Database Systems Design Implementation and Management 12th edition Coronel Test Bank

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CHAPTER 2: DATA MODELS

1. A data model is usually graphical.
   a. True
   b. False

   ANSWER: True
   PTS: 1 DIF: Difficulty: Easy REF: p.36
   NAT: BUSPROG: Technology STATE: DISC: Information Technologies
   KEY: Bloom's: Knowledge TOP: Data Modeling and Data Models

2. An implementation-ready data model needn't necessarily contain enforceable rules to guarantee the integrity of the data.
   a. True
   b. False

   ANSWER: False
   PTS: 1 DIF: Difficulty: Moderate REF: p.36
   NAT: BUSPROG: Analytic STATE: DISC: Information Technologies
   KEY: Bloom's: Comprehension TOP: Data Modeling and Data Models

3. An implementation-ready data model should contain a description of the data structure that will store the end-user data.
   a. True
   b. False

   ANSWER: True
   PTS: 1 DIF: Difficulty: Easy REF: p.36
   NAT: BUSPROG: Technology STATE: DISC: Information Technologies
   KEY: Bloom's: Knowledge TOP: Data Modeling and Data Models

4. Within the database environment, a data model represents data structures with the purpose of supporting a specific problem domain.
   a. True
   b. False

   ANSWER: True
   PTS: 1 DIF: Difficulty: Easy REF: p.36
   NAT: BUSPROG: Technology STATE: DISC: Information Technologies
   KEY: Bloom's: Knowledge TOP: Data Modeling and Data Models

5. Even when a good database blueprint is available, an applications programmer’s view of the data should match that of the manager and the end user.
   a. True
   b. False

   ANSWER: False
   PTS: 1 DIF: Difficulty: Moderate REF: p.37
   NAT: BUSPROG: Analytic STATE: DISC: Information Technologies
   KEY: Bloom's: Comprehension TOP: The Importance of Data Models

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6. In the context of data models, an entity is a person, place, thing, or event about which data will be collected and stored.

   a. True

   b. False

   ANSWER: True
   PTS: 1 DIF: Difficulty: Easy REF: p.37-38
   NAT: BUSPROG: Technology STATE: DISC: Information Technologies
   KEY: Bloom's: Knowledge TOP: Data Model Basic Building Blocks

7. Database designers determine the data and information that yield the required understanding of the entire business.

   a. True

   b. False

   ANSWER: False
   PTS: 1 DIF: Difficulty: Easy REF: p.39
   NAT: BUSPROG: Technology STATE: DISC: Information Technologies
   KEY: Bloom's: Knowledge TOP: Business Rules

8. Business rules apply to businesses and government groups, but not to other types of organizations such as religious groups or research laboratories.

   a. True

   b. False

   ANSWER: False
   PTS: 1 DIF: Difficulty: Moderate REF: p.39
   NAT: BUSPROG: Analytic STATE: DISC: Information Technologies
   KEY: Bloom's: Comprehension TOP: Business Rules

9. Business rules must be rendered in writing.

   a. True

   b. False

   ANSWER: True
   PTS: 1 DIF: Difficulty: Easy REF: p.39
   NAT: BUSPROG: Communication STATE: DISC: Information Technologies
   KEY: Bloom's: Knowledge TOP: Business Rules

10. A disadvantage of the relational database management system (RDBMS) is its inability to hide the complexities of the relational model from the user.

    a. True

    b. False

    ANSWER: False.
    PTS: 1 DIF: Difficulty: Moderate REF: p.43
    NAT: BUSPROG: Analytic STATE: DISC: Information Technologies
    KEY: Bloom's: Comprehension TOP: The Evolution of Data Models

11. In an SQL-based relational database, each table is dependent on every other table.

    a. True

    b. False

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ANSWER: False
PTS: 1 DIF: Difficulty: Easy REF: p.45
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

12. In an SQL-based relational database, rows in different tables are related based on common values in common attributes.
    a. True
    b. False

ANSWER: True
PTS: 1 DIF: Difficulty: Easy REF: p.45
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

13. Each row in the relational table is known as an entity instance or entity occurrence in the ER model.
    a. True
    b. False

ANSWER: True
PTS: 1 DIF: Difficulty: Easy REF: p.46
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

14. M:N relationships are not appropriate in a relational model.
    a. True
    b. False

ANSWER: True
PTS: 1 DIF: Difficulty: Easy REF: p.47
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

15. In Chen notation, entities and relationships have to be oriented horizontally; not vertically.
    a. True
    b. False

ANSWER: False
PTS: 1 DIF: Difficulty: Easy REF: p.47
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

16. Today, most relational database products can be classified as object/relational.
    a. True
    b. False

ANSWER: True
PTS: 1 DIF: Difficulty: Easy REF: p.50
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

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17. The network model has structural level dependence.
    a. True
    b. False

    ANSWER: True
    PTS: 1 DIF: Difficulty: Easy REF: p.56
    NAT: BUSPROG: Technology STATE: DISC: Information Technologies
    KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

18. The external model is the representation of the database as "seen" by the DBMS.
    a. True
    b. False

    ANSWER: False
    PTS: 1 DIF: Difficulty: Easy REF: p.60
    NAT: BUSPROG: Technology STATE: DISC: Information Technologies
    KEY: Bloom's: Knowledge TOP: Degrees of Data Abstraction

19. The hierarchical model is software-independent.
    a. True
    b. False

    ANSWER: False
    PTS: 1 DIF: Difficulty: Easy REF: p.62
    NAT: BUSPROG: Technology STATE: DISC: Information Technologies
    KEY: Bloom's: Knowledge TOP: Degrees of Data Abstraction

20. The relational model is hardware-dependent and software-independent.
    a. True
    b. False

    ANSWER: False
    PTS: 1 DIF: Difficulty: Easy REF: p.62
    NAT: BUSPROG: Technology STATE: DISC: Information Technologies
    KEY: Bloom's: Knowledge TOP: Degrees of Data Abstraction

21. A(n)_____'s main function is to help one understand the complexities of the real-world environment.
    a. node b. entity
    c. model d. database

    ANSWER: c
    PTS: 1 DIF: Difficulty: Easy REF: p.36
    NAT: BUSPROG: Technology STATE: DISC: Information Technologies
    KEY: Bloom's: Knowledge TOP: Data Modeling and Data Models

22. A(n)_____is anything about which data are to be collected and stored.
    a. attribute b. entity
    c. relationship d. constraint

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ANSWER: b
PTS: 1 DIF: Difficulty: Easy REF: p.37
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: Data Model Basic Building Blocks

23. A(n)_____represents a particular type of object in the real world.
a. attribute b. entity
c. relationship d. node

ANSWER: b
PTS: 1 DIF: Difficulty: Easy REF: p.38
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: Data Modeling and Data Models

24. A(n)_____is the equivalent of a field in a file system.
a. attribute b. entity
c. relationship d. constraint

ANSWER: a
PTS: 1 DIF: Difficulty: Easy REF: p.38
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: Data Modeling and Data Models

25. A(n)_____is bidirectional.
a. attribute b. entity
c. relationship d. constraint

ANSWER: c
PTS: 1 DIF: Difficulty: Easy REF: p.38
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: Data Modeling and Data Models

26. A(n)_____is a restriction placed on the data.
a. attribute b. entity
c. relationship d. constraint

ANSWER: d
PTS: 1 DIF: Difficulty: Easy REF: p.38
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: Data Modeling and Data Models

27. _____are important because they help to ensure data integrity.
a. Attributes b. Entities
c. Relationships d. Constraints

ANSWER: d
PTS: 1 DIF: Difficulty: Easy REF: p.38
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: Data Modeling and Data Models

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28. _____are normally expressed in the form of rules.
    a. Attributes b. Entities
    c. Relationships d. Constraints

    ANSWER: d
    PTS: 1 DIF: Difficulty: Easy REF: p.38
    NAT: BUSPROG: Technology STATE: DISC: Information Technologies
    KEY: Bloom's: Knowledge TOP: Data Modeling and Data Models

29. Students and classes have a_____relationship.
    a. one-to-one b. one-to-many
    c. many-to-one d. many-to-many

    ANSWER: d
    PTS: 1 DIF: Difficulty: Easy REF: p.38
    NAT: BUSPROG: Technology STATE: DISC: Information Technologies
    KEY: Bloom's: Knowledge TOP: Data Modeling and Data Models

30. From a database point of view, the collection of data becomes meaningful only when it reflects properly defined_____.
    a. business rules
    b. business norms
    c. business goals
    d. business plans

    ANSWER: a
    PTS: 1 DIF: Difficulty: Moderate REF: p.39
    NAT: BUSPROG: Analytic STATE: DISC: Information Technologies
    KEY: Bloom's: Comprehension TOP: Business Rules

31. Which of the following is true of business rules?
    a. They allow the designer to set company policies with regard to data.
    b. They allow the designer to develop business processes.
    c. They can serve as a communication tool between the users and designers.
    d. They provide a framework for the company's self-actualization.

    ANSWER: c
    PTS: 1 DIF: Difficulty: Moderate REF: p.40
    NAT: BUSPROG: Analytic STATE: DISC: Information Technologies
    KEY: Bloom's: Comprehension TOP: Business Rules

32. A noun in a business rule translates to a(n)_____in the data model.
    a. entity b. attribute
    c. relationship d. constraint

    ANSWER: a
    PTS: 1 DIF: Difficulty: Easy REF: p.40
    NAT: BUSPROG: Communication STATE: DISC: Information Technologies
    KEY: Bloom's: Knowledge TOP: Business Rules

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33. A verb associating two nouns in a business rule translates to a(n)_____in the data model.
    a. entity b. attribute
    c. relationship d. constraint

    ANSWER: c
    PTS: 1 DIF: Difficulty: Easy REF: p.40
    NAT: BUSPROG: Communication STATE: DISC: Information Technologies
    KEY: Bloom's: Knowledge TOP: Business Rules

34. In the_____model, the basic logical structure is represented as an upside-down tree.
    a. hierarchical b. network
    c. relational d. entity relationship

    ANSWER: a
    PTS: 1 DIF: Difficulty: Easy REF: p.41
    NAT: BUSPROG: Technology STATE: DISC: Information Technologies
    KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

35. In the_____model, each parent can have many children, but each child has only one parent.
    a. hierarchical b. network
    c. relational d. entity relationship

    ANSWER: a
    PTS: 1 DIF: Difficulty: Easy REF: p.41
    NAT: BUSPROG: Technology STATE: DISC: Information Technologies
    KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

36. The hierarchical data model was developed in the_____.
    a. 1960s b. 1970s
    c. 1980s d. 1990s

    ANSWER: a
    PTS: 1 DIF: Difficulty: Easy REF: p.41
    NAT: BUSPROG: Technology STATE: DISC: Information Technologies
    KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

37. In the_____model, the user perceives the database as a collection of records in 1:M relationships, where each record can have more than one parent.
    a. hierarchical b. network
    c. object-oriented d. entity relationship

    ANSWER: b
    PTS: 1 DIF: Difficulty: Easy REF: p.41-42
    NAT: BUSPROG: Technology STATE: DISC: Information Technologies
    KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

38. The object-oriented data model was developed in the_____
    a. 1960s b. 1970s
    c. 1980s d. 1990s

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ANSWER: c
PTS: 1 DIF: Difficulty: Easy REF: p.42
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

39. VMS/VSAM is an example of the_____.
a. hierarchical model b. file system data model
c. relational data model d. XML data model

ANSWER: b
PTS: 1 DIF: Difficulty: Easy REF: p.42
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

40. Oracle 11g is an example of the_____.
a. hierarchical model b. file system data model
c. relational data model d. XML/Hybrid data model

ANSWER: d
PTS: 1 DIF: Difficulty: Easy REF: p.42
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

41. MySQL is an example of the_____.
a. hierarchical model b. file system data model
c. relational data model d. XML data model

ANSWER: c
PTS: 1 DIF: Difficulty: Easy REF: p.42
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: The Evolution of Data Models
Relationship.

42. A(n)_____enables a database administrator to describe schema components.
a. extensible markup language (XML) b. data definition language (DDL)
c. unified modeling language (UML) d. query language

ANSWER: b
PTS: 1 DIF: Difficulty: Easy REF: p.42
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

43. The relational data model was developed in the_____.
a. 1960s b. 1970s
c. 1980s d. 1990s

ANSWER: b
PTS: 1 DIF: Difficulty: Easy REF: p.43
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44. The_____model was developed to allow designers to use a graphical tool to examine structures rather than describing them with text.
    a. hierarchical b. network
    c. object-oriented d. entity relationship

    ANSWER: d
    PTS: 1 DIF: Difficulty: Easy REF: p.45
    NAT: BUSPROG: Technology STATE: DISC: Information Technologies
    KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

45. A(n)_____enables a database administrator to describe schema components.
    a. extensible markup language (XML) b. data definition language (DDL)
    c. unified modeling language (UML) d. query language

    ANSWER: b
    PTS: 1 DIF: Difficulty: Easy REF: p.45
    NAT: BUSPROG: Technology STATE: DISC: Information Technologies
    KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

46. The_____model uses the term connectivity to label the relationship types.
    a. relational b. network
    c. object-oriented d. entity relationship

    ANSWER: d
    PTS: 1 DIF: Difficulty: Easy REF: p.46
    NAT: BUSPROG: Technology STATE: DISC: Information Technologies
    KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

47. The_____data model is said to be a semantic data model.
    a. relational b. network
    c. object-oriented d. entity relationship

    ANSWER: c
    PTS: 1 DIF: Difficulty: Easy REF: p.48
    NAT: BUSPROG: Technology STATE: DISC: Information Technologies
    KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

48. The_____data model uses the concept of inheritance.
    a. relational b. network
    c. object-oriented d. entity relationship

    ANSWER: c
    PTS: 1 DIF: Difficulty: Easy REF: p.50
    NAT: BUSPROG: Technology STATE: DISC: Information Technologies
    KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

49. Which of the following types of HDFS nodes stores all the metadata about a file system?
    a. Data node b. Client node
    c. Name node d. Map node

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ANSWER: c
PTS: 1 DIF: Difficulty: Easy REF: p.52
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

50. Which of the following is true of NoSQL databases?
a. They do not support distributed database architectures.
b. They are not based on the relational model.
c. They are geared toward transaction consistency rather than performance.
d. They do not support very large amounts of sparse data.

ANSWER: b
PTS: 1 DIF: Difficulty: Easy REF: p.53
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

51. Which of the following types of HDFS nodes acts as the interface between the user application and the HDFS?
a. Data node
b. Client node
c. Name node
d. Map node

ANSWER: b
PTS: 1 DIF: Difficulty: Easy REF: p.53
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

52. NoSQL databases:
a. are geared toward transaction consistency; not performance.
b. support only small amounts of sparse data.
c. are based on the relational model.
d. provide fault tolerance.

ANSWER: d
PTS: 1 DIF: Difficulty: Easy REF: p.55
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

53. Which of the following is a disadvantage of the hierarchical data model?
a. It does not promote data sharing.
b. It is not efficient with 1:M relationships.
c. It does not promote data integrity.
d. It does not have standards.

ANSWER: d
PTS: 1 DIF: Difficulty: Easy REF: p.58
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

54. One of the limitations of the_____model is that there is a lack of standards.
a. hierarchical
b. network
c. relational
d. entity relationship

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ANSWER: a
PTS: 1 DIF: Difficulty: Easy REF: p.58
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55. The_____model is the end users' view of the data environment.
a. abstract b. external
c. conceptual d. internal

ANSWER: b
PTS: 1 DIF: Difficulty: Easy REF: p.60
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

56. An internal_____refers to a specific representation of an internal model, using the database constructs supported by the chosen database.
a. tuple b. schema
c. object d. value

ANSWER: b
PTS: 1 DIF: Difficulty: Easy REF: p.62
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: Degrees of Data Abstraction

57. A(n)_____is a relatively simple representation of more complex real-world data structures.

ANSWER: data model
PTS: 1 DIF: Difficulty: Easy REF: p.36
NAT: BUSPROG: Communication STATE: DISC: Information Technologies
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58. A(n)_____is a brief, precise, and unambiguous description of a policy, procedure, or principle within a specific organization.

ANSWER: business rule
PTS: 1 DIF: Difficulty: Easy REF: p.39
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: Business Rules

59. A(n)_____in a hierarchical model is the equivalent of a record in a file system.

ANSWER: segment
PTS: 1 DIF: Difficulty: Easy REF: p.41
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
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60. A(n)_____is the conceptual organization of an entire database as viewed by a database administrator.

ANSWER: schema
PTS: 1 DIF: Difficulty: Easy REF: p.42
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61. A(n)_____defines the environment in which data can be managed and is used to work with the data in the database.

ANSWER: data manipulation language (DML)
PTS: 1 DIF: Difficulty: Easy REF: p.42
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
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62. The relational model's foundation is a mathematical concept known as a_____.

ANSWER: relation
PTS: 1 DIF: Difficulty: Easy REF: p.43
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
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63. Each row in a relation is called a(n)_____.

ANSWER: tuple
PTS: 1 DIF: Difficulty: Easy REF: p.43
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64. Each column in a relation represents a(n)_____.

ANSWER: attribute
PTS: 1 DIF: Difficulty: Easy REF: p.43
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65. Each row in the relational table is known as a(n)_____.

ANSWER: entity instance
PTS: 1 DIF: Difficulty: Easy REF: p.46
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

66. In_____, a three-pronged symbol represents the "many" side of the relationship.

ANSWER: Crow's Foot notation
PTS: 1 DIF: Difficulty: Easy REF: p.46
NAT: BUSPROG: Technology STATE: DISC: Information Technologies
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67. A(n)_____is a collection of similar objects with a shared structure and behavior.

ANSWER: class
PTS: 1 DIF: Difficulty: Easy REF: p.48
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68. In object-oriented terms, a(n)_____defines an object's behavior.

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ANSWER: method

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69. _____is a language based on OO concepts that describes a set of diagrams and symbols used to graphically model a system.

ANSWER: UML (Unified Modeling Language)
Unified Modeling Language (UML)
Unified Modeling Language
UML

PTS:	1	DIF:	Difficulty: Easy	REF:	p.48
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KEY:	Bloom's: Knowledge	TOP:	The Evolution of Data Models		

70. The term_____is used to refer to the task of creating a conceptual data model that could be implemented in any DBMS.

ANSWER: logical design

PTS:	1	DIF:	Difficulty: Easy	REF:	p.62
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71. The._____.is the representation of a database as "seen" by the DBMS.

ANSWER: internal model

PTS:	1	DIF:	Difficulty: Easy	REF:	p.62
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72. What components should an implementation-ready data model contain?

ANSWER: An implementation-ready data model should contain at least the following components:
A description of the data structure that will store the end-user data.
A set of enforceable rules to guarantee the integrity of the data.
A data manipulation methodology to support the real-world data transformations.

PTS:	1	DIF:	Difficulty: Moderate	REF:	p.36
NAT:	BUSPROG: Analytic	STATE:	DISC: Information Technologies		
KEY:	Bloom's: Comprehension	TOP:	Data Modeling and Data Models		

73. What do business rules require to be effective?

ANSWER: To be effective, business rules must be easy to understand and widely disseminated to ensure that every person in the organization shares a common interpretation of the rules. Business rules describe, in simple language, the main and distinguishing characteristics of the data as viewed by the company.

PTS:	1	DIF:	Difficulty: Moderate	REF:	p.39
NAT:	BUSPROG: Communication	STATE:	DISC: Information Technologies		
KEY:	Bloom's: Comprehension	TOP:	Business Rules		

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74. What are the sources of business rules, and what is the database designer's role with regard to business rules?

ANSWER: The main sources of business rules are company managers, policy makers, department managers, and written documentation such as a company's procedures, standards, and operations manuals. A faster and more direct source of business rules is direct interviews with end users. Unfortunately, because perceptions differ, end users are sometimes a less reliable source when it comes to specifying business rules. For example, a maintenance department mechanic might believe that any mechanic can initiate a maintenance procedure, when actually only mechanics with inspection authorization can perform such a task. Such a distinction might seem trivial, but it can have major legal consequences. Although end users are crucial contributors to the development of business rules, it pays to verify end-user perceptions. Too often, interviews with several people who perform the same job yield very different perceptions of what the job components are. While such a discovery may point to "management problems," that general diagnosis does not help the database designer. The database designer's job is to reconcile such differences and verify the results of the reconciliation to ensure that the business rules are appropriate and accurate.

PTS:	1	DIF:	Difficulty: Moderate	REF:	p.39-40
NAT:	BUSPROG: Communication	STATE:	DISC: Information Technologies		
KEY:	Bloom's: Comprehension	TOP:	Business Rules		

75. Describe the three parts involved in any SQL-based relational database application.

ANSWER: From an end-user perspective, any SQL-based relational database application involves three parts: a user interface, a set of tables stored in the database, and the SQL "engine." Each of these parts is explained below.

1. The end-user interface. Basically, the interface allows the end user to interact with the data (by automatically generating SQL code). Each interface is a product of the software vendor's idea of meaningful interaction with the data. You can also design your own customized interface with the help of application generators that are now standard fare in the database software arena.
2. A collection of tables stored in the database. In a relational database, all data are perceived to be stored in tables. The tables simply "present" the data to the end user in a way that is easy to understand. Each table is independent. Rows in different tables are related by common values in common attributes.
3. SQL engine. Largely hidden from the end user, the SQL engine executes all queries, or data requests. Keep in mind that the SQL engine is part of the DBMS software. The end user uses SQL to create table structures and to perform data access and table maintenance. The SQL engine processes all user requests—largely behind the scenes and without the end user's knowledge. Hence, SQL is said to be a declarative language that tells what must be done but not how.

PTS:	1	DIF:	Difficulty: Moderate	REF:	p.45
NAT:	BUSPROG: Analytic	STATE:	DISC: Information Technologies		
KEY:	Bloom's: Comprehension	TOP:	The Evolution of Data Models		

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76. Describe the conceptual model and its advantages. What is the most widely used conceptual model?

ANSWER: The conceptual model represents a global view of the entire database by the entire organization. That is, the conceptual model integrates all external views (entities, relationships, constraints, and processes) into a single global view of the data in the enterprise. Also known as a conceptual schema, it is the basis for the identification and high-level description of the main data objects (avoiding any database model- specific details).

The most widely used conceptual model is the ER model. Remember that the ER model is illustrated with the help of the ERD, which is effectively the basic database blueprint. The ERD is used to graphically represent the conceptual schema.

The conceptual model yields some important advantages. First, it provides a bird's-eye (macro level) view of the data environment that is relatively easy to understand.

Second, the conceptual model is independent of both software and hardware. Software independence means that the model does not depend on the DBMS software used to implement the model. Hardware independence means that the model does not depend on the hardware used in the implementation of the model. Therefore, changes in either the hardware or the DBMS software will have no effect on the database design at the conceptual level. Generally, the term logical design refers to the task of creating a conceptual data model that could be implemented in any DBMS.

PTS:	1	DIF:	Difficulty: Moderate	REF:	p.61-62
NAT:	BUSPROG: Analytic	STATE:	DISC: Information Technologies		
KEY:	Bloom's: Comprehension	TOP:	Degrees of Data Abstraction		

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