CHAPTER 6: NORMALIZATION OF DATABASE TABLES

1. Normalization works through a series of stages called normal forms.
   1. True
   2. 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

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

1. In order to meet performance requirements, portions of the database design may need to be occasionallydenormalized.
   1. True
   2. 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

1. Denormalization produces a lower normal form.
   1. True
   2. 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

1. Normalization is a very important database design ingredient, and the highest level is always the most desirable.
   1. True
   2. 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

1. Reporting anomalies in a table can cause a multitude of problems for managers and can be fixed through applicationprogramming.
   1. True
   2. 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

1. Data redundancy produces data anomalies.
   1. True
   2. 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

1. The objective of normalization is to ensure that each table conforms to the concept of well-formed relations.
   1. True
   2. 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

1. Relational models view data as part of a table or collection of tables in which all key values must be identified.
   1. True
   2. 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

1. Repeating groups must be eliminated by ensuring that each row defines a single entity.
   1. True
   2. 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

1. A dependency of one nonprime attribute on another nonprime attribute is a partial dependency.
   1. True
   2. 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

1. Dependency diagrams are very helpful in getting a bird’s­eye view of all the relationships among a table’s attributes.
   1. True
   2. 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

1. Dependencies that are based on only a part of a composite primary key are called transitive dependencies.
   1. True
   2. 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

1. All relational tables satisfy the 1NF requirements.
   1. True
   2. 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

1. In the context of partial dependencies, data redundancies occur because every row entry requires duplication ofdata.
   1. True
   2. 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

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

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

1. A determinant is any attribute whose value determines other values within a column.
   1. True
   2. 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

1. Data stored at their highest level of granularity are said to be atomic data.
   1. True
   2. 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

1. Atomic attributes are attributes that can be further subdivided.
   1. True
   2. 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

1. A table is in BCNF if every determinant in the table is a foreign key.
   1. True
   2. 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

1. A table is in fourth normal form if it is in third normal form and has no independent multivalued dependencies.
   1. True
   2. 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

1. Normalization represents a micro view of the entities within the ERD.
   1. True
   2. 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

1. The combination of normalization and ER modeling yields a useful ERD, whose entities can be translated intoappropriate relationship structures.
   1. True
   2. 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

1. A good relational DBMS excels at managing denormalized relations.
   1. True
   2. False

*ANSWER:* False

PTS: 1 DIF: Difficulty: Easy REF: p.229

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Denormalization

1. The advantage of higher processing speed must be carefully weighed against the disadvantage of data anomalies.
   1. True
   2. False

*ANSWER:* True

PTS: 1 DIF: Difficulty: Easy REF: p.229

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Denormalization

1. Normalization purity is often easy to sustain in the modern database environment.
   1. True
   2. False

*ANSWER:* False

PTS: 1 DIF: Difficulty: Easy REF: p.231

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Denormalization

1. Unnormalized database tables often lead to various data redundancy disasters in production databases.
   1. True
   2. False

*ANSWER:* True

PTS: 1 DIF: Difficulty: Easy REF: p.232

NAT: BUSPROG: Technology STATE: DISC: Information Technology

KEY: Bloom’s: Knowledge TOP: Denormalization

1. Attributes should clearly define participation, connectivity, and document cardinality.
   1. True
   2. 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

1. Normalization works through a series of stages called normal forms. For most purposes in business databasedesign, stages are as high as you need to go in the normalization process.
   1. 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

1. From a structural point of view, 3NF is better than .
   1. 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

1. From a structural point of view, 2NF is better than .
   1. 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

1. An attribute that is part of a key is known as a(n) attribute.
   1. 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

1. A table that displays data redundancies yields .
   1. 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

1. Data redundancy produces .
   1. 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

1. Attribute A attribute B if all of the rows in the table that agree in value for attribute A also agree in valuefor attribute B.
   1. 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

1. Some very specialized applications may require normalization beyond the .
   1. 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

1. Of the following normal forms, is mostly of theoretical interest.
   1. 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

1. A table that has all key attributes defined, has no repeating groups, and all its attributes are dependent on theprimary key is said to be in .
   1. 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

1. A(n) exists when there are functional dependencies such that XY is functionally dependent on WZ, X isfunctionally dependent on W, and XY is the primary key.
   1. 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

1. A(n) exists when there are functional dependencies such that Y is functionally dependent on X, Z isfunctionally dependent on Y, and X is the primary key.
   1. 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

1. A derives its name from the fact that a collection of multiple entries of the same type can exist for anysingle key attribute occurrence.
   1. 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

1. A relational table must not contain a(n) .
   1. 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

1. In a(n) diagram, the arrows above the attributes indicate all desirable dependencies.
   1. 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

1. Dependencies based on only a part of a composite primary key are known as dependencies.
   1. 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

1. 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.

* 1. 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

1. A table that is in 2NF and contains no transitive dependencies is said to be in .
   1. 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

1. Improving leads to more flexible queries.
   1. 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

1. An atomic attribute .
   1. 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

1. The most likely data type for a surrogate key is .
   1. 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

1. Granularity refers to .
   1. the size of a tableb. the level of detail represented by the values in a table’srow
2. the number of rows in atabled. 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

1. From a system functionality point of view, attribute values can be calculated when they are needed to writereports or invoices.
   1. 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

1. In a real-world environment, we must strike a balance between design integrity and .
   1. 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

1. For most business transactional databases, we should normalize relations into .
   1. 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

1. To generate a surrogate key, Microsoft Access uses a(n) data type.
   1. 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

1. A table where every determinant is a candidate key is said to be in .
   1. 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

1. BCNF can be violated only if the table contains more than one key.
   1. 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

1. When a table contains only one candidate key, are considered to be equivalent.
   1. 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

1. In a situation, one key determines multiple values of two other attributes and those attributes areindependent of each other.
   1. 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

1. A table where all attributes are dependent on the primary key but are independent of each other, and no rowcontains two or more multivalued facts about an entity is said to be in .
   1. 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

1. A table is in 4NF if it is in 3NF, and .
   1. all attributes must be dependent on the primary key and must be dependent on each other
   2. all attributes are unrelated
   3. it has no multivalued dependencies
   4. 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

1. When designing a database, you should .
   1. make sure that entities are in normal form before table structures are created
   2. create table structures then normalize the database
   3. only normalize the database when performance problems occur
   4. 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

1. An example of denormalization is using a denormalized table to hold report data. This is required whencreating a tabular report in which the columns represent data that are stored in the table as rows.
   1. 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

1. The conflicts between design efficiency, information requirements, and performance are often resolved through\_\_\_\_\_.
   1. 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

1. Data warehouse routinely uses structures in its complex, multilevel, multisource data environment.
   1. 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

1. databases reflect the ever-growing demand for greater scope and depth in the data on which decisionsupport systems increasingly rely.
   1. 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

1. If database tables are treated as though they were files in a file system, the never has a chance todemonstrate 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

1. 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

1. 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

1. 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

1. 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

1. When designing a new database structure based on the business requirements of the end users, the databasedesigner 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

1. 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

1. 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

1. 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

1. 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

1. Because a partial dependency can exist only when a table’s primary key is composed of several attributes, a tablewhose 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

1. 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

1. 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

1. 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

1. In a real-world environment, changing granularity requirements might dictate changes in primary key selection, andthose 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

1. 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

1. 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

1. 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

1. 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

1. The combination of and ER modeling yields a useful ERD, whose entities may now be translated intoappropriate 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

1. 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

1. According to the data-modeling checklist, should be nouns that are familiar to business, should be short andmeaningful, 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

1. 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 assigningattributes to tables based on the concept of determination. Normalization works through a series ofstages called normal forms. The first three stages are described as first normal form (1NF), secondnormal form (2NF), and third normal form (3NF). From a structural point of view, 2NF is better than1NF, and 3NF is better than 2NF. For most purposes in business database design, 3NF is as high as youneed to go in the normalization process. However, you will discover that properly designed 3NFstructures 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

1. 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 havelower redundancies. The reason for this requirement is to ensure that the data is updates in onlyone place.
3. All nonprime attributes in a table are dependent on the primary key alone. The reason for thisrequirement 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 andconsistency 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

1. 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 atable’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 basedon the primary key.
3. The arrows below the dependency diagram indicate less desirable dependencies. Two types ofsuch dependencies exist:
   1. Partial dependencies. A dependency based on only a part of a composite primary key is apartial dependency.
   2. Transitive dependencies. A transitive dependency is a dependency of one nonprime attributeon another nonprime attribute. The problem with transitive dependencies is that they still yielddata anomalies.

PTS: 1 DIF: Difficulty: Moderate REF: p.210

NAT: BUSPROG: Analytic STATE: DISC: Information Technology

KEY: Bloom’s: Comprehension TOP: The Normalization Process

1. 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. Adeterminant is any attribute whose value determines other values within a row. If you have threedifferent transitive dependencies, you will have three different determinants. As with the conversion to2NF, 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 dependentattributes 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

1. 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 chosento be the primary key. Clearly, when a table contains only one candidate key, the 3NF and the BCNFare equivalent. In other words, BCNF can be violated only when the table contains more than onecandidate key. Most designers consider the BCNF to be a special case of the 3NF. In fact, if thetechniques shown in this chapter are used, most tables conform to the BCNF requirements once the3NF 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

1. Explain how database designers design and normalize databases.

*ANSWER:* First, an ERD is created through an iterative process. Database designers begin by identifying relevantentities, their attributes, and their relationships. Then they use the results to identify additional entitiesand attributes. The ERD provides the big picture, or macro view, of an organization’s data requirementsand 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 processmight yield additional entities and attributes to be incorporated into the ERD. Therefore, it is difficult toseparate normalization from ER modeling; the two techniques are used in an iterative and incrementalprocess.

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