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.
   1. True
   2. 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

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

1. The order of the rows and columns is important to the DBMS.
   1. True
   2. 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

1. Character data can contain any character or symbol intended for mathematical manipulation.
   1. True
   2. 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

1. The row’s range of permissible values is known as its domain.
   1. True
   2. 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

1. The idea of determination is unique to the database environment.
   1. True
   2. False

*ANSWER:* False

PTS: 1 DIF: Difficulty: Moderate REF: p.76

NAT: BUSPROG: Analytic STATE: DISC: Information Technology

KEY: Bloom's Comprehension TOP: Keys

1. Only a single attribute, not multiple attributes, can define functional dependence.
   1. True
   2. False

*ANSWER:* False

PTS: 1 DIF: Difficulty: Easy REF: p.76

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom's:Knowledge TOP: Keys

1. 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).
   1. True
   2. False

*ANSWER:* True

PTS: 1 DIF: Difficulty: Moderate REF: p.77

NAT: BUSPROG: Analytic STATE: DISC: Information Technology

KEY: Bloom's Comprehension TOP: Keys

1. 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.
   1. True
   2. False

*ANSWER:* True

PTS: 1 DIF: Difficulty: Easy REF: p.78

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom's:Knowledge TOP: Keys

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

*ANSWER:* True

PTS: 1 DIF: Difficulty: Easy REF: p.78

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom's:Knowledge TOP: Keys

1. RDBMSs enforce integrity rules automatically.
   1. True
   2. 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

1. Relational algebra defines the theoretical way of manipulating table contents using relational operators.
   1. True
   2. 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

1. The SELECT operator yields a vertical subset of a table.
   1. True
   2. 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

1. The DIFFERENCE operator subtracts one table from the other.
   1. True
   2. 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

1. In a natural join, the column on which the join was made occurs twice in the new table.
   1. True
   2. 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

1. The DIVIDE operation uses one single­column table (e.g., column “a”) as the divisor and one two­column table (e.g., columns “a” and “b”) as the dividend.
   1. True
   2. 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

1. A data dictionary is sometimes described as “the database designer’s database” because it records the design

decisions about tables and their structures.

* 1. True
  2. 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

1. The one­to­many (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.
   1. True
   2. 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

1. As rare as 1:1 relationships should be, certain conditions absolutely require their use.
   1. True
   2. 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

1. Each table in a relational database must have a primary key.
   1. True
   2. 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

1. \_\_ logic, used extensively in mathematics, provides a framework in which an assertion (statement of fact) canbe verified as either true or false.
   1. 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

1. Each table represents an attribute.
   1. 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

1. Date attributes contain calendar dates stored in a special format known as the date format.
   1. 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

1. In the relational model, are important because they are used to ensure that each row in a table is uniquelyidentifiable.
   1. 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

1. A is any key that uniquely identifies each row.
   1. 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

1. A key can be described as a minimal superkey, a superkey without any unnecessary attributes.
   1. 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

1. A is the primary key of one table that has been placed into another table to create a common attribute.
   1. 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

1. A key is defined as a key that is used strictly for data retrieval purposes.
   1. 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

1. Referential dictates that the foreign key must contain values that match the primary key in the related table,or must contain null.
   1. 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

1. 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.
   1. 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

1. The constraint can be placed on a column to ensure that every row in the table has a value for that column.
   1. 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

1. To be considered minimally relational, the DBMS must support the key relational operators , PROJECT, andJOIN.
   1. 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

1. \_\_ , also known as RESTRICT, yields values for all rows found in a table that satisfy a given condition.
   1. 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

1. \_\_ returns only the attributes requested, in the order in which they are requested.
   1. 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

1. When two or more tables share the same number of columns, and when their corresponding columns share the sameor compatible domains, they are said to be .
   1. 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

1. A(n) join links tables by selecting only the rows with common values in their common attribute(s).
   1. 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

1. \_ are especially useful when you are trying to determine what values in related tables cause referential integrityproblems.
   1. Inner joins b. Outer joins
   2. Theta joins d. Equijoins

*ANSWER:* b

PPTS: 1 DIF: Difficulty: Easy REF: p.89

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom's: Knowledge TOP: Relational Algebra

1. A(n) only returns matched records from the tables that are being joined.
   1. 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

1. A contains at least all of the attribute names and characteristics for each table in the system.
   1. 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

1. The is actually a system-created database whose tables store the user/designer-created databasecharacteristics and contents.
   1. 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

1. In a database context, the word indicates the use of the same attribute name to label different attributes.
   1. 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

1. In a database context, a(n) indicates the use of different names to describe the same attribute.
   1. 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

1. 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

1. 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

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

1. Another name for a composite entity is a(n) entity.
   1. 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

1. A(n) is an orderly arrangement used to logically access rows in a table.
   1. 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

1. When you define a table’s primary key, the DBMS automatically creates a(n) index on the primary key column(s) you declared.
   1. 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

1. According to Codd’s rule of relational database, “Application programs and ad hoc facilities are logicallyunaffected when changes are made to the table structures that preserve the original table values (changing order ofcolumns or inserting columns).”
   1. 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

1. 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

1. 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

1. In a relational model, are also used to establish relationships among tables and to ensure the integrity of thedata.

*ANSWER:* keys

PTS: 1 DIF: Difficulty: Easy REF: p.76

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom's:Knowledge TOP: Keys

1. 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

1. 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

1. The relational operators have the property of ; that is, the use of relational algebra operators on existingrelations (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

1. 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

1. \_\_ is the real power behind the relational database, allowing the use of independent tables linked by commonattributes.

*ANSWER:* JOIN

PTS: 1 DIF: Difficulty: Easy REF: p.87

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom's:Knowledge TOP: Relational Algebra

1. 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

1. 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

1. The catalog can be described as a detailed system data dictionary that describes all objects within thedatabase, including data about table names, the table’s creator and creation date, the number of columns in eachtable, the data type corresponding to each column, index filenames, index creators, authorized users, and accessprivileges.

*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

1. 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

1. \_\_\_\_\_\_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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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 isuniquely identifiable. They are also used to establish relationships among tables and to ensure theintegrity of the data. A key consists of one or more attributes that determine other attributes. Forexample, an invoice number identifies all of the invoice attributes, such as the invoice date and thecustomer name.

PTS: 1 DIF: Difficulty: Moderate REF: p.76

NAT: BUSPROG: Analytic STATE: DISC: Information Technology

KEY: Bloom's Comprehension TOP: Keys

1. 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 uniqueidentity. 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

1. 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 neverallowed in any part of the primary key. From a theoretical perspective, it can be argued that a table thatcontains a null is not properly a relational table at all. From a practical perspective, however, some nullscannot be reasonably avoided. For example, not all students have a middle initial. As a general rule, nullsshould be avoided as much as reasonably possible. In fact, an abundance of nulls is often a sign of a poordesign. 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

1. 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 isnumeric and one is character-based. For the rows to be considered the same in both tables and appear inthe 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

1. 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 ofview, an index is composed of an index key and a set of pointers. The index key is, in effect, the index’sreference point. More formally, an index is an ordered arrangement of keys and pointers. Each keypoints 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 retrievedata ordered by a specific attribute or attributes. For example, creating an index on a customer’s lastname 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 DBMSsfor the implementation of primary keys. When you define a table’s primary key, the DBMSautomatically 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