Guide to SQL 10th edition Shellman Solutions Manual

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Chapter 1

Introduction to Kimtay Pet Supplies and StayWell Student Accommodation Databases

At a Glance

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Lecture Notes

Overview

In this chapter, students examine the database requirements of KimTay Pet Supplies—a company that is used in the examples throughout the text. Students also examine the database requirements for StayWell, whose database is featured in the exercises that appear at the end of each module.

Chapter Objectives

After completing this chapter, students will be able to accomplish the following:

- Introduce KimTay Pet Supplies, a company whose database is used to manage a pet supplies business. The KimTay database is used as the basis for many of the examples throughout the text.
- Introduce StayWell, a Seattle-based company whose database is used to manage accommodation for university students on behalf of property owners. The StayWell database is used as an additional case that runs throughout the text.

Teaching Tips

What Is a Database?

1. Define **database**. A database is a structure that contains different categories of information and the relationships between these categories.
2. The KimTay Pet Supplies database contains information about categories such as sales representatives (sales reps), customers, invoices, and items.
3. The StayWell database contains information about the offices that manage the accommodation, the owners of the accommodation, the residents, and the services (such as cleaning and maintenance) offered for the properties.
4. Each database also contains relationships between categories. The following are some examples:
    a. The KimTay Pet Supplies database contains information that relates sales reps to the customers they represent and customers to the invoices they have placed.
    b. The StayWell database contains information that relates the two main company offices to the properties that they manage, the owners, the different services to the service request, and to the resident renting a property.

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Teaching Tip	Make sure that students understand the types of businesses and categories that are used to describe the databases. Ask them for corresponding real-life examples of the sample businesses. For example, what pet supplies stores are in your town? Have they ever been contacted by agencies that manage student accommodations?

The Kimtay Pet Supplies Database

1. KimTay Pet Supplies, a supplier of pet supplies, food, and accessories located in Cody, Wyoming, is a fictitious company that will be used as an example throughout the text. The company must maintain customer, invoice, and inventory data using its manual systems.
2. Figure 1-1 shows a sample invoice for KimTay Pet Supplies. Use the figure to point out that an invoice includes data from all of the tables in the KimTay Pet Supplies database. The data in the Total column is not stored in the database but calculated whenever an invoice is printed or displayed on the screen.
3. Figure 1-2 lists the five tables that make up the KimTay Pet Supplies database. Each table represents a category. The data in the tables is related through common fields. These relationships allow the user to access data from more than one table and produce reports, queries, and forms.
4. Use Figure 1-2 to explain the relationships in the KimTay Pet Supplies database. There is a one-to-many relationship between the SALES_REP table and the CUSTOMER table; that is, one sales rep can represent many customers. There is a one-to-many relationship between the CUSTOMER table and the INVOICES table because one customer can place many orders. Because the same item can be found on many orders and one order can include many items, there is a many-to-many relationship between the ITEM and the INVOICES table. The INVOICE_LINE table relates the ITEM and INVOICES table by including both the INVOICE_NUM field and the ITEM_ID field. The INVOICE_NUM field is the common field between the INVOICES and the INVOICES_LINE tables. The ITEM_ID field is the common field between the ITEM and INVOICE_LINE tables.
5. Point out the problems with storing data in the table structure shown in Figure 1-3. This alternative table structure violates the definition of a relation. (There are multi-valued entries; the rows are not distinct.)
6. Review the "Q&A" section on page 6 of this chapter to make sure that students understand the KimTay Pet Supplies database.

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Teaching Tip	Use Figure 1-1 and ask students to analyze the invoice. From which table does each piece of data come? (All tables in the KimTay Pet Supplies database are used.) Which entries are calculated from the data in the database? (The entries in the Total column are calculated.) Use one (or more) of the KimTay Pet Supplies exercises on page 12 as an in-class exercise.

Quick Quiz 1

1. A(n) ____ is a structure that contains different categories of information and the relationships between these categories.
   Answer: database

StayWell Student Accommodation Database

1. Describe StayWell Student Accommodation. StayWell finds and manages accommodation for owners of student accommodation in the Seattle area.
2. StayWell has decided that the best way to increase efficiency and move toward an e-commerce-based business model is to store all the data about the properties, owners, tenants, and services in databases.
3. Use Figures 1-4 through 1-9 to describe the type of data that StayWell Student Accommodation needs to maintain. There are six tables in the database: OFFICE, OWNER, PROPERTY, SERVICE_CATEGORY, SERVICE_REQUEST, and RESIDENTS.
4. Use Figures 1-4 through 1-9 to explain the relationships. There is a one-to-many relationship (one customer can make many reservations) between the SERVICE_CATEGORY table and the SERVICE_REQUEST table. The common field between the two tables is CATEGORY_NUM. Because an owner could have more than one property, there is a one-to-many relationship between the OWNER table and the PROPERTY table with OWNER_NUM being the common field. There is a many-to-many relationship between the PROPERTY table and the SERVICE_REQUEST table.

Teaching Tip	Use one (or more) of the StayWell Student Accommodation exercises on page 13 as an in-class exercise.

Quick Quiz 2

1. In the StayWell Student Accommodation database, owner number _____ owns the property with the ID 6.
   Answer: MO100

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2. In the StayWell Student Accommodation database, the corresponding description for the CATEGORY_NUM associated with SERVICE_ID 2 is _____.
   Answer: electrical systems
3. In the StayWell Student Accommodation database, the OFFICE_NAME associated with PROPERTY_ID 7 is _____.
   Answer: StayWell-Georgetown

Class Discussion Topics

1. Students interact with databases daily but often do not recognize that fact. Ask students whether they have used Google or another search engine recently. Have students purchased anything online? Did they use the online library catalog? How have they interacted with any databases in the previous 24 hours? Write the list on the board to emphasize the important role databases play in our daily lives.
2. Choose one of the two databases presented in this chapter. Ask students to provide other data items that could be included. For example, the OWNER table in the StayWell Student Accommodation database could include telephone numbers. Then, ask the students how the data items should be stored; for example, should phone numbers include area code? Why, or why not?

Additional Projects

1. Have students bring in an invoice for something that they have purchased recently. Can they identify which items would be calculated and which items would be stored in the database?
2. Have students create an invoice for StayWell Student Accommodation that would use the OWNER, PROPERTY, and SERVICE_CATEGORY tables in the database.
3. Have students visit a local business to find out how the business uses a database.

Additional Resource

1. *Concepts of Database Management*, *Eighth Edition* by Philip Pratt and Mary Last Cengage Learning, 2015.

Key Term

- **Database:** A structure that contains different categories of information and the

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relationships between these categories

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Answers to End of Module Questions

Module 1

Exercises

KimTay Pet Supplies

1. List the first and last names of all customers that have a credit limit above, but not including, $500.

   Answer:

Billy	Rufton
James	Gonzalez
Angie	Hendricks
Leslie	Smith

2. List the invoice numbers for invoices placed by customer ID 435 on November 18, 2021.

   Answer:

   14228
   14233

3. List the item ID, item description, and on-hand value for each item in category HOR. (*Hint*: On-hand value is the result of multiplying the number of units on hand by the price.)

   Answer:

FM23	Fly Mask with Ears	1022.95
FS39	Folding Saddle Stand	479.88
QB92	Quilted Stable Blanket	3839.68
WB49	Insulated Water Bucket	2719.66

4. List the item ID and item description of all items that are in category DOG.

   Answer:

AD72	Dog Feeding Station
DT12	Dog Toy Gift Set
LD14	Locking Small Dog Door
LP73	Large Pet Carrier
UF39	Underground Fence System

5. How many customers have a balance that exceeds their credit limit?

   Answer: One

6. What is the item ID, description, and price of the least expensive item in the database?

   Answer:

KH81	Wild Bird Food (25 lb)	$19.99

7. For each invoice, list the invoice number, invoice date, customer ID, and customer first and last names.

Answer:

14216	15-NOV-21	125	Joey Smith
14231	18-NOV-21	125	Joey Smith
14224	16-NOV-21	182	Billy Rufton
14219	15-NOV-21	227	Sandra Pincher
14222	16-NOV-21	294	Samantha Smith
14228	18-NOV-21	435	James Gonzalez
14233	18-NOV-21	435	James Gonzalez
14237	19-NOV-21	616	Sally Cruz

8. For each invoice placed on November 16, 2021, list the invoice number, customer ID, and customer first and last names.

Answer:

14222	294	Samantha Smith
14224	182	Billy Rufton

9. List the sales rep ID, and first and last names, for every sales rep who represents at least one customer with a credit limit of $1,000.

Answer:

10 Richard Miller
15 Donna Smith

10. For each invoice placed on November 15, 2021, list the invoice number, item ID, item description, and category for each item ordered.

Answer:

14219	AD72	Dog Feeding Station	DOG
14216	CA75	Enclosed Cat Litter Station	CAT
14219	DT12	Dog Toy Gift Set	DOG

Critical Thinking

1. KimTay Pet Supplies needs to be able to contact customers when problems arise concerning an invoice. What other types of data could KimTay include in the CUSTOMER table to assist in contacting customers?

Answer: Telephone number

StayWell Student Accommodation

1. List the owner number, last name, and first name of every property owner.

Answer:

MO100 Moore Elle-May

PA101 Patel Makesh

AK102 Aksoy Ceyda

CO103 Cole Meerab

KO104 Kowalczyk Jakub

SI105 Sims Haydon

BU106 Burke Ernest

RE107 Redman Seth

LO108 Lopez Janine

BI109 Bianchi Nicole

JO110 Jones Ammarah

2. List the last name and first name of every owner located in Seattle.

   Answer:

   Patel Makesh

   Aksoy Ceyda

   Redman Seth

   Jones Ammarah

3. List the property ID for each condo that is smaller than 1,600 square feet.

   Answer:

   3

   5

   9

   10

   11

4. List the last name, first name, and city of every owner who owns more than one property in the database.

   Answer:

Kowalczyk Jakub Bellingham

Jones Ammarah Seattle

5. List the last name, first name, and city of every owner with a property that has a monthly rent of less than $1,400 per month.

   Answer:

   Bianchi Nicole New York

   Sims Haydon Portland

   Patel Makesh Seattle

   Jones Ammarah Seattle

6. List all the residents staying at 782 Queen Ln.

   Answer:

   Callen Beck

   Milosz Polansky

   Ashanti Lucas

   Randy Woodrue

7. How many properties have two floors?

   Answer:

   5

8. How many owners live outside of Washington state (WA)?

   Answer:

   4

9. List the owner's last and first names and property IDs for each property that has a scheduled or open service request.

   Answer:

Jones Ammarah	11
Burke Ernest	1
Moore Elle-May	6

Aksoy Ceyda	2
Kowalczyk Jakub	8
Kowalczyk Jakub	4
Patel Makesh	9
Redman Seth	12

10. List the property ID and square footage for each property that has a maintenance service request.

    Answer:

11	1,075
1	1,600
6	2,125
2	2,100
8	2,700
4	1,750
9	700
12	1,400

11. List the property ID and office number for all service requests for which the estimated number of hours is greater than 5.

    Answer:

    8 2

    9 2

12. What is the average rent for all three-bedroom properties?

    Answer:

    1610

Critical Thinking

1. The StayWell database does not include a column for service fees. In which table would you place the information for service fees? Why?

    Answer:

Service fees can be placed in a new table called SERVICE_FEES with columns
SERVICE_FEE(SERVICE_FEE_ID, FEE_PER_HOUR)

Alternatively, service fees can be placed in SERVICE CATEGROY table as new column
SERVICE_FEE_PER_HOUR

SERVICE_CATEGORY(CATEGORY_NUM, CATEGORY_DESCRIPTION, SERVICE_FEE_PER_HOUR)