# *Database Concepts 9th edition Kroenke Test Bank*

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*Database Concepts, 9e* **(Kroenke)**
**Chapter 2 The Relational Model**

1) A key must be unique.
Answer: FALSE
Diff: 1 Page Ref: 74
AACSB: Information Technology
Chapter Obj.: Learn basic relational terminology
Classification: Concept

2) Ensuring that every value of a foreign key matches a value of the corresponding primary key is an example of a referential integrity constraint.
Answer: TRUE
Diff: 1 Page Ref: 80
AACSB: Information Technology
Chapter Obj.: Learn basic relational terminology
Classification: Concept

3) A double arrow notation, A→→ B, is used to indicate a multivalued dependency.
Answer: TRUE
Diff: 2 Page Ref: 96
AACSB: Information Technology
Chapter Obj.: Learn basic relational terminology
Classification: Concept

4) Microsoft Access forms can only contain data from one table.
Answer: FALSE
Diff: 1 Page Ref: 114
AACSB: Information Technology
Chapter Obj.: Learn basic relational terminology
Classification: Concept

5) While the relational model for databases appears to hold much promise, few commercial databases have implemented it.
Answer: FALSE
Diff: 1 Page Ref: 70
AACSB: Information Technology
Chapter Obj.: Learn the conceptual foundation of the relational model
Classification: Concept

6) Every cell in a relation can hold only a single value.
Answer: TRUE
Diff: 1 Page Ref: 71
AACSB: Information Technology
Chapter Obj.: Learn the conceptual foundation of the relational model
Classification: Concept


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7) In the relational model, each row of a table contains data that represents an attribute of the entity.
Answer: FALSE
Diff: 2 Page Ref: 71
AACSB: Information Technology
Chapter Obj.: Learn the conceptual foundation of the relational model
Classification: Concept

8) To be considered a composite key, a key must contain at least two attributes.
Answer: TRUE
Diff: 1 Page Ref: 74
AACSB: Information Technology
Chapter Obj.: Learn the meaning and importance of keys, foreign keys, and related terminology
Classification: Concept

9) Candidate keys may or may not be unique.
Answer: FALSE
Diff: 2 Page Ref: 75
AACSB: Information Technology
Chapter Obj.: Learn the meaning and importance of keys, foreign keys, and related terminology
Classification: Concept

10) The primary key is used both to identify unique rows in a relation and to represent rows in relationships.
Answer: TRUE
Diff: 2 Page Ref: 75
AACSB: Information Technology
Chapter Obj.: Learn the meaning and importance of keys, foreign keys, and related terminology
Classification: Concept

11) Null values can cause problems because they are ambiguous.
Answer: TRUE
Diff: 1 Page Ref: 84
AACSB: Information Technology
Chapter Obj.: Learn the meaning and importance of keys, foreign keys, and related terminology
Classification: Concept

12) If the condition exists such that knowing the value of attribute X determines the value of attribute Y, then attribute Y is functionally dependent on attribute X.
Answer: TRUE
Diff: 1 Page Ref: 85
AACSB: Information Technology
Chapter Obj.: Learn the meaning of functional dependencies
Classification: Concept


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13) Given the functional dependency for the attributes of ENTITY1, **X → (A, B, C)**, X is a candidate key for the relation ENTITY1 (A, B, C, X).
Answer: TRUE
Diff: 3 Page Ref: 87
AACSB: Information Technology
Chapter Obj.: Learn the meaning of functional dependencies
Classification: Concept

14) Surrogate key values have no meaning to the users.
Answer: TRUE
Diff: 1 Page Ref: 79
AACSB: Information Technology
Chapter Obj.: Learn the purpose and use of surrogate keys
Classification: Concept

15) Since surrogate keys are used to uniquely identify rows, their values are normally displayed prominently on all forms and reports for the users to see.
Answer: FALSE
Diff: 2 Page Ref: 79
AACSB: Information Technology
Chapter Obj.: Learn the purpose and use of surrogate keys
Classification: Concept

16) The use of surrogate keys usually complicates application programming since most DBMS products require the application program to generate surrogate key values.
Answer: FALSE
Diff: 2 Page Ref: 79
AACSB: Information Technology
Chapter Obj.: Learn the purpose and use of surrogate keys
Classification: Concept

17) Normalization is the process of removing all functional dependencies from a relation.
Answer: FALSE
Diff: 2 Page Ref: 88
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

18) To create a well-formed relation through normalization, every determinant must be a candidate key.
Answer: TRUE
Diff: 1 Page Ref: 89
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Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept


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19) Any table that meets the definition of a relation is said to be in second normal form.
Answer: FALSE
Diff: 2 Page Ref: 99
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

20) The first step of the normalization process is to identify all the candidate keys of a relation.
Answer: TRUE
Diff: 1 Page Ref: 90
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

21) In the normalization process, it is not necessary to identify all the functional dependencies in a relation.
Answer: FALSE
Diff: 1 Page Ref: 89
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

22) In the normalization process, it is necessary to identify all the determinants in a relation.
Answer: TRUE
Diff: 2 Page Ref: 90
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

23) In the normalization process, if you find a candidate key that is not a primary key, then you have determined that the relation needs to be broken into two or more other relations.
Answer: FALSE
Diff: 2 Page Ref: 90
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

24) In the normalization process, if you find that every determinant in a relation is a candidate key, then you have determined that the relation is well formed.
Answer: TRUE
Diff: 2 Page Ref: 89
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Classification: Concept


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25) Since Microsoft Access is a personal database, it is not subject to the modification problems that occur in other relational databases.
Answer: FALSE
Diff: 2 Page Ref: 107
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

26) In Microsoft Access, relationships between tables are created in the Relationships window.
Answer: TRUE
Diff: 1 Page Ref: 110
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

27) In Microsoft Access, foreign keys are designated by using the Foreign Key button in the toolbar.
Answer: FALSE
Diff: 2 Page Ref: 112
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

28) In Microsoft Access, a relationship is created by dragging a foreign key column and dropping it on top of the corresponding primary key.
Answer: FALSE
Diff: 2 Page Ref: 112
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

29) To represent a relationship in the relational model, the primary key of one relation is placed into a second relation.
Answer: TRUE
Diff: 2 Page Ref: 80
AACSB: Information Technology
Chapter Obj.: Understand how foreign keys represent relationships
Classification: Concept

30) When used to represent a relationship, the primary key must have the same name as the corresponding foreign key.
Answer: FALSE
Diff: 3 Page Ref: 80
AACSB: Information Technology
Chapter Obj.: Understand how foreign keys represent relationships
Classification: Concept


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31) Every table is a relation, but not every relation is a table.
Answer: FALSE
Diff: 3 Page Ref: 70-72
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Chapter Obj.: Understand how relations differ from nonrelational tables
Classification: Concept

32) Every relation is a table, but not every table is a relation.
Answer: TRUE
Diff: 2 Page Ref: 70-72
AACSB: Information Technology
Chapter Obj.: Understand how relations differ from nonrelational tables
Classification: Concept

33) Which of the following terms is synonymous with "tuple"?
A) Attribute
B) Table
C) Field
D) Row
E) Relation
Answer: D
Diff: 1 Page Ref: 73
AACSB: Information Technology
Chapter Obj.: Learn basic relational terminology
Classification: Concept

34) Which of the following is not true about null values?
A) A null value can mean that the value is unknown.
B) A null value is ambiguous.
C) A null value can mean that the value is known to be blank.
D) A null value can mean that no value for the field is appropriate.
E) Null values cannot be avoided.
Answer: E
Diff: 2 Page Ref: 84
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Classification: Concept


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35) Which of the following terms is synonymous with "relation"?
A) Attribute
B) Table
C) Record
D) Row
E) Tuple
Answer: B
Diff: 1 Page Ref: 71
AACSB: Information Technology
Chapter Obj.: Learn the conceptual foundation of the relational model
Classification: Concept

36) Which of the following is true about a key?
A) It may be unique.
B) It may be nonunique.
C) It can only identify one row.
D) Both A and B
E) None of the above
Answer: D
Diff: 1 Page Ref: 74
AACSB: Information Technology
Chapter Obj.: Learn the meaning and importance of keys, foreign keys, and related terminology
Classification: Concept

37) A key that contains more than one attribute is called a(n) _____.
A) composite key
B) complex key
C) multi-key
D) n-key
E) candidate key
Answer: A
Diff: 1 Page Ref: 74
AACSB: Information Technology
Chapter Obj.: Learn the meaning and importance of keys, foreign keys, and related terminology
Classification: Concept

38) A primary key is _____.
A) not required to be unique
B) used to represent columns in relationships
C) a candidate key
D) always automatically generated by the DBMS
E) comprised of exactly one attribute
Answer: C
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Classification: Concept


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39) A candidate key is _____.
A) never a primary key
B) a combination of two or more attributes
C) is always automatically generated by the DBMS
D) a candidate to be the primary key
E) None of the above
Answer: D
Diff: 3 Page Ref: 75
AACSB: Information Technology
Chapter Obj.: Learn the meaning and importance of keys, foreign keys, and related terminology
Classification: Concept

40) Given the below functional dependency,

**MedicineCode → (MedicineName, ShelfLife, Manufacturer, Dosage)**

which of the following statements is not known to be true?
A) MedicineCode is a determinant.
B) MedicineName is a determinant.
C) Manufacturer is functionally dependent on MedicineCode.
D) ShelfLife is functionally dependent on MedicineCode.
E) MedicineCode is a candidate key of the relation MEDICINE (MedicineName, ShelfLife, Manufacturer, Dosage).
Answer: B
Diff: 2 Page Ref: 85
AACSB: Information Technology
Chapter Obj.: Learn the meaning of functional dependencies
Classification: Concept

41) A surrogate key may be appropriate under which of the following circumstances?
A) The primary key is not unique.
B) The primary key is numeric.
C) The available candidate keys would be prone to typographical errors.
D) The available candidate keys have little meaning to the users.
E) The relation only has one attribute.
Answer: C
Diff: 2 Page Ref: 79
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Classification: Concept


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42) Which of the following is not true of surrogate keys?
A) They are meaningful to the users.
B) They are numeric.
C) They are usually generated by the DBMS.
D) They are unique.
E) They are usually hidden on forms and reports.
Answer: A
Diff: 2 Page Ref: 79
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Chapter Obj.: Learn the purpose and use of surrogate keys
Classification: Concept

43) In SQL Server, the starting value of a surrogate key is called the _____.
A) identity
B) identity increment
C) identity Start
D) identity Seed
E) identity property
Answer: D
Diff: 3 Page Ref: 79
AACSB: Information Technology
Chapter Obj.: Learn the purpose and use of surrogate keys
Classification: Concept

44) Which of the following functional dependency diagrams accurately represents the following situation:
• A campus has many buildings.
• Each building has a unique name.
• Each building has many rooms.
• All rooms in any given building are numbered sequentially starting at "101."
• Each room has a certain capacity, although many rooms in the same building or different buildings may have the same capacity.
• Each room is assigned to a single department.
• A department may have many rooms in one or more buildings, each with the same or different capacities.
A) BuildingName → (RoomNumber, Capacity, Department)
B) RoomNumber → (BuildingName, Department, Capacity)
C) (Department, Capacity) → (BuildingName, RoomNumber)
D) (BuildingName, Capacity) → (Department, RoomNumber)
E) (BuildingName, RoomNumber) → (Capacity, Department)
Answer: E
Diff: 3 Page Ref: 85-86
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Classification: Concept


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45) One important relational design principle is that _____.
A) every determinant must be a candidate key
B) every candidate key must not be a determinant
C) every primary key must be a surrogate key
D) every determinant must be functionally dependent on the primary key
E) every primary key must be functionally dependent on every determinant
Answer: A
Diff: 2 Page Ref: 89
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

46) During the normalization process, the remedy for a relation that is not well formed is to _____.
A) create a surrogate key
B) create a functional dependency
C) break it into two or more relations that are well formed
D) combine it with another relation that is well formed
E) convert it into a list
Answer: C
Diff: 1 Page Ref: 89
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

47) A table that meets the requirements of a relation is said to be in which normal form?
A) Relational normal form (RNF)
B) First normal form
C) Second normal form
D) Boyce-Codd normal form
E) Domain/key normal form
Answer: B
Diff: 1 Page Ref: 89
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Classification: Concept


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48) The first step of the normalization process is to _____.
A) identify all the candidate keys of a relation
B) identify all the foreign keys of a relation
C) identify all the functional dependencies of a relation
D) identify all the determinants of a relation
E) split the relation into two or more new relations
Answer: A
Diff: 1 Page Ref: 89-90
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

49) In the normalization process, it is not necessary to _____.
A) identify all the candidate keys of a relation
B) identify all the foreign keys of a relation
C) identify all the functional dependencies of a relation
D) identify all the determinants of a relation
E) determine if every determinant is a candidate key
Answer: B
Diff: 2 Page Ref: 89-90
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

50) In the normalization process, if you find a candidate key that is not a primary key then you should _____.
A) place the columns of the functional dependency in a new relation
B) make the determinant of the functional dependency the primary key of the new relation
C) leave a copy of the determinant as a foreign key in the original relation
D) remove the determinant from the original relation
E) None of the above
Answer: E
Diff: 3 Page Ref: 90
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Classification: Concept


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51) In the normalization process, if you find a candidate key that is not a determinant then you should not _____.
A) place the columns of the functional dependency in a new relation
B) make the determinant of the functional dependency the primary key of the new relation
C) leave a copy of the determinant as a foreign key in the original relation
D) rename the determinant to another attribute description
E) create a referential integrity constraint between the original relation and the new relation
Answer: D
Diff: 2 Page Ref: 90
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

52) In the normalization process, if you find that every determinant in a relation is a candidate key then you have determined that _____.
A) the relation is well formed
B) the relation needs to be broken into two or more new relations
C) surrogate keys in the relation may not be correctly linked to other relations
D) the relation needs to have foreign keys added in order to be correctly linked to other relations
E) referential integrity constraints concerning the relation need to be established
Answer: A
Diff: 2 Page Ref: 90
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

53) When the primary key of one relation is placed into a second relation, it is called a _____.
A) field key
B) referential integrity
C) foreign key
D) candidate key
E) relocated key
Answer: C
Diff: 1 Page Ref: 80
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Chapter Obj.: Understand how foreign keys represent relationships
Classification: Concept


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54) Given the relations:

**STUDENT (<u>SID</u>, StudentName, Major, AdvisorID)**
**ADVISOR (<u>AdvisorID</u>, AdvisorName, Office, Phone)**

such that each student is assigned to one advisor, which of the following is true?
A) SID is both a primary key and a foreign key.
B) AdvisorName is a determinant.
C) AdvisorID is a foreign key.
D) Phone is a candidate key.
E) Major is a candidate key.
Answer: C
Diff: 3 Page Ref: 80
AACSB: Information Technology
Chapter Obj.: Understand how foreign keys represent relationships
Classification: Concept

55) A rule that requires that the values in a foreign key must have a matching value in the primary key to which the foreign key corresponds is called _____.
A) normalization
B) a referential integrity constraint
C) a key matching constraint
D) a functional dependency
E) synchronization
Answer: B
Diff: 3 Page Ref: 80
AACSB: Information Technology
Chapter Obj.: Understand how foreign keys represent relationships
Classification: Concept

56) In Microsoft Access, relationships between tables are created _____.
A) by the Relationships button on the Create command tab
B) by the Relationships button on the Home command tab
C) in the Relationships window
D) in the Table window of the table containing the primary key
E) in the Table window of the table containing the foreign key
Answer: C
Diff: 1 Page Ref: 110-113
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Classification: Concept


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57) In Microsoft Access, a relationship between two tables is created _____.
A) by entering the name of the foreign key in the appropriate table in Design View
B) by entering the name of the primary key in the appropriate table in Design View
C) by dragging the primary key column of one table onto the foreign key column of the other table in the Relationships window
D) by dragging the foreign key column of one table onto the primary key column of the other table in the Relationships window
E) by dragging the primary key column of one table onto the primary key column of the other table in the Relationships window
Answer: C
Diff: 2 Page Ref: 110-113
AACSB: Information Technology
Chapter Obj.: Understand how foreign keys represent relationships
Classification: Concept

58) In Microsoft Access, referential integrity constraints are created _____.
A) by setting a property value on the primary key in the table which contains it
B) by setting a property value on the foreign key in the table which contains it
C) by setting a property value on the primary key in the Relationships window
D) by setting a property value on the foreign key in the Relationships window
E) by checking the Enforce Referential Integrity check box in the Edit Relationships dialog box
Answer: E
Diff: 2 Page Ref: 113
AACSB: Information Technology
Chapter Obj.: Understand how foreign keys represent relationships
Classification: Concept

59) In Microsoft Access, the relationship between two tables is not actually created until _____.
A) the **OK** button in the Create Relationships dialog box is clicked
B) the **Create** button in the Create Relationships dialog box is clicked
C) the **OK** button in the Edit Relationships dialog box is clicked
D) the **Create** button in the Edit Relationships dialog box is clicked
E) the **Join** button in the Edit Relationships dialog box is clicked
Answer: D
Diff: 2 Page Ref: 112
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Classification: Concept


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60) Which of the following is not true about a relation?
A) A relation is a two-dimensional table.
B) The cells of a relation must hold a single value.
C) A relation may have duplicate column names.
D) A relation may not have duplicate rows.
E) The order of the rows of a relation is insignificant.
Answer: C
Diff: 1 Page Ref: 71
AACSB: Information Technology
Chapter Obj.: Understand how relations differ from nonrelational tables
Classification: Concept

61) Which of the following is true about a relation?
A) The order of the columns in a relation must go from largest to smallest.
B) All entries in any column must be of the same kind.
C) A relation may have duplicate column names.
D) A relation may have duplicate rows.
E) A relation may have multiple names.
Answer: B
Diff: 2 Page Ref: 71
AACSB: Information Technology
Chapter Obj.: Understand how relations differ from nonrelational tables
Classification: Concept

62) _____ was the developer of the relational model for databases.
Answer: E. F. Codd
Diff: 1 Page Ref: 70
AACSB: Information Technology
Chapter Obj.: Learn the conceptual foundation of the relational model
Classification: Concept

63) Although Microsoft Access is a personal database, the database tables in Access are still subject to _____ if they are not well-formed.
Answer: modification problems
Diff: 1 Page Ref: 107
AACSB: Information Technology
Chapter Obj.: Learn the conceptual foundation of the relational model
Classification: Concept

64) A(n) _____ is one or more columns of a relation that is used to identify a row.
Answer: key
Diff: 1 Page Ref: 74
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Chapter Obj.: Learn the meaning and importance of keys, foreign keys, and related terminology
Classification: Concept


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65) A key that contains two or more attributes is called a(n) _____ key.
Answer: composite
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Chapter Obj.: Learn the meaning and importance of keys, foreign keys, and related terminology
Classification: Concept

66) The unique keys that are not chosen to be the primary key are called _____ keys.
Answer: alternate
Diff: 2 Page Ref: 75
AACSB: Information Technology
Chapter Obj.: Learn the meaning and importance of keys, foreign keys, and related terminology
Classification: Concept

67) The relationship between two attributes that denotes that if the value of the first attribute is known, then the value of the second attribute can be determined, is called a(n) _____.
Answer: functional dependency
Diff: 2 Page Ref: 85-87
AACSB: Information Technology
Chapter Obj.: Learn the meaning of functional dependencies
Classification: Concept

68) The key that has been designated the _____ key of a relation functionally determines all the other attributes in the relation.
Answer: primary
Diff: 2 Page Ref: 87
AACSB: Information Technology
Chapter Obj.: Learn the meaning of functional dependencies
Classification: Concept

69) A(n) _____ is a unique, numeric value that is appended to the relation to serve as the primary key.
Answer: surrogate key
Diff: 2 Page Ref: 79
AACSB: Information Technology
Chapter Obj.: Learn the purpose and use of surrogate keys
Classification: Concept

70) To be a well-formed relation, every _____ in the relation must be a candidate key.
Answer: determinant
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Classification: Concept


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71) Any table that meets the requirements of a(n) _____ is in first normal form.
Answer: relation
Diff: 2 Page Ref: 99
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Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

72) When the primary key of one relation is placed in a second relation to represent a relationship, the attribute in the second relation is called a(n) _____ key.
Answer: foreign
Diff: 2 Page Ref: 80
AACSB: Information Technology
Chapter Obj.: Understand how foreign keys represent relationships
Classification: Concept

73) A rule that requires every value in a foreign key to match values in the corresponding primary key is called a(n) _____ constraint.
Answer: referential integrity
Diff: 3 Page Ref: 80
AACSB: Information Technology
Chapter Obj.: Understand how foreign keys represent relationships
Classification: Concept

74) In Microsoft Access, relationships between tables are built in the _____.
Answer: Relationships window
Diff: 2 Page Ref: 110-113
AACSB: Information Technology
Chapter Obj.: Understand how foreign keys represent relationships
Classification: Concept

75) In Microsoft Access, the Relationships window is accessed by using the _____ button on the Database tools command tab.
Answer: Relationships
Diff: 2 Page Ref: 110-113
AACSB: Information Technology
Chapter Obj.: Understand how foreign keys represent relationships
Classification: Concept

76) To create a relationship in Microsoft Access, we drag and drop the _____ of a table.
Answer: primary key
Diff: 2 Page Ref: 112
AACSB: Information Technology
Chapter Obj.: Understand how foreign keys represent relationships
Classification: Concept


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77) In Microsoft Access, referential integrity constraints are created in the _____.
Answer: Edit Relationships dialog box
Diff: 3 Page Ref: 113
AACSB: Information Technology
Chapter Obj.: Understand how foreign keys represent relationships
Classification: Concept

78) Explain the terms *relation*, *tuple*, and *attribute*.
Answer: The terms *relation*, *tuple*, and *attribute* are used primarily by database theoreticians. These terms are synonymous with the terms *table*, *row*, and *column*, respectively, about a relational database. They are also equivalent to the terms *file*, *record*, and *field*, which tend to be used by many traditional data processing professionals.
Diff: 1 Page Ref: 73
AACSB: Information Technology
Chapter Obj.: Learn basic relational terminology
Classification: Concept

79) Explain the possible interpretations of a null value.
Answer: The problem with allowing null values in a table is that the null value is open to three different interpretations. First, a null value in a field may mean that no value is appropriate for the field for the given record. Second, a null value may mean that the value of that field is known to be blank for the given record. Third, a null value may mean that the value of that field is not known for the given record.
Diff: 1 Page Ref: 83-84
AACSB: Information Technology
Chapter Obj.: Learn basic relational terminology
Classification: Concept

80) Distinguish between the primary key and a candidate key.
Answer: Both the primary key and a candidate key can uniquely identify the rows in a table. The primary key is the candidate key that is chosen by the database designer, working with the users, to uniquely identify rows and to represent relationships. Although any candidate key could, by definition, be selected to act as the primary key, the choice of primary key is often based on design decisions such as the amount of foreign key data that would be generated.
Diff: 2 Page Ref: 75
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Classification: Concept


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81) Briefly describe the various tasks of the primary key.
Answer: The primary key is used for four primary tasks. First, it is used to uniquely identify the rows in a table. Second, it is used to represent rows in relationships. Third, most DBMS products use the values of the primary key to organize the storage of the relation. Finally, primary keys are used in indexes and other structures to improve performance for search operations.
Diff: 2 Page Ref: 74-75
AACSB: Information Technology
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Classification: Concept

82) Explain the concept of a functional dependency.
Answer: A functional dependency is a relationship that exists among the attributes of a relation, such that if the value of one attribute or group of attributes is known, the value of another attribute or group of attributes can be determined. In a functional dependency, the attribute(s) whose value determines the value of the other attribute is called the "determinant." The other attribute, whose value is determined by the determinant, is said to be functionally dependent on the determinant.
Diff: 2 Page Ref: 85-86
AACSB: Information Technology
Chapter Obj.: Learn the meaning of functional dependencies
Classification: Concept

83) Explain the concept of a surrogate key.
Answer: A surrogate key is an artificial key that is created to act as the primary key for a relation. The surrogate key is a unique, numeric value that is appended to the relation. Surrogate keys are used in situations when no suitable primary key exists within the user data, or when all available primary keys within the data are too cumbersome for an efficient design. Surrogate key values have no meaning to the users and are normally hidden on all forms, reports, and displays. Most DBMS products have the ability to automatically generate values for surrogate keys as needed.
Diff: 1 Page Ref: 79
AACSB: Information Technology
Chapter Obj.: Learn the purpose and use of surrogate keys
Classification: Concept

84) What is normalization?
Answer: Normalization is a process whereby relations that are not well-formed are modified to become well-formed relations. A relation is considered to be well-formed if the data within it are not subject to unintended negative consequences when it is maintained. Although normalization recognizes several different normal forms, which are categories that the structure of a relation can be classified into based on the types of problems to which it is vulnerable, the basic premises of normalization are that (1) every determinant should be a candidate key, and (2) any relation that is not well formed should be broken into two or more relations that are well-formed.
Diff: 2 Page Ref: 88-89
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept


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85) What are the basic steps of the normalization process?
Answer: Before starting the normalization process, the relation must be in first normal form, which means that it meets the basic requirements of being a relation. The first step of the normalization process is to identify all the candidate keys in the relation. The second step is to identify all the functional dependencies in the relation. Third, check to see if all the identified determinants are candidate keys. If all determinants are candidate keys, the relation is well-formed and nothing more needs to be done. On the other hand, if any of the determinants is not a candidate key, the relation is not well-formed, and it is necessary to: (1) place the columns of that functional dependency into a new relation, (2) make the determinant of that functional dependency the primary key of the new relation, (3) leave a copy of the determinant in the original relation as a foreign key, and (4) create a referential integrity constraint between the original relation and the new relation. This process should be repeated for every relation until every determinant in a relation is a candidate key of that relation.
Diff: 1 Page Ref: 89-91
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

86) What is a multivalued dependency, and how do they affect the normalization process?
Answer: A multivalued dependency is the case where a determinant is associated with a set of values. When isolated, they do not have modification anomalies; tables with these isolated dependencies are considered to be in fourth normal form (4NF).
Diff: 2 Page Ref: 96-98
AACSB: Information Technology
Chapter Obj.: Learn to apply a process for normalizing relations
Classification: Concept

87) Explain the concept of a foreign key.
Answer: To implement a relationship within a relational database, the primary key of one relation is placed as an attribute in another relation. This attribute is called a foreign key in the second relation because it is the primary key of a relation that is foreign to the table in which the field resides.
Diff: 2 Page Ref: 80
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Chapter Obj.: Understand how foreign keys represent relationships
Classification: Concept


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88) Explain how to create a relationship in Microsoft Access.
Answer: In Microsoft Access, relationships are created in the **Relationships** window, which is opened by using the **Relationships** button on the Database Tools command tab. Once the **Relationships** window is open, the needed database tables are displayed using the **Show Table** dialog box. A relationship is initiated by dragging the primary key of one table and dropping it on top of the corresponding foreign key in the related table. At this point the **Edit Relationships** dialog box is displayed. A referential integrity constraint can be set in this box by checking the **Enforce Referential Integrity** check box. The relationship is actually created by clicking the **Create** button in the **Edit Relationships** dialog box.
Diff: 2 Page Ref: 110-113
AACSB: Information Technology
Chapter Obj.: Understand how foreign keys represent relationships
Classification: Concept

89) What requirements must a two-dimensional table satisfy in order to be a relation?
Answer: For a table to be considered a relation, it must meet several requirements. First, every cell must contain a single value. Second, there can be no duplicate rows. Third, each column must have a unique name. Fourth, the order of the columns must have no significance. Fifth, all values for a given column must be of the same type. Finally, the order of the rows must have no significance.
Diff: 1 Page Ref: 71
AACSB: Information Technology
Chapter Obj.: Understand how relations differ from nonrelational tables
Classification: Concept

90) In practice, why would tables that have duplicate rows be allowed?
Answer: It is not uncommon for a table that is returned as the result of a data manipulation operation, such as a query, to contain duplicate rows. This is often tolerated because of the processing time necessary for the DBMS to search the table to find and eliminate duplicate rows. This is especially true if the table is very large. In these cases, it is often acceptable to allow the duplicate rows to exist.
Diff: 3 Page Ref: 74
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Classification: Concept


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