The Outsourcing Bookkeeping and Payroll Company

Designing a Relational Database to Create Tables, Queries, and Reports

**Preview**

In this case, you will design a relational database for a company that offers bookkeeping and payroll services to other companies. After your database design is completed and correct, you will create database tables and populate them with data. Next, you will create a form for the employees of the firm to record their hours worked for clients. Then, you will create two queries: one to list all the accounts in a given town, and another to calculate the number of hours worked on a given day for each client. You will finish this case by creating two reports: one to display client accounts grouped by town, and one to report the number of hours worked on each type of task.

**Preparation**

- Before attempting this case, you should have some experience in database design and in using Microsoft Access.
- Complete any part of Database Design Tutorial A that your instructor assigns.
- Complete any part of Access Tutorial B that your instructor assigns, or refer to the tutorial as necessary.
- Refer to Tutorial E as necessary.
- In this case, you will be using the following features of Access: Forms, Parameter queries, Calculated Fields in queries, and Grouped reports.
**Background**

In today’s business environment, outsourcing is very popular. When a company outsources a business operation, such as the company’s bookkeeping or payroll, they hire another company to do that job rather than having an employee do it. Both large and small companies outsource work to save money and time—and to have a more accurate job done by a specialist in the field.

Outsourcing even a simple job, such as payroll, can result in a substantial savings. For example, a small company with 10 employees has a typical payroll cost of $2,600. It is not cost-effective to hire another in-house person to perform that job. Similarly, it might not be wise to have a non-specialist employee take on the job. The IRS claims that almost one half of all small businesses pay over $750 per year for late or incorrect filings. If an outsource specialist does payroll, such fines can be avoided because the outsource specialist will have the latest version of the tax tables and government forms. In addition, outsourcer specialists can also deal with bookkeeping and other payroll-related items, such as electronic tax payments, employee direct deposits, custom reports, and much more.

For generations, a company called Outsourcing Bookkeeping and Payroll (OBP) has helped small businesses manage their accounts. You have landed a summer internship at OBP, based on your database experience. The management wants you to design a database for them to keep track of their clients, employees, and the outsourced jobs they do.

First, they need to get their client records in order. Currently, all client data is recorded on an old-fashioned Rolodex file system. Because most clients prefer e-mail communication, the Rolodex is archaic. (Using a Rolodex was a popular way for businesses to keep track of clients. Each client’s information was listed on a separate card; all cards were held together by two rings. To find a client, you could spin the side wheels of the Rolodex and “roll” through the various clients.) OBP needs to keep track of the clients, their addresses, contact person, telephone, and now increasingly, e-mail address. Some clients have similar names but are located in different cities.

In addition to maintaining employee information, such as Social Security Number and birth date, the company wants to allow their employees to submit their client work hours into the database directly, via a form. From there, the management of OBP can generate a report to determine which clients are using which employees, and for how long.

Some of the OBP salespeople have heard about your internship and have requested that you create a query that they can run to identify which clients are in which towns. When OBP salespeople are on the road, it’s more efficient for them to call on all their clients in a given area. With the Rolodex system, it’s very difficult to find that information because data is arranged alphabetically by client name. In addition, having a report that groups clients by town would allow management to have a better grasp of their market demographics.

**Assignment 1 Creating the Database Design**

In this assignment, you will design your database tables on paper, using a word-processing program. Pay close attention to the tables’ logic and structure. Do not start your Access code (Assignment 2) before getting feedback from your instructor on Assignment 1. Keep in mind that you will need to look at what is required in Assignment 2 to design your fields and tables properly. It’s good programming practice to look at the required outputs before designing your database. When designing the database, observe the following guidelines:
• First, determine the tables you’ll need by listing on paper the name of each table and the fields that it should contain. Avoid data redundancy. Do not create a field if it could be created by a “calculated field” in a query.
• You’ll need a transaction table. Avoid duplicating data.
• Document your tables by using the Table facility of your word processor. Your word-processed tables should resemble the format of the table in Figure 2-1.
• You must mark the appropriate key field(s). You can designate a key field by placing an asterisk (*) next to the field name. Keep in mind that some tables need a compound primary key to uniquely identify a record within a table.
• Print out the database design.

<table>
<thead>
<tr>
<th>TABLE NAME</th>
<th>Field Name</th>
<th>Data Type (text, numeric, currency, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2-1 Table design

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

**Assignment 2 Creating a Database and Developing a Form, Queries, and Reports**

In this assignment, you will first create database tables in Access and populate them with data. Name and save your database as OUTSOURCING.mdb. Next, you will create one form, two queries, and two reports.

**Assignment 2A: Creating Tables in Access**

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

• Type records into the tables, using the Clients and their addresses shown in Figure 2-2. Add your name as a client, with your address and phone number. Create any additional fields that would be needed and populate them with data.
• Create employee data, including Social Security numbers and birthdates. There should be at least six employees.
• Create work dates and hours for each employee and for each client. Choose one week to record those hours and record at least 10 work sessions.
• Appropriately limit the size of the text fields; for example, a Zip field need only be 5 characters wide, not the default 50 characters in length.
• Print all tables.
Assignment 2B: Creating a Form, Queries, and Reports

There is one form, two queries, and two reports to generate, as outlined in the background of this case. Begin with the form.

Form: Jobs Input

Create a form that the employees can use to record their hours worked on a particular date for a particular client. Base this form on one table only (hint: the Transaction table) and use the Form Wizard. Save the form as Jobs Input. Print one record from this form. Your completed form should resemble that shown in Figure 2-3.

Query 1: Sales Calls

The salespeople would like to be able to run a query before they leave for a sales call to a particular town to find out which clients are in that town. Create a Parameter query that asks for the input of a town. Include in your output useful information for the salesperson such as client #, name, address, telephone, contact person, and e-mail. Your resulting query should resemble that shown in Figure 2-4, although some of your data will differ. Save the query as Sales Calls, and print the results when you input NY as the town, when prompted.
Query 2: Hours Worked Per Client

The management of OBP would like to keep track of how many hours of employee work time each client is consuming. Create a query that calculates the total time devoted to each client. Keep in mind the following guidelines:

- In your output show only Client #, Name, and Total Time
- Total Time must be a calculated field
- Check Tutorial B for hints on time arithmetic if your numbers don’t look correct
- Save the query as Hours Worked per Client

Although your data will differ, your query output should resemble that in Figure 2-5.

![Hours Worked Per Client: Select Query](image)

Figure 2-5 Hours Worked Per Client query

Report 1: Clients by Zip

The salespeople can now determine which clients are in which towns, but the management still does not have a feeling for how the clients break down by zip code. Create a grouped report that lists the clients by zip code. Include their name, address, state, zip, contact person, and e-mail address. Title the report Clients by Zip. Be careful to adjust the design of the report so that all fields and data are visible. You may change some column headings so that it looks tidy and readable. Your output should resemble that in Figure 2-6, although some data may differ.

![Clients by Zip](image)

Figure 2-6 Clients by Zip report
Report 2: Workers and Times for Each Client

The last report is also required by management. For each client, management would like to see the dates worked, the number of hours worked, and which employees worked those hours. In order to create this report, follow these guidelines:

- First create a query with the necessary tables.
- Calculate the time spent on each job in that query, using a calculated field.
- Use the Report Wizard based on that query.
- Group the report by the Client’s Name.
- Using the Summary Options button, sum the Time.
- Remove any bogus summary bands, and make sure all data and headings are visible.

Your final report should resemble that shown in Figure 2-7, although your data should vary.

<table>
<thead>
<tr>
<th>Client Name</th>
<th>Employee Name</th>
<th>Date</th>
<th>Hours Worked</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 and 10</td>
<td>Daniel Brown</td>
<td>1/4/2006</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Sandy Gomez</td>
<td>1/4/2006</td>
<td>11</td>
</tr>
<tr>
<td>Sum (in hours)</td>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Home Nursing</td>
<td>Pierre Henri</td>
<td>1/2/2006</td>
<td>5</td>
</tr>
<tr>
<td>Sum (in hours)</td>
<td></td>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>

Figure 2-7  Workers and Times for Each Client report

Assignment 3 Making a Presentation

Create a presentation for the management of OBP. Explain the database and make suggestions for future work. Include the following:

- Describe the design of your database tables.
- Tell how to use the database, enter information into the form, and run the queries and reports.
- Explain how other parts of the business might be included in an expanded version of this database project.
**Deliverables**

1. Word-processed design of tables
2. Tables created in Access
3. Form: Jobs Input
4. Query 1: Sales Calls
5. Query 2: Hours Worked Per Client
6. Report 1: Clients by Zip
7. Report 2: Workers and Times for Each Client
8. Presentation materials
9. Any other required tutorial printouts or tutorial diskette or CD

Staple all pages together. Put your name and class number at the top of the page. Make sure your diskette or CD is labeled.