

**Web Publishing
Outlook
ActiveX**

Paul McFedries, et al.



TIMELY SOLUTIONS

- Integrate your many Office 97 applications into one solution
- Publish Word, Excel, PowerPoint, and Access files on the Web
- Discover how to use the newest Office 97 tool: Outlook
- Learn how to maximize Office with Visual Basic for Applications



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- Symantec® pcANYWHERE32™ v7.5 Trial software
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Microsoft®

Office 97

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The Comprehensive Solutions Package!

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Office Assistant's Cast of Characters

<i>Assistant</i>	<i>Name</i>	<i>Description</i>
	Clipit	An animated paper clip that contorts in all shapes to point you to solutions.
	The Dot	A happy, bouncing dot that keeps your attention.
	The Genius	An Einstein-like character that lets you know when there's a better way.
	Hoverbot	A futuristic robot that offers advice.
	Mother Nature	An environmentally correct guide for erasing mistakes and answering questions.
	Office Logo	A twirling, colorful Office 97 logo that spins when your attention is needed.
	Power Pup	A superhero puppy that sniffs out answers for you.
	Scribble	A feline guide that purrs when you (not she) need attention.
	Will	A Shakespearian bard whose ancient advice still works for today's computers.

Microsoft[®] Office 97

Paul McFedries, et al

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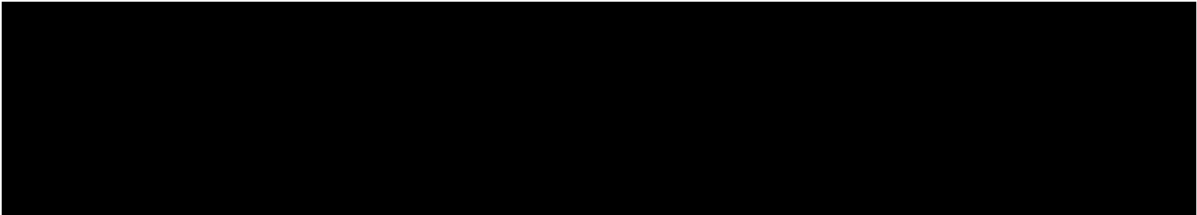
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—Paul McFedries

Dedication

To my family and friends, who, bless them, don't have a geek bone in their bodies.

About the Authors

Paul McFedries is a computer consultant, programmer, and freelance writer. He has worked with computers in one form or another since 1975, he has a degree in mathematics, and he can swap out a hard drive in seconds flat, yet he still, inexplicably, has a life. He is the author or coauthor of more than two dozen computer books that have sold more than 850,000 copies worldwide. His books include the Sams Publishing titles *Paul McFedries' Windows 95 Unleashed* and *Navigating the Internet*. Other hats worn by McFedries on occasion include video editor, animator, bread maker, Webmaster, brewmaster, cruciverbalist, and neologist. He has no cats, and his favorite hobbies are shooting pool, taking naps, riding his motorcycle, and talking about himself in the third person.

Sue Charlesworth has 12 years of experience in PC software development. She has played many roles, from tester to programmer to team leader responsible for developing quality assurance standards and high-performance test teams. More recently, she has been involved in teaching, technical writing, and HTML Web page development.

Jim Grey is a technical writer and editor. He develops software manuals and online help for audiences ranging from the computer-intimidated to systems administrators and programmers. He currently writes online help for Marketing Resources Plus, which creates software for the advertising industry. He lives in Indianapolis with his wife and children and their menagerie of pets.

Tom Hayes is a graduate of Purdue University, and he received his MBA in marketing from Indiana University. For the past five years, he has provided marketing solutions to national clients as the owner and general manager of Fax Daily, an Indianapolis-based fax publishing company. While not at work, he enjoys golf, ultimate Frisbee, and spending time with his wife, Michelle, and their weimaraner, Simon.

Greg Perry is a speaker and a writer on both the programming and the application sides of computing. He has been a programmer and a trainer since the early 1980s. He received his first degree in computer science and a master's degree in corporate finance. Perry is the author or coauthor of more than 40 books, including *Teach Yourself Windows 95 in 24 Hours*, *Absolute Beginner's Guide to Programming*, *Absolute Beginner's Guide to C*, and *Moving from C to C++*. He also writes about rental property management and loves to travel. In his spare time, he helps produce a nationally syndicated television talk show. His favorite place to be when away from home is at Patsy's in New York or in Italy, because he enjoys only the best pasta!

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As Publishing Manager of the group that created this book, I welcome your comments. You can fax, e-mail, or write me directly to let me know what you did or didn't like about this book—as well as what we can do to make our books stronger. Here's the information:

Fax: (317) 581-4669
E-mail: opsys_mgr@sams.mcp.com
Mail: Dean Miller
Comments Department
Sams Publishing
201 W. 103rd Street
Indianapolis, IN 46290

Introduction

On August 24, 1995, Microsoft shipped an updated version of its Office suite of applications. The problem, however, was that the glare from the hype over the Windows 95 launch on that same day prevented anyone from seeing the new Office upgrade, and its own launch turned out to be a non-event. Even when people did finally turn their attention away from Windows 95 to focus on Office 95, they were underwhelmed, to say the least. Aside from a few extra goodies thrown into the mix, Office 95 was really just a 32-bit upgrade that brought the suite's applications in line with the Windows 95 world. Yawn.

I think it's safe to say that this fate does *not* await the latest version of Office, called Office 97. The Microsoft programmers spent the year-and-a-half after Office 95 was released fine-tuning every aspect of the suite, cramming lots of great new programs into the box and implementing some slick technology that is sure to keep Office 97 at the forefront of the applications suite pack.

With so many new features, utilities, and technologies in Office 97, you need some sort of guide that not only tells you what these new knickknacks are, but also shows you how to get the most out of them so that you can get the most out of your Office 97 investment. And that's precisely where this book comes in. We scoured Office from head to toe, rang its bells and blew its whistles, and generally just pushed the entire package to its limits to see what would happen. The result is the book you're holding—a book that offers the following coverage to help you unleash your Office 97 productivity:

- How to use the components and commands that are new to Office 97
- Advanced material on each of the Big Four Office applications: Word, Excel, Access, and PowerPoint
- In-depth coverage of the other Office programs, including Outlook, the graphing and drawing tools, and more
- Dedicated coverage of all the Internet and Web page publishing features of Office 97
- How to integrate the Office applications using Binder, OLE, and other techniques
- How to use Office in a networked environment
- Extensive coverage of Visual Basic for Applications so that you can program the Office applications both individually and collectively

Through many real-world examples, we've translated our own hard-won experiences in developing custom Office solutions to give you a leg up on creating solutions that will help you leverage the full power of the Office suite.

What You Should Know Before Reading This Book

Our goal in writing *Microsoft Office 97 Unleashed* was to give you extensive coverage of the Office programs and technologies, as well as numerous examples for putting the suite to good use. Note, however, that this book isn't an Office tutorial per se. So although we cover the entire Office suite, many relatively low-level topics are presented quickly so that we can get to meatier topics. Therefore, although you don't need to have Office experience in order to read this book, knowledge of some of the basics would be helpful.

We've tried to keep the chapters focused on the topic at hand and unburdened with long-winded theoretical discussions. For the most part, each chapter gets right down to brass tacks without much fuss and bother. To keep the chapters uncluttered, we've made a few assumptions about what you know and don't know:

- We assume that you have knowledge of rudimentary computer concepts such as files and folders.
- We assume that you're familiar with Windows and that you know how to launch applications and use accessories such as Control Panel.
- We assume that you're comfortable with the basic Windows 95 interface. This book doesn't tell you how to work with tools such as pull-down menus, dialog boxes, and the Help system.
- We assume that you can operate the peripherals attached to your computer, such as the keyboard, mouse, printer, and modem.
- We assume that you've installed Office 97 and are ready to dive in at a moment's notice.
- We assume that you have a brain and are willing to use it.

How This Book Is Organized

To help you find the information you need, this book is divided into a dozen parts that group related tasks. The next few sections offer a summary of each part.

Part I: Introduction

The two chapters in Part I give you a "big picture" view of the Office suite. Chapter 1 introduces Office 97, tells you what's new in the latest version, and gets you up to speed with a few basic concepts. From there, Chapter 2 introduces you to the individual Office applications and gives you some background on the features and concepts unique to each program.

Part II: The Common Office

Part II looks at a number of features that are implemented throughout the Office suite. These features include the document concept, OLE integration, the Office Shortcut Bar, binders, wizards, and more.

Part III: Unleashing Word

Word for Windows is Microsoft's flagship word processing application, and it's one of the most powerful applications available on any platform. The price of all this power is complexity, and it's the goal of the chapters in Part III to help you manage that complexity. To that end, the first couple of chapters give you lots of information on working with documents, including advanced topics such as columns, tables, footnotes, frames, lists, indexes, and outlines.

Subsequent chapters cover the various wizards available in Word, techniques for turning Word documents into forms, OLE integration, mail merge, and document layout considerations.

Part IV: Unleashing Excel

Number crunchers get their turn in Part IV. Here you'll find no less than nine chapters that cover just about every aspect of Excel. The first two take some basic Excel concepts—ranges, formulas, and functions—and show you how to extend them to create advanced worksheets.

The next few chapters cover crucial Excel topics such as charts, lists, pivot tables, and querying external databases with Microsoft Query. You also learn how to wield Excel's powerful data analysis tools and how to integrate Excel with other applications.

Part V: Unleashing Access

If you need to work with data, but Word's tables and Excel's lists aren't powerful enough for you, you'll probably want to graduate to using an Access database. The chapters in Part V will get you up to speed. Coverage includes extensive background on database design; how to plan, build, and populate tables; how to extract data with sophisticated queries; and how to design and work with forms and tables.

Subsequent chapters cover Access macros, techniques for working with multiple tables, and coverage of how Access lets you work with other applications.

Part VI: Unleashing PowerPoint

Once you've finished writing documents in Word, performing calculations in Excel, and assembling data in Access, you'll often want to bring everything together as part of a PowerPoint presentation. Part VI shows you how it's done, from designing an effective presentation to creating the slides to running the show. You'll also learn some valuable techniques for incorporating multimedia and data from other applications into your presentations.

Part VII: Unleashing Outlook

Outlook is the powerful new desktop information manager that replaces both the Exchange e-mail client and the Schedule+ organizer. The seven chapters in Part VII serve to get you up and running with this fascinating new tool. The first chapter shows you how to get Outlook set up for the way you work. From there, you learn how to use all of Outlook's e-mail and fax features, and how to work with the other Outlook folders: Calendar, Contacts, Tasks, Journal, and Notes.

Part VIII: Unleashing the Office Internet Tools

Microsoft completely retooled Office 97 so that the Internet would be a ubiquitous part of the landscape. You can now embed hyperlinks in just about any Office document, convert Office documents into Web pages, work with ActiveX controls, and much more. All of these topics are grist for the mill in Part VIII. You'll begin with a Web page primer that gives you the basics of Web documents and HTML. From there, you'll learn how to work with hyperlinks, navigate the Web with Internet Explorer, and convert Office documents into HTML. Other chapters show you how to create Web pages within Word, how to set up Web forms, and how to use the ActiveX Control Pad.

Part IX: The General Tools

Part IX continues our coverage of the common Office features. The first of the three chapters here shows you how to use the latest version of Microsoft Graph to create and format charts. You'll then learn how to use Office 97's impressive array of drawing tools. Finally, three more Office tools are examined: WordArt, Equation Editor, and Organization Chart.

Part X: Output

Creating documents in Office is often only half the battle. In corporate settings, you usually need to distribute your documents to others. The two chapters in Part X can help you. You'll learn valuable techniques for printing documents from all the Office applications, and you'll learn how to mail, route, and fax documents from within the Office programs.

Part XI: The Networked Office

The days of the lone computer operating in splendid isolation are rapidly coming to a close. In business settings, it's now more likely that your machine will be attached to a network and that you'll need to collaborate with other Office users on that network. Although this book explains network-related concepts throughout, the two chapters in Part XI focus on specific areas such as installing Office over a network and sharing data with other users.

Part XII: Office Application Development with VBA

With Office 97, the Visual Basic for Applications (VBA) programming language is now available in all the major applications: Word, Excel, Access, and PowerPoint. Part XII consists of seven chapters that show you how to take advantage of VBA's power and ease of use to build Office-based applications. You'll begin with some basic programming concepts, and then you'll progress to the Office objects, controlling your code, programming databases, creating custom user interfaces, and integrating Office applications programmatically. There's even a chapter that shows you how to control Web page objects using VBScript, a subset of VBA.

This Book's Special Features

Microsoft Office 97 Unleashed is designed to give you the information you need without making you wade through ponderous explanations and interminable technical background. To make your life easier, this book includes various features and conventions that help you get the most out of the book and Office 97 itself.

Steps: Throughout this book, each Office task is summarized in a step-by-step procedure.

Sidebars: Note, Tip, and Caution sidebars draw your attention to important (or merely interesting) information.

Toolbar buttons: Whenever a toolbar button is mentioned, a picture of that button appears in the margin.

Things you type: Whenever we suggest that you type something, what you type appears in a monospace font.

Placeholders: Placeholders are words that stand for what you will actually type. Placeholders in regular text appear in *italic*. Placeholders in code appear in *italic monospace*.

Arguments: In lines of code, required arguments appear in ***bold italic monospace***. Optional arguments appear in *italic monospace*.

Commands: We use the following style for application menu commands: File | Open. This means that you pull down the File menu and select the Open command.

The code continuation character (↵): When a line of VBA code is too long to fit on one line of this book, it is broken at a convenient place, and the code continuation character appears at the beginning of the next line.



The CD icon: This icon tells you that the file, workbook, or spreadsheet being discussed is available on the CD-ROM that comes with this book.

29

CHAPTER

Juggling Multiple Tables

by Paul McFedries

IN THIS CHAPTER

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Most database applications (and *all* well-designed database applications) store their information in multiple tables. Although most of these tables will have nothing to do with each other (for example, tables of customer information and employee payroll data), it's likely that at least some of the tables will contain related information (such as tables of customer information and customer orders).

Working with multiple, related tables presents you with two challenges: You need to design your database so that the related data is accessible, and you need to set up links between the tables so that the related information can be retrieved and worked with quickly and easily. This chapter tackles both challenges and shows you how to exploit the full multiple-table powers of Access.

Relational Database Fundamentals

Why do you need to worry about multiple tables, anyway? Isn't it easier to work with one large table instead of two or three medium-sized ones? To answer these questions and demonstrate the problems that arise when you ignore relational database models, let's look at a simple example: a table of sales leads.

The Pitfalls of a Nonrelational Design

Table 29.1 outlines a structure for a simple table (named Leads) that stores data on sales leads.

Table 29.1. A structure for a simple sales leads table (Leads).

<i>Field</i>	<i>Description</i>
LeadID	The primary key.
FirstName	The contact's first name.
LastName	The contact's last name.
Company	The company that the contact works for.
Address	The company's address.
City	The company's city.
State	The company's state.
Zip	The company's ZIP code.
Phone	The contact's phone number.
Fax	The contact's fax number.
Source	Where the lead came from.
Notes	Notes or comments related to the sales lead.

This structure works fine until you need to add two or more leads from the same company (a not-uncommon occurrence). In this case, you would end up with repeating information in the Company, Address, City, and State fields. (The Zip field would also repeat, as will, in some cases, the Phone, Fax, and Source fields.)

All this repetition makes the table unnecessarily large, which is bad enough, but it also creates two major problems:

- The data entry clerk must enter the repeated information for each lead from the same company.
- If any of the repeated information changes (such as the company's name or address), each corresponding record must be changed.

One way to eliminate the repetition and solve the data entry and maintenance inefficiencies would be to change the table's focus. As it stands, each record in the table identifies a specific contact in a company. But it's the company information that repeats, so it makes some sense to allow only one record per company. You could then include separate fields for each sales lead within the company. The new structure might look something like the one shown in Table 29.2.

Table 29.2. A revised, company-centered structure for the sales leads table.

<i>Field</i>	<i>Description</i>
LeadID	The primary key.
Company	The company's name.
Address	The company's address.
City	The company's city.
State	The company's state.
Zip	The company's ZIP code.
Phone	The company's phone number.
Fax	The company's fax number.
First_1	The first name of contact #1.
Last_1	The last name of contact #1.
Source_1	Where the lead for contact #1 came from.
Notes_1	Notes or comments related to contact #1.
First_2	The first name of contact #2.
Last_2	The last name of contact #2.
Source_2	Where the lead for contact #2 came from.

continues



Table 29.2. continued

<i>Field</i>	<i>Description</i>
Notes_2	Notes or comments related to contact #2.
First_3	The first name of contact #3.
Last_3	The last name of contact #3.
Source_3	Where the lead for contact #3 came from.
Notes_3	Notes or comments related to contact #3.

In this setup, the company information appears only once, and the contact-specific data (I'm assuming this involves only the first name, last name, source, and notes) appears in separate field groups (for example, First_1, Last_1, Source_1, and Notes_1). This solves the earlier problems, but at the cost of a new dilemma: The structure as it stands will hold only three sales leads per company. Of course, it is entirely conceivable that a large firm might have more than three contacts—perhaps even dozens. This raises two unpleasant difficulties:

- If you run out of repeating groups of contact fields, new ones must be added. Although this might not be a problem for the database designer, most data-entry clerks generally don't have access to the table design (nor should they).
- Empty fields take up as much disk real estate as full ones, so making room for, say, a dozen contacts from one company means that all the records that have only one or two contacts have huge amounts of wasted space.

How a Relational Design Can Help

To solve the twin problems of repetition between records and repeated field groups within records, you need to turn to the relational database model. This model was developed by Dr. Edgar Codd of IBM in the early 1970s. It was based on a complex relational algebra theory, so the pure form of the rules and requirements for a true relational database setup is quite complicated and decidedly impractical for real-world applications. The next few sections look at a simplified version of the model.

Step 1: Separate the Data

Once you know which fields you need to include in your database application, the first step in setting up a relational database is to divide these fields into separate tables where the “theme” of each table is unique. In technical terms, each table must be composed of only entities (that is, records) from a single *entity class*.

For example, the table of sales leads you saw earlier dealt with data that had two entity classes: the contacts and the companies they worked for. Every one of the problems encountered with that table can be traced to the fact that we were trying to combine two entity classes into a single table. So the first step toward a relational solution is to create separate tables for each class of data. Table 29.3 shows the table structure for the contact data (the Contacts table) and Table 29.4 shows the structure for the company information (the Company table). Note, in particular, that both tables include a primary key field.

Table 29.3. The structure for the Contacts table.

<i>Field</i>	<i>Description</i>
ContactID	The primary key.
FirstName	The contact's first name.
LastName	The contact's last name.
Phone	The contact's phone number.
Fax	The contact's fax number.
Source	Where the lead came from.
Notes	Notes or comments related to the sales lead.

Table 29.4. The structure for the Company table.

<i>Field</i>	<i>Description</i>
CompanyID	The primary key.
CompanyName	The company's name.
Address	The company's address.
City	The company's city.
State	The company's state.
Zip	The company's ZIP code.
Phone	The company's phone number (main switchboard).



Step 2: Add Foreign Keys to the Tables

At first glance, separating the tables seems self-defeating because, if you've done the job properly, the two tables will have nothing in common. So the second step in our relational design is to define the commonality between the tables.

In our sales leads example, what is the common ground between the Contacts and Company tables? It's that every one of the leads in the Contacts table works for a specific firm in the Company table. So what's needed is some way of relating the appropriate information in Company to each record in Contacts (without, of course, the inefficiency of simply cramming all the data into a single table, as we tried earlier).

The way you do this in relational database design is to establish a field that is common to both tables. You'll then be able to use this common field to set up a link between the two tables. The field you use must satisfy three conditions:

- It must not have the same name as an existing field in the other table.
- It must uniquely identify each record in the other table.
- To save space and reduce data entry errors, it should be the smallest field that satisfies the two preceding conditions.

In the sales leads example, a field needs to be added to the Contacts table that establishes a link to the appropriate record in the Company table. The CompanyName field uniquely identifies each firm, but it's too large to be of use. The Phone field is also a unique identifier and is smaller, but the Contacts table already has a Phone field. The best solution is to use CompanyID, the Company table's primary key field. Table 29.5 shows the revised structure for the Contacts table that includes the CompanyID field.

Table 29.5. The final structure for the Contacts table.

<i>Field</i>	<i>Description</i>
ContactID	The primary key.
CompanyID	The Company table foreign key.
FirstName	The contact's first name.
LastName	The contact's last name.
Phone	The contact's phone number.
Fax	The contact's fax number.
Source	Where the lead came from.
Notes	Notes or comments related to the sales lead.

When a table includes a primary key field from a related database, the field is called a *foreign key*. Foreign keys are the secret to successful relational database design.

Step 3: Establish a Link Between the Related Tables

Once you have your foreign keys inserted into your tables, the final step in designing your relational model is to establish a link between the two tables. This step is covered in detail later in this chapter.

Types of Relational Models

Depending on the data you're working with, you can set up one of several different relational database models. In each of these models, however, you need to differentiate between a *child* table (also called a *dependent* table or a *controlled* table) and a *parent* table (also called a *primary* table or a *controlling* table). The child table is the one that is dependent on the parent table to fill in the definition of its records. The Contacts table, for example, is a child table because it is dependent on the Company table for the company information associated with each person.

The One-To-Many Model

The most common relational model is one where a single record in the parent table relates to multiple records in the child table. This is called a *one-to-many* relationship. The sales leads example is a one-to-many relation because one record in the Company table can relate to many records in the Contacts table (in other words, you can have multiple sales contacts from the same firm). In these models, the "many" table is the one where you add the foreign key.

Another example of a one-to-many relationship would be an application that tracks accounts-receivable invoices. You'd need one table for the invoice data (Invoices) and another for the customer data (Customer). In this case, one customer can place many orders, so Customer is the parent table, Invoices is the child table, and the common field would be the Customer table's primary key.

The One-To-One Model

If your data requires that one record in the parent table be related to only one record in the child table, you have a *one-to-one* model. The most common use of one-to-one relations is to create separate entity classes to enhance security. In a hospital, for example, each patient's data is a single entity class, but it makes sense to create separate tables for the patient's basic information (such as his name, address, and so on) and their medical history. This allows you to add extra levels of security to the confidential medical data (such as a password). The two tables would then be related based on a common "PatientID" key field.

Another example of a one-to-one model would be employee data. You would separate the less-sensitive information such as job title and startup date into one table, and restricted information such as salary and commissions into a second table. If each employee has a unique identification number, you would use that number to set up a relation between the two tables.

Note that in a one-to-one model, the concepts of *child* and *parent* tables are interchangeable. Each table relies on the other to form the complete picture of each patient or employee.

The Many-To-Many Model

In some cases, you might have data in which many records in one table can relate to many records in another table. This is called a *many-to-many* relationship. In this case, there is no direct way to establish a common field between the two tables. To see why, let's look at an example from a pared-down accounts-receivable application.

Table 29.6 shows a simplified structure for an Invoices table. It includes a primary key—InvoiceID—as well as a foreign key—CustID—from a separate table of customer information (which I'll ignore in this example).

Table 29.6. The structure for an Invoices table.

<i>Field</i>	<i>Description</i>
InvoiceID	The primary key.
CustID	The foreign key from a table of customer data.

Table 29.7 shows a stripped-down structure for a table of product information. It includes a primary key field—ProductID—and a description field—Product.

Table 29.7. The structure for a Products table.

<i>Field</i>	<i>Description</i>
ProductID	The primary key.
Product	The product description.

The idea here is that a given product can appear in many invoices, and any given invoice may contain many products. This is a many-to-many relation, and it implies that *both* tables are parents (or, to put it another way, neither table is directly dependent on the other). But relational theory says that a child table is needed to establish a common field. In this case, the solution is to set up a third table—called a *relation table*—that is the child of both the original tables. In our example, the relation table would contain the detail data for each invoice. Table 29.8 shows the structure for such a table. As you can see, the table includes foreign keys from both Invoices (InvoiceID) and Products (ProductID), as well as a Quantity field.

Table 29.8. The structure for a table of invoice detail data.

Field	Description
InvoiceID	The foreign key from the Invoices table.
ProductID	The foreign key from the Products table.
Quantity	The quantity ordered.

Enforcing Referential Integrity

Database applications that work with multiple, related tables need to worry about enforcing *referential integrity rules*. These rules ensure that related tables remain in a consistent state relative to each other. In the sales leads application, for example, suppose the Company table includes an entry for “ACME Coyote Supplies” and that the Contacts table contains three leads who work for ACME. What would happen if you deleted the ACME Coyote Supplies record from the Company table? Well, the three records in the Contacts table would no longer be related to any record in the Company table. Child records without corresponding records in the parent table are called, appropriately enough, *orphans*. This situation leaves your tables in an inconsistent state that could have unpredictable consequences.

Preventing orphaned records is what is meant by enforcing referential integrity. You need to watch out for two situations:

- Deleting a parent table record that has related records in a child table.
- Adding a child table record that isn’t related to a record in the parent table (either because the common field contains no value or because it contains a value that doesn’t correspond to any record in the parent table).

Establishing Table Relationships

Now that you know the theory behind the relational model, you can turn your attention to creating and working with related tables in queries, forms, and reports. The first step, however, is to establish the relation between the two tables, which is what this section is all about.

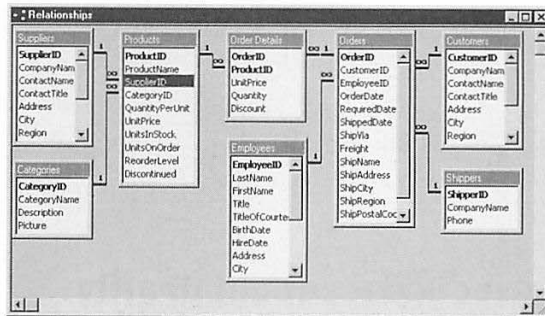


To get started, either select Tools | Relationships or click the Relationships button on the Database toolbar. You’ll see the Relationships window, shown in Figure 29.1. (Note that you’ll see this view of the window only if you’re working with the Northwind sample database.)



FIGURE 29.1.

You use the Relationships window to establish relations between tables.



Understanding Join Lines

Because the Northwind sample database is well-designed, all the tables are related to each other in one way or another. You can tell this by observing the lines that connect each table in the Relationships window. These lines are called *join lines*. As you can see in Figure 29.1, the join line connects the two fields that contain the related information. For example, the Suppliers and Products tables are joined on the common SupplierID field. In this case, SupplierID is the primary key field for the Suppliers table, and it appears as a foreign key in the Products table. This lets you relate any product to its corresponding supplier data.

The symbols attached to the join lines tell you the type of relation. In the join between the Suppliers and Products tables, for example, the Suppliers side of the join line has a 1, and the Products side of the line has an infinity symbol (∞). This stands for “many,” so you would interpret this join as a one-to-many relation.

Types of Joins

Access lets you set up three kinds of joins: an inner join, an outer join, and a self-join.

Inner join: An *inner join* includes only those records in which the related fields in the two tables match each other exactly. This is the most common type of join.

Outer join: An *outer join* includes every record from one of the tables and only those records from the other table in which the related fields match each other exactly. In our sales leads example, it's possible that there might be companies for which no contacts have yet been established. Creating an inner join between the Company and Contacts table will show you only those firms that have existing contacts. However, setting up an outer join will show *all* the records in the Company table, including those where there is no corresponding record in the Contacts table.

NOTE

An outer join is also called a *left-outer join*. To see why, consider a one-to-many relation. Here, the left side is the "one," table and the right side is the "many" table. So this type of join includes every record from the "one" (left) side and only those matching records from the "many" (right) side.

You use the term *left-outer join* when you need to differentiate it from a *right-outer join*. In a one-to-many relation, this type of join includes every record from the "many" (right) side and only those matching records from the "one" (left) side.

Self-join: A *self-join* is a join on a second copy of the same table. Self-joins are handy for tables that include different fields with the same type of information. For example, the sample table Employees that comes with Access has an EmployeeID field that lists the identification number of each employee. The same table also includes a ReportsTo field that lists the identification number of the employee's manager. To display the name of each employee's manager, you'd use a second copy of the Employees table and join the EmployeeID and ReportsTo fields.

Adding Tables to the Relationships Window

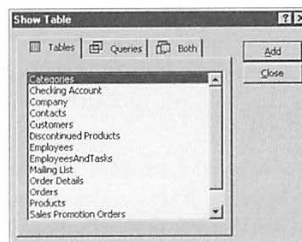
If you need to establish a new relationship between two tables, your first order of business is to add the tables to the Relationships window. Here are the steps to follow:



1. Select Relationships | Show Table, or click the Show Table button on the toolbar.
Access displays the Show Table dialog box, shown in Figure 29.2.

FIGURE 29.2.

Use this dialog box to add tables to the Relationships window.



2. Highlight the table you want to add.
3. Click the Add button. Access adds the table to the Relationships window.
4. Repeat steps 2 and 3 to add more tables.
5. Click the Close button to return to the Relationships window.

Joining Tables

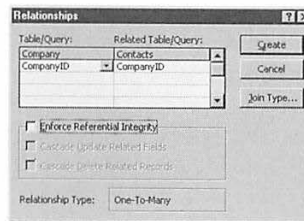
To create a join between two tables (or a self-join between two copies of the same table), use the mouse to drag one of the related fields and drop it on the other. Here are the specific steps:

1. Add the tables you want to join.
2. Arrange the table boxes so that you can see the fields you want to use for the join in each box.
3. Drag the related field from one table and drop it on the related field in the other table.

Access displays the Relationships dialog box, shown in Figure 29.3.

FIGURE 29.3.

Access displays this dialog box when you drag a related field from one table and drop it on another.



4. If you want Access to enforce referential integrity rules on this relation, activate the Enforce Referential Integrity check box. If you do this, two other check boxes become active:

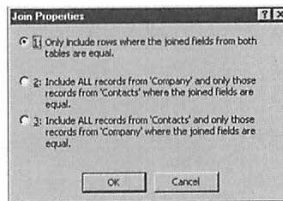
Cascade Update Related Fields: If you activate this check box and then make changes to a primary key value in the parent table, Access will update the new key value for all related records in all child tables. For example, if you change a CompanyID value in the Company table, all related records in the Contacts table will have their CompanyID fields updated automatically.

Cascade Delete Related Fields: If you activate this check box and then delete a record from the parent table, all related records in all child tables will also be deleted. For example, if you delete a record from the Company table, all records in the Contacts table that have the same CompanyID as the deleted record will also be deleted.

5. To set the type of join, click the Join Type button to display the Join Properties dialog box, shown in Figure 29.4. Here, option 1 corresponds to an inner join, option 2 corresponds to a left-outer join, and option 3 corresponds to a right-outer join. Click OK to return to the Relationships dialog box.
6. Click Create. Access sets up the join line between the two fields.

As soon as you have your joins set up, you can add the appropriate fields to the data pane and even filter the data using criteria.

FIGURE 29.4.
Use this dialog box to establish the type of join.



Editing a Relationship

If you need to make changes to a relationship, Access lets you edit the relation parameters from within the Relationships window. For the relation you want to adjust, either click the join line for the two fields and then select Relationships | Edit Relationship, or right-click the join line and choose Edit Relationship from the context menu. Access displays the Relationships dialog box so that you can make your changes.

Removing a Join

If you no longer need a join, you can remove it either by clicking the join line and selecting Edit | Delete Relationship (or pressing Delete), or by right-clicking the join line and choosing Delete from the context menu.

Multiple-Table Queries

With a properly constructed relational database model, you'll end up with fields that don't make much sense by themselves. For example, the Northwind database has an Order Details table that includes a ProductID field—a foreign key from the Products table. This field contains only numbers and therefore by itself is meaningless to an observer.

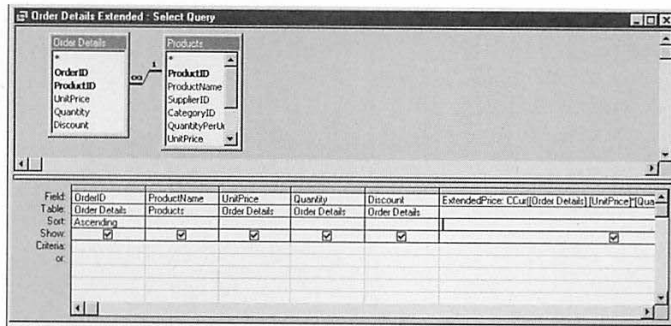
The idea behind a multiple-table query is to *join* related tables and by doing so create a dynaset that replaces meaningless data (such as a product ID) with meaningful data (such as a product name).

The good news is that once you've established a relationship between two tables, Access handles everything else behind the scenes. All you have to do is add the appropriate tables to the query. You can either do this at design time (in the Query Wizard or in the Show Table dialog box that appears when you start a new query in Design view), or you can add new tables while in Design view. For the latter, use the same steps that I outlined in the section "Adding Tables to the Relationships Window."

As you can see in Figure 29.5, Access displays join lines between related tables. From here, you simply create the query in the usual way—by adding fields from either table, setting up criteria, and so on. See Chapter 26, “Querying Data,” for details.

FIGURE 29.5.

A multiple-table query that shows fields from the Order Details and Products tables.



The only thing you have to watch out for is dealing with tables that each have a field with the same name. In Figure 29.5, you can see that both the Order Details table and the Products table have a UnitPrice field. To differentiate between them in, say, a calculated criterion, you need to preface the field name with the table name, like so:

`[Table Name].[FieldName]`

For example, consider the formula that calculates the ExtendedPrice field in the Order Details Extended query. The idea behind this formula is to multiply the unit price times the quantity ordered and subtract the discount. Here's the formula:

`CCur([Order Details].[UnitPrice]*[Quantity]*(1-[Discount]))/100*100`

To differentiate between the UnitPrice field in the Order Details table and the UnitPrice field in the Products table, the formula uses the term `[Order Details].[UnitPrice]`.

Multiple-Table Forms

Once you set up a multiple-table query, it's straightforward to use this query as the underlying data source in a form. However, there are two other ways that you can use multiple tables with forms: creating subforms, and populating combo boxes and list boxes. The next few sections explain both concepts.

Working with Subforms

One of the handiest uses for related tables is to create a form that displays the related data from both tables simultaneously. For example, the form shown in Figure 29.6 contains data from two sources. The bulk of the form fields displays data from an Orders table query (a few fields

from the Customers table are thrown in for good measure), and the datasheet in the middle of the form contains data from the Order Details table. Because the Orders and Order Details tables are related by the OrderID field, the order details shown are just those for the displayed order; when you move to a different order, the order details change accordingly.

FIGURE 29.6.

A form showing data from two related tables.

The screenshot shows a Microsoft Access form titled "Orders". It is divided into several sections. At the top, there are fields for "Bill To:" and "Ship To:" with addresses in Berlin, Germany. Below this, there are fields for "Salesperson:" (Suyana, Michael) and "Ship Via:" (Speedy, United, Federal). The main section of the form displays a table of order details. The table has columns for "Product", "Unit Price", "Quantity", "Discount", and "Extended Price". The data rows are: Spegesold (\$12.00, 2, 25%, \$18.00), Chartrousse verte (\$18.00, 21, 25%, \$283.50), and Rissile Sauerkraut (\$45.60, 15, 25%, \$513.00). Below the table, there is a "Print Invoice" button. At the bottom right, there is a summary section with "Subtotal: \$814.50", "Freight: \$23.46", and "Total: \$843.96". The status bar at the bottom indicates "Records: 14 of 831".

Product	Unit Price	Quantity	Discount	Extended Price
Spegesold	\$12.00	2	25%	\$18.00
Chartrousse verte	\$18.00	21	25%	\$283.50
Rissile Sauerkraut	\$45.60	15	25%	\$513.00

Subtotal: \$814.50
Freight: \$23.46
Total: \$843.96

This type of form is actually a combination of two separate forms. The regular form fields (in the example, the ones showing the Orders table data) are part of the *main form*, and the datasheet (the Order Details table data) is called the *subform*. A form/subform combination can be thought of as a main/detail form or a parent/child form.

Subforms are especially effective at showing dependent records from tables or queries participating in one-to-many relationships. In the preceding example, each item in the Orders table can have many related records in the Order Details table. Because of this, most subforms are viewed in datasheet mode, but this isn't a requirement. However, the main form can't be viewed in datasheet mode when a subform is present.

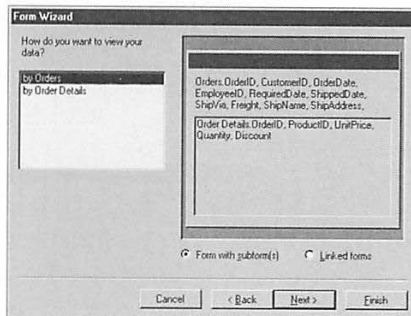
Adding a Subform via the Form Wizard

An easy way to set up a form/subform combination is to use the Form Wizard. Begin a new form using the Form Wizard as described in Chapter 27, "Creating and Using Simple Forms." In the initial Wizard dialog box, first add the fields you want to use for the main form. When that's done, use the Table/Queries list to select the data source you want to use for the subform, and then select the fields that will be used for the subform.

Because you've added fields from multiple sources, the Form Wizard displays the dialog box shown in Figure 29.7. The purpose of this dialog box is to establish which table will be used as the basis for the main form (and, therefore, which table will be used as the basis for the subform). In the How do you want to view your data? list, highlight the item that includes the table you want to use with the main form, and then click Next >.

FIGURE 29.7.

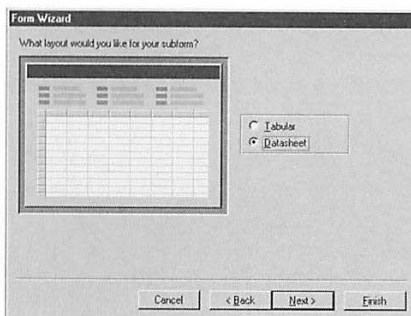
Use this dialog box to establish which tables apply to the main form and the subform.



The next Wizard dialog box asks you to select a layout for the subform, as shown in Figure 29.8. Activate either the Tabular or the Datasheet option, and then click Next >.

FIGURE 29.8.

Use this dialog box to choose a layout option for the subform.



From here, you follow the usual steps for finishing the form. (The only difference is that, in the last dialog box, you need to specify a name for both the main form and the subform.)

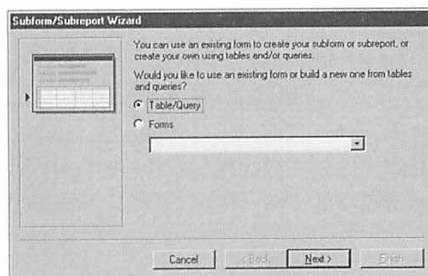
Adding a Subform Control



If you've already started your form, you can still add a subform using Design view. In the Toolbox, click on the Subform/Subreport control, and then drag the mouse inside the form to create a box to hold the subform. Access starts the Subform/Subreport Wizard to lead you through the process, as shown in Figure 29.9.

FIGURE 29.9.

The Subform/Subreport Wizard makes it easy to add a subform to an existing form.



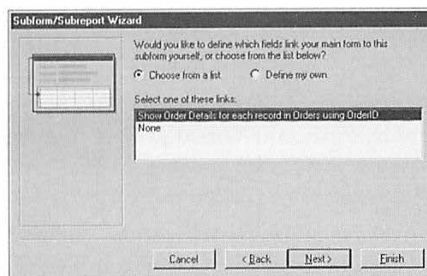
You have two ways to proceed:

- If you want to create the subform from a table or query, activate the Table/Query option, click Next >, and then use the next Wizard dialog box to choose the table or query and select the subform fields.
- If you want to use an existing form as the subform, activate the Forms option, use the drop-down list provided to select the form you want to use, and click Next >.

Now you'll see the Wizard dialog box shown in Figure 29.10. You use it to choose the field that links the main form and the subform. As long as the tables are related (which they should be for this to work), Access will establish the correct linking field automatically. (If not, you can always activate the Define my own option and set up the link fields yourself.) Click Next >. Enter a name for the subform and click Finish to complete your work.

FIGURE 29.10.

Use this dialog box to establish the field that links the main form and the subform.



Working with Combo Boxes and List Boxes



Back in Chapter 27 I showed you how to populate a combo box or list box with a series of values that you type in by hand. However, if the available values exist as part of another table, you can get Access to grab these values from the table and use them to populate the list. There are two different situations to consider:

- When the two tables are related
- When the two tables are unrelated

If the two tables are related, Access handles all the dirty work for you. For example, suppose you're building a form for a table that includes an EmployeeID field. It wouldn't be very efficient (or accurate, for that matter) to have the data entry clerk type in the actual identification numbers for each employee. Instead, you would relate your table to the Employees table using EmployeeID as the common field. If you then added the EmployeeID field to your form, Access would do two things automatically:

- It would set up the field as a drop-down list.
- It would populate the list with the name of each employee. That is, it would grab the unique names from the Employees table and use these names in the list.

If the two tables are unrelated, you need to do a bit more legwork. Specifically, you need to specify which table and which field to use for the list items. For example, if you add a combo box to the form, Access loads the Combo Box Wizard. In the first dialog box, activate the I want the combo box to look up the values in a table or query option, and click Next >. From here, subsequent Wizard dialog boxes take you through the process of choosing the table or query and specifying which field contains the values for your list.

Multiple-Table Reports

In Access, the process of creating reports and forms is quite similar: You add fields, insert graphic objects, format text, and so on. This similarity also shows up when you're working with multiple tables. You saw earlier how to create a form/subform combination; the process for creating a report/subreport combination is almost identical. As with forms, you have two ways to proceed:

- If you're using the Report Wizard to create a new report, adding fields from multiple tables will cause the Wizard to detour from its usual routine and ask you about the layout of the report and subreport.
- If you're working in Design view, use the Subform/Subreport tool to draw a box for your subreport. In the Subform/Subreport Wizard that appears, use the steps described earlier to define your subreport.



Summary

This chapter showed you a few techniques for working with multiple tables in Access. You began by learning some important relational database theory, including why a relational design is important, how to implement a proper relational database, and the types of relational models. From there, I showed you how to establish relationships between tables and how to work with multiple-table queries, forms, and reports.

Here's a list of chapters where you'll find related information:

- To learn how to create and work with tables, see Chapter 25, "Working with Tables."
- For information on basic queries, check out Chapter 26, "Querying Data."
- I showed you how to create data entry forms in Chapter 27, "Creating and Using Simple Forms."
- Check out Chapter 28, "Designing and Customizing Reports," to get the nitty-gritty on Access reports.



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