

# Microsoft Access Project

## MANAGING A SMALL BUSINESS

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By reading the business case sections and completing the three parts of this project (Parts A, B, and C) you will:

- Extend your knowledge of Microsoft (MS) Access tables, forms, queries, and reports.
- Understand the relationship between the logical model of a database and the physical implementation of that database.
- Understand how to implement referential integrity and discover its purpose.
- Learn how to apply MS Access to solve business problems.

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### PROJECT INTRODUCTION

Data and databases are at the heart of many business information systems. If you think about the daily interactions you have with organizations, you will discover that many of these interactions generate data that organizations use to create value for you and for them. For example, when you shop at a retail grocery store, data is gathered about your purchases and your method of payment. If you choose to pay with a debit or credit card, then additional data may be gathered about you and your purchase. Some stores even offer a discount if you use a “customer” card. This enables the store to gather data about your specific purchases and to provide value to you through coupons and other sales promotions. It also enables store management to make better decisions about product selection, pricing, and promotions. This project will focus on how a retail firm might achieve its goals of generating new business and increasing customer satisfaction by providing a knowledge-oriented service to its customers. You will create the database that will allow this company to accomplish these goals.

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### GENERAL BUSINESS CASE

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Wild Outfitters, Inc. is a well-established national outdoor-sports retail products chain with a local store in your area. It carries a complete line of name brand and locally produced equipment and supplies for outdoor enthusiasts. Through customer surveys, WildOutfitters discovered that many of its customers, who are beginners buy equipment without knowing how to use it properly. Rather than view this as a problem, WildOutfitters sees this as an opportunity to provide better service to its customers and to gain a business advantage over its competitors. WildOutfitters is going to offer “how to” courses for its customers. During

these courses, customers will learn how to use the equipment they purchased, but they will also learn about other equipment they should purchase. WildOutfitters will use this free (to the customers) service to increase sales and customer satisfaction. Isaac Timberlake, a student at your business school, is an intern at WildOutfitters, and Sara Johns, the store manager, asks Isaac to create a Course Management System that she can use to track the courses customers take, and the employees who teach the courses. Isaac understands the business requirements, but he needs your help in designing the database that will be at the heart of the Course Management System. The end result of your collaboration with Isaac will be the relational database and associated features specified in the MS Access Project instructions that follow.

### **Project Data Model Instructions**

You will need to download the PowerPoint file *WildOutfittersDataModel.ppt* from the student section of <http://www.wiley.com/college/piercy>. This file contains the data model you will reference in order to create your database. There are several slides in the presentation. The first slide is the data model, and the remaining slides are examples of how your tables might look. Remember, you will have to use MS Access to create the tables, and you will have to add additional data to meet project requirements.

### **Project Naming Conventions**

Access uses several database objects to perform different functions. For example, a table object stores data, and a form object helps you input data. In general, we will refer to the database objects simply as tables, forms, queries, and reports. Each of these objects may have similar names, such as the Customer Table, the Customer Form, etc. In order to prevent confusion we will ask you to add a prefix to all object names. Table 1 shows the database object, the corresponding prefixes, and an employee-related example.

| <b>Database Object</b> | <b>Prefix</b> | <b>Example</b> |
|------------------------|---------------|----------------|
| Table                  | tbl           | tblEmployee    |
| Form                   | frm           | frmEmployee    |
| Query                  | qry           | qryEmployee    |
| Report                 | rpt           | rptEmployee    |

**Table 1** – Customary Prefixes for Database Objects

## **PART A – CREATING THE TABLES**

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**Part A Problem Definition:** Isaac Timberlake welcomed the challenge of creating an information system that will help create business value for Wild Outfitters, Inc. This project focuses on the database component of that IS, and accomplishing this project will enable you to help Isaac by applying and refining the IS skills you’ve learned. Before you can build the database, you will have to understand the data that must be captured by the system and

sketch out how this data will be stored. You should try this on your own and then compare your model to the one found in the *WildOutfittersDataModel.ppt* file.

**Part A Problem Requirements:** Remember, tables are the objects that MS Access uses to store data. Your first task in this part of the project is to help Isaac by using Microsoft Access to create the required tables (see the *WildOutfittersDataModel.ppt* file). You should use input masks for fields where appropriate (e.g., zip code). If you do not know what an input mask is, use MS Access' Help function to find out. Next, you will need to populate the tables with data. You should make up the data yourself following the examples in the *WildOutfittersDataModel.ppt* file. You should create at least ten records (rows) in the customer table, and five records each in the employee, class, and course tables. Your instructor may require that you add more data. You may want to accomplish Part B of the project before you enter all of your data. Lastly, you will need to create the appropriate relationships between the tables. When creating relationships, you should ensure that referential integrity is enforced.

**Part A Interpretative Questions:** Based on your work in Part A, answer the following questions:

- 1) What is the relationship between an instance of a primary key and a record (row) in a table?
- 2) What is referential integrity and why is it important for Isaac (and you) to enforce referential integrity in the database you create?

## **PART B – INPUTTING DATA INTO THE DATABASE – CREATING FORMS**

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**Part B Problem Definition:** Isaac discovered that rather than enter data directly into the tables he could use the MS Access database objects known as forms to enter data into the database. He used the forms that you created to make data entry more efficient and less error prone.

**Part B Problem Requirements:** Use the Form Wizard to create a form that will allow you to input data into each of the tables. Although the forms you create are useful tools for entering data, when a customer makes a purchase, it would be useful to have the option to sign them up for a class.

**Part B Interpretative Questions:** Based on your work in Part B, answer the following questions:

- 1) In Part A of the project, you may have entered data directly into the tables. Although this is convenient, why are forms a better way to do this? Why might it be a good idea to avoid entering data directly into the tables?
- 2) Forms work well but given additional hardware and software resources, how could you improve the data entry process to reduce errors?

## **PART C – CREATING DIFFERENT VIEWS OF DATA FOR DECISIONS – CREATING DATABASE QUERIES**

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**Part C Problem Definition:** Ms. Sara Johns asked Isaac to find out which employees are leading which courses and classes, and when they are leading them. She also wants to know which customers are taking classes and when. Lastly, she wants to be able to view the data for each instructor and for each month. Although the data stored in your database is organized into tables, looking at all of the tables to answer her questions or to help her make decisions is inefficient. Fortunately, MS Access provides an object, the query, and a query tool, Query-By-Example, which makes it easy for you to view selected subsets of your data. In other words, Access makes it easy for you to ask and answer questions about your data and then use this information to make business decisions.

For the purposes of this project, you can think of a query as a question you ask of your database. The visually-oriented tool you will use is known as the Query-By-Example tool. Access provides another tool to create queries, although this tool is actually a computer language. Structured Query Language (SQL) is a standardized language for querying databases. With it you can create complex queries of almost any database, however using SQL is beyond the scope of your project requirements (see Part C Interpretive Question #2).

**Part C Problem Requirements:** Using the Design View and QBE, create the following queries. You may need to add more data to your database so that you can test your query results.

- Query 1** What customers have signed up to take classes from which instructors? (This query should return the data in your database for all courses, classes, customers taking classes, and employees leading classes.)
- Query 2** Who is taking and leading a course in September? (This query should return the courses, classes, customers taking classes, and employees leading classes for September only.)
- Query 3** What classes is Sara Johns teaching in September? (This query should return the courses and classes that Sara Johns is leading in September only.)
- Query 4** What classes are being led by either Sara Johns or Isaac Timberlake in September? (This query should return all of the courses and classes that Sara Johns and Isaac Timberlake are leading in September only.)

**Part C Interpretive Questions:** Based on your work in Part C, answer the following questions:

- 1) When querying a database using QBE, what are criteria used for?
- 2) When using QBE, what is the difference between asking, “What are all the classes that Employee A and Employee B are teaching,” and “What are all the classes that both Employee A and Employee B are teaching together?”
- 3) Although we mentioned that SQL was beyond the scope of this project, you can look at the SQL view for any of your queries. It is one of the choices on the same View Menu that you used to select the design view after running your queries. Look at the SQL for Query 2 above. Can you make sense of SQL query?

Look for things like table and field names. You can even change the September Query to an August Query by changing only one character – try it!

## **PART D – OUTPUTTING DATA TO DECISION MAKERS AND OTHER KNOWLEDGE WORKERS – CREATING REPORTS**

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**Part D Problem Definition:** Queries are useful tools for asking questions of your data and for transforming data into information that is useful to decision makers. However, the standard query table view is not as useful or as easily readable as most users need or want. Ms. Johns asked Isaac to organize the views of WildOutfitters data and present it in a well-organized form.

**Part D Problem Requirements:** To organize the views of WildOutfitters data and present it in a well-organized form, Isaac will use the MS Access Report object. A Report can be based on a table or a query or a combination of tables and queries however for Part D of this project you need only to create a report based on Query 2 from Part C above. You can use the Report Wizard to create your report. The report should show all of the data contained in Query 2. When responding to the Report Wizard’s prompts, you should select to view your data by class, add “class date” as the grouping level, and sort the detailed records by customer last name in ascending order. The layout and style choices are up to you. Finish the report and name it “rptSeptemberQuery.”

Review your report and note the “database speak” used for the title and headings. Since the purpose of a well-crafted report is to effectively and efficiently convey useful information, you will need to edit your report. Here are the minimum requirements for Part D of the project.

- 1) Change the orientation of the report from portrait to landscape.
- 2) Change the title of the report to “WildOutfitters September 2006 Classes.”
- 3) Move the customer first name label and data so that they are next to each other, last name then first name.
- 4) Transform all field names into easily readable headings, e.g., CourseName should become Course Name, and CourseType should become Course Type, etc.

Your instructor may add additional requirements or you may want to explore just how professional you can make the report appear.

**Part D Interpretative Questions:** Based on your work in Part D, answer the following questions:

- 1) What other reports would you suggest that Isaac Timberlake should create for Ms. Johns to help her understand and manage the courses and classes that WildOutfitters provides to its customers?
- 2) We have mentioned several Access objects throughout this project. Did you notice any additional objects when you were working in the design view? What were some of these objects and how did you know that you were looking at an object?