

True / False

1. One can successfully design a database system without fully understanding the concept of functional dependence.

- a. True
- b. False

ANSWER: False

FEEDBACK: **Correct** The terms entity, attribute, and relationship are important to understand when designing a database; the concepts of functional dependence and primary keys are critical when learning about the database design process.

Incorrect The terms entity, attribute, and relationship are important to understand when designing a database; the concepts of functional dependence and primary keys are critical when learning about the database design process.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Database Concepts

QUESTION TYPE: True / False

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.3 - Understand functional dependence and identify when one column is functionally dependent on another.

KEYWORDS: Bloom's: Remember

DATE CREATED: 8/18/2020 6:37 PM

DATE MODIFIED: 9/18/2020 12:56 PM

2. If column A in a relational database determines a single value for column B at any point in time, then column B is functionally dependent on column A.

- a. True
- b. False

ANSWER: True

FEEDBACK: **Correct** In a relational database, column B is functionally dependent on another column (or a collection of columns), A, if at any point in time a value for A determines a single value for B.

Incorrect In a relational database, column B is functionally dependent on another column (or a collection of columns), A, if at any point in time a value for A determines a single value for B.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Functional Dependence

QUESTION TYPE: True / False

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.3 - Understand functional dependence and identify when one column is functionally dependent on another.

KEYWORDS: Bloom's: Remember

DATE CREATED: 8/18/2020 6:37 PM

DATE MODIFIED: 9/18/2020 1:00 PM

3. The statement “A sales rep’s pay class functionally determines his or her pay rate” means that if you know the pay class, you can determine the pay rate.

Module 2 - Database Design Fundamentals

- a. True
- b. False

ANSWER: True

FEEDBACK: **Correct** If, when you are given a value for A, you know that you can find a single value for B, then B is functionally dependent on A. You also can say that A functionally determines B.

Incorrect If, when you are given a value for A, you know that you can find a single value for B, then B is functionally dependent on A. You also can say that A functionally determines B.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Functional Dependence

QUESTION TYPE: True / False

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.3 - Understand functional dependence and identify when one column is functionally dependent on another.

KEYWORDS: Bloom's: Understand

DATE CREATED: 8/18/2020 6:37 PM

DATE MODIFIED: 9/18/2020 1:03 PM

4. You can determine functional dependence by viewing sample data.

- a. True
- b. False

ANSWER: False

FEEDBACK: **Correct** The only way to determine functional dependencies is to examine the user's policies. This process can involve discussions with users, an examination of user documentation, and so on.

Incorrect The only way to determine functional dependencies is to examine the user's policies. This process can involve discussions with users, an examination of user documentation, and so on.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Functional Dependence

QUESTION TYPE: True / False

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.3 - Understand functional dependence and identify when one column is functionally dependent on another.

KEYWORDS: Bloom's: Understand

DATE CREATED: 8/18/2020 6:37 PM

DATE MODIFIED: 9/18/2020 1:05 PM

5. A determinant is any column (or collection of columns) that determines another table.

- a. True
- b. False

ANSWER: False

FEEDBACK: **Correct** Any column (or collection of columns) that determines another column is called a determinant.

Incorrect Any column (or collection of columns) that determines another column is called a

Module 2 - Database Design Fundamentals

determinant.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Normalization

QUESTION TYPE: True / False

HAS VARIABLES: False

LEARNING OBJECTIVE Guide to SQL.10e.2.8 - Convert tables from second normal form to third normal form.
S:

KEYWORDS: Bloom's: Remember

DATE CREATED: 8/18/2020 6:37 PM

DATE MODIFIED: 9/19/2020 12:00 PM

Multiple Choice

6. The process of determining the particular tables and columns that will comprise a database is known as ____.

- a. normalization
- b. database design
- c. qualification
- d. relational management

ANSWER: b

FEEDBACK:

- a. The process of determining the particular tables and columns that comprise a database is known as database design.
- b. The process of determining the particular tables and columns that comprise a database is known as database design.
- c. The process of determining the particular tables and columns that comprise a database is known as database design.
- d. The process of determining the particular tables and columns that comprise a database is known as database design.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Introduction

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECT Guide to SQL.10e.2.5 - Design a database to satisfy a set of requirements.
IVES:

KEYWORDS: Bloom's: Remember

DATE CREATED: 8/18/2020 6:37 PM

DATE MODIFIED: 9/18/2020 1:48 PM

7. A property of an entity is ____.

- a. like a noun
- b. an attribute
- c. a table row
- d. its association with other entities

ANSWER: b

Module 2 - Database Design Fundamentals

FEEDBACK:

- a. An attribute is a property of an entity.
- b. An attribute is a property of an entity.
- c. An attribute is a property of an entity.
- d. An attribute is a property of an entity.

POINTS:

1

DIFFICULTY:

Easy

REFERENCES:

Database Concepts

QUESTION TYPE:

Multiple Choice

HAS VARIABLES:

False

LEARNING OBJECTIVES:

Guide to SQL.10e.2.1 - Understand the terms entity, attribute, and relationship.

KEYWORDS:

Bloom's: Remember

DATE CREATED:

8/18/2020 6:37 PM

DATE MODIFIED:

9/18/2020 8:20 AM

8. In a relational database, ____.

- a. rows must be ordered numerically
- b. relations must include repeating groups
- c. columns should be ordered correctly
- d. each row should be unique

ANSWER:

d

FEEDBACK:

- a. Each row should be unique—when two rows are identical, the second row does not provide any new information. For maximum flexibility, the order of the columns and rows should be immaterial. The table's design should be as simple as possible by restricting each position to a single entry and by preventing multiple entries (also called repeating groups) in an individual location in the table.
- b. Each row should be unique—when two rows are identical, the second row does not provide any new information. For maximum flexibility, the order of the columns and rows should be immaterial. The table's design should be as simple as possible by restricting each position to a single entry and by preventing multiple entries (also called repeating groups) in an individual location in the table.
- c. Each row should be unique—when two rows are identical, the second row does not provide any new information. For maximum flexibility, the order of the columns and rows should be immaterial. The table's design should be as simple as possible by restricting each position to a single entry and by preventing multiple entries (also called repeating groups) in an individual location in the table.
- d. Each row should be unique—when two rows are identical, the second row does not provide any new information. For maximum flexibility, the order of the columns and rows should be immaterial. The table's design should be as simple as possible by restricting each position to a single entry and by preventing multiple entries (also called repeating groups) in an individual location in the table.

POINTS:

1

DIFFICULTY:

Easy

REFERENCES:

Database Concepts

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.2 - Understand the terms relation and relational database.

KEYWORDS:

Bloom's: Understand

Module 2 - Database Design Fundamentals

DATE CREATED: 8/18/2020 6:37 PM

DATE MODIFIED: 9/18/2020 12:27 PM

9. A relation that does not contain any repeating groups is in _____.

- a. first normal form
- b. second normal form
- c. third normal form
- d. Boyce-Codd normal form

ANSWER: a

FEEDBACK:

- a. A table (relation) is in first normal form (1NF) when it does not contain a repeating group.
- b. A table (relation) is in first normal form (1NF) when it does not contain a repeating group.
- c. A table (relation) is in first normal form (1NF) when it does not contain a repeating group.
- d. A table (relation) is in first normal form (1NF) when it does not contain a repeating group.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Normalization

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES Guide to SQL.10e.2.6 - Convert an unnormalized relation to first normal form.

:

KEYWORDS: Bloom's: Remember

DATE CREATED: 8/18/2020 6:37 PM

DATE MODIFIED: 9/18/2020 2:21 PM

10. The duplication of data is formally called _____.

- a. a repeating group
- b. redundancy
- c. replication
- d. an anomaly

ANSWER: b

FEEDBACK:

- a. Sometimes the same attribute data occurs twice in one table. This duplication (formally called redundancy) causes several problems.
- b. Sometimes the same attribute data occurs twice in one table. This duplication (formally called redundancy) causes several problems.
- c. Sometimes the same attribute data occurs twice in one table. This duplication (formally called redundancy) causes several problems.
- d. Sometimes the same attribute data occurs twice in one table. This duplication (formally called redundancy) causes several problems.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Normalization

QUESTION TYPE: Multiple Choice

Module 2 - Database Design Fundamentals

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.7 - Convert tables from first normal form to second normal form.

KEYWORDS: Bloom's: Remember

DATE CREATED: 8/18/2020 6:37 PM

DATE MODIFIED: 9/19/2020 10:18 AM

11. One of the categories of update anomalies is _____.

- a. functional dependencies
- b. functional splits
- c. inconsistent data
- d. qualifications

ANSWER: c

FEEDBACK:

- a. The more serious types of problems caused by redundancy are called update anomalies and they fall into four categories: updates, inconsistent data, additions, and deletions.
- b. The more serious types of problems caused by redundancy are called update anomalies and they fall into four categories: updates, inconsistent data, additions, and deletions.
- c. The more serious types of problems caused by redundancy are called update anomalies and they fall into four categories: updates, inconsistent data, additions, and deletions.
- d. The more serious types of problems caused by redundancy are called update anomalies and they fall into four categories: updates, inconsistent data, additions, and deletions.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Normalization

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.7 - Convert tables from first normal form to second normal form.

KEYWORDS: Bloom's: Remember

DATE CREATED: 8/18/2020 6:37 PM

DATE MODIFIED: 9/19/2020 10:22 AM

12. Suppose you have a table with a primary key composed of two columns. When another column in this table is dependent on only one of the two columns in the primary key, this poses a risk for _____.

- a. qualification errors
- b. update anomalies
- c. function splitting
- d. functional dependency

ANSWER: b

FEEDBACK:

- a. Update anomalies occur because a nonkey column is dependent on only a portion of the primary key and not on the complete primary key.
- b. Update anomalies occur because a nonkey column is dependent on only a portion of the primary key and not on the complete primary key.
- c. Update anomalies occur because a nonkey column is dependent on only a portion of the primary key and not on the complete primary key.
- d. Update anomalies occur because a nonkey column is dependent on only a portion of the primary key and not on the complete primary key.

Module 2 - Database Design Fundamentals

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Normalization

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.7 - Convert tables from first normal form to second normal form.

KEYWORDS: Bloom's: Remember

DATE CREATED: 8/18/2020 6:37 PM

DATE MODIFIED: 9/19/2020 10:29 AM

13. In this text, Boyce-Codd normal form is the same as ____.

- a. unnormalized
- b. first normal form
- c. second normal form
- d. third normal form

ANSWER: d

FEEDBACK:

- a. This text's definition of third normal form is not the original definition. This more recent definition, which is preferable to the original, is often referred to as Boyce-Codd normal form (BCNF) when it is important to make a distinction between this definition and the original definition. This text does not make such a distinction but will take this to be the definition of third normal form.
- b. This text's definition of third normal form is not the original definition. This more recent definition, which is preferable to the original, is often referred to as Boyce-Codd normal form (BCNF) when it is important to make a distinction between this definition and the original definition. This text does not make such a distinction but will take this to be the definition of third normal form.
- c. This text's definition of third normal form is not the original definition. This more recent definition, which is preferable to the original, is often referred to as Boyce-Codd normal form (BCNF) when it is important to make a distinction between this definition and the original definition. This text does not make such a distinction but will take this to be the definition of third normal form.
- d. This text's definition of third normal form is not the original definition. This more recent definition, which is preferable to the original, is often referred to as Boyce-Codd normal form (BCNF) when it is important to make a distinction between this definition and the original definition. This text does not make such a distinction but will take this to be the definition of third normal form.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Normalization

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.8 - Convert tables from second normal form to third normal form.

KEYWORDS: Bloom's: Remember

DATE CREATED: 8/18/2020 6:37 PM

DATE MODIFIED: 9/19/2020 10:56 AM

Module 2 - Database Design Fundamentals

14. In an entity-relationship (E-R) diagram, tables are represented by _____.

- a. rectangles
- b. ovals
- c. circles
- d. diamonds

ANSWER: a

FEEDBACK:

- a. In an E-R diagram, a rectangle represents an entity (table).
- b. In an E-R diagram, a rectangle represents an entity (table).
- c. In an E-R diagram, a rectangle represents an entity (table).
- d. In an E-R diagram, a rectangle represents an entity (table).

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Diagrams for Database Design

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.9 - Create an entity-relationship diagram to represent the design of a database.

KEYWORDS: Bloom's: Remember

DATE CREATED: 8/18/2020 6:37 PM

DATE MODIFIED: 9/19/2020 11:33 AM

15. In an entity-relationship (E-R) diagram, one-to-many relationships between entities are drawn as _____.

- a. rectangles
- b. equals signs between shapes
- c. lines between shapes
- d. circles

ANSWER: c

FEEDBACK:

- a. In an E-R diagram, a rectangle represents an entity (table). One-to-many relationships between entities are drawn as lines between the corresponding rectangles.
- b. In an E-R diagram, a rectangle represents an entity (table). One-to-many relationships between entities are drawn as lines between the corresponding rectangles.
- c. In an E-R diagram, a rectangle represents an entity (table). One-to-many relationships between entities are drawn as lines between the corresponding rectangles.
- d. In an E-R diagram, a rectangle represents an entity (table). One-to-many relationships between entities are drawn as lines between the corresponding rectangles.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Diagrams for Database Design

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.9 - Create an entity-relationship diagram to represent the design of a database.

KEYWORDS: Bloom's: Remember

DATE CREATED: 8/18/2020 6:37 PM

DATE MODIFIED: 9/19/2020 11:35 AM

Module 2 - Database Design Fundamentals

16. Which statement describing relations is **false**?

- a. A relation is a two-dimensional table.
- b. The entries in a relation may be single- or double-valued.
- c. Each column in a relation has a distinct name.
- d. The order of the columns in a relation is immaterial.

ANSWER: b

FEEDBACK:

- a. A relation is a two-dimensional table in which the entries in the table are single-valued (each location in the table contains a single entry), each column has a distinct name, all values in the column match this name, the order of the rows and columns is immaterial, and each row contains unique values.
- b. A relation is a two-dimensional table in which the entries in the table are single-valued (each location in the table contains a single entry), each column has a distinct name, all values in the column match this name, the order of the rows and columns is immaterial, and each row contains unique values.
- c. A relation is a two-dimensional table in which the entries in the table are single-valued (each location in the table contains a single entry), each column has a distinct name, all values in the column match this name, the order of the rows and columns is immaterial, and each row contains unique values.
- d. A relation is a two-dimensional table in which the entries in the table are single-valued (each location in the table contains a single entry), each column has a distinct name, all values in the column match this name, the order of the rows and columns is immaterial, and each row contains unique values.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Database Concepts

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.2 - Understand the terms relation and relational database.

KEYWORDS: Bloom's: Remember

DATE CREATED: 9/18/2020 12:29 PM

DATE MODIFIED: 9/18/2020 12:38 PM

17. When the commonly accepted shorthand representation is used to describe a database, ____.

- a. each column name appears on its own line
- b. the first attributes from each row are listed in parentheses
- c. tables cannot contain columns with duplicate names
- d. it is always acceptable to qualify column names

ANSWER: d

FEEDBACK:

- a. There is a commonly accepted shorthand representation to show the tables and columns in a relational database: for each table, you write the name of the table and then within parentheses list all of the columns in the table. In this representation, each table appears on its own line. Some tables may contain columns with duplicate names. It is always acceptable to qualify column names, even when there is no potential for confusion.
- b. There is a commonly accepted shorthand representation to show the tables and columns in a relational database: for each table, you write the name of the table and then within parentheses list all of the columns in the table. In this representation, each table appears on its own line. Some tables may contain columns with duplicate names. It is always

Module 2 - Database Design Fundamentals

acceptable to qualify column names, even when there is no potential for confusion.

- c. There is a commonly accepted shorthand representation to show the tables and columns in a relational database: for each table, you write the name of the table and then within parentheses list all of the columns in the table. In this representation, each table appears on its own line. Some tables may contain columns with duplicate names. It is always acceptable to qualify column names, even when there is no potential for confusion.
- d. There is a commonly accepted shorthand representation to show the tables and columns in a relational database: for each table, you write the name of the table and then within parentheses list all of the columns in the table. In this representation, each table appears on its own line. Some tables may contain columns with duplicate names. It is always acceptable to qualify column names, even when there is no potential for confusion.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Database Concepts

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.2 - Understand the terms relation and relational database.

KEYWORDS: Bloom's: Understand

DATE CREATED: 9/18/2020 12:31 PM

DATE MODIFIED: 9/18/2020 12:46 PM

18. A relational database ____.

- a. consists of relationships between entities
- b. implements relationships through common table rows
- c. consists of tables called relations
- d. implements relationships through repeating groups

ANSWER: c

FEEDBACK:

- a. A relational database is a collection of tables like the ones you examined for KimTay Pet Supplies in Module 1.
- b. A relational database is a collection of tables like the ones you examined for KimTay Pet Supplies in Module 1.
- c. A relational database is a collection of tables like the ones you examined for KimTay Pet Supplies in Module 1.
- d. A relational database is a collection of tables like the ones you examined for KimTay Pet Supplies in Module 1.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Database Concepts

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.2 - Understand the terms relation and relational database.

KEYWORDS: Bloom's: Remember

DATE CREATED: 9/18/2020 12:31 PM

DATE MODIFIED: 9/18/2020 12:52 PM

Module 2 - Database Design Fundamentals

19. Why have Social Security numbers traditionally been used as primary keys for database tables that store personal data on individual people?

- a. All other columns in such a table are functionally dependent on the Social Security number column.
- b. The Social Security number is always the only candidate key in such a table.
- c. A Social Security number column is functionally dependent on all the other columns in such a table.
- d. The Social Security number is functionally independent of most other columns in such a table.

ANSWER: a

FEEDBACK:

- a. Column A (or a collection of columns) is the primary key for a table if all columns in the table are functionally dependent on A.
- b. Column A (or a collection of columns) is the primary key for a table if all columns in the table are functionally dependent on A.
- c. Column A (or a collection of columns) is the primary key for a table if all columns in the table are functionally dependent on A.
- d. Column A (or a collection of columns) is the primary key for a table if all columns in the table are functionally dependent on A.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Primary Keys

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.4 - Understand the term primary key and identify primary keys in tables.

KEYWORDS: Bloom's: Understand

DATE CREATED: 9/18/2020 1:10 PM

DATE MODIFIED: 9/18/2020 1:25 PM

20. Which statement regarding primary keys is true?

- a. By definition, a primary key always consists of a single column.
- b. You can identify primary keys for tables by examining sample data.
- c. Some tables include more than one column that can be used as a primary key.
- d. All primary keys are values generated by database software.

ANSWER: c

FEEDBACK:

- a. Column A (or a collection of columns) is the primary key for a table if all columns in the table are functionally dependent on A. The only way to determine functional dependencies is to examine the user's policies. Sometimes you might identify one or more columns that you can use as a table's primary key. Some institutions prefer to assign values to use as primary keys for items such as customer ID values, item ID values, and student numbers. Others simply let the computer generate the values.
- b. Column A (or a collection of columns) is the primary key for a table if all columns in the table are functionally dependent on A. The only way to determine functional dependencies is to examine the user's policies. Sometimes you might identify one or more columns that you can use as a table's primary key. Some institutions prefer to assign values to use as primary keys for items such as customer ID values, item ID values, and student numbers. Others simply let the computer generate the values.
- c. Column A (or a collection of columns) is the primary key for a table if all columns in the table are functionally dependent on A. The only way to determine functional dependencies is to examine the user's policies. Sometimes you might identify one or more columns that you can use as a table's primary key. Some institutions prefer to assign values to use as primary keys for items such as customer ID values, item ID

Module 2 - Database Design Fundamentals

values, and student numbers. Others simply let the computer generate the values.

- d. Column A (or a collection of columns) is the primary key for a table if all columns in the table are functionally dependent on A. The only way to determine functional dependencies is to examine the user's policies. Sometimes you might identify one or more columns that you can use as a table's primary key. Some institutions prefer to assign values to use as primary keys for items such as customer ID values, item ID values, and student numbers. Others simply let the computer generate the values.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Primary Keys

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.4 - Understand the term primary key and identify primary keys in tables.

KEYWORDS: Bloom's: Understand

DATE CREATED: 9/18/2020 1:11 PM

DATE MODIFIED: 9/18/2020 1:37 PM

21. In the following shorthand representation of a database, the underlined items are _____.

INVOICES (INVOICE_NUM, INVOICE_DATE, CUST_ID)

INVOICE_LINE (INVOICE_NUM, ITEM_ID, QUANTITY, QUOTED_PRICE)

ITEM (ITEM_ID, DESCRIPTION, ON_HAND, CATEGORY, LOCATION, PRICE)

- a. relations
- b. entities
- c. nonkey columns
- d. primary keys

ANSWER: d

FEEDBACK:

- a. You can indicate a table's primary key with a shorthand representation of a database by underlining the column or collection of columns that comprise the primary key.
- b. You can indicate a table's primary key with a shorthand representation of a database by underlining the column or collection of columns that comprise the primary key.
- c. You can indicate a table's primary key with a shorthand representation of a database by underlining the column or collection of columns that comprise the primary key.
- d. You can indicate a table's primary key with a shorthand representation of a database by underlining the column or collection of columns that comprise the primary key.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Primary Keys

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.4 - Understand the term primary key and identify primary keys in tables.

KEYWORDS: Bloom's: Understand

DATE CREATED: 9/18/2020 1:11 PM

DATE MODIFIED: 9/18/2020 1:44 PM

22. You receive the following requirements for a caterer's database:

Module 2 - Database Design Fundamentals

- For a customer, store a customer ID, last name, first name, billing address, and phone number
- For an order, store an order number, order date, event date, customer ID, description of services, and total price for services

When designing this database, which step do you take **first**?

- Identify the customer ID and order number as unique identifiers.
- Identify and name the entities CUSTOMER and ORDER.
- Identify customer ID, last name, first name, billing address, and phone number as attributes.
- Create a CUSTOMER table that includes all the customers' attributes as columns.

ANSWER: b

FEEDBACK:

- The first step to complete to design a database for a set of requirements is to read the requirements, identify the entities (objects) involved, and name the entities.
- The first step to complete to design a database for a set of requirements is to read the requirements, identify the entities (objects) involved, and name the entities.
- The first step to complete to design a database for a set of requirements is to read the requirements, identify the entities (objects) involved, and name the entities.
- The first step to complete to design a database for a set of requirements is to read the requirements, identify the entities (objects) involved, and name the entities.

POINTS: 1

DIFFICULTY: Moderate

REFERENCES: Database Design

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.5 - Design a database to satisfy a set of requirements.

KEYWORDS: Bloom's: Apply

DATE CREATED: 9/18/2020 1:51 PM

DATE MODIFIED: 9/18/2020 2:10 PM

23. When you are designing a database, ____.

- you might be able to determine the relationships between tables directly from the requirements
- one useful approach to identifying relationships between tables is to look for matching rows
- the many part of a relationship between tables occurs where the matching column is the primary key
- attributes with functional dependencies should not be placed together in the same table

ANSWER: a

FEEDBACK:

- The sixth step to complete to design a database for a set of requirements is to identify any relationships between tables. In some cases, you might be able to determine the relationships directly from the requirements. If not, look for matching columns in the tables you created.
- The sixth step to complete to design a database for a set of requirements is to identify any relationships between tables. In some cases, you might be able to determine the relationships directly from the requirements. If not, look for matching columns in the tables you created.
- The sixth step to complete to design a database for a set of requirements is to identify any relationships between tables. In some cases, you might be able to determine the relationships directly from the requirements. If not, look for matching columns in the tables you created.

Module 2 - Database Design Fundamentals

- d. The sixth step to complete to design a database for a set of requirements is to identify any relationships between tables. In some cases, you might be able to determine the relationships directly from the requirements. If not, look for matching columns in the tables you created.

POINTS: 1

DIFFICULTY: Moderate

REFERENCES: Database Design

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.5 - Design a database to satisfy a set of requirements.

KEYWORDS: Bloom's: Understand

DATE CREATED: 9/18/2020 1:52 PM

DATE MODIFIED: 9/18/2020 2:19 PM

24. James converts a table with this notation:

INVOICES (INVOICE_NUM, INVOICE_DATE, (ITEM_ID, QUANTITY))

into a table with this notation:

INVOICES (INVOICE_NUM, INVOICE_DATE, ITEM_ID, QUANTITY)

James has _____.

- a. made the table design worse
- b. converted a table in first normal form into a table in second normal form
- c. converted an unnormalized relation into a table in first normal form
- d. added a repeating group to a table

ANSWER: c

FEEDBACK:

- a. You might create the following INVOICES table, in which there is a repeating group consisting of ITEM_ID and QUANTITY. To convert the table to first normal form, you remove the repeating group as follows: INVOICES (INVOICE_NUM, INVOICE_DATE, ITEM_ID, QUANTITY).
- b. You might create the following INVOICES table, in which there is a repeating group consisting of ITEM_ID and QUANTITY. To convert the table to first normal form, you remove the repeating group as follows: INVOICES (INVOICE_NUM, INVOICE_DATE, ITEM_ID, QUANTITY).
- c. You might create the following INVOICES table, in which there is a repeating group consisting of ITEM_ID and QUANTITY. To convert the table to first normal form, you remove the repeating group as follows: INVOICES (INVOICE_NUM, INVOICE_DATE, ITEM_ID, QUANTITY).
- d. You might create the following INVOICES table, in which there is a repeating group consisting of ITEM_ID and QUANTITY. To convert the table to first normal form, you remove the repeating group as follows: INVOICES (INVOICE_NUM, INVOICE_DATE, ITEM_ID, QUANTITY).

POINTS: 1

DIFFICULTY: Moderate

REFERENCES: Normalization

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.6 - Convert an unnormalized relation to first normal form.

CTIVES:

Module 2 - Database Design Fundamentals

KEYWORDS: Bloom's: Understand

DATE CREATED: 9/18/2020 2:24 PM

DATE MODIFIED: 9/18/2020 2:35 PM

25. When you convert an unnormalized table to a table in first normal form, the primary key of the table in first normal form _____.

- a. rarely includes a column from the repeating group
- b. is usually the primary key of the unnormalized table concatenated with the key for the repeating group
- c. rarely includes the primary key of the unnormalized table
- d. is usually exactly the same as the primary key of the unnormalized table

ANSWER: b

FEEDBACK:

- a. When you convert an unnormalized table to a table in first normal form, the primary key of the table in first normal form is usually the primary key of the unnormalized table concatenated with the key for the repeating group.
- b. When you convert an unnormalized table to a table in first normal form, the primary key of the table in first normal form is usually the primary key of the unnormalized table concatenated with the key for the repeating group.
- c. When you convert an unnormalized table to a table in first normal form, the primary key of the table in first normal form is usually the primary key of the unnormalized table concatenated with the key for the repeating group.
- d. When you convert an unnormalized table to a table in first normal form, the primary key of the table in first normal form is usually the primary key of the unnormalized table concatenated with the key for the repeating group.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Normalization

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.6 - Convert an unnormalized relation to first normal form.

KEYWORDS: Bloom's: Remember

DATE CREATED: 9/18/2020 2:26 PM

DATE MODIFIED: 9/18/2020 2:41 PM

26. You are working with a QUOTATIONS table that contains no repeating groups and has a primary key consisting of the SERVICE_CODE and SPECS columns. You realize that some other columns in the table functionally depend on either SERVICE_CODE or SPECS, but not both, whereas the rest depend on both. How should you improve this table?

- a. remove the multiple entries from the SERVICE_CODE and SPECS columns
- b. eliminate any columns that determine other columns from the table
- c. combine SERVICE_CODE and SPECS into a single-column primary key
- d. replace it with three tables with the following primary keys: SERVICE_CODE, SPECS, and SERVICE_CODE plus SPECS

ANSWER: d

FEEDBACK:

- a. You want to be able to convert tables to second normal form. First, take each subset of the set of columns that make up the primary key and begin a new table with this subset as its primary key. Next, place each of the other columns with the appropriate primary key; that is, place each one with the minimal collection of columns on which it depends.
- b. You want to be able to convert tables to second normal form. First, take each subset of

Module 2 - Database Design Fundamentals

the set of columns that make up the primary key and begin a new table with this subset as its primary key. Next, place each of the other columns with the appropriate primary key; that is, place each one with the minimal collection of columns on which it depends.

- c. You want to be able to convert tables to second normal form. First, take each subset of the set of columns that make up the primary key and begin a new table with this subset as its primary key. Next, place each of the other columns with the appropriate primary key; that is, place each one with the minimal collection of columns on which it depends.
- d. You want to be able to convert tables to second normal form. First, take each subset of the set of columns that make up the primary key and begin a new table with this subset as its primary key. Next, place each of the other columns with the appropriate primary key; that is, place each one with the minimal collection of columns on which it depends.

POINTS: 1

DIFFICULTY: Moderate

REFERENCES: Normalization

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.7 - Convert tables from first normal form to second normal form.

KEYWORDS: Bloom's: Apply

DATE CREATED: 9/19/2020 10:31 AM

DATE MODIFIED: 9/19/2020 10:47 AM

27. A table in second normal form should be improved to third normal form because _____.

- a. its determinants can cause update anomalies
- b. its candidate keys can cause update anomalies
- c. this reduces the number of relations in the database
- d. this eliminates repeating groups that waste space

ANSWER: a

FEEDBACK:

- a. Any column (or collection of columns) that determines another column is called a determinant. Determinants can cause update anomalies. A table's primary key is a determinant. In fact, by definition, any candidate key is a determinant. A table is in third normal form (3NF) when it is in second normal form and the only determinants it contains are candidate keys.
- b. Any column (or collection of columns) that determines another column is called a determinant. Determinants can cause update anomalies. A table's primary key is a determinant. In fact, by definition, any candidate key is a determinant. A table is in third normal form (3NF) when it is in second normal form and the only determinants it contains are candidate keys.
- c. Any column (or collection of columns) that determines another column is called a determinant. Determinants can cause update anomalies. A table's primary key is a determinant. In fact, by definition, any candidate key is a determinant. A table is in third normal form (3NF) when it is in second normal form and the only determinants it contains are candidate keys.
- d. Any column (or collection of columns) that determines another column is called a determinant. Determinants can cause update anomalies. A table's primary key is a determinant. In fact, by definition, any candidate key is a determinant. A table is in third normal form (3NF) when it is in second normal form and the only determinants it contains are candidate keys.

POINTS: 1

DIFFICULTY: Easy

Module 2 - Database Design Fundamentals

REFERENCES: Normalization

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.8 - Convert tables from second normal form to third normal form.

KEYWORDS: Bloom's: Understand

DATE CREATED: 9/19/2020 10:58 AM

DATE MODIFIED: 9/19/2020 11:11 AM

28. Which of the following tables is in third normal form, given that DOC_ID determines DOC_FIRST_NAME and DOC_LAST_NAME?

- a. PATIENT (PATIENT_ID, FIRST_NAME, LAST_NAME, DOC_ID, DOC_FIRST_NAME, DOC_LAST_NAME)
- b. PATIENT (PATIENT_ID, FIRST_NAME, LAST_NAME, VISIT_DATE, (SERVICE, BILLING_CODE))
- c. PATIENT (PATIENT_ID, FIRST_NAME, LAST_NAME, EMAIL, PHONE_NO, DOC_ID)
- d. PATIENT (PATIENT_ID, DOC_ID, FIRST_NAME, LAST_NAME, (ADMIT_DATE, RELEASE_DATE))

ANSWER: c

POINTS: 1

DIFFICULTY: Moderate

REFERENCES: Normalization

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.8 - Convert tables from second normal form to third normal form.

KEYWORDS: Bloom's: Understand

DATE CREATED: 9/19/2020 10:58 AM

DATE MODIFIED: 9/19/2020 11:29 AM

29. Within an entity-relationship diagram, which of the following would indicate that the relationship between A and B is one (A) to many (B)?

- a. An arrow drawn from rectangle B points to rectangle A.
- b. A line drawn from rectangle A ends in a crow's foot at rectangle B.
- c. A line with a number 1 beside it is drawn from rectangle A to rectangle B.
- d. A line with a letter *n* beside it is drawn from a diamond to rectangle A.

ANSWER: b

FEEDBACK:

- a. One style of E-R diagram is to represent the many side of a relationship between tables with a crow's foot. The crow's foot represents the many part of the relationship.
- b. One style of E-R diagram is to represent the many side of a relationship between tables with a crow's foot. The crow's foot represents the many part of the relationship.
- c. One style of E-R diagram is to represent the many side of a relationship between tables with a crow's foot. The crow's foot represents the many part of the relationship.
- d. One style of E-R diagram is to represent the many side of a relationship between tables with a crow's foot. The crow's foot represents the many part of the relationship.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Diagrams for Database Design

QUESTION TYPE: Multiple Choice

Module 2 - Database Design Fundamentals

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.9 - Create an entity-relationship diagram to represent the design of a database.

KEYWORDS: Bloom's: Understand

DATE CREATED: 9/19/2020 11:36 AM

DATE MODIFIED: 9/19/2020 11:47 AM

30. Diamonds are sometimes used in E-R diagrams to _____.
a. identify the names of entities in a database
b. indicate which entity is on the "many" side of a one-to-many relationship
c. represent individual tables
d. describe the relationship between two tables

ANSWER: d

FEEDBACK:

- a. In the original style of E-R diagrams. relationships are indicated in diamonds that describe the relationship.
- b. In the original style of E-R diagrams. relationships are indicated in diamonds that describe the relationship.
- c. In the original style of E-R diagrams. relationships are indicated in diamonds that describe the relationship.
- d. In the original style of E-R diagrams. relationships are indicated in diamonds that describe the relationship.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Diagrams for Database Design

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

LEARNING OBJECTIVES: Guide to SQL.10e.2.9 - Create an entity-relationship diagram to represent the design of a database.

KEYWORDS: Bloom's: Remember

DATE CREATED: 9/19/2020 11:38 AM

DATE MODIFIED: 9/19/2020 11:53 AM

Essay

31. How does a database management system that follows the relational model handle entities, attributes of entities, and relationships between entities?

ANSWER: Entities and attributes are fairly simple. Each entity has its own table. The attributes of an entity become the columns in the table. In a relational model database, a one-to-many relationship is represented by using common columns in two or more tables. More formally, a relation is essentially a two-dimensional table. Each column in a table should have a unique name, and entries within each column should all "match" this column name. Also, each row (also called a record or a tuple in some programs) should be unique. After all, if two rows in a table contain identical data, the second row doesn't provide any information that you don't already have. In addition, for maximum flexibility in manipulating data, the order in which columns and rows appear in a table should be immaterial. Finally, a table's design should be as simple as possible; you should restrict each position in a table to a single entry by not allowing multiple entries (called a repeating group) in an individual location in the table.

POINTS: 1

Module 2 - Database Design Fundamentals

DIFFICULTY: Moderate

REFERENCES: Database Concepts

QUESTION TYPE: Essay

HAS VARIABLES: False

STUDENT ENTRY Basic

MODE:

LEARNING OBJECTIVES: Guide to SQL.10e.2.1 - Understand the terms entity, attribute, and relationship.

KEYWORDS: Bloom's: Understand

DATE CREATED: 8/18/2020 6:37 PM

DATE MODIFIED: 9/18/2020 8:26 AM

32. Define a relation.

ANSWER: A relation is a two-dimensional table in which:

1. The entries in the table are single-valued; that is, each location in the table contains a single entry.
2. Each column has a distinct name (technically called the attribute name).
3. All values in a column are values of the same attribute (that is, all entries must match the column name).
4. The order of rows and columns is immaterial.
5. Each row contains unique values.

POINTS: 1

DIFFICULTY: Moderate

REFERENCES: Database Concepts

QUESTION TYPE: Essay

HAS VARIABLES: False

STUDENT ENTRY MOD Basic

E:

LEARNING OBJECTIVE Guide to SQL.10e.2.1 - Understand the terms entity, attribute, and relationship.

S:

KEYWORDS: Bloom's: Remember

DATE CREATED: 8/18/2020 6:37 PM

DATE MODIFIED: 9/18/2020 8:28 AM

33. What is the precise definition of a primary key?

ANSWER: Column A (or a collection of columns) is the primary key for a table if the following is true:

Property 1: *All* columns in the table are functionally dependent on A.

Property 2: No subcollection of the columns in A (assuming A is a collection of columns and not just a single column) also has Property 1.

POINTS: 1

DIFFICULTY: Easy

REFERENCES: Primary Keys

QUESTION TYPE: Essay

HAS VARIABLES: False

STUDENT ENTRY Basic

MODE:

Module 2 - Database Design Fundamentals

LEARNING OBJECTIVES: Guide to SQL.10e.2.4 - Understand the term primary key and identify primary keys in tables.

KEYWORDS: Bloom's: Remember

DATE CREATED: 8/18/2020 6:37 PM

DATE MODIFIED: 9/18/2020 1:08 PM

34. What are the six steps necessary to design a database for a set of requirements?

ANSWER:

1. Read the requirements, identify the entities (objects) involved, and name the entities.
2. Identify the unique identifiers for the entities identified in Step 1.
3. Identify the attributes for all the entities.
4. Identify the functional dependencies that exist among the attributes.
5. Use the functional dependencies to identify the tables by placing each attribute with the attribute or minimum combination of attributes on which it is functionally dependent.
6. Identify any relationships between tables.

POINTS: 1

DIFFICULTY: Moderate

REFERENCES: Database Design

QUESTION TYPE: Essay

HAS VARIABLES: False

STUDENT ENTRY: Basic

MODE:

LEARNING OBJECTIVES: Guide to SQL.10e.2.5 - Design a database to satisfy a set of requirements.

KEYWORDS: Bloom's: Understand

DATE CREATED: 8/18/2020 6:37 PM

DATE MODIFIED: 9/18/2020 1:50 PM

35. Explain why and how an unnormalized relation should be converted into a relation in first normal form.

ANSWER: A table in a particular normal form possesses a certain desirable collection of properties. Although there are several normal forms, the most common are first normal form, second normal form, and third normal form. According to the definition of a relation, a relation (table) cannot contain a repeating group in which multiple entries exist on a single row. However, in the database design process, you might create a table that has all the other properties of a relation but contains a repeating group. Removing repeating groups is the starting point when converting an unnormalized collection of data into a table that is in first normal form. A table (relation) is in first normal form (1NF) when it does not contain a repeating group.

To convert a table with repeating group(s) to first normal form, you remove the repeating group(s). When you convert an unnormalized table to a table in first normal form, the primary key of the table in first normal form is usually the primary key of the unnormalized table concatenated with the key for the repeating group. The key for the repeating group is the column in the repeating group that distinguishes one occurrence of the repeating group from another.

POINTS: 1

DIFFICULTY: Moderate

REFERENCES: Normalization

QUESTION TYPE: Essay

HAS VARIABLES: False

STUDENT ENTRY: Basic

Module 2 - Database Design Fundamentals

MODE:

LEARNING OBJECTIVES: Guide to SQL.10e.2.6 - Convert an unnormalized relation to first normal form.

CTIVES:

KEYWORDS: Bloom's: Understand

DATE CREATED: 9/18/2020 6:02 PM

DATE MODIFIED: 9/18/2020 6:07 PM