CASE 2

# THE PARKS AND RECREATION DATABASE

## *Designing a Relational Database to Create Tables, Forms, Queries, and Reports*

### PREVIEW

In this case, you will design a relational database for a Parks and Recreation program that offers classes for children and young adults. After your design is complete and correct, you will create database tables and populate them with data. You will then produce two forms, five queries, and two reports. The queries will address the following questions or tasks: Which class members do not have a health certificate on file? How many children have registered in each class? Who is the top participant in the program? What classes does a particular instructor teach? How many members are 5 years old or younger? Your reports will summarize the program's list of parent contacts and class members and the master class list.

### PREPARATION

- Before attempting this case, you should have some experience in database design and in using Microsoft Access.
- Complete any part of Tutorial A that your instructor assigns.
- Complete any part of Tutorial B that your instructor assigns or refer to the tutorial as necessary.

### BACKGROUND

You are looking for a summer job and come across a notice on your hometown's Facebook page for an internship to create a database for the town's Parks and Recreation program. Because you have experience in database design and database implementation with Microsoft Access, you apply and obtain the job. On your first day, you meet the coordinator of the program, Steven Strickland. He quickly explains the program, which offers classes for children and young adults. Steven also explains that the information for all families, children, classes, instructors, and class sign-ups are recorded in a single Excel spreadsheet. The Parks and Rec program has grown so much recently that it is impossible to find information quickly using the current system. Steven says he wants to migrate over to a small database system to try to understand how it might work. Eventually, the plan is to move to a larger database system that will interface with an online registration system. For now, your job is to design the database tables and implement this prototype system using Microsoft Access.

Steven further explains that all money paid to the Parks and Rec department will be done in person at the office. In other words, you do not have to worry about including any prices, costs, or payments in your prototype database.

After your conversation with Steven, you sit down with the Parks and Rec team to learn as much as you can about the program. The team describes the sign-up process. First, parents must register with the Parks and Rec department by filling in a form that includes their full names, addresses, telephone numbers, and email addresses. The team says that Parks and Rec classes are very popular, and they anticipate that the number of offerings and students will grow. A team member mentions that some parents might have the same name, so you suggest that an identification number would be appropriate to uniquely identify each parent contact.

When parents sign up, they also need to register their children. Each child's first name must be recorded; you are told you can assume that a child has the same last name as the parent. In addition, Parks and Rec needs to know each child's birthdate, an emergency contact phone number, and whether the child has a health certificate on file. Health certificates are important for certain physical activities in some of the Parks and Rec classes. The team reminds you that many parents have multiple children; therefore, children can have the same last name. Again, you suggest that a unique identification be created for each child.

The team goes through other details about the Parks and Rec system for you. Classes are offered on different days of the week and at different times. To avoid confusion, you suggest giving each class a unique identification. Each class has its own instructor, and an instructor might teach more than one class. Again, to avoid any confusion, you will create an ID number for each instructor. Finally, there needs to be a way for each child to sign up for classes.

Back in Steven's office, you continue discussing how the preceding information fits within the new database system. First, there needs to be a way to input information for new parents and children (contacts and members, respectively). In addition, there should be an efficient way to sign up children for classes. You suggest forms for each of these tasks, as they are an excellent method for inputting data by untrained clerks.

Steven is often searching for information in the spreadsheet that is hard to find. For example, he needs a list of the children who do not have a health certificate on file. For scheduling purposes, he also needs to keep track of how many children have signed up for each class. You are confident that both issues can be handled by queries.

The Parks and Rec department likes repeat students. The marketing person, Sheila, is always searching for new methods to attract further participation. She would like to see a list of children who often participate in the classes and perhaps use them as examples in her new marketing campaign. She also would like to see how many young children (5 years old or less) participate in the program, in the hopes that more classes can be added for preschoolers. You tell Sheila that you can develop queries to produce this information.

Another request from the team is a searchable query. For example, parents might drop by the office and ask if a specific instructor is currently offering any classes, because their children enjoy being taught by that instructor. You are confident that a parameter query will answer this question.

Finally, Steven requests two summary reports that will be useful for review purposes. One is a list of all the contacts in the database and their family members. The second report is a master class list. You assure Steven that these straightforward reports will be generated by the database.

## ASSIGNMENT 1: CREATING THE DATABASE DESIGN

In this assignment, you design your database tables using a word-processing program. Pay close attention to the logic and structure of the tables. Do not start developing your Access database in Assignment 2 before getting feedback from your instructor on Assignment 1. Keep in mind that you need to examine the requirements in Assignment 2 to design your fields and tables properly. It is good programming practice to look at the required outputs before beginning your design. When designing the database, observe the following guidelines:

- First, determine the tables you will need by listing the name of each table and the fields it should contain. Avoid data redundancy. Do not create a field if it can be created by a calculated field in a query.
- You will need a transaction table. Think about the business event that occurs with each child's registration. Keep in mind that some children sign up for multiple classes. Avoid duplicating data.
- Document your tables using the table feature of your word processor. Your tables should resemble the format shown in Figure 2-1.
- You must mark the appropriate key field(s) by entering an asterisk (*) next to the field name. Keep in mind that some tables might need a compound primary key to uniquely identify a record within a table.
- Print the database design.

| Table Name | |
|---|---|
| Field Name | Data Type (text, numeric, currency, etc.) |
| ... | ... |
| ... | ... |

**FIGURE 2-1** Table design

**NOTE**

Have your design approved before beginning Assignment 2; otherwise, you may need to redo Assignment 2.

## ASSIGNMENT 2: CREATING THE DATABASE, QUERIES, AND REPORTS

In this assignment, you first create database tables in Access and populate them with data. Next, you create two forms, five queries, and two reports.

### Assignment 2A: Creating Tables in Access

In this part of the assignment, you create your tables in Access. Use the following guidelines:

- Enter at least eight parent records that include names, addresses, email addresses, and telephone numbers. Each parent should have at least two children. Record yourself as one child. Consider using a fake name-and-address generator on the Web to eliminate typing.
- For simplicity, create eight classes and at least four instructors.
- Populate a table that lists the sign-ups for the classes. Have each child sign up for at least one class and have a few sign up for three.
- Appropriately limit the size of the text fields; for example, a telephone number does not need the default length of 255 characters.
- Print all tables if your instructor requires it.

### Assignment 2B: Creating Forms, Queries, and Reports

You must generate two forms, five queries, and two reports, as outlined in the Background section of this case.

#### Form 1

Create a form based on your Contacts and Members tables (or whatever you named the tables). Save the form as Add Contacts and Members. Your form should resemble the one in Figure 2-2.

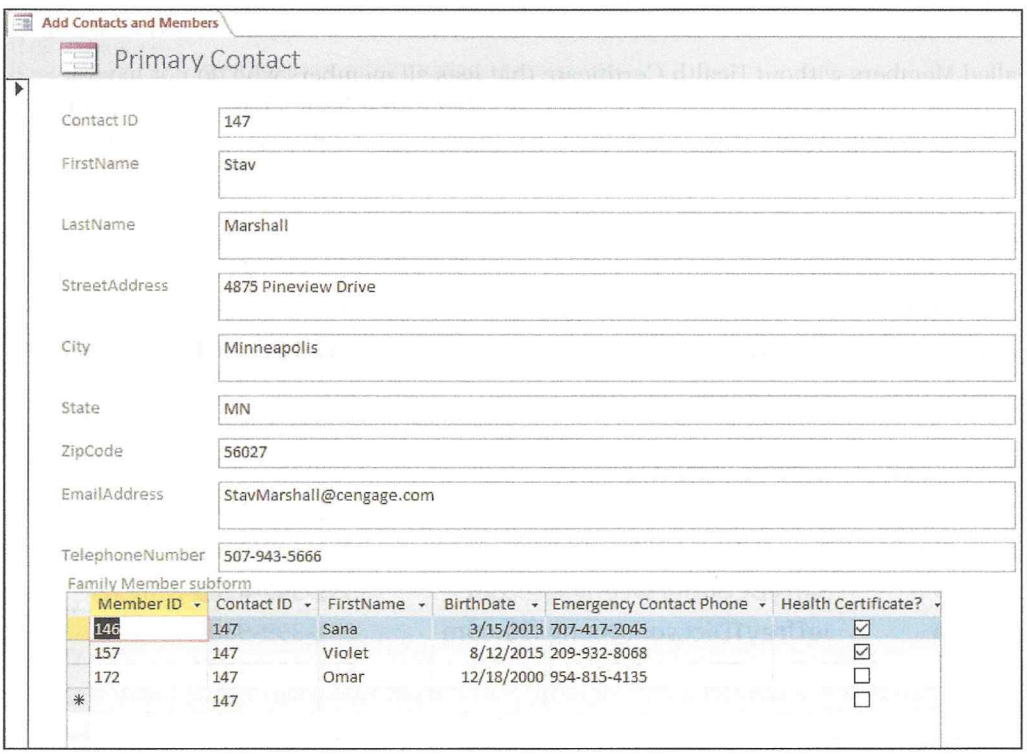


**FIGURE 2-2** Add Contacts and Members form

### Form 2

Create a form based on your Classes and Sign Up tables (or whatever you named the tables). Save the form as Add Class Sign Up. Your form should resemble the one in Figure 2-3.

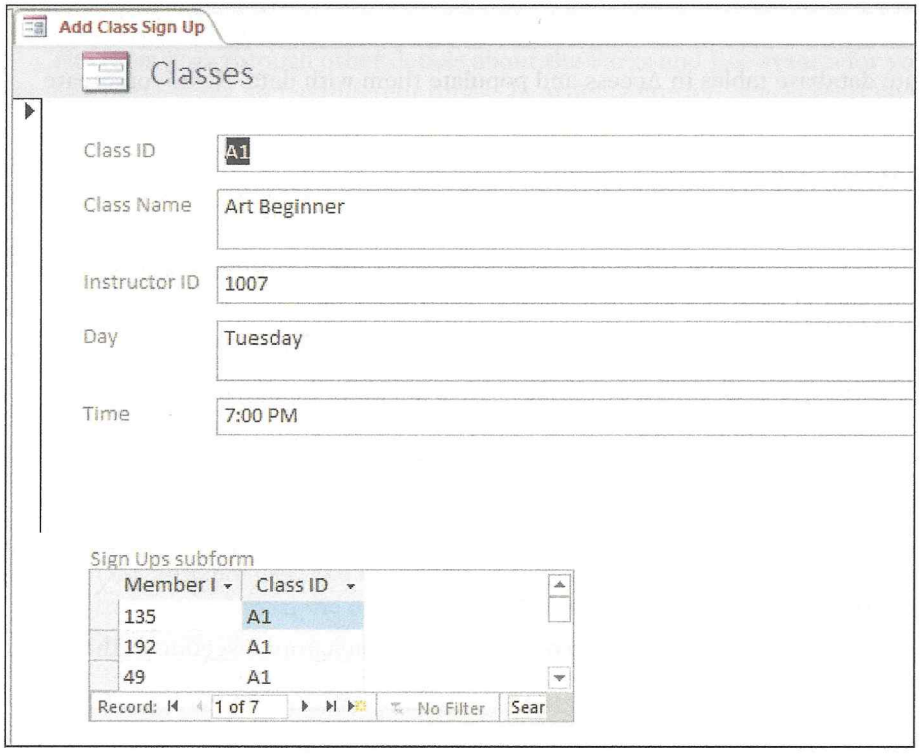


FIGURE 2-3 Add Class Sign Up form

### Query 1

Create a select query called Members without Health Certificate that lists all members who do not have a health certificate on file. In the output, display columns for each member's First Name, Last Name, Email Address, and Telephone Number. Your output should resemble that in Figure 2-4, although your data will be different.

Members without Health Certificate

| FirstName | LastName | EmailAddress | TelephoneNumber |
|---|---|---|---|
| Neda | Abadi | MA24@cengage.com | 763-781-4804 |
| Lina | Beltran | Tumelo69@cengage.com | 218-968-4994 |
| Omar | Marshall | StavMarshall@cengage.com | 507-943-5666 |
| Dara | Brown | EBrown@cengage.com | 314-477-7879 |
| Cristobal | Cooper | BarryDCooper@cengage.com | 651-342-4245 |
| Amir | Cooper | BarryDCooper@cengage.com | 651-342-4245 |
| William | Cooper | BarryDCooper@cengage.com | 651-342-4245 |
| Xia | Dickson | JeffreyTDickson@cengage.com | 651-399-9384 |
| Kimberly | Dickson | JeffreyTDickson@cengage.com | 651-399-9384 |

FIGURE 2-4 Members without Health Certificate query

### Query 2

Create a query called Class Registration that lists the number of students in each class. Display columns for Class Name and Number Signed Up. List the classes from most popular to least popular. Note the column heading change from the default setting provided by the query generator. Your output should look like that in Figure 2-5, although your data will be different.

Class Registration

| Class Name | Number Signed Up |
|---|---|
| Gymnastics I | 17 |
| Swimming I | 8 |
| Horseback Riding | 8 |
| Gymnastics II | 8 |
| Art Beginner | 7 |
| Art Advanced | 6 |
| Golf Intro | 5 |
| Swimming II | 2 |

**FIGURE 2-5** Class Registration query

### Query 3

Create a query called Top Participant. This query shows which students have signed up for classes and calculates how many classes they have signed up to attend. The query should include columns for First Name, Last Name, and Number of Classes. Sort the output so that the student with the most classes is shown at the top of the list. Note the column heading change from the default setting provided by the query generator. Your output should resemble the format shown in Figure 2-6, but the data will be different (also, only a portion is showing).

Top Participant

| FirstName | LastName | Number of Classes |
|---|---|---|
| Mai | Velasco | 4 |
| Jun | Brown | 3 |
| Amir | Cooper | 3 |
| Cristobal | Cooper | 2 |
| Dominique | Beltran | 2 |
| Elijah | Abadi | 2 |
| Emi | Brown | 2 |
| Ian | Beltran | 2 |
| Jafir | Brown | 2 |
| Joon | Velasco | 2 |
| Kai | Dickson | 2 |
| Kimberly | Dickson | 2 |
| Lena | Wildman | 2 |
| Xia | Dickson | 2 |

**FIGURE 2-6** Top Participant query

### Query 4

Create a query called Instructor Search that prompts for an instructor's first name and then displays his or her first name and last name as well as the names, days, and times of the classes the instructor teaches. Your output should resemble the format shown in Figure 2-7, but the data will be different.

Instructor Search

| FirstName | LastName | Class Name | Day | Time |
|---|---|---|---|---|
| Nazif | Nazari | Golf Intro | Saturday | 9:00 AM |

**FIGURE 2-7** Instructor Search query

### Query 5

Create a query called Number of Members 5 or Younger that counts the number of children enrolled in the program who are 5 years old or younger. Note the column heading change from the default setting provided by the query generator. Your output should resemble the format shown in Figure 2-8, but the number may be different.

Number of Members 5 or Younger

| Number of Members |
|---|
| 3 |

**FIGURE 2-8** Number of Members 5 or Younger query

### Report 1

Create a report named Contact and Member List that summarizes the parents and children registered with the Parks and Rec program. The report's output should display headings for the parent's last name and first name, the child's first name and birthdate, and an emergency contact phone number. You need to create a query first to bring the fields from different tables together. Group the report on the contact's last name. Adjust your output so that a parent's first and last names are on the same line and all fields are formatted and visible. Depending on your data, the output should resemble that in Figure 2-9. Note that only a portion of the report appears in the figure.

Contact and Member List

Contact and Member List

| Parent's Last Name | Parent's First Name | Child's First Name | BirthDate | Emergency Contact Phone |
|---|---|---|---|---|
| Abadi | Malak | | | |
| | | Samuel | 9/18/2011 | 573-934-5903 |
| | | Elijah | 9/23/2011 | 765-820-9484 |
| | | Richard | 8/13/2015 | 256-774-1759 |
| | | Neda | 7/11/1999 | 337-358-9635 |
| | | Sonjua | 2/11/2000 | 716-870-3379 |
| Beltran | Tumelo | | | |
| | | Dominique | 10/31/2014 | 414-344-9994 |
| | | Ian | 11/15/2000 | 212-482-3187 |
| | | Lina | 8/3/2013 | 601-478-6458 |
| | | Maya | 7/23/2012 | 901-461-7949 |

**FIGURE 2-9** Contact and Member List report

### Report 2

Create a report named Master Class List that summarizes each class's participants. The report's output should show headings for the class name, the instructor's first name and last name, and each child's first name and last name. You need to create a query first to bring the fields from different tables together. Group the report on the Class Name. Adjust your output so that an instructor's first and last names are on the same line and all fields are formatted and visible. Depending on your data, the output should resemble that in Figure 2-10. Note that only a portion of the report appears in the figure.

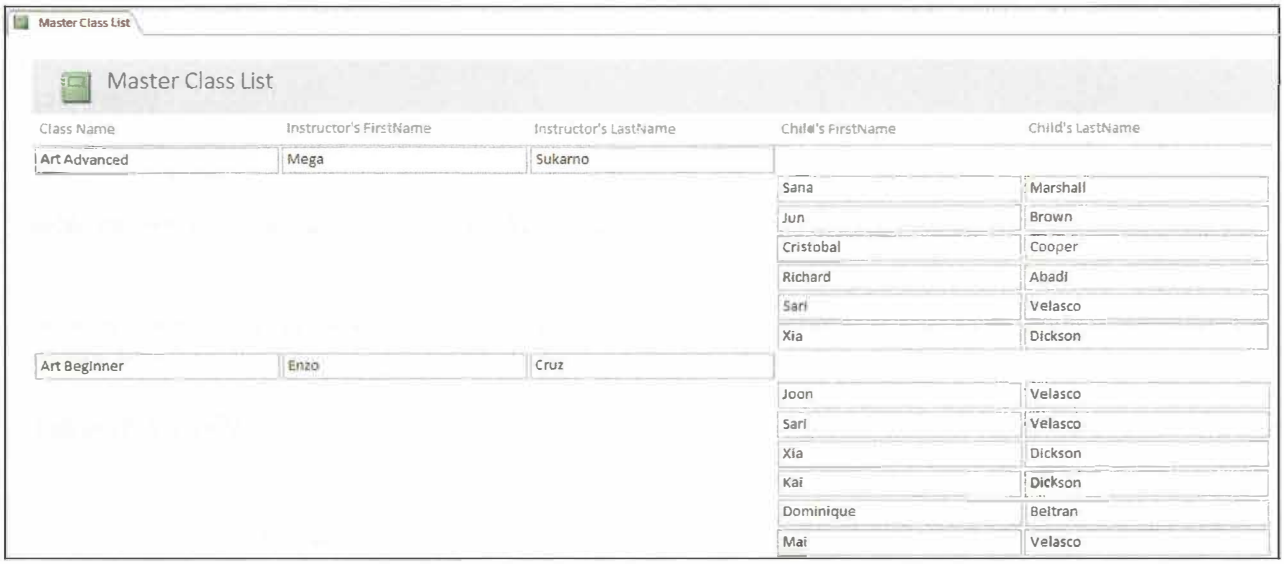


**FIGURE 2-10** Master Class List report

## DELIVERABLES

Assemble the following deliverables for your instructor, either electronically or in printed form:

1. Word-processed design of tables
2. Tables created in Access
3. Query 1: Members without Health Certificate
4. Query 2: Class Registration
5. Query 3: Top Participant
6. Query 4: Instructor Search

9. Query 5: Number of Members 5 or Younger
10. Query for Report 1
11. Report 1: Contact and Member List
12. Query for Report 2
13. Report 2: Master Class List