CHAPTER 1

INTRODUCTION TO PREMIERE PRODUCTS, HENRY BOOKS, AND ALEXAMARA MARINA GROUP

LEARNING OBJECTIVES

Objectives

- Introduce Premiere Products, a company whose database is used as the basis for many of the examples throughout the text
- Introduce Henry Books, a company whose database is used as a case that runs throughout the text
- Introduce Alexamara Marina Group, a company whose database is used as an additional case that runs throughout the text

INTRODUCTION

In this chapter, you will examine the database requirements of Premiere Products, a company that will be used in the examples throughout the text. Then you will examine the database requirements for Henry Books and Alexamara Marina Group, whose databases are featured in the exercises that appear at the end of each chapter.

WHAT IS A DATABASE?

Throughout this text, you will work with databases for three organizations: Premiere Products, Henry Books, and Alexamara Marina Group. A **database** is a structure that contains different categories of information and the relationships between these categories. The Premiere Products database, for example, contains information about categories such as sales representatives (sales reps), customers, orders, and parts. The Henry Books database contains information about categories such as books, publishers, authors, and branches. The Alexamara Marina Group database contains information about categories such as marinas, slips and the boats in them, service categories, and service requests.

Each database also contains relationships between categories. For example, the Premiere Products database contains information that relates sales reps to the customers they represent and customers to the orders they have placed. The Henry Books database contains information that relates publishers to the books they publish and authors to the books they have written. The Alexamara Marina Group database contains information that relates the boats in the slips at the marina to the owners of the boats.

As you work through the chapters in this text, you will learn more about these databases and how to view and update the information they contain. As you read each chapter, you will see examples from the Premiere Products database. At the end of each chapter, your instructor might assign the exercises for the Premiere Products, Henry Books, or Alexamara Marina Group databases.

THE PREMIERE PRODUCTS DATABASE

The management of Premiere Products, a distributor of appliances, housewares, and sporting goods, has determined that the company's recent growth no longer makes it feasible to maintain customer, order, and inventory data using its manual systems. With the data stored in a database, management will be able to ensure that the data is current and more accurate than in the present manual systems. In addition, managers will be able to obtain answers to their questions concerning the data in the database easily and quickly, with the option of producing a variety of useful reports.

Management has determined that Premiere Products must maintain the following information about its sales reps, customers, and parts inventory in the new database:

- The number, last name, first name, address, total commission, and commission rate for each sales rep
- The customer number, name, address, current balance, and credit limit for each customer, as well as the number of the sales rep who represents the customer
- The part number, description, number of units on hand, item class, number of the warehouse where the item is stored, and unit price for each part in inventory

Premiere Products also must store information about orders. Figure 1-1 shows a sample order.

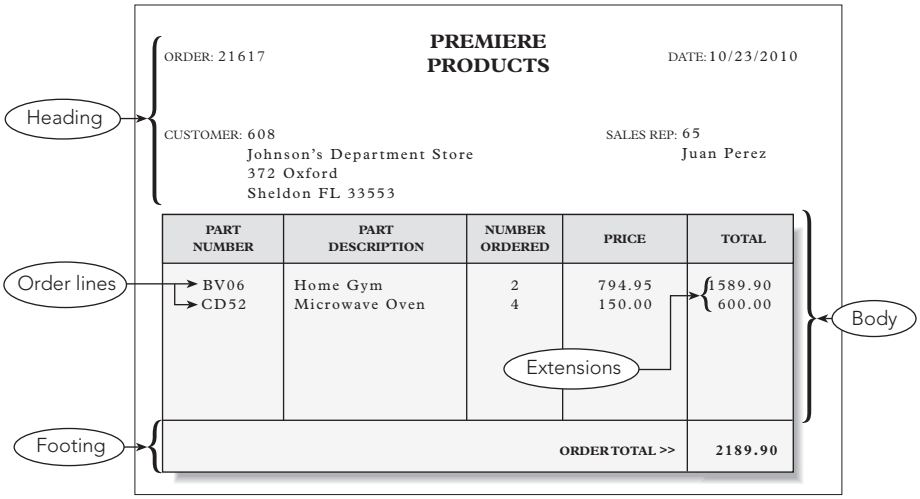

FIGURE 1-1 Sample order

The sample order shown in Figure 1-1 has three sections:

- The heading (top) of the order contains the company name; the order number and date; the customer's number, name, and address; and the sales rep's number and name.
- The body of the order contains one or more order lines, sometimes called line items. Each order line contains a part number, a part description, the number of units of the part ordered, and the quoted price for the part. Each order line also contains a total, usually called an extension, which is the result of multiplying the number ordered by the quoted price.
- Finally, the footing (bottom) of the order contains the order total.

Premiere Products also must store the following items in the database for each customer's order:

- For each order, the database must store the order number, the date the order was placed, and the number of the customer that placed the order. The customer's name and address and the number of the sales rep who represents the customer are stored with the customer information. The name of the sales rep is stored with the sales rep information.
- For each order, the database must store the order number, the part number, the number of units ordered, and the quoted price for each order line. The part description is stored with the information about parts. The result of multiplying the number of units ordered by the quoted price is not stored because the database can calculate it when needed.
- The overall order total is not stored. Instead, the database calculates the total whenever an order is printed or displayed on the screen.

Figure 1-2 shows sample data for Premiere Products.

REP

REP_NUM	LAST_NAME	FIRST_NAME	STREET	CITY	STATE	ZIP	COMMISSION	RATE
20	Kaiser	Valerie	624 Randall	Grove	FL	33321	$20,542.50	0.05
35	Hull	Richard	532 Jackson	Sheldon	FL	33553	$39,216.00	0.07
65	Perez	Juan	1626 Taylor	Fillmore	FL	33336	$23,487.00	0.05

CUSTOMER

CUSTOMER_NUM	CUSTOMER_NAME	STREET	CITY	STATE	ZIP	BALANCE	CREDIT_LIMIT	REP_NUM
148	Al's Appliance and Sport	2837 Greenway	Fillmore	FL	33336	$6,550.00	$7,500.00	20
282	Brookings Direct	3827 Devon	Grove	FL	33321	$431.50	$10,000.00	35
356	Ferguson's	382 Wildwood	Northfield	FL	33146	$5,785.00	$7,500.00	65
408	The Everything Shop	1828 Raven	Crystal	FL	33503	$5,285.25	$5,000.00	35
462	Bargains Galore	3829 Central	Grove	FL	33321	$3,412.00	$10,000.00	65
524	Kline's	838 Ridgeland	Fillmore	FL	33336	$12,762.00	$15,000.00	20
608	Johnson's Department Store	372 Oxford	Sheldon	FL	33553	$2,106.00	$10,000.00	65
687	Lee's Sport and Appliance	282 Evergreen	Altonville	FL	32543	$2,851.00	$5,000.00	35
725	Deerfield's Four Seasons	282 Columbia	Sheldon	FL	33553	$248.00	$7,500.00	35
842	All Season	28 Lakeview	Grove	FL	33321	$8,221.00	$7,500.00	20

FIGURE 1-2 Sample data for Premiere Products

ORDERS

ORDER_NUM	ORDER_DATE	CUSTOMER_NUM
21608	10/20/2010	148
21610	10/20/2010	356
21613	10/21/2010	408
21614	10/21/2010	282
21617	10/23/2010	608
21619	10/23/2010	148
21623	10/23/2010	608

ORDER_LINE

ORDER_NUM	PART_NUM	NUM_ORDERED	QUOTED_PRICE
21608	AT94	11	$21.95
21610	DR93	1	$495.00
21610	DW11	1	$399.99
21613	KL62	4	$329.95
21614	KT03	2	$595.00
21617	BV06	2	$794.95
21617	CD52	4	$150.00
21619	DR93	1	$495.00
21623	KV29	2	$1,290.00

PART

PART_NUM	DESCRIPTION	ON_HAND	CLASS	WAREHOUSE	PRICE
AT94	Iron	50	HW	3	$24.95
BV06	Home Gym	45	SG	2	$794.95
CD52	Microwave Oven	32	AP	1	$165.00
DL71	Cordless Drill	21	HW	3	$129.95
DR93	Gas Range	8	AP	2	$495.00
DW11	Washer	12	AP	3	$399.99
FD21	Stand Mixer	22	HW	3	$159.95
KL62	Dryer	12	AP	1	$349.95
KT03	Dishwasher	8	AP	3	$595.00
KV29	Treadmill	9	SG	2	$1,390.00

FIGURE 1-2 Sample data for Premiere Products (continued)

In the REP table, you see that there are three sales reps, whose numbers are 20, 35, and 65. The name of sales rep 20 is Valerie Kaiser. Her street address is 624 Randall. She lives in Grove, Florida, and her zip code is 33321. Her total commission is $20,542.50, and her commission rate is five percent (0.05).

In the CUSTOMER table, 10 Premiere Products customers are identified with the numbers 148, 282, 356, 408, 462, 524, 608, 687, 725, and 842. The name of customer number 148 is Al's Appliance and Sport. This customer's address is 2837 Greenway in Fillmore, Florida, with a zip code of 33336. The customer's current balance is $6,550.00, and its credit limit is $7,500.00. The number 20 in the REP_NUM column indicates that Al's Appliance and Sport is represented by sales rep 20 (Valerie Kaiser).

Skipping to the table named PART, you see that there are 10 parts, whose part numbers are AT94, BV06, CD52, DL71, DR93, DW11, FD21, KL62, KT03, and KV29. Part AT94 is an iron, and the company has 50 units of this part on hand. Irons are in item class HW (housewares) and are stored in warehouse 3. The price of an iron is $24.95. Other item classes are AP (appliances) and SG (sporting goods).

Moving back to the table named ORDERS, you see that there are seven orders, which are identified with the numbers 21608, 21610, 21613, 21614, 21617, 21619, and 21623. Order number 21608 was placed on October 20, 2010, by customer 148 (Al's Appliance and Sport).

NOTE

In some database systems, the word *order* has a special purpose. Having a table named ORDER could cause problems in such systems. For this reason, Premiere Products uses the table name ORDERS instead of ORDER.

The table named ORDER_LINE might seem strange at first glance. Why do you need a separate table for the order lines? Could they be included in the ORDERS table? The answer is technically yes. You could structure the table named ORDERS as shown in Figure 1-3. Notice that this table contains the same orders as shown in Figure 1-2, with the same dates and customer numbers. In addition, each table row in Figure 1-3 contains all the order lines for a given order. Examining the fifth row, for example, you see that order 21617 has two order lines. One of these order lines is for two BV06 parts at $794.95 each, and the other order line is for four CD52 parts at $150.00 each.

ORDERS

ORDER_NUM	ORDER_DATE	CUSTOMER_NUM	PART_NUM	NUM_ORDERED	QUOTED_PRICE
21608	10/20/2010	148	AT94	11	$21.95
21610	10/20/2010	356	DR93 DW11	1 1	$495.00 $399.99
21613	10/21/2010	408	KL62	4	$329.95
21614	10/21/2010	282	KT03	2	$595.00
21617	10/23/2010	608	BV06 CD52	2 4	$794.95 $150.00
21619	10/23/2010	148	DR93	1	$495.00
21623	10/23/2010	608	KV29	2	$1,290.00

FIGURE 1-3 Alternative ORDERS table structure

Q & A

Question: How is the information from Figure 1-2 represented in Figure 1-3?
Answer: Examine the ORDER_LINE table shown in Figure 1-2 and note the sixth and seventh rows. The sixth row indicates that there is an order line on order 21617 for two BV06 parts at $794.95 each. The seventh row indicates that there is an order line on order 21617 for four CD52 parts at $150.00 each. Thus, the information that you find in Figure 1-3 is represented in Figure 1-2 in two separate rows rather than in one row.

It might seem inefficient to use two rows to store information that could be represented in one row. There is a problem, however, with the arrangement shown in Figure

1-3—the table is more complicated. In Figure 1-2, there is a single entry at each location in the table. In Figure 1-3, some of the individual positions within the table contain multiple entries, making it difficult to track the information between columns. In the row for order number 21617, for example, it is crucial to know that the BV06 corresponds to the 2 in the NUM_ORDERED column (not the 4) and that it corresponds to the $794.95 in the QUOTED_PRICE column (not the $150.00). In addition, a more complex table raises practical issues, such as:

- How much room do you allow for these multiple entries?
- What happens when an order has more order lines than you have allowed room for?
- For a given part, how do you determine which orders contain order lines for that part?

Although none of these problems is unsolvable, they do add a level of complexity that is not present in the arrangement shown in Figure 1-2. In Figure 1-2, there are no multiple entries to worry about, it does not matter how many order lines exist for any order, and finding every order that contains an order line for a given part is easy (just look for all order lines with the given part number in the PART_NUM column). In general, this simpler structure is preferable, and that is why order lines appear in a separate table.

To test your understanding of the Premiere Products data, use Figure 1-2 to answer the following questions.

Q & A

Question: What are the numbers of the customers represented by Valerie Kaiser?
Answer: 148, 524, and 842. (Look up the REP_NUM value of Valerie Kaiser in the REP table and obtain the number 20. Then find all customers in the CUSTOMER table that have the number 20 in the REP_NUM column.)

Q & A

Question: What is the name of the customer that placed order 21610, and what is the name of the rep who represents this customer?
Answer: Ferguson's is the customer; Juan Perez is the sales rep. (Look up the CUSTOMER_NUM value in the ORDERS table for order number 21610 and obtain the number 356. Then find the customer in the CUSTOMER table with the CUSTOMER_NUM value of 356. Using the REP_NUM value, which is 65, find the name of the rep in the REP table.)

Q & A

Question: List all parts that appear in order 21610. For each part, give the description, number ordered, and quoted price.
Answer: Part number: DR93; part description: Gas Range; number ordered: 1; and quoted price: $495.00. Also, part number: DW11; part description: Washer; number ordered: 1; and quoted price: $399.99. (Look up each ORDER_LINE table row in which the order number is 21610. Each of these rows contains a part number, the number ordered, and the quoted price. Use the part number to look up the corresponding part description in the PART table.)

Q & A

Question: Why is the QUOTED_PRICE column part of the ORDER_LINE table? Can't you just use the part number and look up the price in the PART table?
Answer: If the QUOTED_PRICE column did not appear in the ORDER_LINE table, you would need to obtain the price for a part on an order line by looking up the price in the PART table. Although this approach is reasonable, it prevents Premiere Products from charging different prices to different customers for the same part. Because Premiere Products wants the flexibility to quote and charge different prices to different customers, the QUOTED_PRICE column is included in the ORDER_LINE table. If you examine the ORDER_LINE table, you will see cases in which the quoted price matches the actual price in the PART table and cases in which it differs. For example, in order number 21608, Al's Appliance and Sport bought 11 irons, and Premiere Products charged only $21.95 per iron, rather than the regular price of $24.95.

THE HENRY BOOKS DATABASE

Ray Henry is the owner of a bookstore chain named Henry Books. Like the management of Premiere Products, Ray has decided to store his data in a database. He wants to achieve the same benefits; that is, he wants to ensure that his data is current and accurate. In addition, he wants to be able to ask questions concerning the data and to obtain answers to these questions easily and quickly.

In running his chain of bookstores, Ray gathers and organizes information about branches, publishers, authors, and books. Figure 1-4 shows sample branch and publisher data for Henry Books. Each branch has a number that uniquely identifies the branch. In addition, Ray tracks the branch's name, location, and number of employees. Each publisher has a code that uniquely identifies the publisher. In addition, Ray tracks the publisher's name and city.

BRANCH

BRANCH_NUM	BRANCH_NAME	BRANCH_LOCATION	NUM_EMPLOYEES
1	Henry Downtown	16 Riverview	10
2	Henry On The Hill	1289 Bedford	6
3	Henry Brentwood	Brentwood Mall	15
4	Henry Eastshore	Eastshore Mall	9

PUBLISHER

PUBLISHER_CODE	PUBLISHER_NAME	CITY
AH	Arkham House	Sauk City WI
AP	Arcade Publishing	New York
BA	Basic Books	Boulder CO
BP	Berkley Publishing	Boston
BY	Back Bay Books	New York
CT	Course Technology	Boston
FA	Fawcett Books	New York
FS	Farrar Straus and Giroux	New York
HC	HarperCollins Publishers	New York
JP	Jove Publications	New York
JT	Jeremy P. Tarcher	Los Angeles
LB	Lb Books	New York
MP	McPherson and Co.	Kingston
PE	Penguin USA	New York
PL	Plume	New York
PU	Putnam Publishing Group	New York
RH	Random House	New York
SB	Schoken Books	New York
SC	Scribner	New York
SS	Simon and Schuster	New York
ST	Scholastic Trade	New York
TA	Taunton Press	Newtown CT
TB	Tor Books	New York
TH	Thames and Hudson	New York
TO	Touchstone Books	Westport CT
VB	Vintage Books	New York
WN	W.W. Norton	New York
WP	Westview Press	Boulder CO

FIGURE 1-4 Sample branch and publisher data for Henry Books

Figure 1-5 shows sample author data for Henry Books. Each author has a number that uniquely identifies the author. In addition, Ray records each author's last and first names.

AUTHOR

AUTHOR_NUM	AUTHOR_LAST	AUTHOR_FIRST
1	Morrison	Toni
2	Solotaroff	Paul
3	Vintage	Vernor
4	Francis	Dick
5	Straub	Peter
6	King	Stephen
7	Pratt	Philip
8	Chase	Truddi
9	Collins	Bradley
10	Heller	Joseph
11	Wills	Gary
12	Hofstadter	Douglas R.
13	Lee	Harper
14	Ambrose	Stephen E.
15	Rowling	J.K.
16	Salinger	J.D.
17	Heaney	Seamus
18	Camus	Albert
19	Collins, Jr.	Bradley
20	Steinbeck	John
21	Castelman	Riva
22	Owen	Barbara
23	O'Rourke	Randy
24	Kidder	Tracy
25	Schleining	Lon

FIGURE 1-5 Sample author data for Henry Books

Figure 1-6 shows sample book data for Henry Books. Each book has a code that uniquely identifies the book. For each book, Ray also tracks the title, publisher, book type, price, and whether the book is a paperback.

BOOK

BOOK_CODE	TITLE	PUBLISHER_CODE	TYPE	PRICE	PAPERBACK
0180	A Deepness in the Sky	TB	SFI	$7.19	Y
0189	Magic Terror	FA	HOR	$7.99	Y
0200	The Stranger	VB	FIC	$8.00	Y
0378	Venice	SS	ART	$24.50	N
079X	Second Wind	PU	MYS	$24.95	N
0808	The Edge	JP	MYS	$6.99	Y
1351	Dreamcatcher: A Nvel	SC	HOR	$19.60	N
1382	Treasure Chests	TA	ART	$24.46	N
138X	Beloved	PL	FIC	$12.95	Y
2226	Harry Potter and the Prisoner of Azkaban	ST	SFI	$13.96	N
2281	Van Gogh and Gauguin	WP	ART	$21.00	N
2766	Of Mice and Men	PE	FIC	$6.95	Y
2908	Electric Light	FS	POE	$14.00	N
3350	Group: Six People in Search of a Life	BP	PSY	$10.40	Y
3743	Nine Stories	LB	FIC	$5.99	Y
3906	The Soul of a New Machine	BY	SCI	$11.16	Y
5163	Travels with Charley	PE	TRA	$7.95	Y
5790	Catch-22	SC	FIC	$12.00	Y
6128	Jazz	PL	FIC	$12.95	Y
6328	Band of Brothers	TO	HIS	$9.60	Y
669X	A Guide to SQL	CT	CMP	$37.95	Y
6908	Franny and Zooey	LB	FIC	$5.99	Y
7405	East of Eden	PE	FIC	$12.95	Y
7443	Harry Potter and the Goblet of Fire	ST	SFI	$18.16	N
7559	The Fall	VB	FIC	$8.00	Y
8092	Godel, Escher, Bach	BA	PHI	$14.00	Y
8720	When Rabbit Howls	JP	PSY	$6.29	Y
9611	Black House	RH	HOR	$18.81	N
9627	Song of Solomon	PL	FIC	$14.00	Y
9701	The Grapes of Wrath	PE	FIC	$13.00	Y
9882	Slay Ride	JP	MYS	$6.99	Y
9883	The Catcher in the Rye	LB	FIC	$5.99	Y
9931	To Kill a Mockingbird	HC	FIC	$18.00	N

FIGURE 1-6 Sample book data for Henry Books

To check your understanding of the relationship between publishers and books, answer the following questions.

Q & A

Question: Who published *Jazz*? Which books did Jove Publications publish?
Answer: Plume published *Jazz*. In the row in the BOOK table for *Jazz* (see Figure 1-6), find the publisher code PL. Examining the PUBLISHER table (see Figure 1-4), you see that PL is the code assigned to Plume. Jove Publications published *The Edge*, *When Rabbit Howls*, and *Slay Ride*. To find the books published by Jove Publications, find its code (JP) in the PUBLISHER table. Next, find all records in the BOOK table for which the publisher code is JP.

The table named WROTE, as shown in Figure 1-7, relates books to the authors who wrote them. The SEQUENCE column indicates the order in which the authors of a particular book are listed on the cover. The table named INVENTORY in the same figure is used to indicate the number of copies of a particular book that are currently on hand at a particular branch of Henry Books. The first row, for example, indicates that there are two copies of the book with the code 0180 at branch 1.

WROTE

BOOK_CODE	AUTHOR_NUM	SEQUENCE
0180	3	1
0189	5	1
0200	18	1
0378	11	1
079X	4	1
0808	4	1
1351	6	1
1382	23	2
1382	25	1
138X	1	1
2226	15	1
2281	9	2
2281	19	1
2766	20	1
2908	17	1
3350	2	1
3743	16	1

INVENTORY

BOOK_CODE	BRANCH_NUM	ON_HAND
0180	1	2
0189	2	2
0200	1	1
0200	2	3
0378	3	2
079X	2	1
079X	3	2
079X	4	3
0808	2	1
1351	2	4
1351	3	2
1382	2	1
138X	2	3
2226	1	3
2226	3	2
2226	4	1
2281	4	3

FIGURE 1-7 Sample data that relates books to authors and books to branches for Henry Books

WROTE

BOOK_CODE	AUTHOR_NUM	SEQUENCE
3906	24	1
5163	20	1
5790	10	1
6128	1	1
6328	14	1
669X	7	1
6908	16	1
7405	20	1
7443	15	1
7559	18	1
8092	12	1
8720	8	1
9611	5	2
9611	6	1
9627	1	1
9701	20	1
9882	4	1
9883	16	1
9931	13	1

INVENTORY

BOOK_CODE	BRANCH_NUM	ON_HAND
2766	3	2
2908	1	3
2908	4	1
3350	1	2
3743	2	1
3906	2	1
3906	3	2
5163	1	1
5790	4	2
6128	2	4
6128	3	3
6328	2	2
669X	1	1
6908	2	2
7405	3	2
7443	4	1
7559	2	2
8092	3	1
8720	1	3
9611	1	2
9627	3	5
9627	4	2
9701	1	2
9701	2	1
9701	3	3
9701	4	2
9882	3	3
9883	2	3
9883	4	2
9931	1	2

FIGURE 1-7 Sample data that relates books to authors and books to branches for Henry Books (continued)

To check your understanding of the relationship between authors and books, answer the following questions.

Q & A

Question: Who wrote *Black House*? (Make sure to list the authors in the correct order.) Which books did Toni Morrison write?
Answer: Stephen King and Peter Straub wrote *Black House*. First examine the BOOK table (see Figure 1-6) to find the book code for *Black House* (9611). Next, look for all rows in the WROTE table in which the book code is 9611. There are two such rows. In one row, the author number is 5, and in the other, it is 6. Then, look in the AUTHOR table to find the authors who have been assigned the numbers 5 and 6. The answers are Peter Straub (5) and Stephen King (6). The sequence number for author number 5 is 2, and the sequence number for author number 6 is 1. Thus, listing the authors in the proper order results in Stephen King and Peter Straub.

Toni Morrison wrote *Beloved*, *Jazz*, and *Song of Solomon*. To find the books written by Toni Morrison, look up her author number (1) in the AUTHOR table. Then look for all rows in the WROTE table for which the author number is 1. There are three such rows. The corresponding book codes are 138X, 6128, and 9627. Looking up these codes in the BOOK table, you find that Toni Morrison wrote *Beloved*, *Jazz*, and *Song of Solomon*.

Q & A

Question: A customer in branch 1 wants to purchase *The Soul of a New Machine*. Is this book currently in stock at branch 1?
Answer: No. Looking up the code for *The Soul of a New Machine* in the BOOK table, you find it is 3906. To find out how many copies are in stock at branch 1, look for a row in the INVENTORY table with 3906 in the BOOK_CODE column and 1 in the BRANCH_NUM column. Because there is no such row, branch 1 doesn't have any copies of *The Soul of a New Machine*.

Q & A

Question: You would like to obtain a copy of *The Soul of a New Machine* for this customer. Which other branches currently have this book in stock, and how many copies does each branch have?
Answer: Branch 2 has one copy, and branch 3 has two copies. You already know that the code for *The Soul of a New Machine* is 3906. (If you did not know the book code, you would look it up in the BOOK table.) To find out which branches currently have copies, look for rows in the INVENTORY table with 3906 in the BOOK_CODE column. There are two such rows. The first row indicates that branch 2 currently has one copy. The second row indicates that branch 3 currently has two copies.

THE ALEXAMARA MARINA GROUP DATABASE

Alexamara Marina Group offers in-water boat storage to owners by providing boat slips that owners can rent on an annual basis. Alexamara owns two marinas: Alexamara East and Alexamara Central. Each marina has several boat slips available. Alexamara also provides a variety of boat repair and maintenance services to the boat owners who rent the slips. Alexamara stores the data it needs to manage its operations in a relational database containing the tables described in the following section.

Alexamara stores information about its two marinas in the MARINA table shown in Figure 1-8. A marina number uniquely identifies each marina. The table also includes the marina name, street address, city, state, and zip code.

MARINA

MARINA_NUM	NAME	ADDRESS	CITY	STATE	ZIP
1	Alexamara East	108 2nd Ave.	Brinman	FL	32273
2	Alexamara Central	283 Branston	W. Brinman	FL	32274

FIGURE 1-8 Sample marina data for Alexamara Marina Group

Alexamara stores information about the boat owners to whom it rents slips in the OWNER table shown in Figure 1-9. An owner number that consists of two uppercase letters followed by a two-digit number uniquely identifies each owner. For each owner, the table also includes the last name, first name, address, city, state, and zip code.

OWNER

OWNER_NUM	LAST_NAME	FIRST_NAME	ADDRESS	CITY	STATE	ZIP
AD57	Adney	Bruce and Jean	208 Citrus	Bowton	FL	31313
AN75	Anderson	Bill	18 Wilcox	Glander Bay	FL	31044
BL72	Blake	Mary	2672 Commodore	Bowton	FL	31313
EL25	Elend	Sandy and Bill	462 Riverside	Rivard	FL	31062
FE82	Feenstra	Daniel	7822 Coventry	Kaleva	FL	32521
JU92	Juarez	Maria	8922 Oak	Rivard	FL	31062
KE22	Kelly	Alyssa	5271 Waters	Bowton	FL	31313
NO27	Norton	Peter	2811 Lakewood	Lewiston	FL	32765
SM72	Smeltz	Becky and Dave	922 Garland	Glander Bay	FL	31044
TR72	Trent	Ashton	922 Crest	Bay Shores	FL	30992

FIGURE 1-9 Sample owner data for Alexamara Marina Group

Each marina contains slips that are identified by slip numbers. Marina 1 (Alexamara East) has two sections (A and B) and slips are numbered within each section. Thus, slip

numbers at marina 1 consist of the letter A or B followed by a number (for example, A3 or B2). At marina 2 (Alexamara Central), a number (1, 2, 3) identifies each slip.

Information about the slips in the marinas is contained in the MARINA_SLIP table shown in Figure 1-10. Each row in the table contains a slip ID that identifies the particular slip. The table also contains the marina number and slip number, the length of the slip (in feet), the annual rental fee, the name of the boat currently occupying the slip, the type of boat, and the boat owner's number.

MARINA_SLIP

SLIP_ID	MARINA_ NUM	SLIP_ NUM	LENGTH	RENTAL_ FEE	BOAT_NAME	BOAT_TYPE	OWNER_ NUM
1	1	A1	40	$3,800.00	Anderson II	Sprite 4000	AN75
2	1	A2	40	$3,800.00	Our Toy	Ray 4025	EL25
3	1	A3	40	$3,600.00	Escape	Sprite 4000	KE22
4	1	B1	30	$2,400.00	Gypsy	Dolphin 28	JU92
5	1	B2	30	$2,600.00	Anderson III	Sprite 3000	AN75
6	2	1	25	$1,800.00	Bravo	Dolphin 25	AD57
7	2	2	25	$1,800.00	Chinook	Dolphin 22	FE82
8	2	3	25	$2,000.00	Listy	Dolphin 25	SM72
9	2	4	30	$2,500.00	Mermaid	Dolphin 28	BL72
10	2	5	40	$4,200.00	Axxon II	Dolphin 40	NO27
11	2	6	40	$4,200.00	Karvel	Ray 4025	TR72

FIGURE 1-10 Sample data about slips at Alexamara Marina Group

Alexamara provides boat maintenance service for owners at its two marinas. The types of service provided are stored in the SERVICE_CATEGORY table shown in Figure 1-11. A category number uniquely identifies each service that Alexamara performs. The table also contains a description of the category.

SERVICE_CATEGORY

CATEGORY_NUM	CATEGORY_DESCRIPTION
1	Routine engine maintenance
2	Engine repair
3	Air conditioning
4	Electrical systems
5	Fiberglass repair
6	Canvas installation
7	Canvas repair
8	Electronic systems (radar, GPS, autopilots, etc.)

FIGURE 1-11 Sample data about service categories at Alexamara Marina Group

Information about the services requested by owners is stored in the SERVICE_REQUEST table shown in Figure 1-12. Each row in the table contains a service ID that identifies each service request. The slip ID identifies the location (marina number and slip number) of the boat to be serviced. For example, the slip ID on the second row is 5. As indicated in the MARINA_SLIP table in Figure 1-10, the slip ID 5 identifies the boat in marina 1 and slip number B2.

The SERVICE_REQUEST table also contains the category number of the service to be performed, plus a description of the specific service to be performed, and a description of the current status of the service. It also contains the estimated number of hours required to complete the service. For completed jobs, the table contains the actual number of hours it took to complete the service. If another appointment is required to complete additional service, the appointment date appears in the NEXT_SERVICE_DATE column.

SERVICE_REQUEST

SERVICE_ ID	SLIP_ ID	CATEGORY_ NUM	DESCRIPTION	STATUS	EST_ HOURS	SPENT_ HOURS	NEXT_ SERVICE_ DATE
1	1	3	Air conditioner periodically stops with code indicating low coolant level. Diagnose and repair.	Technician has verified the problem. Air conditioning specialist has been called.	4	2	7/12/2010
2	5	4	Fuse on port motor blown on two occasions. Diagnose and repair.	Open	2	0	7/12/2010
3	4	1	Oil change and general routine maintenance (check fliud levels, clean sea strainers, etc.).	Service call has been scheduled.	1	0	7/16/2010
4	1	2	Engine oil level has been dropping drastically. Diagnose and repair.	Open	2	0	7/13/2010
5	3	5	Open pockets at base of two stantions.	Technician has completed the initial filling of the open pockets. Will complete the job after the initial fill has had sufficient time to dry.	4	2	7/13/2010
6	11	4	Electric-flush system periodically stops functioning. Diagnose and repair.	Open	3	0	
7	6	2	Engine overheating. Loss of coolant. Diagnose and repair.	Open	2	0	7/13/2010
8	6	2	Heat exchanger not operating correctly.	Technician has determined that the exchanger is faulty. New exchanger has been ordered.	4	1	7/17/2010
9	7	6	Canvas severely damaged in windstorm. Order and install new canvas.	Open	8	0	7/16/2010
10	2	8	Install new GPS and chart plotter.	Scheduled	7	0	7/17/2010

FIGURE 1-12 Sample data about service requests at Alexamara Marina Group

SERVICE_REQUEST

SERVICE_ ID	SLIP_ ID	CATEGORY_ NUM	DESCRIPTION	STATUS	EST_ HOURS	SPENT_ HOURS	NEXT_ SERVICE_ DATE
11	2	3	Air conditioning unit shuts down with HHH showing on the control panel.	Technician not able to replicate the problem. Air conditioning unit ran fine through multiple tests. Owner to notify technician if the problem recurs.	1	1	
12	4	8	Both speed and depth readings on data unit are significantly less than the owner thinks they should be.	Technician has scheduled appointment with owner to attempt to verify the problem.	2	0	7/16/2010
13	8	2	Customer describes engine as making a clattering sound.	Technician suspects problem with either propeller or shaft and has scheduled the boat to be pulled from the water for further investigation.	5	2	7/12/2010
14	7	5	Owner accident caused damage to forward portion of port side.	Technician has scheduled repair.	6	0	7/13/2010
15	11	7	Canvas leaks around zippers in heavy rain. Install overlap around zippers to prevent leaks.	Overlap has been created. Installation has been scheduled.	8	3	7/17/2010

FIGURE 1-12 Sample data about service requests at Alexamara Marina Group (continued)

The Alexamara Marina Group exercises at the end of this chapter will give you a chance to check your understanding of the data in this database.

Chapter Summary

- Premiere Products is an organization whose information requirements include sales reps, customers, parts, orders, and order lines.
- Henry Books is an organization whose information requirements include branches, publishers, authors, books, inventory, and author sequences.
- Alexamara Marina Group is an organization whose information requirements include marinas, owners, slips, service categories, and service requests.

Key Terms

database

Exercises

Premiere Products

Answer each of the following questions using the Premiere Products data shown in Figure 1-2. No computer work is required.

1. List the names of all customers that have a credit limit of $7,500 or less.
2. List the order numbers for orders placed by customer number 608 on 10/23/2010.
3. List the part number, part description, and on-hand value for each part in item class SG. (*Hint:* On-hand value is the result of multiplying the number of units on hand by the price.)
4. List the part number and part description of all parts that are in item class HW.
5. How many customers have a balance that exceeds their credit limit?
6. What is the part number, description, and price of the least expensive part in the database?
7. For each order, list the order number, order date, customer number, and customer name.
8. For each order placed on October 21, 2010, list the order number, customer number, and customer name.
9. List the sales rep number and name for every sales rep who represents at least one customer with a credit limit of $10,000.
10. For each order placed on October 21, 2010, list the order number, part number, part description, and item class for each part ordered.

Henry Books

Answer each of the following questions using the Henry Books data shown in Figures 1-4 through 1-7. No computer work is required.

1. List the name of each publisher that is located in New York.
2. List the name of each branch that has at least nine employees.
3. List the book code and title of each book that has the type FIC.
4. List the book code and title of each book that has the type FIC and that is in paperback.
5. List the book code and title of each book that has the type FIC or whose publisher code is SC.
6. List the book code and title of each book that has the type MYS and a price of less than $20.

7. Customers who are part of a special program get a 10 percent discount off regular book prices. For the first five books in the BOOK table, list the book code, title, and discounted price. (Use the PRICE column to calculate the discounted price.)
8. Find the name of each publisher containing the word *and*.
9. List the book code and title of each book that has the type FIC, MYS, or ART.
10. How many books have the type SFI?
11. Calculate the average price for books that have the type ART.
12. For each book published by Penguin USA, list the book code and title.
13. List the book code, book title, and units on hand for each book in branch number 3.

Alexamara Marina Group

Answer each of the following questions using the Alexamara Marina Group data shown in Figures 1-8 through 1-12. No computer work is required.

1. List the owner number, last name, and first name of every boat owner.
2. List the last name and first name of every owner located in Bowton.
3. List the marina number and slip number for every slip whose length is equal to or less than 30 feet.
4. List the marina number and slip number for every boat with the type Dolphin 28.
5. List the slip number for every boat with the type Dolphin 28 that is located in marina 1.
6. List the boat name for each boat located in a slip whose length is between 25 and 30 feet.
7. List the slip number for every slip in marina 1 whose annual rental fee is less than $3,000.
8. Labor is billed at the rate of $60 per hour. List the slip ID, category number, estimated hours, and estimated labor cost for every service request. To obtain the estimated labor cost, multiply the estimated hours by 60. Use the column name ESTIMATED_COST for the estimated labor cost.
9. List the marina number and slip number for all slips containing a boat with the type Sprite 4000, Sprite 3000, or Ray 4025.
10. How many Dolphin 25 boats are stored at both marinas?
11. For every boat, list the marina number, slip number, boat name, owner number, owner's first name, and owner's last name.
12. For every service request for routine engine maintenance, list the slip ID, the description, and the status.
13. For every service request for routine engine maintenance, list the slip ID, marina number, slip number, estimated hours, spent hours, owner number, and owner's last name.