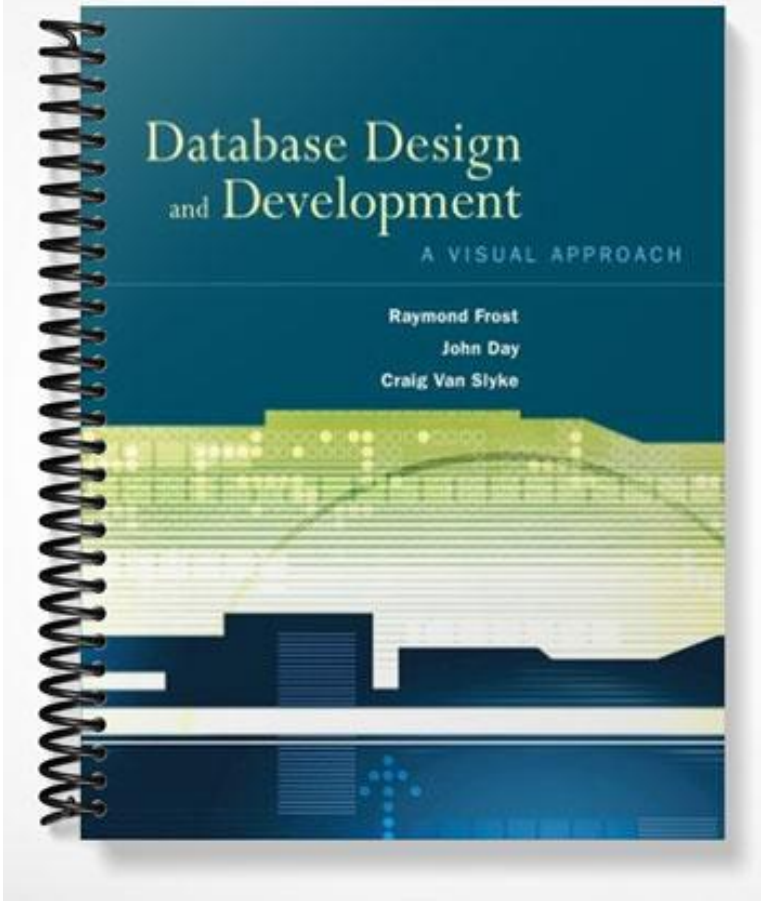
TEST BANK


Database Design
and Development
A VISUAL APPROACH
Raymond Frost
John Day
Craig Van Slyke

Chapter 2
Relational Theory

TRUE / FALSE QUESTIONS

1. Information systems include people, policies, computers, and application software.
Answer: True **Difficulty: Easy** **Ref: p 15**

2. Relational database is not a part of an information system.
Answer: False **Difficulty: Easy** **Ref: p 15**

3. End users typically have a direct access to a database.
Answer: False **Difficulty: Moderate** **Ref: p 15**

4. In relational databases tables are called tuples.
Answer: False **Difficulty: Moderate** **Ref: p 16**

5. Relational database management system (RDBMS) is the software that runs on the Web server.
Answer: False **Difficulty: Easy** **Ref: p 16**

6. Structured query language (SQL) is the command language used to communicate with the RDBMS.
Answer: True **Difficulty: Moderate** **Ref: p 16**

7. DBA stands for database authorization.
Answer: False **Difficulty: Easy** **Ref: p 16**

8. Database design is a model of the data items and their interrelationships.
Answer: True **Difficulty: Easy** **Ref: p 16**

9. A conceptual database model is a description of data that depends on the type of database software product.
Answer: False **Difficulty: Easy** **Ref: p 16**

10. Database design is visually presented in the form of an entity-relationship diagram.
Answer: True **Difficulty: Easy** **Ref: p 16**

11. Entities are adjectives (name, address, phone number) that describe an attribute such as a customer.
Answer: False **Difficulty: Moderate** **Ref: p 16**

12. Attributes are nouns (people, places, things) such as orders and customers.
Answer: False **Difficulty: Moderate** **Ref: p 17**

13. Relationships are verbs (possessions) such as customer places an order.
Answer: True **Difficulty: Easy** **Ref: p 16 - 17**

14. Entities in today's ER diagrams are modeled as diamonds.
Answer: False **Difficulty: Easy** **Ref: p 17**

15. Relationships in today's ER diagrams are modeled as lines.
Answer: True **Difficulty: Easy** **Ref: p 17**

16. A crow's foot at the single end of a line represents a one-to-many relationship.
Answer: True **Difficulty: Moderate** **Ref: p 17**

17. Crow's feet at the both ends of a line represent a many-to-many relationship.
Answer: False **Difficulty: Moderate** **Ref: p 17**

18. Entity and table are typically used interchangeably.
Answer: True **Difficulty: Easy** **Ref: p 17**

19. Attribute and record are typically used interchangeably.
Answer: False **Difficulty: Moderate** **Ref: p 17**

20. A primary key uniquely identifies each field in a table.
Answer: False **Difficulty: Easy** **Ref: p 18**

21. Two fields, longitude and latitude, together form a primary key for a location table.
Answer: True **Difficulty: Easy** **Ref: p 18**

22. Email address satisfies all of the desired primary key properties.
Answer: False **Difficulty: Hard** **Ref: p 19**

23. Foreign keys link the related records between parent and child tables.
Answer: True **Difficulty: Easy** **Ref: p 20**

24. Foreign key in the child table is defined over the same set of values as the primary key in the parent table.
Answer: True **Difficulty: Moderate** **Ref: p 20**

25. Network database has physical pointers to connect related tables.
Answer: True **Difficulty: Moderate** **Ref: p 23**

26. Object-oriented databases are easier to use than relational databases.
Answer: False **Difficulty: Easy** **Ref: p 23**

MULTIPLE-CHOICE QUESTIONS

27. Relational database is a part of a(n)
    a) relational system.
    b) information system.
    c) physical system.
    d) storage system.

Answer: b **Difficulty: Moderate** **Ref: p 15**

28. Which of the following describes the relationship between an end user and a database?
    a) End user has a direct access to a database.
    b) End user can never access a database.
    c) End user interacts with a database front-end program.
    d) End user can only interact with the database through a database administrator.

Answer: c **Difficulty: Moderate** **Ref: p 15**

29. Forms in Web pages, such as order forms, are used for
    a) data input.
    b) result output.
    c) data formatting.
    d) data storage.

Answer: a **Difficulty: Moderate** **Ref: p 15**

30. Reports, such as order summary, are used for
    a) data input.
    b) result output.
    c) data formatting.
    d) data storage.

Answer: b **Difficulty: Moderate** **Ref: p 15**

31. In a relational database, tables are called
    a) tuples.
    b) fields.
    c) attributes.
    d) relations.

Answer: d **Difficulty: Moderate** **Ref: p 16**

32. In relational database, columns in a table are called
    a) tuples.
    b) fields.
    c) records.
    d) relations.

Answer: b **Difficulty: Moderate** **Ref: p 16**

33. In relational database, rows in a table are called
    a) tuples.
    b) fields.
    c) attributes.
    d) relations.

Answer: a **Difficulty: Moderate** **Ref: p 16**

34. RDBMS can be best defined using which of the following?
    a) A software that runs on the Web server
    b) A software that runs on the mail server
    c) A software that runs on the database server
    d) A hardware on which the database resides

Answer: c **Difficulty: Moderate** **Ref: p 16**

35. RDBMS stands for which of the following?
    a) Rational database management software
    b) Relational database management system
    c) Rapid database maintenance system
    d) Relational database management structure

Answer: b **Difficulty: Moderate** **Ref: p16**

36. RDBMS can be described as doing which of the following?
    a) Provides end user with unrestricted access to data and procedures
    b) Prevents authorized end users from accessing data and procedures
    c) Provides authorized end users with restricted access to data and procedures
    d) Provides unauthorized users with restricted access to data and procedures

Answer: c **Difficulty: Moderate** **Ref: p 16**

37. SQL stands for which of the following?
    a) Structured query language
    b) Simple query language
    c) Structured queuing language
    d) Simple query list

Answer: a **Difficulty: Easy** **Ref: p 16**

38. SQL would be best described as doing which of the following?
    a) Allowing the end user to communicate with RDBMS
    b) Enabling the database to communicate with RDBMS
    c) Allowing RDBMS to communicate with the database administrator.
    d) Allowing the RDBMS to communicate with database server hardware.

Answer: b **Difficulty: Moderate** **Ref: p 16**

39. DBA is the person who
    a) runs the RDBMS.
    b) grants database access to end users.
    c) maintains the database using RDBMS.
    d) All of the above.

Answer: d **Difficulty: Moderate** **Ref: p 16**

40. Databases are designed as a group of related
    a) entities.
    b) attributes.
    c) relationships.
    d) fields.

Answer: a **Difficulty: Moderate** **Ref: p 16**

41. Entities (persons, places, things) are like
    a) nouns.
    b) verbs.
    c) adjectives.
    d) sentences.

Answer: a **Difficulty: Moderate** **Ref: p 16**

42. Relationships (possessions) are like
    a) nouns.
    b) verbs.
    c) adjectives.
    d) sentences.

Answer: b **Difficulty: Moderate** **Ref: p 16**

43. Attributes (names, phone numbers, addresses) are like
    a) nouns.
    b) verbs.
    c) adjectives.
    d) sentences.

Answer: c **Difficulty: Moderate** **Ref: p 17**

44. ER diagrams use which of the following as a symbol for an entity?
    a) Diamond
    b) Triangle
    c) Box
    d) Line

Answer: c **Difficulty: Easy** **Ref: p 17**

45. ER diagrams use which of the following as a symbol for a relationship?
    a) Diamond
    b) Triangle
    c) Box
    d) Line

Answer: d **Difficulty: Easy** **Ref: p 17**

46. A crow's foot at the single end of the line represents which of the following?
    a) One-to-one relationship
    b) One-to-many relationship
    c) Many-to-many relationship
    d) No relationship

Answer: b **Difficulty: Moderate** **Ref: p 17**

47. Crow's feet at both ends of the line represent which of the following?
    a) One-to-one relationship
    b) One-to-many relationship
    c) Many-to-many relationship
    d) Not a proper relationship representation

Answer: d **Difficulty: Moderate** **Ref: p 17**

48. In a one-to-many relationship, the crow's foot always points to the
    a) child table.
    b) parent table.
    c) sibling table.
    d) grandparents table.

Answer: a **Difficulty: Moderate** **Ref: p 17**

49. Customer/order relationship is an example of
    a) one-to-one relationship.
    b) one-to-many relationship.
    c) many-to-many relationship.
    d) difficult relationship.

Answer: b **Difficulty: Easy** **Ref: p 17**

50. Many-to-many relationships are represented by a
    a) parent table.
    b) child table.
    c) sibling table.
    d) third table.

Answer: d **Difficulty: Easy** **Ref: p 17**

51. Customer/product relationship is an example of
    a) one-to-one relationship.
    b) one-to-many relationship.
    c) many-to-many relationship.
    d) difficult relationship.

Answer: c **Difficulty: Moderate** **Ref: p 17**

52. In a doctor/patient relationship, a visit represents a
    a) parent table.
    b) child table.
    c) sibling table.
    d) third table.

Answer: b **Difficulty: Moderate** **Ref: p 17**

53. Primary keys can be formed
    a) from an existing single field.
    b) from several existing fields.
    c) as computer-generated field.
    d) using all of the above.

Answer: d **Difficulty: Moderate** **Ref: p 19**

54. Customer's phone number does not satisfy which of the following primary key desired properties?
    a) Unique
    b) Minimal
    c) Non-null
    d) Nonupdateable

Answer: d **Difficulty: Moderate** **Ref: p 18**

55. In an order table, foreign key for a customer table would be named as which of the following?
    a) Customer$name
    b) Order$date
    c) Customer$email
    d) OrderID

Answer: c **Difficulty: Moderate** **Ref: p 20**

56. Fourth-Generation Languages like SQL
    a) are procedural and record oriented.
    b) require significant amount of looping.
    c) are nonprocedural and table oriented.
    d) are oriented towards processing binary code.

Answer: c **Difficulty: Hard** **Ref: p 24**

FILL-IN QUESTIONS

57. Information systems include people, policies, computers, and **application software**.
Difficulty: Moderate **Ref: p 15**

58. End users typically have an **indirect** access to a database.
Difficulty: Moderate **Ref: p 15**

59. Businesses have **programs** that allow end user to interact with a database.
Difficulty: Easy **Ref: p 15**

60. Forms are used to **input** data into a database.
Difficulty: Easy **Ref: p 15**

61. In a relational database, rows in a table are called **tuples**.
Difficulty: Moderate **Ref: p 16**

62. In a relational database, tables are called **relations**.
Difficulty: Moderate **Ref: p 16**

63. RDBMS is a software that prevents unauthorized access to a **database**.
Difficulty: Easy **Ref: p 16**

64. SQL is a command language that allows **RDBMS** to communicate with a database.
Difficulty: Moderate **Ref: p 16**

65. DBA stands for **database administrator**.
Difficulty: Easy **Ref: p 16**

66. The most common way of designing a relational database is through the creation of a(n) **entity-relationship diagram**.
Difficulty: Easy **Ref: p 16**

67. ER diagrams make it much easier to understand the **relationships** among entities in the database.
Difficulty: Easy **Ref: p 16**

68. Entities are like **nouns**; they are persons, places, or things.
Difficulty: Moderate **Ref: p 16**

69. Relationships are like **verbs**; they are acts of possession.
Difficulty: Moderate **Ref: p 16**

70. Attributes are like **adjectives**; they describe properties of entities.
Difficulty: Moderate **Ref: p 17**

71. In an ER diagram, a line between two entities with a crow's foot at a single end of the line represents a _**one-to-many**_ relationship.
Difficulty: Moderate **Ref: p 17**

72. In a parent/child relationship, the crow's foot always points toward the _**child**_ table.
Difficulty: Moderate **Ref: p 17**

73. OrderID is an example of a _**computer-generated**_ primary key.
Difficulty: Moderate **Ref: p 20**

74. A primary key _**uniquely**_ identifies each record in a table.
Difficulty: Easy **Ref: p 18**

75. Email address as a primary key violates _**nonupdateable**_ property every primary key should support.
Difficulty: Moderate **Ref: p 18**

76. **Entity** integrity requires that the designer specify a primary key at the time the table is created.
Difficulty: Hard **Ref: p 21**

77. **Referential** integrity requires that foreign key values match existing primary key values in the table to which they refer.
Difficulty: Hard **Ref: p 21**

78. A table is said to be in first normal form when each field in that table contains **single values only**.
Difficulty: Moderate **Ref: p 22**

79. Relational databases use _**logical**_ links between related tables, whereas network databases use _**physical**_ links between related tables.
Difficulty: Moderate **Ref: p 23**

80. Relational databases achieve a high degree of data independence by deriving **views** from base table in order to protect those tables from the end user.
Difficulty: Moderate **Ref: p 24**

81. An _**associative**_ table is a child of two parent tables that are in a many-to-many relationship.
Difficulty: Hard **Ref: p 26**

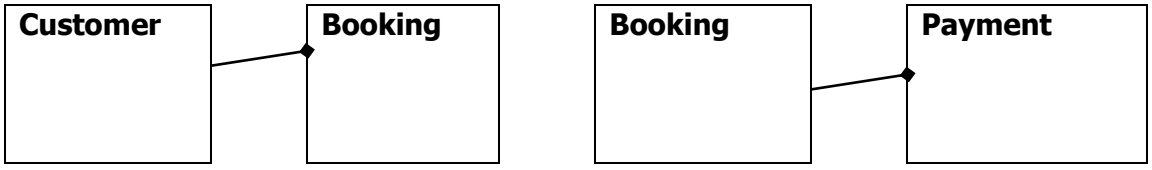
ESSAY QUESTIONS

Plymouth Car Rental started with two compact cars and has expanded its fleet of vehicles with several sedans and trucks. When a customer books a rental, his/her age has to be at least 18 for compact cars and sedans, which are rented by the day and must be returned the following morning by 11 AM. Trucks are rented for a maximum of six hours. The owner requires a deposit on the reservation to be paid within seven days of booking. Vehicle records consist of the makes and types (Honda sedan), color, seating capacity, required deposit, rental rate, and rental limit (in hours). Customer data consists of customer's names, addresses, phone numbers, and birth dates. Bookings identify the customer, vehicle, as well as the time rented and returned. There can be several payments up until the reservation date. Payments must reflect the payment status for each booking, including deposit, when the deposit was made, then each of the payments made, and when the entire payment was completed.
For questions 82 - 86, please refer to the preceding paragraph.

82. List all the entities for Plymouth Car Rental, and describe their relationships with other entities.

Entities: Customer, Vehicle, Booking, Payment. Relationship between Customer and Booking tables is one-to-many. One customer can have many bookings during a period of time. Relationship between Vehicle and Booking tables is one-to-many. One vehicle can appear in many bookings (not at the same time, of course). Relationship between Booking and Payment tables is also one-to-many. Each booking can have many payments.

83. Draw the proper relationship between the customer and booking tables, as well as between booking and payment tables.



84. List all the attributes in vehicle table.

Vehicle
VIN
Make
Type
Color
Seating Capacity
Required Deposit
Rental Rate
Rental Limit

85. List and/or construct primary keys for each of the tables.

Customer table: CustomerID
Vehicle table: VIN
Booking table: BookingID
Payment table: PaymentID

86. List all foreign keys in appropriate tables.

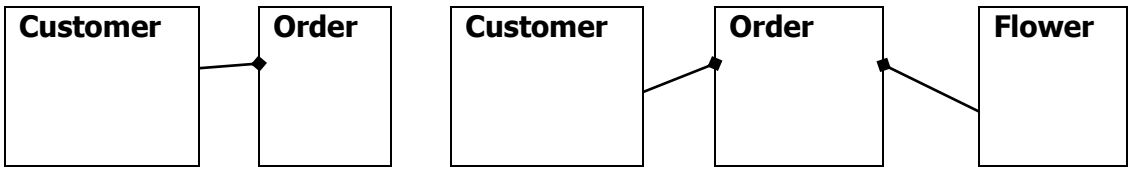
CustomerID is a foreign key in Booking table that establishes connection with Customer table. VIN is a foreign key in Booking table that establishes connection with Vehicle table. BookingID is a foreign key in Payment table that establishes connection with Booking table.

Jerry, the owner of Exotic Flower, Inc., built a small greenhouse to store several types of exotic flowers that he purchases from wholesale suppliers around the world. Each exotic flower Jerry buys and resells falls into one of several flower groups that differ with respect to their storage needs, duration, time in bloom, price, etc. Each of the orders placed by customers specifies the type of exotic flower, the supplier it came from, the date of order, expected delivery date, flower condition on delivery, as well as the quantity ordered. Customer's data contain all the standard information needed to collect payment and deliver the flowers.
For questions 87 - 91, please refer to the preceding paragraph.

87. List all the entities for Exotic Flower, and describe their relationships with other entities.

Entities: Customer, Flower, Order, Supplier. Relationship between Customer and Order tables is one-to-many. One customer can have many orders during a period of time. Relationship between Flower and Order tables is one-to-many. One flower can appear in many orders. Relationship between Supplier and Order tables is also one-to-many. Each supplier can be present in many orders. Relationship between Customer and Flower is many-to-many. Many customers can have orders for many flowers.

88. Draw the proper relationship between the customer and order tables, as well as between customer and flower tables.



89. List all the attributes in flower table.

Flower
FlowerID
Flower Group
Storage Needs
Duration
Time in Bloom
Price

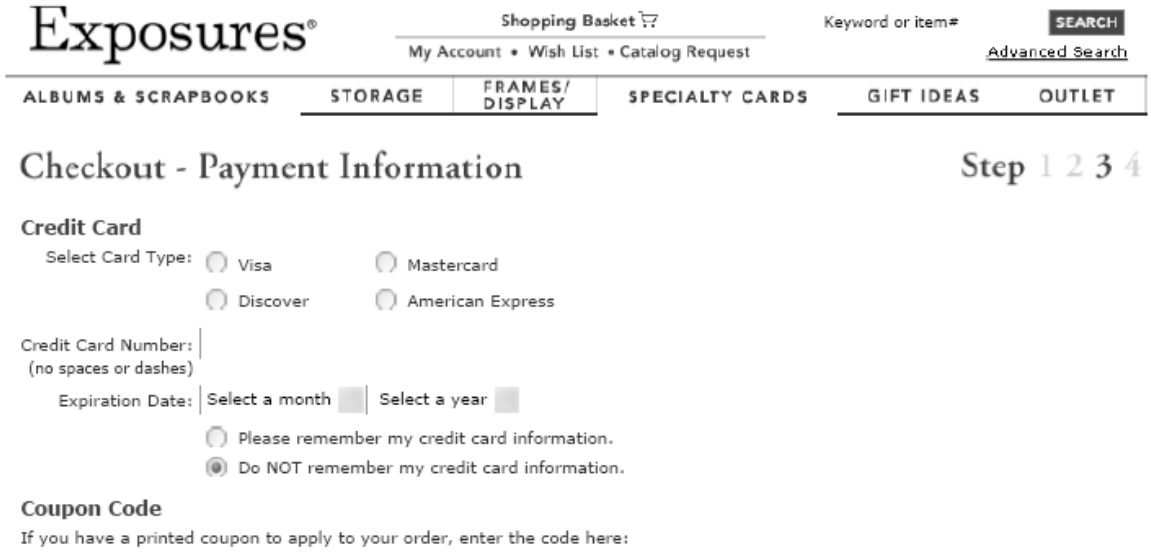
90. List and/or construct primary keys for each of the tables.

Customer table: CustomerID
Order table: OrderID
Flower table: FlowerID
Supplier table: SupplierID

91. List all foreign keys in appropriate tables.

CustomerID is a foreign key in Order table that establishes connection with Customer table. FlowerID is a foreign key in Order table that establishes connection with Flower table. SupplierID is a foreign key in Order table that establishes connection with Supplier table.

Exposures is a specialty retailer of fine gifts, picture frames, albums, scrapbooks, as well as occasional gift ideas. Visit their Web site at www.exposureonline.com, and using the registration, billing, catalog, and shopping cart screens below, go through each of the five ER design steps.



Exposures®

Shopping Basket | My Account • Wish List • Catalog Request

Keyword or item# SEARCH

Advanced Search

ALBUMS & SCRAPBOOKS | STORAGE | FRAMES/ DISPLAY | SPECIALTY CARDS | GIFT IDEAS | OUTLET

Home >

More Views >

Baby Brag Book

It's all about Baby-our sweet little album is devoted to one star alone, showcasing 40 photos to take along with you. Pearlized leather-look paper cover comes in classic colors a great baby gift for parents or proud grandparents. Inside, 20 clear pages hold two snapshots each (4"x6" or smaller). Made in the USA. 4 1/2" x 6 1/2"

Item#	Product	Qty	Price
FHBBB	Baby Brag Book	0	$16.00

Select a Type

TELL A FRIEND | ADD TO WISH LIST | ADD TO BASKET

Exposures®

Shopping Basket | My Account • Wish List • Catalog Request

Keyword or item# SEARCH

Advanced Search

ALBUMS & SCRAPBOOKS | STORAGE | FRAMES/ DISPLAY | SPECIALTY CARDS | GIFT IDEAS | OUTLET

Shopping Cart

Click **Remove** to delete an item from your Shopping Cart, click **Continue Shopping** to add more items, or **Checkout** to complete your purchase. If you change the quantity of any item(s) in your cart, click **Update** to recalculate your subtotal.

Item#	Product	Qty	Price Each	Total Price	
08 1999 04	Baby Brag Book	1	$16.00	$16.00	Remove
	Baby Brag Book Blue				
08 1433	Baby Days Scrapbook Kit	1	$19.95	$19.95	Remove
	Baby Days Frame Pack				
			Subtotal	**$35.95**	

UPDATE | CONTINUE SHOPPING | CHECKOUT

92. List all the entities in Exposures database and describe their relationships with other entities.

Entities: Customer, Payment, Order, and Shopping Cart. Customer table has one-to-many relationship with Payment table. One customer can have many credit cards (and other payment options). Customer table has one-to-many relationship with Order table. One customer can have many orders. Order table has one-to-one relationship with Shopping Cart table. Each order should be associated with only one shopping cart. Shopping Cart table has one-to-many relationship with Shopping Cart Item table. One shopping cart can have many items. Also, Customer table might have one-to-many relationship with Shopping Cart table. Each customer can have many shopping carts (presumably at different times).

93. List all the attributes in shopping cart table.

CartID
CustomerID
OrderID
ItemID
TimeCheckedOut
OrderPlaced?

94. List and/or construct primary keys for each of the tables.

Each of the tables probably has computer-generated IDs like CustomerID, CartID, OrderID, ItemID, and PaymentID.

95. List all foreign keys in appropriate tables.

CustomerID is a foreign key in Payment table, establishing the relationship with Customer table. CustomerID is a foreign key in Shopping Cart table, establishing the relationship with Customer table. OrderID is a foreign key in Shopping Cart table, establishing the relationship with Order table. ItemID is a foreign key in Shopping Cart table, establishing the relationship with Shopping Cart Item table. CustomerID is a foreign key in Order table, establishing the relationship with Customer table.