

# Chapter 1

## Introduction to Database Management

### Solutions

#### Answers to Review Questions

*Note:* Answers to odd-numbered review questions are found in Appendix D of the textbook.

1. Redundancy is the duplication of data or the storing of the same data in more than one place. Redundancy wastes space, makes the updating of data more cumbersome and time-consuming, and can lead to inconsistencies.
2. The problems, other than redundancy, associated with the nondatabase approach to processing data include difficulties accessing related data, limited security features to protect data from access by unauthorized users, limited ability for multiple users to update the same data at the same time, and size limitations.
3. An entity is a person, place, object, event, or idea for which you want to store and process data. An attribute, which is also called a field or column in many database systems, is a characteristic or property of an entity.
4. A relationship is an association between entities. A one-to-many relationship exists between two entities when each row in the first entity matches many rows in the second entity and each row in the second entity matches only one row in the first entity.
5. A database is a structure that can store information about multiple types of entities, the attributes of those entities, and the relationships among the entities.
6. In a database system, you create a one-to-many relationship by using common columns in the two tables.
7. An E-R diagram represents a database in a visual way by using a rectangle for each entity, using a line to connect two entities that have a relationship, and placing a dot at the end of a line to indicate the “many” part of a one-to-many relationship.
8. A database management system (DBMS) is a program, or a collection of programs, through which users interact with a database.
9. Database design is the process of determining the table structure of the desired database.
10. A form is a screen object used to maintain, view, and print data from a database.
11. It is possible to get more information from the same amount of data by using a database approach as opposed to a nondatabase approach because all data is stored in a single database, instead of being stored in dozens of separate files, making the process of obtaining information quicker, easier, and even possible in certain situations.
12. Sharing of data means that several users can have access to the same piece of data and use it in a variety of ways.
13. The DBA (database administrator or database administration) is the central person or group in an organization in charge of the database and the DBMS that runs the database. The DBA attempts to balance the needs of individuals and the overall needs of the organization.
14. Multiple copies of the same data in an organization leads to inconsistency because each piece of data can have different values. Controlling redundancy is the result of eliminating, or at least reducing, the multiple copies. Improved consistency is the result of this controlled redundancy.

15. An integrity constraint is a rule that the data in a database must follow. A database has integrity when the data in it satisfies all established integrity constraints. A good DBMS should provide an opportunity for users to incorporate these integrity constraints when they design the database. The DBMS then should ensure that these constraints are not violated.
16. Security is the prevention of access to the database by unauthorized users. A DBMS provides security features such as passwords. As additional security, the DBA can assign users to groups and restrict each group to certain data and to certain types of access.
17. Data independence is the property that lets you change the structure of a database without requiring you to change the programs that access the database. With data independence, you easily can change the structure of the database when the need arises.
18. In a database environment, file size is a disadvantage because the DBMS is a large program that occupies a great amount of disk space and internal memory. Also, because all the data that the database manages for you is stored in one file, the database file itself requires a large amount of disk space and internal memory.
19. The more complex a product is in general (and a DBMS, in particular, is complex), the more difficult it is to understand and correctly apply its features. As a result of this complexity, serious problems may result from mistakes made by users and designers of the DBMS.
20. In a nondatabase environment, each user has a completely separate system; the failure of any single user's system does not necessarily affect any other user. On the other hand, if several users are sharing the same database, a failure on the part of any one user that damages the database in some way might affect all the other users.
21. The great complexity of a database structure makes recovery more difficult. In addition, many users update the data at the same time, which means that recovering the database involves not only restoring it to the last state in which it was known to be correct, but also performing the complex task of redoing all the updates made since that time.

## Answers to Premiere Products Exercises

See the Instructor's Resource Kit on CD-ROM for a copy of the Premiere Products database in Access format. It also includes the SQL script files necessary to create the Premiere Products database in Oracle and in MySQL. You also can access Instructor Resources via the Web at [login.cengage.com](http://login.cengage.com).

1. Al's Appliance and Sport, Ferguson's, The Everything Shop, Lee's Sport and Appliance, Deerfield's Four Seasons, and All Season
2. Washer, Dishwasher
3. 21617, 21623
4. BV06, Home Gym, \$35,772.75; KV29, Treadmill, \$12,510.00
5. Ferguson's, Johnson's Department Store
6. The Everything Shop, Lee's Sport and Appliance
7. \$11,303.00 (\$5,785.00 Ferguson's, \$3,412.00 Bargains Galore, \$2,106.00 Johnson's Department Store)
8. 21608, 10/20/2013, 148, Al's Appliance and Sport; 21610, 10/20/2013, 356, Ferguson's; 21613, 10/21/2013, 408, The Everything Shop; 21614, 10/21/2013, 282, Brookings Direct; 21617, 10/23/2013, 608, Johnson's Department Store; 21619, 10/23/2013, 148, Al's Appliance and Sport; 21623, 10/23/2013, 608, Johnson's Department Store
9. 21613, 10/21/2013, 408, The Everything Shop; 21614, 10/21/2013, 282, Brookings Direct
10. 21608, Al's Appliance and Sport, Valerie Kaiser; 21610, Ferguson's, Juan Perez

## Answers to Henry Books Case

See the Instructor's Resource Kit on CD-ROM for a copy of the Henry Books database in Access format. It also includes the SQL script files necessary to create the Henry Books database in Oracle and in MySQL. You also can access Instructor Resources via the Web at [login.cengage.com](http://login.cengage.com).

1. Arkham House, Basic Books, Berkley Publishing, Course Technology, Jeremy P. Tarcher, McPherson and Co., Taunton Press, Touchstone Books, Westview Press
2. Of Mice and Men, Travels with Charley, East of Eden, The Grapes of Wrath
3. Second Wind, The Edge, Slay Ride
4. A Deepness in the Sky
5. The Edge, Slay Ride, Group: Six People in Search of a Life, When Rabbit Howls
6. The Soul of a New Machine, Band of Brothers, A Guide to SQL
7. 4 (2 for ST and 2 for VB)
8. Second Wind, The Edge, Slay Ride
9. Of Mice and Men, East of Eden, The Grapes of Wrath
10. Treasure Chests, TA, ART, Lon Schleining and Randy O'Rourke; Van Gogh and Gauguin, WP, ART, Bradley Collins, Jr. and Bradley Collins; Black House, RH, HOR, Stephen King and Peter Straub
11. 8
12. 1, 1, Excellent, 8.00; 2, 1, Excellent, 8.00; 2, 2, Fair, 3.50; 2, 3, Poor, 2.25
13. Henry Downtown, 1, Excellent, 14.95; Henry Downtown, 2, Excellent, 14.95; Henry Downtown, 3, Good, 8.50; Henry Eastshore, 1, Good, 8.50
14. Second Wind, Excellent, 25.95 (4 copies); Treasure Chests, Good, 34.50; A Guide to SQL, Excellent, 39.95 (2 copies)
15. There are 24 copies available at the Henry on the Hill branch that are in Excellent condition. There are no copies in the list with multiple authors. The books (some books have multiple copies) and their authors are: Magic Terror, Peter Straub; The Stranger, Albert Camus; Second Wind, Dick Francis, The Edge, Dick Francis, Dreamcatcher: A Novel, Stephen King; Beloved, Toni Morrison; Nine Stories, J D Salinger; The Soul of a New Machine, Tracy Kidder; Jazz, Toni Morrison, Band of Brothers, Stephen Ambrose; A Guide to SQL, Philip Pratt; Franny and Zoey, J D Salinger; The Grapes of Wrath, John Steinbeck; The Catcher in the Rye, J D Salinger

## Answers to Alexamara Marina Group Case

See the Instructor's Resource Kit on CD-ROM for a copy of the Alexamara database in Access format. It also includes the SQL script files necessary to create the Alexamara database in Oracle and in MySQL. You also can access Instructor Resources via the Web at [login.cengage.com](http://login.cengage.com).

1. AD54, Adney, Bruce and Jean; AN75, Anderson, Bill; BL72, Blake, Mary; EL25, Elend, Sandy and Bill; FE82, Feenstra, Daniel; JU92, Juarez, Maria; KE22, Kelly, Alyssa; NO27, Norton, Peter; SM72, Smeltz, Becky and Dave; TR72, Trent, Ashton
2. Bravo, Chinook, and Listy
3. Anderson, Bill, 18 Wilcox; Smeltz, Becky and Dave, 922 Garland
4. Anderson, Bill, Glander Bay

5. Anderson, Bill, Glander Bay; Elend, Sandy and Bill, Rivard; Kelly, Alyssa, Bowton; Norton, Peter, Lewiston; Trent, Ashton, Bay Shores
6. Anderson II, Sprite 4000; Our Toy, Ray 4025; Escape, Sprite 4000; Gypsy, Dolphin 28; Anderson III, Sprite 3000
7. Anderson, Bill, Anderson II; Elend, Sandy and Bill, Our Toy; Kelly Alyssa, Escape; Juarez, Maria, Gypsy; Anderson, Bill, Anderson III; Adney, Bruce and Jean, Bravo; Feenstra, Daniel, Chinook; Smeltz, Becky and Dave, Listy; Trent, Ashton, Karvel
8. Anderson II, Sprite 4000; Our Toy, Ray 4025; Gypsy, Dolphin 28; Bravo, Dolphin 25; Chinook, Dolphin 22; Karvel, Ray 4025
9. Escape, Sprite 4000; Chinook, Dolphin 22; Karvel, Ray 4025
10. Anderson II, Anderson, Bill; Bravo, Adney, Bruce and Jean; Listy, Smeltz, Becky and Dave