CHAPTER 6: NORMALIZATION OF DATABASE TABLES

1. Normalization works through a series of stages called normal forms.
   a. True
   b. False

   ANSWER: True
   PTS: 1 DIF: Difficulty: Easy REF: p.202
   NAT: BUSPROG: Technology STATE: DISC: Information Technology
   KEY: Bloom's: Knowledge TOP: Database Tables and Normalization

2. Normalization is a process that is used for changing attributes to entities.
   a. True
   b. False

   ANSWER: False
   PTS: 1 DIF: Difficulty: Easy REF: p.202
   NAT: BUSPROG: Technology STATE: DISC: Information Technology
   KEY: Bloom's: Knowledge TOP: Database Tables and Normalization

3. In order to meet performance requirements, portions of the database design may need to be occasionally denormalized.
   a. True
   b. False

   ANSWER: True
   PTS: 1 DIF: Difficulty: Easy REF: p.202
   NAT: BUSPROG: Technology STATE: DISC: Information Technology
   KEY: Bloom's: Knowledge TOP: Database Tables and Normalization

4. Denormalization produces a lower normal form.
   a. True
   b. False

   ANSWER: True
   PTS: 1 DIF: Difficulty: Easy REF: p.202
   NAT: BUSPROG: Technology STATE: DISC: Information Technology
   KEY: Bloom's: Knowledge TOP: Database Tables and Normalization

5. Normalization is a very important database design ingredient, and the highest level is always the most desirable.
   a. True
   b. False

   ANSWER: False
   PTS: 1 DIF: Difficulty: Moderate REF: p.202
   NAT: BUSPROG: Analytic STATE: DISC: Information Technology
   KEY: Bloom's: Comprehension TOP: Database Tables and Normalization

6. Reporting anomalies in a table can cause a multitude of problems for managers and can be fixed through application programming.
   a. True
   b. False

   ANSWER: False
   PTS: 1 DIF: Difficulty: Easy REF: p.205
   NAT: BUSPROG: Technology STATE: DISC: Information Technology
   KEY: Bloom's: Knowledge TOP: The Need For Normalization

7. Data redundancy produces data anomalies.
   a. True
   b. False

   ANSWER: True
   PTS: 1 DIF: Difficulty: Easy REF: p.206
   NAT: BUSPROG: Technology STATE: DISC: Information Technology
   KEY: Bloom's: Knowledge TOP: The Need For Normalization

8. The objective of normalization is to ensure that each table conforms to the concept of well-formed relations.
   a. True
   b. False

   ANSWER: True
   PTS: 1 DIF: Difficulty: Easy REF: p.206
   NAT: BUSPROG: Technology STATE: DISC: Information Technology
   KEY: Bloom's: Knowledge TOP: The Normalization Process

9. Relational models view data as part of a table or collection of tables in which all key values must be identified.
   a. True
   b. False

   ANSWER: True
   PTS: 1 DIF: Difficulty: Easy REF: p.208
   NAT: BUSPROG: Technology STATE: DISC: Information Technology
   KEY: Bloom's: Knowledge TOP: The Normalization Process

10. Repeating groups must be eliminated by ensuring that each row defines a single entity.
    a. True
    b. False

    ANSWER: True
    PTS: 1 DIF: Difficulty: Easy REF: p.208
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: The Normalization Process

11. A dependency of one nonprime attribute on another nonprime attribute is a partial dependency.
    a. True
    b. False

    ANSWER: False
    PTS: 1 DIF: Difficulty: Easy REF: p.210
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: The Normalization Process

12. Dependency diagrams are very helpful in getting a bird's-eye view of all the relationships among a table's attributes.
    a. True
    b. False

    ANSWER: True
    PTS: 1 DIF: Difficulty: Easy REF: p.210
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: The Normalization Process

13. Dependencies that are based on only a part of a composite primary key are called transitive dependencies.
    a. True
    b. False

    ANSWER: False
    PTS: 1 DIF: Difficulty: Easy REF: p.210
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: The Normalization Process

14. All relational tables satisfy the 1NF requirements.
    a. True
    b. False

    ANSWER: True
    PTS: 1 DIF: Difficulty: Easy REF: p.211
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: The Normalization Process

15. In the context of partial dependencies, data redundancies occur because every row entry requires duplication of data.
    a. True
    b. False

    ANSWER: True
    PTS: 1 DIF: Difficulty: Easy REF: p.211
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: The Normalization Process

16. Since a partial dependency can exist only if a table's primary key is composed of several attributes, if a table in 1NF has a single-attribute primary key, then the table is automatically in 2NF.

    a. True

    b. False

    ANSWER: True

    PTS: 1 DIF: Difficulty: Moderate REF: p.212
    NAT: BUSPROG: Analytic STATE: DISC: Information Technology
    KEY: Bloom's: Comprehension TOP: The Normalization Process

17. It is possible for a table in 2NF to exhibit transitive dependency, where the primary key may rely on one or more nonprime attributes to functionally determine other nonprime attributes.

    a. True

    b. False

    ANSWER: True

    PTS: 1 DIF: Difficulty: Moderate REF: p.212
    NAT: BUSPROG: Analytic STATE: DISC: Information Technology
    KEY: Bloom's: Comprehension TOP: The Normalization Process

18. A determinant is any attribute whose value determines other values within a column.

    a. True

    b. False

    ANSWER: False

    PTS: 1 DIF: Difficulty: Easy REF: p.213
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: The Normalization Process

19. Data stored at their highest level of granularity are said to be atomic data.

    a. True

    b. False

    ANSWER: False

    PTS: 1 DIF: Difficulty: Easy REF: p.216
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Improving the Design

20. Atomic attributes are attributes that can be further subdivided.

    a. True

    b. False

    ANSWER: False

    PTS: 1 DIF: Difficulty: Easy REF: p.216
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Improving the Design

21. A table is in BCNF if every determinant in the table is a foreign key.
    a. True
    b. False

    ANSWER: False
    PTS: 1 DIF: Difficulty: Easy REF: p.226
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Higher-Level Normal Forms

22. A table is in fourth normal form if it is in third normal form and has no independent multivalued dependencies.
    a. True
    b. False

    ANSWER: True
    PTS: 1 DIF: Difficulty: Easy REF: p.226
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Higher-Level Normal Forms

23. Normalization represents a micro view of the entities within the ERD.
    a. True
    b. False

    ANSWER: True
    PTS: 1 DIF: Difficulty: Easy REF: p.226
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Normalization and Database Design

24. The combination of normalization and ER modeling yields a useful ERD, whose entities can be translated into appropriate relationship structures.
    a. True
    b. False

    ANSWER: False
    PTS: 1 DIF: Difficulty: Easy REF: p.229
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Normalization and Database Design

25. A good relational DBMS excels at managing denormalized relations.
    a. True
    b. False

    ANSWER: False
    PTS: 1 DIF: Difficulty: Easy REF: p.229
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Denormalization

26. The advantage of higher processing speed must be carefully weighed against the disadvantage of data anomalies.
    a. True
    b. False

    ANSWER: True
    PTS: 1 DIF: Difficulty: Easy REF: p.229
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Denormalization

27. Normalization purity is often easy to sustain in the modern database environment.
    a. True
    b. False

    ANSWER: False
    PTS: 1 DIF: Difficulty: Easy REF: p.231
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Denormalization

28. Unnormalized database tables often lead to various data redundancy disasters in production databases.
    a. True
    b. False

    ANSWER: True
    PTS: 1 DIF: Difficulty: Easy REF: p.232
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Denormalization

29. Attributes should clearly define participation, connectivity, and document cardinality.
    a. True
    b. False

    ANSWER: False
    PTS: 1 DIF: Difficulty: Easy REF: p.233
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Data-Modeling Checklist

30. Normalization works through a series of stages called normal forms. For most purposes in business database design, _____stages are as high as you need to go in the normalization process.
    a. two b. three
    c. four d. five

    ANSWER: b
    PTS: 1 DIF: Difficulty: Easy REF: p.202
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Database Tables and Normalization

31. From a structural point of view, 3NF is better than_____.
    a. 4NF b. 2NF
    c. 5NF d. 6NF

ANSWER: b
PTS: 1 DIF: Difficulty: Easy REF: p.202
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Database Tables and Normalization

32. From a structural point of view, 2NF is better than_____.
a. 1NF b. 3NF
c. 4NF d. BCNF

ANSWER: a
PTS: 1 DIF: Difficulty: Easy REF: p.202
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Database Tables and Normalization

33. An attribute that is part of a key is known as a(n)_____attribute.
a. important b. nonprime
c. prime d. entity

ANSWER: c
PTS: 1 DIF: Difficulty: Easy REF: p.202
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Database Tables and Normalization

34. A table that displays data redundancies yields_____.
a. consistencies b. anomalies
c. fewer attributes d. more entities

ANSWER: b
PTS: 1 DIF: Difficulty: Easy REF: p.205
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Need For Normalization

35. Data redundancy produces_____.
a. slower lookups b. robust design
c. efficient storage use d. data integrity problems

ANSWER: d
PTS: 1 DIF: Difficulty: Easy REF: p.206
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Need For Normalization

36. Attribute A_____attribute B if all of the rows in the table that agree in value for attribute A also agree in value for attribute B.
a. determines b. derives from
c. controls d. owns

ANSWER: a
PTS: 1 DIF: Difficulty: Moderate REF: p.207
NAT: BUSPROG: Analytic STATE: DISC: Information Technology
KEY: Bloom's: Comprehension TOP: The Normalization Process

37. Some very specialized applications may require normalization beyond the____.
a. 1NF b. 2NF
c. 3NF d. 4NF

ANSWER: d
PTS: 1 DIF: Difficulty: Easy REF: p.207
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Normalization Process

38. Of the following normal forms,_____is mostly of theoretical interest.
a. 1NF b. 3NF
c. BCNF d. DKNF

ANSWER: d
PTS: 1 DIF: Difficulty: Easy REF: p.207
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Normalization Process

39. A table that has all key attributes defined, has no repeating groups, and all its attributes are dependent on the primary key is said to be in_____.
a. 1NF b. 2NF
c. 3NF d. 4NF

ANSWER: a
PTS: 1 DIF: Difficulty: Easy REF: p.207
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Normalization Process

40. A(n)_____exists when there are functional dependencies such that XY is functionally dependent on WZ, X is functionally dependent on W, and XY is the primary key.
a. atomic attribute b. repeating group
c. partial dependency d. transitive dependency

ANSWER: c
PTS: 1 DIF: Difficulty: Easy REF: p.207
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Normalization Process

41. A(n)_____exists when there are functional dependencies such that Y is functionally dependent on X, Z is functionally dependent on Y, and X is the primary key.
a. partial dependency b. repeating group
c. atomic attribute d. transitive dependency

ANSWER: d
PTS: 1 DIF: Difficulty: Easy REF: p.208
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Normalization Process

42. A_____derives its name from the fact that a collection of multiple entries of the same type can exist for any single key attribute occurrence.
a. partial dependency b. transitive dependency
c. repeating group d. primary key

ANSWER: c
PTS: 1 DIF: Difficulty: Easy REF: p.208
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Normalization Process

43. A relational table must not contain a(n)_____.
a. entity b. attribute
c. relationship d. repeating group

ANSWER: d
PTS: 1 DIF: Difficulty: Easy REF: p.208
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Normalization Process

44. In a(n)_____diagram, the arrows above the attributes indicate all desirable dependencies.
a. Chen b. dependency
c. functionality d. ER

ANSWER: b
PTS: 1 DIF: Difficulty: Easy REF: p.210
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Normalization Process

45. Dependencies based on only a part of a composite primary key are known as_____dependencies.
a. primary b. partial
c. incomplete d. composite

ANSWER: b
PTS: 1 DIF: Difficulty: Easy REF: p.211
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Normalization Process

46. If a table has multiple candidate keys and one of those candidate keys is a composite key, the table can have _____based on this composite candidate key even when the primary key chosen is a single attribute.
a. Boyce-Codd normal forms b. redundancies
c. time-variances d. partial dependencies

ANSWER: d
PTS: 1 DIF: Difficulty: Easy REF: p.215
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Normalization Process

47. A table that is in 2NF and contains no transitive dependencies is said to be in_____.
a. 1NF b. 2NF
c. 3NF d. 4NF

ANSWER: c
PTS: 1 DIF: Difficulty: Easy REF: p.215
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Normalization Process

48. Improving_____leads to more flexible queries.
a. atomicity b. normalization
c. denormalization d. derived attribute

ANSWER: a
PTS: 1 DIF: Difficulty: Easy REF: p.216
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Improving the Design

49. An atomic attribute_____.
a. cannot exist in a relational table b. cannot be further subdivided
c. displays multiplicity d. is always chosen to be a foreign key

ANSWER: b
PTS: 1 DIF: Difficulty: Easy REF: p.216
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Improving the Design

50. The most likely data type for a surrogate key is_____.
a. character b. date
c. logical d. numeric

ANSWER: d
PTS: 1 DIF: Difficulty: Easy REF: p.216
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Improving the Design

51. Granularity refers to_____.
a. the size of a table b. the level of detail represented by the values in a table's row
c. the number of rows in a table d. the number of attributes represented in a table

ANSWER: b
PTS: 1 DIF: Difficulty: Easy REF: p.216
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Improving the Design

52. From a system functionality point of view,_____attribute values can be calculated when they are needed to write reports or invoices.

a. derived b. atomic

c. granular d. historical

ANSWER: a

PTS: 1 DIF: Difficulty: Easy REF: p.217
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Improving The Design

53. In a real-world environment, we must strike a balance between design integrity and_____.

a. robustness b. flexibility

c. uniqueness d. ease of use

ANSWER: b

PTS: 1 DIF: Difficulty: Easy REF: p.220
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Surrogate Key Considerations

54. For most business transactional databases, we should normalize relations into_____.

a. 1NF b. 2NF

c. 3NF d. 6NF

ANSWER: c

PTS: 1 DIF: Difficulty: Easy REF: p.220
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Higher-Level Normal Forms

55. To generate a surrogate key, Microsoft Access uses a(n)_____data type.

a. character b. sequence

c. AutoNumber d. identity

ANSWER: c

PTS: 1 DIF: Difficulty: Easy REF: p.220
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Surrogate Key Considerations

56. A table where every determinant is a candidate key is said to be in_____.

a. BCNF b. 2NF

c. 1NF d. 4NF

ANSWER: a

PTS: 1 DIF: Difficulty: Easy REF: p.221
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Higher-Level Normal Forms

57. BCNF can be violated only if the table contains more than one_____key.
    a. primary b. candidate
    c. foreign d. secondary

    ANSWER: b
    PTS: 1 DIF: Difficulty: Easy REF: p.221
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Higher-Level Normal Forms

58. When a table contains only one candidate key,_____are considered to be equivalent.
    a. the 1NF and the 2NF b. the 3NF and the BCNF
    c. the 4NF and the 3NF d. the BCNF and the DKNF

    ANSWER: b
    PTS: 1 DIF: Difficulty: Easy REF: p.221
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Higher-Level Normal Forms

59. In a_____situation, one key determines multiple values of two other attributes and those attributes are independent of each other.
    a. multivalued dependency b. transitive dependency
    c. partial dependency d. functional dependency

    ANSWER: a
    PTS: 1 DIF: Difficulty: Easy REF: p.225
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Higher-Level Normal Forms

60. A table where all attributes are dependent on the primary key but are independent of each other, and no row contains two or more multivalued facts about an entity is said to be in_____.
    a. 1NF b. 2NF
    c. 3NF d. 4NF

    ANSWER: d
    PTS: 1 DIF: Difficulty: Easy REF: p.226
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Higher-Level Normal Forms

61. A table is in 4NF if it is in 3NF, and_____.
    a. all attributes must be dependent on the primary key and must be dependent on each other
    b. all attributes are unrelated
    c. it has no multivalued dependencies
    d. no column contains the same values

    ANSWER: c
    PTS: 1 DIF: Difficulty: Easy REF: p.226
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Higher-Level Normal Forms

62. When designing a database, you should_____.
    a. make sure that entities are in normal form before table structures are created
    b. create table structures then normalize the database
    c. only normalize the database when performance problems occur
    d. consider more important issues such as performance before normalizing

    ANSWER: a
    PTS: 1 DIF: Difficulty: Moderate REF: p.226
    NAT: BUSPROG: Analytic STATE: DISC: Information Technology
    KEY: Bloom's: Comprehension TOP: Normalization and Database Design

63. An example of denormalization is using a_____denormalized table to hold report data. This is required when creating a tabular report in which the columns represent data that are stored in the table as rows.
    a. transitive b. 3NF
    c. component d. temporary

    ANSWER: d
    PTS: 1 DIF: Difficulty: Easy REF: p.231
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Denormalization

64. The conflicts between design efficiency, information requirements, and performance are often resolved through_____.
    a. compromises that include normalization b. conversion from 2NF to 3NF
    c. compromises that include denormalization d. conversion from 3NF to 4NF

    ANSWER: c
    PTS: 1 DIF: Difficulty: Moderate REF: p.231
    NAT: BUSPROG: Analytic STATE: DISC: Information Technology
    KEY: Bloom's: Comprehension TOP: Denormalization

65. Data warehouse routinely uses_____structures in its complex, multilevel, multisource data environment.
    a. 1NF b. 2NF
    c. 3NF d. 4NF

    ANSWER: b
    PTS: 1 DIF: Difficulty: Easy REF: p.232
    NAT: BUSPROG: Technology STATE: DISC: Information Technology
    KEY: Bloom's: Knowledge TOP: Denormalization

66. _____databases reflect the ever-growing demand for greater scope and depth in the data on which decision support systems increasingly rely.
    a. Normalized b. Data warehouse
    c. Temporary d. Report

ANSWER: b
PTS: 1 DIF: Difficulty: Easy REF: p.232
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Denormalization

67. If database tables are treated as though they were files in a file system, the_____never has a chance to demonstrate its superior data-handling capabilities.

ANSWER: RDBMS
relational database management system
relational database management system (RDBMS) RDBMS
(relational database management system)

PTS: 1 DIF: Difficulty: Easy REF: p.202
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Database and Normalization

68. The price paid for increased performance through denormalization is a larger amount of_____.

ANSWER: redundancy
data redundancy
PTS: 1 DIF: Difficulty: Easy REF: p.202
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Database Tables and Normalization

69. In order to meet_____requirements, you may have to denormalize some portions of a database design.

ANSWER: performance
PTS: 1 DIF: Difficulty: Easy REF: p.202
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Database Tables and Normalization

70. _____is a process to help reduce the likelihood of data anomalies.

ANSWER: Normalization
PTS: 1 DIF: Difficulty: Easy REF: p.202
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Database Tables and Normalization

71. Any attribute that is at least part of a key is known as a (n)_____.

ANSWER: prime attribute
key attribute

PTS: 1 DIF: Difficulty: Easy REF: p.202
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Database Tables and Normalization

72. When designing a new database structure based on the business requirements of the end users, the database designer will construct a data model using a technique such as_____.

ANSWER: Crow's Foot notation ERDs

PTS: 1 DIF: Difficulty: Easy REF: p.202
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Database Tables and Normalization

73. The_____is central to a discussion of normalization.

ANSWER: concept of keys
PTS: 1 DIF: Difficulty: Easy REF: p.206
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Normalization Process

74. A dependency based on only a part of a composite primary key is called a (n)_____.

ANSWER: partial dependency
PTS: 1 DIF: Difficulty: Easy REF: p.210
NAT: BUSPROG: Technology STATE: DISC: Information technology
KEY: Bloom's: Knowledge TOP: The Normalization Process

75. The problem with transitive dependencies is that they still yield data_____.

ANSWER: anomalies
PTS: 1 DIF: Difficulty: Easy REF: p.210
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Normalization Process

76. All relational tables satisfy the_____requirements.

ANSWER: 1NF
first normal form
first normal form (1NF)
1NF (first normal form)
PTS: 1 DIF: Difficulty: Easy REF: p.211
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Normalization Process

77. Because a partial dependency can exist only when a table's primary key is composed of several attributes, a table whose_____key consists of only a single attribute is automatically in 2NF once it is in 1NF.

ANSWER: primary
PTS: 1 DIF: Difficulty: Easy REF: p.212
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Normalization Process

78. Any attribute whose value determines other values within a row is known as a_____.

ANSWER: determinant
PTS: 1 DIF: Difficulty: Easy REF: p.213
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: The Normalization Process

79. An attribute that cannot be further subdivided is said to display_____.

ANSWER: atomicity
PTS: 1 DIF: Difficulty: Easy REF: p.216
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Improving The Design

80. _____refers to the level of detail represented by the values stored in a table's row.

ANSWER: Granularity
PTS: 1 DIF: Difficulty: Easy REF: p.216
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Improving The Design

81. In a real-world environment, changing granularity requirements might dictate changes in primary key selection, and those changes might ultimately require the use of_____keys.

ANSWER: surrogate
PTS: 1 DIF: Difficulty: Easy REF: p.217
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Improving The Design

82. It becomes difficult to create a suitable_____key when the related table uses a composite primary key.

ANSWER: foreign
PTS: 1 DIF: Difficulty: Easy REF: p.219
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Surrogate Key Considerations

83. When a nonkey attribute is the determinant of a key attribute, the table is in 3NF but not in_____.

ANSWER: BCNF
Boyce-Codd normal form
Boyce-Codd normal form
(BCNF) BCNF (Boyce-Codd normal form)
PTS: 1 DIF: Difficulty: Easy REF: p.221
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Surrogate Key Considerations

84. In the_____, no row may contain two or more multivalued facts about an entity.

ANSWER: 4NF
fourth normal form
fourth normal form (4NF)
4NF (fourth normal form)
PTS: 1 DIF: Difficulty: Easy REF: p.226
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Higher-Level Normal Forms

85. An ERD is created through a (n)_____process.

ANSWER: iterative
PTS: 1 DIF: Difficulty: Easy REF: p.226
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Normalization and Database Design

86. The combination of_____and ER modeling yields a useful ERD, whose entities may now be translated into appropriate table structures.

ANSWER: normalization
PTS: 1 DIF: Difficulty: Easy REF: p.229
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Normalization and Database Design

87. Unnormalized tables yield no simple strategies for creating virtual tables known as_____.

ANSWER: views
PTS: 1 DIF: Difficulty: Easy REF: p.232
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Denormalization

88. According to the data-modeling checklist,_____should be nouns that are familiar to business, should be short and meaningful, and should document abbreviations, synonyms, and aliases for each entity.

ANSWER: entity names
PTS: 1 DIF: Difficulty: Easy REF: p.233
NAT: BUSPROG: Technology STATE: DISC: Information Technology
KEY: Bloom's: Knowledge TOP: Data-Modeling Checklist

89. Explain normalization and its different forms.

ANSWER: Normalization is a process for evaluating and correcting table structures to minimize data redundancies, thereby reducing the likelihood of data anomalies. The normalization process involves assigning attributes to tables based on the concept of determination. Normalization works through a series of stages called normal forms. The first three stages are described as first normal form (1NF), second normal form (2NF), and third normal form (3NF). From a structural point of view, 2NF is better than 1NF, and 3NF is better than 2NF. For most purposes in business database design, 3NF is as high as you need to go in the normalization process. However, you will discover that properly designed 3NF structures also meet the requirements of fourth normal form (4NF).

PTS: 1 DIF: Difficulty: Moderate REF: p.202
NAT: BUSPROG: Analytic STATE: DISC: Information Technology
KEY: Bloom's: Comprehension TOP: Database Tables and Normalization

90. What characteristics do tables that conform to the concept of well-informed relations have?

ANSWER: Tables that conform to the concept of well-informed relations have the following characteristics:

1. Each table represents a single subject.
2. No data item will be unnecessarily stored in more than one table. This results in tables that have lower redundancies. The reason for this requirement is to ensure that the data is updates in only one place.

3. All nonprime attributes in a table are dependent on the primary key alone. The reason for this requirement is to ensure that the data is uniquely identifiable by a primary key value.
4. Each table is void of insertion, update, or deletion anomalies, which ensure the integrity and consistency of the data.

PTS: 1 DIF: Difficulty: Moderate REF: p.206
NAT: BUSPROG: Analytic STATE: DISC: Information Technology
KEY: Bloom's: Comprehension TOP: The Normalization Process

91. Describe a dependency diagram and explain its purpose.

ANSWER: Dependency diagrams are very helpful in getting a bird's eye view of all the relationships among a table's attributes, and their use makes it less likely that you will overlook an important dependency. The following are features of a dependency diagram:

1. The primary key attributes are bold, underlined, and shaded in a different color.
2. The arrows above the attributes indicate all desirable dependencies—that is, dependencies based on the primary key.
3. The arrows below the dependency diagram indicate less desirable dependencies. Two types of such dependencies exist:
   a. Partial dependencies. A dependency based on only a part of a composite primary key is a partial dependency.
   b. Transitive dependencies. A transitive dependency is a dependency of one nonprime attribute on another nonprime attribute. The problem with transitive dependencies is that they still yield data anomalies.

PTS: 1 DIF: Difficulty: Moderate REF: p.210
NAT: BUSPROG: Analytic STATE: DISC: Information Technology
KEY: Bloom's: Comprehension TOP: The Normalization Process

92. What steps are involved in the conversion to third normal form?

ANSWER: Step 1: Make New Tables to Eliminate Transitive Dependencies
For every transitive dependency, write a copy of its determinant as a primary key for a new table. A determinant is any attribute whose value determines other values within a row. If you have three different transitive dependencies, you will have three different determinants. As with the conversion to 2NF, it is important for the determinant remain in the original table to serve as a foreign key.

Step 2: Reassign Corresponding Dependent Attributes
Identify the attributes that are dependent on each determinant identified in Step 1. Place the dependent attributes in the new tables with their determinants and remove them from their original tables.

PTS: 1 DIF: Difficulty: Moderate REF: p.213
NAT: BUSPROG: Analytic STATE: DISC: Information Technology
KEY: Bloom's: Comprehension TOP: The Normalization Process

93. Explain the Boyce-Codd normal form (BCNF). How is it related to other normal forms?

ANSWER: A table is in Boyce-Codd normal form (BCNF) when every determinant in the table is a candidate key. A candidate key has the same characteristics as a primary key, but for some reason, it was not chosen to be the primary key. Clearly, when a table contains only one candidate key, the 3NF and the BCNF are equivalent. In other words, BCNF can be violated only when the table contains more than one candidate key. Most designers consider the BCNF to be a special case of the 3NF. In fact, if the techniques shown in this chapter are used, most tables conform to the BCNF requirements once the 3NF is reached.

PTS: 1 DIF: Difficulty: Moderate REF: p.221
NAT: BUSPROG: Analytic STATE: DISC: Information Technology
KEY: Bloom's: Comprehension TOP: Higher-Level Normal Forms

94. Explain how database designers design and normalize databases.

ANSWER: First, an ERD is created through an iterative process. Database designers begin by identifying relevant entities, their attributes, and their relationships. Then they use the results to identify additional entities and attributes. The ERD provides the big picture, or macro view, of an organization's data requirements and operations. Second, normalization focuses on the characteristics of specific entities; that is, normalization represents a micro view of the entities within the ERD. Also, the normalization process might yield additional entities and attributes to be incorporated into the ERD. Therefore, it is difficult to separate normalization from ER modeling; the two techniques are used in an iterative and incremental process.

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