database. All nodes should see the same data at the same time which means the replicas should be immediately undated. This involves dealing with latency and network partitioning delay.  ​*Availability* is a paramount requirement of all web-centric organizations. No received request should ever be lost and requests should always be filled by the system.  ​*Partition tolerance* means the system continues to operate even in the event of a node failure and will fail only if all nodes fail.  ​ | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | p. 581 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-7 - LO12-7 | | *NATIONAL STANDARDS:* | United States - BUSPROG: Analytic | | *TOPICS:* | The CAP Theorem | | *KEYWORDS:* | Bloom's: Comprehension | |

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| 75. Describe any five of the 12 commandments formulated by C. J. Date for distributed databases.   |  |  | | --- | --- | | *ANSWER:* | With the rise of relational databases, most vendors implemented their own versions of distributed databases, generally highlighting their respective product’s strengths. To make comparisons easier, C. J. Date formulated 12 “commandments” or basic principles of distributed databases. Although no current DDBMS conforms to all of them, they constitute a useful target. Students may choose any five of the following 12 commandments and describe them:  ​  Rule 1: Local-site independence.  Each local site can act as an independent, autonomous, centralized DBMS. Each site is responsible for security, concurrency control, backup, and recovery.  ​  Rule 2: Central-site independence.  No site in the network relies on a central site or any other site. All sites have the same capabilities.  ​  Rule 3: Failure independence.  The system is not affected by node failures. The system is in continuous operation even in the case of a node failure or an expansion of the network.  ​  Rule 4: Location transparency.  The user does not need to know the location of data to retrieve those data.  ​  Rule 5: Fragmentation transparency.  Data fragmentation is transparent to the user, who sees only one logical database. The user does not need to know the name of the database fragments to retrieve them.  ​  Rule 6: Replication transparency.  The user sees only one logical database. The DDBMS transparently selects the database fragment to access. To the user, the DDBMS manages all fragments transparently.  ​  Rule 7: Distributed query processing.  A distributed query may be executed at several different data processor sites. Query optimization is performed transparently by the DDBMS.  ​  Rule 8: Distributed transaction processing.  A transaction may update data at several different sites, and the transaction is executed transparently.  ​  Rule 9: Hardware independence.  The system must run on any hardware platform.  ​  Rule 10: Operating system independence.  The system must run on any operating system platform.  ​  Rule 11: Network independence.  The system must run on any network platform.  ​  Rule 12: Database independence.  The system must support any vendor’s database product. | | *POINTS:* | 1 | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | p. 583 | | *LEARNING OBJECTIVES:* | DATA.CORO.15.LO12-14 - LO12-14 | | *NATIONAL STANDARDS:* | United States - BUSPROG: Analytic | | *TOPICS:* | C.J. Date's 12 Commandments for Distributed Databases | | *KEYWORDS:* | Bloom's: Comprehension | |