

Experiencing MIS, 9e (Kroenke)
Chapter Extension 6 Database Design

1) Which of the following is TRUE of a data model?

- A) It is created after the database is designed.
- B) It is an attribute whose value is associated with only one entity instance.
- C) It is a logical representation of the structure of the data.
- D) It does not describe the relationships among the data.

Answer: C

AACSB: Information Technology

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-2: How Are Database Application Systems Developed?

Classification: Concept

2) Once the users have validated and approved the data model, it is transformed into a _____.

- A) database design
- B) technical report
- C) knowledge system
- D) data repository

Answer: A

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-2: How Are Database Application Systems Developed?

Classification: Concept

3) A data model is a logical representation of the structure of the data.

Answer: TRUE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-2: How Are Database Application Systems Developed?

Classification: Concept

4) A data model does not depict the relationships among the data.

Answer: FALSE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-2: How Are Database Application Systems Developed?

Classification: Concept

5) A data model contains a description of both the data and the relationships among the data.

Answer: TRUE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-2: How Are Database Application Systems Developed?

Classification: Concept

6) Explain the database development process.

Answer: A database application consists of forms, reports, queries, and application programs. At first, the developers interview users and develop the requirements for the new system. During this process, the developers analyze existing forms, reports, queries, and other user activities. The requirements for the database are then summarized in a data model, which is a logical representation of the structure of the data. The data model contains a description of both the data and the relationships among the data. It is similar to a blueprint. Once the users have validated and approved the data model, it is then transformed into a database design. After that, the design is implemented in a database, and that database is then filled with user data.

AACSB: Information Technology

Difficulty: 3: Challenging

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-2: How Are Database Application Systems Developed?

Classification: Concept

7) Which of the following is a highly popular technique for creating a data model with which the developers describe the content of a database by defining what is to be stored in the database and the associations among them?

A) entity-relationship (E-R) data model

B) Unified Modeling Language (UML)

C) object-relational model

D) semantic data model

Answer: A

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

8) Which of the following is TRUE of entities?

- A) Entities have an identifier whose value is associated with every entity in the data model.
- B) Entities can only represent a logical construct or transaction, not a physical object.
- C) The characteristics of entities are described by attributes.
- D) The names of entities are always plural.

Answer: C

AACSB: Information Technology

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

9) Carol, an online shopping customer, raises a complaint stating she had placed an order for books two weeks ago but has still not received them. Nigel, in charge of handling complaints for the site, wants to verify Carol's complaint. He tracks the order number and the order date for Carol's books. The data that Nigel is tracking are also called _____.

- A) attributes
- B) dependencies
- C) cardinalities
- D) alternatives

Answer: A

AACSB: Reflective Thinking

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Application

10) Which of the following statements is TRUE of identifiers?

- A) They are constraints on minimum requirements in a relationship.
- B) They are data that users want to track.
- C) They highlight instances of data duplication in a database.
- D) They are attributes, or group of attributes, whose values are associated with only one entity instance.

Answer: D

AACSB: Information Technology

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

11) Which of the following is TRUE of an entity-relationship (E-R) diagram?

- A) Each entity is shown in separate triangles.
- B) Many-to-many relationships are generally denoted by N:N.
- C) A crow's foot represents a 1:N relationship between two entities.
- D) Crow's foot is a shorthand representation for a single relationship between entities.

Answer: C

AACSB: Information Technology

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

12) Roger teaches a Chemistry class at the state university. Each student in the class can only be tutored by Roger; however, he can tutor multiple students. In a data model, this relationship is best represented as a(n) _____.

- A) N:M relationship
- B) N:N relationship
- C) 1:N relationship
- D) 1:1 relationship

Answer: C

AACSB: Reflective Thinking

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Application

13) Which of the following notations signifies that an adviser can be related to many students and that a student can be related to many advisers?

- A) 1:N
- B) N:M
- C) N:1
- D) N:N

Answer: B

AACSB: Information Technology

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

14) An example of a _____ relationship includes one student being assigned to one gym locker.

- A) 1:N
- B) N:N
- C) 1:1
- D) N:M

Answer: C

AACSB: Information Technology

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

15) The angled lines in an entity-relationship (E-R) diagram used as shorthand to represent multiple relationships are referred to as a(n) _____.

- A) crow's foot
- B) identifier
- C) attribute
- D) cardinality line

Answer: A

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

16) Maximum cardinality in an entity-relationship (E-R) diagram refers to the maximum number of _____.

- A) normalizations possible in a diagram
- B) entities that can be involved in a relationship
- C) identifiers possible in a particular diagram
- D) attributes associated with an entity

Answer: B

AACSB: Information Technology

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

17) Entities have attributes that describe characteristics of the entity.

Answer: TRUE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

18) An identifier is an attribute whose value is associated with every entity in the data model.

Answer: FALSE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

19) Entities have relationships to attributes but not to each other.

Answer: FALSE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

20) In an entity-relationship (E-R) diagram, a line is used to represent a relationship between two entities.

Answer: TRUE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

21) The notation N:N is used to indicate a many-to-many relationship in an E-R diagram.

Answer: FALSE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

22) While representing the relationship between two entities in an entity-relationship diagram, the N:N notation is used to indicate that the same number of entities are present on each end of the relationship.

Answer: TRUE

AACSB: Information Technology

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

23) 1:N means that more than one entity is allowed on each side of the relationship.

Answer: FALSE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

24) The crow's foot notation shows the minimum number of entities that can be involved in a relationship.

Answer: FALSE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

25) The maximum number of entities that can be involved in a relationship is known as maximum cardinality.

Answer: TRUE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

26) In an entity-relationship diagram, a vertical bar on the lines indicates that at least one entity of that type is required in the relationship.

Answer: TRUE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

27) What are the different types of relationships represented in a data model?

Answer: Entities in a data model have relationships with each other. Database designers use diagrams called entity-relationship (E-R) diagrams to explain the relationships. The relationships can be of three types: one-to-one, one-to-many, and many-to-many. The one-to-one relationship is denoted by 1:1 and one-to-many is denoted by 1:N. Many-to-many relationships are denoted by N:M.

AACSB: Information Technology

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

28) Explain the difference between maximum and minimum cardinality.

Answer: Cardinality is the number of entities that can be involved in a relationship. There can be both a maximum and minimum constraint on cardinality. The maximum number of entities that can be involved in a relationship is known as maximum cardinality. Constraints on minimum requirements (minimum entities) are called minimum cardinalities.

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

29) The process of converting poorly structured tables into two or more well-structured tables is referred to as _____.

A) replication

B) integration

C) actualization

D) normalization

Answer: D

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-4: How Is a Data Model Transformed into a Database Design?

Classification: Concept

30) The data integrity problem can occur if data are _____.

A) inconsistent

B) missing

C) inefficient

D) insufficient

Answer: A

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-4: How Is a Data Model Transformed into a Database Design?

Classification: Concept

31) Normalized tables eliminate _____.

A) data dependency

B) data duplication

C) data insufficiency

D) data conversion

Answer: B

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-4: How Is a Data Model Transformed into a Database Design?

Classification: Concept

32) The general goal of normalization is to _____.

- A) create a copy of an existing table
- B) establish relationships among the entities in a table
- C) convert two or more tables into a single table
- D) construct tables such that every table has a single topic

Answer: D

AACSB: Information Technology

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-4: How Is a Data Model Transformed into a Database Design?

Classification: Concept

33) Database practitioners classify tables into various _____ depending on the kinds of problems they have.

- A) solved forms
- B) cardinalities
- C) normal forms
- D) relationships

Answer: C

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-4: How Is a Data Model Transformed into a Database Design?

Classification: Concept

34) Normalization is a database design concept that helps to construct well-structured tables.

Answer: TRUE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-4: How Is a Data Model Transformed into a Database Design?

Classification: Concept

35) The data integrity problem can occur only if data are missing.

Answer: FALSE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-4: How Is a Data Model Transformed into a Database Design?

Classification: Concept

36) The general goal of normalization is to construct tables such that every table has a single topic or theme.

Answer: TRUE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-4: How Is a Data Model Transformed into a Database Design?

Classification: Concept

37) Tables that are not normalized likely have data integrity problems.

Answer: TRUE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-4: How Is a Data Model Transformed into a Database Design?

Classification: Concept

38) Database practitioners classify tables into various normal forms according to the kinds of problems they have.

Answer: TRUE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-4: How Is a Data Model Transformed into a Database Design?

Classification: Concept

39) To represent an N:M relationship between two entities, two normalized tables are sufficient.

Answer: FALSE

AACSB: Information Technology

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-4: How Is a Data Model Transformed into a Database Design?

Classification: Concept

40) How is a data model transformed into a database design?

Answer: Database design is the process of converting a data model into tables, relationships, and data constraints. The database design team transforms entities into tables and expresses relationships by defining foreign keys. The tables in a model must be normalized before they are converted into designs. Normalization is the process of converting poorly structured tables into two or more well-structured tables. Database practitioners classify tables into various normal forms according to the kinds of problems they have. Transforming a table into a normal form to remove duplicated data and other problems is called normalizing the table. After normalizing, the designer should represent the relationship among those tables to complete the design.

AACSB: Information Technology

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-4: How Is a Data Model Transformed into a Database Design?

Classification: Concept

41) What are the steps involved in transforming a data model into a relational database design?

Answer: The first step in transforming a data model into a relational database design involves the creation of a table for each entity by the database designer. The identifier of the entity becomes the key of the table. Each attribute of the entity becomes a column of the table. Next, the resulting tables are normalized so that each table has a single theme. Once that has been done, the next step is to represent the relationship among those tables.

AACSB: Information Technology

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-4: How Is a Data Model Transformed into a Database Design?

Classification: Concept

42) The easiest time to change the database structure is _____.

- A) during the data modeling stage
- B) after constructing the database
- C) during the database designing stage
- D) after creating database reports

Answer: A

AACSB: Information Technology

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-5: What Is the Users' Role?

Classification: Concept

43) The easiest time to change the database structure is after the database has been constructed and loaded with data.

Answer: FALSE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-5: What Is the Users' Role?

Classification: Concept

44) Explain the role of users in designing a database.

Answer: A database is a model of how the users view their business world. This means that the users are the final judges as to what data the database should contain and how the records in that database should be related to one another. The easiest time to change the database structure is during the data modeling stage. So the user should be actively involved in the modeling process. The user review of a data model is crucial. The data model must accurately reflect the user's view of the business. Users should devote the time necessary to thoroughly review a data model, as any mistakes will be difficult and costly to correct.

AACSB: Information Technology

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-5: What Is the Users' Role?

Classification: Concept

45) Who should validate and approve the data model?

A) the CIO

B) the IT staff

C) the users

D) managers

Answer: C

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-2: How Are Database Application Systems Developed?

Classification: Concept

46) What is the next step after the users validate the data model?

A) The database is designed.

B) The requirements are verified.

C) The tables are identified.

D) The database is created.

Answer: A

AACSB: Information Technology

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-2: How Are Database Application Systems Developed?

Classification: Concept

47) In an entity relationship diagram, constraints on minimum requirements are called _____.

- A) crow's foot
- B) identifier
- C) least cardinality
- D) minimum cardinality

Answer: A

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

48) Entities have relationships with each other.

Answer: TRUE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

49) Jackie is a new database administer. She notices that many of the tables are poorly constructed. What should she do to create more well-structured tables?

- A) Jackie should delete the table and begin again.
- B) Jackie should create a new database.
- C) There is nothing Jackie can do; once the tables are created they are set.
- D) Jackie should normalize the tables.

Answer: D

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-4: How Is a Data Model Transformed into a Database Design?

Classification: Concept

50) Data integrity problems are not serious and can be easily fixed.

Answer: FALSE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-4: How Is a Data Model Transformed into a Database Design?

Classification: Concept

51) It is not necessary for a user to understand the data model. The IT department will handle any misunderstandings.

Answer: FALSE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-5: What Is the Users' Role?

Classification: Concept

52) Database developers know what entities and attributes are needed, and don't need input from users.

Answer: FALSE

AACSB: Information Technology

Difficulty: 2: Moderate

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-2: How Are Database Application Systems Developed?

Classification: Concept

53) It is important to for users to understand how to code entities.

Answer: FALSE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-3: What Are the Components of the Entity-Relationship Data Model?

Classification: Concept

54) What is the first step in transforming a data model into a database design?

A) Use foreign key.

B) Normalize tables as necessary.

C) Look for N:M relationships.

D) Represent each entity.

Answer: D

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-4: How Is a Data Model Transformed into a Database Design?

Classification: Concept

55) User review of the data model is crucial as they are the final judges of what data the database should contain.

Answer: TRUE

AACSB: Information Technology

Difficulty: 1: Easy

Course LO: Discuss best practices for using and managing databases.

Learning Obj: LO CE6-5: What Is the Users' Role?

Classification: Concept