CHAPTER 3: THE RELATIONAL DATABASE MODEL

1. The practical significance of taking the logical view of a database is that it serves as a reminder of the simple file concept of data storage.
   a. True
   b. False

   ANSWER: True
   PTS: 1 DIF: Difficulty: Moderate REF: p.73
   NAT: BUSPROG: Analytic STATE: DISC: Information Technology
   KEY: Bloom's: Comprehension TOP: A Logical View of Data

2. You can think of a table as a persistent representation of a logical relation.
   a. True
   b. False

   ANSWER: True
   PTS: 1 DIF: Difficulty: Easy REF. p.74
   NAT: BUSPROG: Technology STATE: DISC: Information Technology
   KEY: Bloom's: Knowledge TOP: A Logical View of Data

3. The order of the rows and columns is important to the DBMS.
   a. True
   b. False

   ANSWER: False
   PTS: 1 DIF: Difficulty: Easy REF: p.74
   NAT: BUSPROG: Technology STATE: DISC: Information Technology
   KEY: Bloom's: Knowledge TOP: A Logical View of Data

4. Character data can contain any character or symbol intended for mathematical manipulation.
   a. True
   b. False

   ANSWER: False
   PTS: 1 DIF: Difficulty: Easy REF: p.75
   NAT: BUSPROG: Technology STATE: DISC: Information Technology
   KEY: Bloom's: Knowledge TOP: A Logical View of Data

5. The row's range of permissible values is known as its domain.
   a. True
   b. False

   ANSWER: False
   PTS: 1 DIF: Difficulty: Easy REF: p.75
   NAT: BUSPROG: Technology STATE: DISC: Information Technology
   KEY: Bloom's Knowledge TOP: A Logical View of Data

6. The idea of determination is unique to the database environment.
   a. True
   b. False

   ANSWER: False
   PTS: 1 DIF: Difficulty: Moderate REF: p.76
   NAT: BUSPROG: Analytic STATE: DISC: Information Technology
   KEY: Bloom's Comprehension TOP: Keys

7. Only a single attribute, not multiple attributes, can define functional dependence.
   a. True
   b. False

   ANSWER: False
   PTS: 1 DIF: Difficulty: Easy REF: p.76
   NAT: BUSPROG: Technology STATE: DISC: Information Technology
   KEY: Bloom's: Knowledge TOP: Keys

8. If the attribute (B) is functionally dependent on a composite key (A) but not on any subset of that composite key, the attribute (B) is fully functionally dependent on (A).
   a. True
   b. False

   ANSWER: True
   PTS: 1 DIF: Difficulty: Moderate REF: p.77
   NAT: BUSPROG: Analytic STATE: DISC: Information Technology
   KEY: Bloom's Comprehension TOP: Keys

9. A null is created when you press the Enter key or the Tab key to move to the next entry without making a prior entry of any kind.
   a. True
   b. False

   ANSWER: True
   PTS: 1 DIF: Difficulty: Easy REF: p.78
   NAT: BUSPROG: Technology STATE: DISC: Information Technology
   KEY: Bloom's: Knowledge TOP: Keys

10. Depending on the sophistication of the application development software, nulls can create problems when functions such as COUNT, AVERAGE, and SUM are used.
    a. True
    b. False

    ANSWER: True
    PTS: 1 DIF: Difficulty: Easy REF: p.78
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Keys

11. RDBMSs enforce integrity rules automatically.

a. True

b. False

ANSWER: True

PTS:	1	DIF:	Difficulty: Easy	REF:	p.80
NAT:	BUSPROG: Technology	STATE:	DISC: Information Technology		
KEY:	Bloom's: Knowledge	TOP:	Integrity Rules		

12. Relational algebra defines the theoretical way of manipulating table contents using relational operators.

a. True

b. False

ANSWER: True

PTS:	1	DIF:	Difficulty: Easy	REF:	p.82
NAT:	BUSPROG: Technology	STATE:	DISC: Information Technology		
KEY:	Bloom's: Knowledge	TOP:	Relational Algebra		

13. The SELECT operator yields a vertical subset of a table.

a. True

b. False

ANSWER: False

PTS:	1	DIF:	Difficulty: Easy	REF:	p.83
NAT:	BUSPROG: Technology	STATE:	DISC: Information Technology		
KEY:	Bloom's: Knowledge	TOP:	Relational Algebra		

14. The DIFFERENCE operator subtracts one table from the other.

a. True

b. False

ANSWER: True

PTS:	1	DIF:	Difficulty: Easy	REF:	p.85
NAT:	BUSPROG: Technology	STATE:	DISC: Information Technology		
KEY:	Bloom's: Knowledge	TOP:	Relational Algebra		

15. In a natural join, the column on which the join was made occurs twice in the new table.

a. True

b. False

ANSWER: False

PTS:	1	DIF:	Difficulty: Easy	REF:	p.88
NAT:	BUSPROG: Technology	STATE:	DISC: Information Technology		
KEY:	Bloom's: Knowledge	TOP:	Relational Algebra		

16. The DIVIDE operation uses one single-column table (e.g., column "a") as the divisor and one two-column table (e.g., columns "a" and "b") as the dividend.
    a. True
    b. False

    ANSWER: True
    PTS: 1 DIF: Difficulty: Easy REF: p.90
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Relational Algebra

17. A data dictionary is sometimes described as "the database designer's database" because it records the design decisions about tables and their structures.
    a. True
    b. False

    ANSWER: True
    PTS: 1 DIF: Difficulty: Easy REF: p.91
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: The Data Dictionary and the System Catalog

18. The one-to-many (1: M) relationship is easily implemented in the relational model by putting the foreign key of the "1" side in the table of the "many" side as a primary key.
    a. True
    b. False

    ANSWER: False
    PTS: 1 DIF: Difficulty: Moderate REF: p.94
    NAT: BUSPROG: Analytic STATE: DISC: Information Technology
    KEY: Bloom's Comprehension TOP: Relationships within the Relational Database

19. As rare as 1:1 relationships should be, certain conditions absolutely require their use.
    a. True
    b. False

    ANSWER: True
    PTS: 1 DIF: Difficulty: Easy REF: p.96
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Relationships within the Relational Database

20. Each table in a relational database must have a primary key.
    a. True
    b. False

    ANSWER: True
    PTS: 1 DIF: Difficulty: Easy REF: p.20
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: A Logical View of Data

21. _____logic, used extensively in mathematics, provides a framework in which an assertion (statement of fact) can be verified as either true or false.

a. Predicate b. Database

c. Relational d. Index

ANSWER: a

PTS: 1 DIF: Difficulty: Easy REF: p.73
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: A Logical View of Data

22. Each table_____represents an attribute.

a. column b. row

c. dimension d. value

ANSWER: a

PTS: 1 DIF: Difficulty: Easy REF: p.74
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: A Logical View of Data

23. Date attributes contain calendar dates stored in a special format known as the_____date format.

a. Epoch b. calendar

c. Julian d. logical

ANSWER: c

PTS: 1 DIF: Difficulty: Easy REF: p.75
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: A Logical View of Data

24. In the relational model,_____are important because they are used to ensure that each row in a table is uniquely identifiable.

a. relations b. keys

c. indexes d. logical structures

ANSWER: b

PTS: 1 DIF: Difficulty: Easy REF: p.76
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Keys

25. A_____is any key that uniquely identifies each row.

a. superkey b. special key

c. foreign key d. candidate key

ANSWER: a

PTS: 1 DIF: Difficulty: Easy REF: p.77
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Keys

26. A_____key can be described as a minimal superkey, a superkey without any unnecessary attributes.

a. secondary b. candidate

c. primary d. foreign

ANSWER: b
PTS: 1 DIF: Difficulty: Easy REF: p.78
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Keys

27. A_____is the primary key of one table that has been placed into another table to create a common attribute.

a. superkey b. composite primary key

c. candidate key d. foreign key

ANSWER: d
PTS: 1 DIF: Difficulty: Easy REF: p.79
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Keys

28. A_____key is defined as a key that is used strictly for data retrieval purposes.

a. lookup b. foreign

c. candidate d. secondary

ANSWER: d
PTS: 1 DIF: Difficulty: Easy REF: p.79
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Keys

29. Referential_____dictates that the foreign key must contain values that match the primary key in the related table, or must contain null.

a. integrity b. uniqueness

c. model d. attribute

ANSWER: a
PTS: 1 DIF: Difficulty: Easy REF: p.79
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Keys

30. The CUSTOMER table's primary key is CUS_CODE. The CUSTOMER primary key column has no null entries, and all entries are unique. This is an example of____integrity.

a. entity b. referential

c. relational d. null

ANSWER: a
PTS: 1 DIF: Difficulty: Moderate REF: p.81
NAT: BUSPROG: Analytic STATE: DISC: Information Technology
KEY: Bloom's: Comprehension TOP: Keys

31. The_____constraint can be placed on a column to ensure that every row in the table has a value for that column.

a. UNIQUE b. NOT NULL

c. VALUE d. EMPTY

ANSWER: b

PTS: 1 DIF: Difficulty: Easy REF: p.81
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Keys

32. To be considered minimally relational, the DBMS must support the key relational operators_____, PROJECT, and JOIN.

a. INTERSECT b. UNION

c. DIFFERENCE d. SELECT

ANSWER: d

PTS: 1 DIF: Difficulty: Easy REF: p.82
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Relational Algebra

33. _____, also known as RESTRICT, yields values for all rows found in a table that satisfy a given condition.

a. INTERSECT b. UNION

c. DIFFERENCE d. SELECT

ANSWER: d

PTS: 1 DIF: Difficulty: Easy REF: p.83
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Relational Algebra

34. _____returns only the attributes requested, in the order in which they are requested.

a. PROJECT b. SELECT

c. UNION d. DIFFERENCE

ANSWER: a

PTS: 1 DIF: Difficulty: Easy REF: p.83
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Relational Algebra

35. When two or more tables share the same number of columns, and when their corresponding columns share the same or compatible domains, they are said to be_____.

a. intersect-compatible b. union-compatible

c. difference-compatible d. select-compatible

ANSWER: b

PTS: 1 DIF: Difficulty: Easy REF: p.84
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Relational Algebra

36. A(n)_____join links tables by selecting only the rows with common values in their common attribute(s).

a. attribute b. unique

c. foreign d. natural

ANSWER: d

PTS: 1 DIF: Difficulty: Easy REF: p.87
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Relational Algebra

37. _____are especially useful when you are trying to determine what values in related tables cause referential integrity problems.

a. Inner joins b. Outer joins

b. Theta joins d. Equijoins

ANSWER: b

P PTS: 1 DIF: Difficulty: Easy REF: p.89
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Relational Algebra

38. A(n)_____only returns matched records from the tables that are being joined.

a. outer join b. inner join

c. equijoin d. theta join

ANSWER: b

PTS: 1 DIF: Difficulty: Easy REF: p.89
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Relational Algebra

39. A_____contains at least all of the attribute names and characteristics for each table in the system.

a. data dictionary b. relational schema

c. logical schema d. database

ANSWER: a

PTS: 1 DIF: Difficulty: Easy REF: p.91
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Data Dictionary and the System Catalog

40. The_____is actually a system-created database whose tables store the user/designer-created database characteristics and contents.

a. database tuple b. systematic database

c. unique index d. system catalog

ANSWER: d

PTS: 1 DIF: Difficulty: Easy REF: p.91
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Data Dictionary and the System Catalog

41. In a database context, the word_____indicates the use of the same attribute name to label different attributes.

a. redundancy b. homonym

c. duplicate d. synonym

ANSWER: b

PTS:	1	DIF:	Difficulty: Moderate	REF:	p.91
NAT:	BUSPROG: Analytic	STATE:	DISC: Information Technology		
KEY:	Bloom's Comprehension	TOP:	The Data Dictionary and the System Catalog		

42. In a database context, a(n)_____indicates the use of different names to describe the same attribute.

a. entity b. duplicate

c. synonym d. homonym

ANSWER: c

PTS:	1	DIF:	Difficulty: Easy	REF:	p.93
NAT:	BUSPROG: Technology	STATE:	DISC: Information Technology		
KEY:	Bloom's: Knowledge	TOP:	The Data Dictionary and the System Catalog		

43. The_____relationship is the "relational model ideal."

a. 1:1 b. 1:M

c. M:1 d. M:N

ANSWER: b

PTS:	1	DIF:	Difficulty: Easy	REF:	p.93
NAT:	BUSPROG: Technology	STATE:	DISC: Information Technology		
KEY:	Bloom's: Knowledge	TOP:	Relationships within the Relational Database		

44. The_____relationship should be rare in any relational database design.

a. 1:1 b. 1:M

c. M:1 d. M:N

ANSWER: a

PTS:	1	DIF:	Difficulty: Easy	REF:	p.93
NAT:	BUSPROG: Technology	STATE:	DISC: Information Technology		
KEY:	Bloom's: Knowledge	TOP:	Relationships within the Relational Database		

45. _____relationships can be implemented by creating a new entity in 1:M relationships with the original entities.

a. 1:N b. M:1

c. M:N d. 1:1

ANSWER: c

PTS:	1	DIF:	Difficulty: Easy	REF:	p.96
NAT:	BUSPROG: Technology	STATE:	DISC: Information Technology		
KEY:	Bloom's: Knowledge	TOP:	Relationships within the Relational Database		

46. Another name for a composite entity is a(n)_____entity.

a. bridge b. linked

c. directive d. associative

ANSWER: a
PTS: 1 DIF: Difficulty: Easy REF: p.98
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Relationships within the Relational Database

47. A(n)_____is an orderly arrangement used to logically access rows in a table.
a. primary rule b. superkey
c. relationship d. index

ANSWER: d
PTS: 1 DIF: Difficulty: Easy REF: p.103
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Indexes

48. When you define a table's primary key, the DBMS automatically creates a(n)_____index on the primary key column(s) you declared.
a. key b. composite
c. unique d. primary

ANSWER: c
PTS: 1 DIF: Difficulty: Easy REF: p.104
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's Knowledge TOP: Indexes

49. According to Codd's_____rule of relational database, "Application programs and ad hoc facilities are logically unaffected when changes are made to the table structures that preserve the original table values (changing order of columns or inserting columns)."
a. nonsubversion b. logical data independence
c. comprehensive data sublanguage d. integrity independence

ANSWER: b
PTS: 1 DIF: Difficulty: Easy REF: p.105
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's Knowledge TOP: Codd's Relational Database Rules

50. A table is also called a(n)_____because the relational model's creator, E. F. Codd, used the two terms as synonyms.

ANSWER: relation
PTS: 1 DIF: Difficulty: Easy REF: p.74
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: A Logical View of Data

51. In a relational table, each column has a specific range of values known as the_____domain.

ANSWER: attribute
PTS: 1 DIF: Difficulty: Easy REF: p.74
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: A Logical View of Data

52. In a relational model,_____are also used to establish relationships among tables and to ensure the integrity of the data.

ANSWER: keys
PTS: 1 DIF: Difficulty: Easy REF: p.76
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Keys

53. A primary key is a(n)_____key chosen to be the primary means by which rows of a table are uniquely identified.

ANSWER: candidate
PTS: 1 DIF: Difficulty: Easy REF: p.78
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Keys

54. To avoid nulls, some designers use special codes, known as_____, to indicate the absence of some value.

ANSWER: flags
PTS: 1 DIF: Difficulty: Easy REF: p.81
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Integrity Rules

55. The relational operators have the property of_____; that is, the use of relational algebra operators on existing relations (tables) produces new relations.

ANSWER: closure
PTS: 1 DIF: Difficulty: Easy REF: p.83
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Relational Algebra

56. PRODUCT yields all possible pairs of rows from two tables, also known as the_____product.

ANSWER: Cartesian
PTS: 1 DIF: Difficulty: Moderate REF: p.86
NAT: BUSPROG: Analytic STATE: DISC: Information Technology
KEY: Bloom's: Comprehension TOP: Relational Algebra

57. _____is the real power behind the relational database, allowing the use of independent tables linked by common attributes.

ANSWER: JOIN
PTS: 1 DIF: Difficulty: Easy REF: p.87
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Relational Algebra

58. A(n)_____links tables on the basis of an equality condition that compares specified columns of each table.

ANSWER: equijoin
PTS: 1 DIF: Difficulty: Easy REF: p.89
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Relational Algebra

59. A(n)_____provides a detailed description of all tables found within the user/designer-created database.

ANSWER: data dictionary
PTS: 1 DIF: Difficulty: Easy REF: p.91
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Data Dictionary and the System Catalog

60. The_____catalog can be described as a detailed system data dictionary that describes all objects within the database, including data about table names, the table's creator and creation date, the number of columns in each table, the data type corresponding to each column, index filenames, index creators, authorized users, and access privileges.

ANSWER: system
PTS: 1 DIF: Difficulty: Easy REF: p.91
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Data Dictionary and the System Catalog

61. The_____relationship is the relational database norm.

ANSWER: 1:M
PTS: 1 DIF: Difficulty: Easy REF: p.93
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Relationships within the Relational Database

62. _____relationships cannot be implemented as such in the relational model.

ANSWER: M:N
PTS: 1 DIF: Difficulty: Moderate REF: p.93
NAT: BUSPROG: Analytic STATE: DISC: Information Technology
KEY: Bloom's: Comprehension TOP: Relationships within the Relational Database

63. If one department chair—a professor—can chair only one department, and one department can have only one department chair. The entities PROFESSOR and DEPARTMENT exhibit a(n)_____relationship.

ANSWER: 1:1
PTS: 1 DIF: Difficulty: Easy REF: p.95
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Relationships within the Relational Database

64. One characteristic of generalization hierarchies is that they are implemented as_____relationships.

ANSWER: 1:1
PTS: 1 DIF: Difficulty: Easy REF: p.96
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Relationships within the Relational Database

65. The proper use of_____keys is crucial to controlling data redundancy.

ANSWER: foreign
PTS: 1 DIF: Difficulty: Easy REF: p.101
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Data Redundancy Revisited

66. Proper data_____design requires carefully defined and controlled data redundancies to function properly.

ANSWER: warehousing
PTS: 1 DIF: Difficulty: Easy REF: p.101
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Data Redundancy Revisited

67. A(n)_____index is an index in which the index key can have only one pointer value (row) associated with it.

ANSWER: unique
PTS: 1 DIF: Difficulty: Easy REF: p.104
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Indexes

68. An index key can have multiple_____(a composite index).

ANSWER: attributes
PTS: 1 DIF: Difficulty: Easy REF: p.104
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Indexes

69. Dr. Codd's_____rule of relational database states that every value in a table is guaranteed to be accessible through a combination of table name, primary key value, and column name.

ANSWER: Guaranteed Access
PTS: 1 DIF: Difficulty: Easy REF: p.105
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Codd's Relational Database Rules

70. What is a key and how is it important in a relational model?

ANSWER: In a relational model, keys are important because they are used to ensure that each row in a table is uniquely identifiable. They are also used to establish relationships among tables and to ensure the integrity of the data. A key consists of one or more attributes that determine other attributes. For example, an invoice number identifies all of the invoice attributes, such as the invoice date and the customer name.
PTS: 1 DIF: Difficulty: Moderate REF: p.76
NAT: BUSPROG: Analytic STATE: DISC: Information Technology
KEY: Bloom's Comprehension TOP: Keys

71. Define entity integrity. What are the two requirements to ensure entity integrity?

ANSWER: Entity integrity is the condition in which each row (entity instance) in the table has its own unique identity. To ensure entity integrity, the primary key has two requirements:
(1) all of the values in the primary key must be unique.
(2) no key attribute in the primary key can contain a null.

PTS: 1 DIF: Difficulty: Moderate REF: p.78
NAT: BUSPROG: Analytic STATE: DISC: Information Technology
KEY: Bloom's Comprehension TOP: Keys

72. Describe the use of null values in a database.

ANSWER: Null values are problematic in a relational model. A null is the absence of any data value, and it is never allowed in any part of the primary key. From a theoretical perspective, it can be argued that a table that contains a null is not properly a relational table at all. From a practical perspective, however, some nulls cannot be reasonably avoided. For example, not all students have a middle initial. As a general rule, nulls should be avoided as much as reasonably possible. In fact, an abundance of nulls is often a sign of a poor design. Also, nulls should be avoided in the database because their meaning is not always identifiable.

For example, a null could represent:

• An unknown attribute value.

• A known, but missing, attribute value.

• A "not applicable" condition.

PTS: 1 DIF: Difficulty: Moderate REF: p.78
NAT: BUSPROG: Analytic STATE: DISC: Information Technology
KEY: Bloom's: Comprehension TOP: Keys

73. Describe the use of the INTERSECT operator.

ANSWER: INTERSECT yields only the rows that appear in both tables. As with UNION, the tables must be union-compatible to yield valid results. For example, you cannot use INTERSECT if one of the attributes is numeric and one is character-based. For the rows to be considered the same in both tables and appear in the result of the INTERSECT, the entire rows must be exact duplicates.

PTS: 1 DIF: Difficulty: Moderate REF: p.85
NAT: BUSPROG: Analytic STATE: DISC: Information Technology
KEY: Bloom's: Comprehension TOP: Relational Algebra

74. Define an index. Explain the role of indexes in a relational database.

ANSWER: An index is an orderly arrangement used to logically access rows in a table. From a conceptual point of view, an index is composed of an index key and a set of pointers. The index key is, in effect, the index's reference point. More formally, an index is an ordered arrangement of keys and pointers. Each key points to the location of the data identified by the key. DBMSs use indexes for many different purposes. An index can be used to retrieve data more efficiently. Indexes can also be used by a DBMS to retrieve data ordered by a specific attribute or attributes. For example, creating an index on a customer's last name will allow you to retrieve the customer data alphabetically by the customer's last name.

Also, an index key can be composed of one or more attributes. Indexes play an important role in DBMSs for the implementation of primary keys. When you define a table's primary key, the DBMS automatically creates a unique index on the primary key column(s) you declared.

PTS: 1 DIF: Difficulty: Moderate REF: p.103-104
NAT: BUSPROG: Analytic STATE: DISC: Information Technology
KEY: Bloom's: Comprehension TOP: Relational Algebra