

INTRODUCTION



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Microsoft Office Access 2007 (version 12, called *Access 2007* in this book) is a powerful, robust, and mature 32-bit relational database management system (RDBMS) for creating desktop and client/server database applications that run under Windows Vista/XP/2000+. As a component of the Professional and higher editions of the 2007 Microsoft Office System, Access 2007 has a totally revamped user interface that's consistent with the other members of the Office 2007 suite.

Access has vanquished all desktop RDBMS rivals except Visual FoxPro and FileMaker Pro. The primary reasons for Access's success are its inclusion in Microsoft's productivity suite and its prowess as a rapid application development (RAD) environment for creating industrial-strength database applications. Another contributor to Access's market share is the capability to duplicate on the PC desktop the features of client/server relational database systems, also called *SQL databases*. Client/server RDBMSs have led the way in transferring database applications from costly mainframes and Unix servers to modestly priced networked PCs and mobile devices. Despite Access's power—and the claims of its erstwhile competitors—this desktop RDBMS is easy for nonprogrammers to use.

Microsoft's top priority for Access 2007 was to broaden the base of new users by focusing on typical tracking applications generated by a bevy of out-of-the box templates and more templates from Office Online that take maximum advantage of Access 2007's new navigation features and tabbed document presentation. Many potential Access customers view Access as difficult to master. The new Access templates enable information workers to create and begin using simple database applications in a few minutes.

The Access team devoted substantial resources to integrating Access 2007 with Windows SharePoint Services (WSS) 3.0 and Microsoft Office SharePoint Server (MOSS) 2007. WSS 3.0 is a no-charge add-on to Windows Server 2003 that lets you share Access 2007 applications from document libraries and use Access to create or edit SharePoint lists. WSS 3.0 ease of use lets workgroup members manage their own SharePoint website. MOSS 2007 builds on WSS 3.0 to create complete document management systems. WSS 3.0 and MOSS 2007 (collectively called *SharePoint* in this book) are Microsoft's primary workgroup and enterprise-level collaboration tools for knowledge workers.

Near the top of the feature list is support for Microsoft SQL Server 2005 and its freely distributable Express Edition (SSX). SSX Graphic table and query designers make creating and modifying SQL Server tables, views, functions, and stored procedures almost as easy as working with Access tables and queries. Extended properties add lookup fields, sub-datasheets, input masks, and other Access accouterments to SQL Server databases. Access data projects (ADP) take advantage of Access's well-deserved reputation for rapid application development (RAD) to develop robust, production-quality multiuser database programs.

Microsoft's rallying cry for Windows Vista/XP/2003+ Server and Office 2007 is total cost of ownership (TCO). Ease of use is one of the primary requisites for reducing TCO; Access 2007 includes many wizards and other aids designed for first-time database users. If you're still using Access 97 or 2000, Access 2007 and SQLX alone justify the cost of upgrading to Office 2007. If your team has a SharePoint site, make upgrading from Access 2000 your first priority.

WHO SHOULD READ THIS BOOK

Special Edition Using Microsoft Office Access 2007 takes an approach that's different from most books about database management applications. This book doesn't begin with the creation of a database for Widgets, Inc., nor does it require you to type a list of fictional customers for the company's new WidgetPlus product line to learn the basics of Access. Instead, this book makes the following basic assumptions about your interest in Microsoft's relational database management system:

- You aren't starting from "ground zero." You now have or will have access via your computer, network, the Internet (or all three) to much of the data that you want to process with a Windows database manager. You've acquired Access and want to learn to use it more quickly and effectively. Or, you might be considering using Access as the database manager for yourself, your department or division, or your entire organization.
- Your existing data is in the form of databases, spreadsheets, mailing lists, web pages, or even plain-text files that you want to manipulate with a relational database management system. Access 2007 can process the most common varieties of these file types, as well as HTML tables, element-centric XML files, Outlook contact lists, WSS lists, and other tabular data sources.
- If you're planning to use Access 2007 as a front end to a client/server RDBMS, you'll use SQL Server 2005 Express Edition (SSX) or SQL Server 2005 as the back-end database. Access 2007 lets you replicate data between a local or workgroup copy of SSX and SQL Server 2005 on a network server.
- If your data is on a mainframe computer, you're connected to that computer by a local area network and a database gateway, or through terminal-emulation software and an adapter card. Alternatively, you download text files from the mainframe to create Access or SQL Server tables.

If some or all of your data is in the form of ASCII/ANSI text files, or files from a spreadsheet application, you need to know how to create an Access database from the beginning and import the data into Access's new .accdb file structure. If your data is in the form of dBASE, FoxPro, or Paradox files, you can import it directly to Access tables. Access 2007 also lets you link Excel workbook and conventional text files, as well as Outlook and SharePoint lists to Access databases. The capability to link files in their native format lets you synchronize the contents of your database tables with the original source documents. All these subjects receive thorough coverage in this book.

Learning relational database design and management with Access 2007 as the training tool is the quickest and easiest way to upgrade your professional skills. If you're a web designer, the expertise in client/server database techniques that you gain by working with Access data projects, SQL Server, and Data Access Pages greatly enhances your future employment prospects. Despite the prolonged downturn in the dot-com sector, there's no slack in the demand for unlocking islands of data stored in client/server databases and making the data available as usable business information on corporate intranets.

Access 2007 is a great first step in gaining XML, XML schema (XSD), and XSL transform (XSLT) skills. Most XML-related books and other training materials use trivial examples to illustrate XML and XSL(T) methodology. Access 2007 lets you dynamically generate real-world XML data, and provides a standard transform to render data in HTML format. Working with the resulting .xsl files and their embedded VBScript is the fastest way to learn practical XSLT techniques for delivering XML data as fully formatted web pages.

How This Book Is ORGANIZED

Special Edition Using Microsoft Office Access 2007 is divided into seven parts arranged in increasing levels of detail and complexity. Each division after Part I, “Getting Acquainted with Access 2007,” follows the normal course of database application design, which involves the following initial steps:

- **Create tables to hold the data and establish relationships between the tables**—Once you’ve defined the purpose of your database application and have found and organized the data it will process, you design a table for each *entity* (also called an *object* or *subject*). For example, contacts, tasks, orders, line items, and invoices are entities. In many cases, table data will be available in files that have another format. Part II, “Learning the Fundamentals of Access Databases,” covers table design and importing or linking data to tables.
- **Design queries to filter, format, sort, and display data contained in one or more tables**—Relational databases use queries for turning raw data into useful information. Part III, “Transforming Data with Queries and PivotTables,” shows you how to master Access’s graphic query designer and generate PivotCharts and PivotTables.
- **Prepare forms for data entry and visualization**—Although you can enter data into tables directly, providing one or more forms simplifies data entry and minimizes the potential for entering bad data. Forms with graphs, PivotTables, and PivotCharts make data understandable to your supervisors and managers. Three of the chapters in Part IV, “Designing Forms and Reports,” cover this topic.
- **Lay out reports to summarize data**—Access is famous for its report designer, which lets you quickly design fully formatted reports with group subtotals and grand totals, or generate mailing labels. Part IV’s remaining two chapters show you how to take best advantage of Access reports.

Parts II, III, and IV draw on the knowledge and experience that you’ve gained in the previous parts, so use of the book in a linear, front-to-back manner through Part IV, “Designing Forms and Reports,” is recommended during the initial learning process. After you absorb the basics of working with Access databases, you progress through changing from single-user to multiuser database applications and upsizing databases to SSX or SQL Server 2005. Chapters on Access’s HTML, XML, and SharePoint features follow the SQL Server chapters. Finally, you learn how to automate your applications with Access macros and Visual Basic for Applications (VBA) code.

As you progress through the chapters in this book, you create a model of an Access application called Human Resources Actions. In Chapter 5, “Working with Access Databases and Tables,” you create the HR Actions table. In the following chapters, you add new features to the HR Actions application. Be sure to perform the sample exercises for the HR Actions application each time you encounter them because succeeding examples build on your previous work. (The accompanying CD-ROM contains sample databases at each stage of the process).

The seven parts of *Special Edition Using Microsoft Office Access 2007* and the topics that they cover are described in the following sections.

PART I: GETTING ACQUAINTED WITH ACCESS 2007

The chapters in Part I introduce you to Access and many of the unique features that make Access 2007 the premier desktop database management system.

- Chapter 1, “Access 2007 for Access 200x Users: What’s New,” provides a summary of the most important new features of Access 2007 and a detailed description of each addition and improvement. Much of this chapter’s content is of interest primarily to readers who now use Access 2000, 2002, or 2003 because there are major changes between these versions and Access 2007. Readers new to Access, however, benefit from the explanations of why many of these new features are significant in everyday Access 2007 use. Chapter 1 includes detailed instructions for installing SQL Server 2005 Express.
- In Chapter 2, “Building Simple Tracking Applications,” you create a database from an out-of-the-box database template included with Access 2007. You gain a basic understanding of the standard data-related objects of Access, including tables, queries, forms, reports, and macros. Chapter 2 also introduces you to automating Access operations with Access macros.
- Chapter 3, “Navigating the New Access User Interface,” shows you how to take best advantage of Access 2007’s revolutionary ribbon user interface by explaining its command button, menu, and context menu choices and then showing how they relate to the structure of the Access object model. Chapter 3 also shows you how to use Access 2007’s new and improved online help system.

PART II: LEARNING THE FUNDAMENTALS OF ACCESS DATABASES

Part II is devoted to understanding the design principles of relational databases, creating new Access tables, adding and editing table data, and integrating Access tables with other sources of data. Most of the techniques that you learn in Part II also apply to SQL Server tables.

- Chapter 4, “Exploring Relational Database Theory and Practice,” describes the process that you use to create relational database tables from real-world data—a technique called *normalizing the database structure*. The chapter also introduces you to the concepts of key fields, primary keys, data integrity, and views of tables that contain related data.

- Chapter 5, “Working with Access Databases and Tables,” delves into the details of Access desktop database tables, shows you how to create tables, and explains how to choose the optimum data types from the many new types that Access offers. Chapter 5 explains how to use subdatasheets and lookup tables to display and edit records in related tables. The chapter also explains how to use the Database Documentor tool included with Access 2007 to create a data dictionary that fully identifies each object in your database.
- Chapter 6, “Entering, Editing, and Validating Access Table Data,” describes how to add new records to tables, enter data in the new records, and edit data in existing records. Using keyboard shortcuts instead of the mouse for editing speeds manual data entry. Adding input masks and data validation rules minimizes the chance for typographic errors when entering new data.
- Chapter 7, “Sorting, Finding, and Filtering Data,” shows you how to arrange the data in tables to suit your needs and to limit the data displayed to only that information you want. You learn how to use Find and Replace to search for and alter multiple instances of data in the fields of tables. Chapter 7 further describes how to make best use of the Filter by Form and Filter by Selection features of Access 2007.
- Chapter 8, “Linking, Importing, and Exporting Tables,” explains how to import and export files of other database managers, spreadsheet applications, and text files downloaded from mainframe or Unix database servers or the Internet. You also learn how to use the Access Mail Merge Wizard to create form letters from data stored in Access tables.

PART III: TRANSFORMING DATA WITH QUERIES AND PIVOTTABLES

The chapters in Part III explain how to create Access queries to select the way that you view data contained in tables and how to take advantage of Access’s relational database structure to link multiple tables with joins. Part III also covers Access 2007’s PivotTable and PivotChart views of query result sets.

- Chapter 9, “Designing Queries for Access Databases,” starts with simple queries you create with Access’s graphical Query Design window. You learn how to choose the fields of the tables included in your query and return query result sets from these tables. Examples of Access SQL generated by the queries you design let you learn SQL “by osmosis.” Chapter 9 shows you how to use the Simple Query Wizard to simplify the design process.
- Chapter 10, “Understanding Access Operators and Expressions,” introduces you to the operators and expressions that you need to create queries that provide a meaningful result. Most Access operators and expressions are the same as those that you use in VBA programs. You use the Immediate window of the Office 2007 VBA editor to evaluate the expressions you write.
- In Chapter 11, “Creating Multitable and Crosstab Queries,” you create relations between tables, called *joins*, and learn how to add criteria to queries so that the query result set includes only records that you want. Chapter 11 also takes you through the

process of designing powerful crosstab queries to summarize data and to present information in a format similar to that of worksheets.

- Chapter 12, “Working with PivotTable and PivotChart Views,” shows you how to manipulate data from multitable queries in the OWC’s PivotTable control and then display the results in PivotChart controls. The query design and PivotTable/PivotChart techniques that you learn here also apply to PivotTables and PivotCharts that you embed in Access forms and Data Access Pages.
- Chapter 13, “Creating and Updating Access Tables with Action Queries,” shows you how to develop action queries that update the tables underlying append, delete, update, and make-table queries. Chapter 13 also covers Access 2007’s advanced referential integrity features, including cascading updates and cascading deletions.

PART IV: DESIGNING FORMS AND REPORTS

The chapters in Part IV introduce you to the primary application objects of Access. (Tables and queries are considered database objects.) Forms make your Access applications come alive with the control objects that you add from the Form Tools, Design ribbon, and Report Tools. Access’s full-featured report generator lets you print fully formatted reports, export or mail reports as PDF or XPS (XML Paper Specification) files, and save reports to files that you can process in Excel 2007 or Word 2007.

- Chapter 14, “Creating and Using Basic Access Forms,” shows you how to use Access’s Form Wizards to create simple forms and subforms that you can modify to suit your particular needs. Chapter 14 introduces you to the Subform Builder Wizard that uses drag-and-drop techniques to automatically create subforms for you.
- Chapter 15, “Designing Custom Multitable Forms,” shows you how to design custom forms for viewing and entering your own data with Access’s advanced form design tools.
- Chapter 16, “Working with Simple Reports and Mailing Labels,” describes how to design and print basic reports with Access’s Report Wizard, and how to print preformatted mailing labels by using the Mailing Label Wizard.
- Chapter 17, “Preparing Advanced Reports,” describes how to use more sophisticated sorting and grouping techniques, as well as subreports, to obtain a result that exactly meets your detail and summary data-reporting requirements. Chapter 17 also covers the technology that lets you distribute Access reports as Outlook email attachments.
- In Chapter 18, “Adding Graphs, PivotCharts, and PivotTables,” you first learn to use the OLE-based Chart Wizard to create data-bound graphs and charts based on Access crosstab queries. PivotCharts are destined to replace conventional Access Charts, so Chapter 18 builds on Chapter 12 by showing you how to add bound PivotTables and PivotCharts whose data is supplied by the form’s data source.

PART V: MOVING TO NETWORKED MULTIUSER APPLICATIONS

From Access 2000 on, SQL Server has been the preferred back-end data source for secure, robust, and reliable Access multiuser applications. You can link SQL Server tables to a conventional Access .accdb front-end file, but a direct connection to an Access data project (.adp) front end is the better approach. This is especially true because Access 2007 no longer supports user-level (also called *workgroup*) security. If you're new to client/server RDBMSs, Access 2007 is the ideal learning tool for upgrading your database design and management skills to the requirements of today's job market.

- Chapter 19, “Linking Access Front Ends to Access and Client/Server Tables,” explains how to use the Upsizing Wizard to migrate from single-file or split (front-end/back-end) Access applications to SQL Server back-end databases. Retaining the front-end queries and application objects in an Access (.accdb) file, and using the SQL Server ODBC driver to connect to the server database, minimizes application changes required to take advantage of client/server technology. This chapter also explains how to secure Access databases with file system Access Control Lists (ACLs), because Access 2007 supports workgroup information (.mdw) files only for earlier version's .mdb files.
- Chapter 20, “Exploring Access Data Projects and SQL Server 2005,” introduces you to Access data projects and SSX. The chapter shows you how to use Access 2007's built-in project designer to create and modify SQL Server tables, views, functions, and stored procedures. Backing up, restoring, copying, and moving SQL Server databases is covered in detail. You also learn how to link other databases, including Access .accdb files, with OLE DB data providers and how to secure ADP front ends as .ade files.
- Chapter 21, “Moving from Access Queries to Transact-SQL,” provides a formal introduction to ANSI-92 SQL and explains how the Access and Transact-SQL dialects differ. Special emphasis is given to queries that you can't create in the graphical project designer—such as UNION queries and subqueries—and enabling transactions in stored procedures that update two or more tables.
- Chapter 22, “Upsizing Access Applications to Access Data Projects,” explains how to use the Upsizing Wizard to convert existing Access applications directly to Access data project front ends and SQL Server tables, views, functions, and stored procedures. The wizard can't upsize Access crosstab queries, so the chapter explains how to write T-SQL PIVOT queries to emulate Access crosstab queries.

PART VI: COLLABORATING WITH ACCESS DATA

The chapters in Part VI explain how to take advantage of Access's new XML features and the upgraded Data Access Pages technology of Access 2002.

- Chapter 23, “Importing and Exporting Web Pages,” shows you how to generate Access tables from HTML tables and lists in web pages, optimize HTML files to ensure proper importation, and export static or dynamic HTML pages. The chapter also explains how to gather data by email with Outlook 2007 HTML forms and automatically add the data acquired to the appropriate table.

- Chapter 24, “Integrating with XML and InfoPath 2007,” explains the role of XML in database applications and how Access 2007’s ReportML XML schema describes Access objects as an XML data document. The chapter shows you how to take advantage of the Report2HTML4.xsl XML transform to generate HTML pages from tables and queries with the Save As XML option. You learn how to modify Access’s standard XSLT files to format the resulting tables and add images to the tables. Exporting conventional Access reports as fully formatted static and live web reports also receives detailed coverage. The chapter also explains the role of InfoPath 2007 as an alternative to Outlook 2007 HTML forms for gathering data.
- Chapter 25, “Collaborating with Windows SharePoint Services,” introduces you to WSS 3.0 and its data-related features. You learn to export Access or SQL Server tables to WSS 3.0 lists, and how to link the lists to Access tables (and vice versa). You also learn to take linked SharePoint lists offline, modify them while disconnected, reconnect to SharePoint, and synchronize your’s and others’ changes. Finally, the chapter shows you how to publish Access applications to SharePoint document libraries and share the published .accdb files with multiple collaborators.

PART VII: PROGRAMMING AND CONVERTING ACCESS APPLICATIONS

The chapters in Part VII assume that you have no programming experience in any language. These chapters explain the principles of writing Access macros and VBA programming code. They also show you how to apply these principles to automate Access applications and use VBA to work directly with ADO Recordset objects. Part VII also supplies tips for converting Access 97 and 200x applications to Access 2007.

- Chapter 26, “Automating Access Applications with Macros 2007,” is an introduction to Access macros, which Microsoft resurrected from their previously deprecated status in Access 97 and later. You learn how to write simple standalone or embedded macros to run a query and open a form or report when you click a button on a form.
- Chapter 27, “Learning Visual Basic for Applications,” introduces you to the VBA language with emphasis on using VBA to automate your Access front ends. The chapter describes how to write VBA code to create user-defined functions stored in modules and to write simple procedures that you activate directly from events.
- Chapter 28, “Handling Events with VBA and Macros,” describes how to use embedded macros and VBA event-handling subprocedures in class modules. This chapter explains the events triggered by Access form, report, and control objects, and tells you how to use macro actions or methods of the DoCmd object to respond to events, such as loading or activating a form.
- Chapter 29, “Programming Combo and List Boxes,” shows you how to take maximum advantage of Access 2007’s unique combo and list boxes in decision-support applications. This chapter explains the VBA coding techniques for loading combo box lists and populating text and list boxes based on your combo box selections.

- Chapter 30, “Understanding Data Access Objects, OLE DB, and ADO,” explains Microsoft’s approach to Access and SQL Server data connectivity in Office applications, and describes how to program Data Access Objects (DAO) and ActiveX Data Objects (DAO), as well as tells how to decide on DAO or ADO for your new Access 2007 projects.
- Chapter 31, “Upgrading 2000X Applications to Access 2007,” tells you what changes you need to make when you convert your current 32-bit Access database applications and data access pages to Access 2007.

GLOSSARY

The glossary presents a descriptive list of the terms, abbreviations, and acronyms used in this book that you might not be familiar with and that can’t be found in commonly used dictionaries.

THE ACCOMPANYING CD-ROM



The CD-ROM that accompanies this book includes Access database files containing tables, queries, forms, reports, HTML pages, VBA, and special files to complement design examples, and it shows you the expected result. An icon identifies sections that point to chapter files included on the accompanying CD-ROM.

A very large (20MB) database named Oakmont.accdb is included for optional use with some of the examples in this book. Oakmont University is a fictional institution in Texas with 30,000 students and 2,300 employees. Databases with a large number of records in their tables are useful when designing applications to optimize performance, so the CD-ROM also includes a version of the Northwind.accdb database, NwindXL19.accdb, that has 21,096 records in the Orders table and 193,280 Order Details records.

Installing the sample files on the accompanying CD-ROM to your \SEUA12 folder requires about 200MB of free disk space.

HOW THIS BOOK IS DESIGNED

The following special features are included in this book to assist readers.



If you’ve never used a database management application, you’re provided with quick-start examples to gain confidence and experience while using Access with the Northwind Traders sample database. Like Access, this book uses the *tabula rasa* approach: Each major topic begins with the assumption that you have no prior experience with the subject. Therefore, when a command button on a ribbon, such as Design view, is used, its icon is displayed in the margin.

TIP

Tips describe shortcuts and alternative approaches to gaining an objective. These tips are based on the experience the author has gained during more than seven years of testing successive alpha and beta versions of Access and Microsoft Office Developer (MOD).

NOTE

Notes offer advice to help you use Access, describe differences between various versions of Access, and explain the few remaining anomalies that you find in Access 2007.

Access SQL

The book provides numerous examples of Access SQL statements for queries and Transact-SQL statements for views, functions, and stored procedures.

XML

Part VI of this book includes sample XML, XSL, and XML Schema documents (XSD) and examples of altering XSL Transforms (XSLT) to modify the presentation of HTML documents.

CAUTION

Cautions are provided when an action can lead to an unexpected or unpredictable result, including loss of data; the text provides an explanation of how you can avoid such a result.



Features that are new or that have been modified in Access 2007 are indicated by the 2007 icon in the margin, unless the change is only cosmetic. Where the changes are extensive and apply to an entire section of a chapter, the icon appears to the left or right of the section head.



References to resources available on the Internet—such as World Wide Web Consortium (W3C) Recommendations—are identified by the Web icon.

Cross-references to specific sections in other chapters follow the material that they pertain to, as in the following sample reference:

→ For more information, **see** “A Section in Another Chapter,” **p. XXX**.

Most chapters include a “Troubleshooting” section at the end of the tutorial and reference contents. The elements of this section help you solve specific problems—common and uncommon—that you might run into when creating applications that use specific Access features or techniques.

At the end of each chapter is an “In the Real World” section that discusses the relevance of the chapter’s content to the realm of production databases, the Internet, and other current computer-related topics that affect Access users and developers. The opinion-editorial (op-ed) style of many of the “In the Real World” sections reflects the author’s view of the benefits—or drawbacks—of new Access features and related Microsoft technologies, based on experience with production Access applications installed by several Fortune 500 corporations.

TYPOGRAPHIC CONVENTIONS USED IN THIS BOOK

This book uses various typesetting styles to distinguish between explanatory and instructional text, text that you enter in dialogs (set in **bold**), and text that you enter in code-editing windows (set in monospace type).

KEY COMBINATIONS, MENU CHOICES, AND FILENAMES

Key combinations that you use to perform Windows operations are indicated by joining the keys with a plus sign: Alt+F4, for example. In cases when you must press and release a key, and then press another key, such as Alt to activate KeyTips, the keys are separated by a comma without an intervening space: Alt,H. Conventional shortcut key combinations appear as Ctrl+Key.

Sequences of individual menu items are separated by a comma: Edit, Cut.

Most file and folder names are initial-letter-capitalized in the text and headings of this book to conform with 32-bit Windows filenaming conventions and the appearance of filenames in Windows Explorer.

SQL STATEMENTS AND KEYWORDS IN OTHER LANGUAGES

SQL statements and code examples are set in a special monospace font. Keywords of SQL statements, such as SELECT, are set in all uppercase. Ellipses (...) indicate intervening programming code that isn’t shown in the text or examples.

Square brackets in monospace type ([1]) that appear within Access SQL statements don’t indicate optional items, as they do in syntax descriptions. In this case, the square brackets are used instead of quotation marks to frame a literal string or to allow use of a table and field names, such as [Order Details], that include embedded spaces or special punctuation, or field names that are identical to reserved words in VBA.

TYPOGRAPHIC CONVENTIONS USED FOR VBA

This book uses a special set of typographic conventions for references to Visual Basic for Applications keywords in the presentation of VBA examples:

- Monospace type is used for all examples of VBA code, as in the following statement:

```
Dim NewArray ( ) As Long
ReDim NewArray (9, 9, 9)
```

- Monospace type also is used when referring to names of properties of Access database objects, such as *FormName.Width*. The captions for text boxes and drop-down lists in which you enter values of properties, such as Source Connect String, are set in this book's regular textual font.
- **Bold monospace** type is used for all VBA reserved words and type-declaration symbols, as shown in the preceding example. Standard function names in VBA also are set in **bold monospace** type so that reserved words, standard function names, and reserved symbols stand out from variable and function names and values that you assign to variables.
- *Italic monospace* type indicates a replaceable item, as in
Dim DataItem As String
- **Bold italic monospace** type indicates a replaceable reserved word, such as a data type, as in
Dim DataItem As DataType
DataItem is replaced by a keyword corresponding to the desired VBA data type, such as **String** or **Variant**.
- An ellipsis (...) substitutes for code not shown in syntax and code examples, as in
If...Then...Else...End If
- Braces ({}) enclosing two or more identifiers separated by the pipe symbol (|) indicate that you must choose one of these identifiers, as in
Do {While|Until}...Loop
 In this case, you must use the **While** or **Until** reserved word in your statement, but not the braces or the pipe character.
- Three-letter prefixes to variable names indicate the VBA data type of the variable, such as `bln` for **Boolean**, `str` for **String**, and `lng` for **Long** (integer).
- Square brackets ([]) enclosing an identifier indicate that the identifier is optional, as in
Set tblName = dbName.OpenTable(strTableName[, blnExclusive])
 Here, the `blnExclusive` flag, if set to **True**, opens the table specified by `strTableName` for exclusive use. `blnExclusive` is an optional argument. Don't include the brackets in any code that you type.

TYPGRAPHIC CONVENTIONS USED FOR VBSCRIPT

The few Visual Basic Scripting Edition (VBScript) examples in this book use lowercase monospace type for reserved words, a practice that originated in ECMAScript (JavaScript or Microsoft JScript). Variables are in mixed case with a data type prefix, despite the lack of VBScript support for data types other than **variant**. Object, property, and method names included in the World Wide Web Consortium (W3C) Document Object Model (DOM) standard also are in lowercase.

SYSTEM REQUIREMENTS FOR ACCESS 2007

Access 2007 is a very resource-intensive application, as are all other Office 2007 members, including InfoPath 2007. You'll find execution of Access applications on Pentium PCs slower than 500MHz running Windows XP SP2 to be impaired, at best. A 667+ MHz Pentium III delivers acceptable performance, but a 1GHz x86 or similar AMD-powered machine is a more realistic minimum. The Windows Vista Capable PC minimum—"A modern processor (at least 800MHz)"—isn't likely to provide generally accepted performance standards.

Microsoft's somewhat optimistic minimum RAM recommendations for Microsoft Office Professional 2007 running under Windows XP (SP2) or Windows 2000 Professional (SP3) is 256MB. However, the Windows Vista Capable PC minimum is 512MB.

The preceding recommendations don't take into account the RAM required to run SQL Server 2005. Double the realistic RAM recommendations to 1GB to achieve acceptable performance with SSX. All the examples of this book were created and tested under Windows XP Professional (SP2) or Windows Vista, or Windows Server 2003 running on a 2.3GHz Intel x86 computer with 2GB RAM.

Standard installation of Office Professional 2007—without SSX, SQL Server Management Studio, or SQL Server Books Online—requires 1GB of free disk space. Add another 100MB for SQL Server, and 50MB each for InfoPath and Windows SharePoint Services. From a practical standpoint, you need 1.5GB or more of free disk space to use Office 2007 effectively. Add another 200MB for the sample files on the accompanying CD-ROM.

OTHER SOURCES OF INFORMATION FOR ACCESS

Relational database design and SQL, discussed in Chapters 4 and 21, are the subject of myriad guides and texts covering one or both of these topics. Articles in database-related periodicals in print form or on the Internet provide up-to-date assistance in using Access 2007. The following sections provide a bibliography of database-related books and periodicals, as well as a brief description of websites and newsgroups of interest to Access users.

BOOKS

The following books complement the content of this book by providing detailed coverage of database design techniques, Structured Query Language, VBA database programming, SQL Server 2000, XML, and HTML:

- *Database Design for Mere Mortals, Second Edition*, by Michael J. Hernandez (Addison-Wesley, ISBN 0-201-75284-0), is a comprehensive guide to sound relational database design techniques for developing productive desktop and client/server databases. The book is platform-agnostic, but the methods that you learn are especially effective for Access and SQL Server database design.

- *Understanding the New SQL: A Complete Guide*, by Jim Melton and Alan R. Simpson (Morgan Kaufmann Publishers, ISBN 1-55860-245-3), describes the history and implementation of the American National Standards Institute's X3.135.1-1992 standard for Structured Query Language, SQL-92, on which Access SQL is based. Melton was the editor of the ANSI SQL-92 standard, which consists of more than 500 pages of fine print.

NOTE

SQL: 1999 – Understanding Relational Language Components, by Jim Melton and Alan R. Simpson (Morgan Kaufmann Publishers, ISBN 1-55860-456-1, 2001), is a newer book that covers SQL-99. However, neither Access nor SQLX supports the elements added to SQL-92 by SQL-99.

- *SQL Queries for Mere Mortals*, by Michael J. Hernandez and John L. Viescas (Addison-Wesley, ISBN 0-201-43336-2), is your best source for learning to write effective SELECT queries in any SQL dialect. The book includes detailed coverage of JOIN, UNION, GROUP BY, HAVING, and subquery syntax.
- *Special Edition Using XML, Second Edition*, by David Gulbrandsen, et al. (Que, ISBN 0-7897-2748-X), describes the technologies and standards that make up XML. It includes chapters that cover modeling with XML Schema, managing namespaces, using XSL transformations, and applying styles with XSL Formatting Objects and Cascading Style Sheets.
- *Special Edition Using HTML and XHTML*, by Molly E. Holzschlag (Que, ISBN 0-7897-2713-5), is an indispensable tutorial and reference for learning the basics of HTML and gaining a full understanding of Dynamic HTML (DHTML), Cascading Style Sheets (CSS), and XHTML.

PERIODICALS

The following magazine and newsletter cover Access topics:

- *Advisor Guide to Microsoft Access*, published by Advisor Media, Inc., is a magazine intended to serve Access users and developers and is published several times a year. Online sample databases, utilities, and other software tools for Access supplement your subscription (<http://msaccess.advisorguide.com/>).
- *Smart Access* is a monthly newsletter of Pinnacle Publishing, Inc., which publishes several other database-related newsletters. *Smart Access* is directed primarily to developers and Access power users. This newsletter tends toward advanced topics, such as creating libraries and using the Windows API with VBA (http://www.pinpub.com/spec_access.htm).

INTERNET

Microsoft's Office Online and Access Developer Portal websites now are the primary source of new and updated information for Access users and developers. Following are the primary websites and newsgroups for Access 2007 users and developers:

- Microsoft's Access page, <http://office.microsoft.com/en-us/access/default.aspx>, is the jumping-off point for U.S. Access users. It includes links to all related Access 2007 and earlier pages on the Microsoft website.
- Microsoft's Access Developer Portal page, <http://msdn2.microsoft.com/en-us/office/aa905400.aspx>, provides links to information of particular interest to the Access developer community.
- The Access Team blog (<http://blogs.msdn.com/access/>), subtitled "A discussion of what's new in Access 2007," is a running source of information on the new features in Access 2007.
- Microsoft's online support page for 2007 Microsoft Office Suites, <http://support.microsoft.com/ph/8753>, provides links to Microsoft Knowledge Base pages for all its products. For other support options, go to <http://www.microsoft.com/support/>.
- Office Watch has an Access page at <http://office-watch.com/access/index.asp>. Peter Deegan and Helen Feddema offer the *Access Watch (AW)* newsletter.
- Microsoft's msnews.microsoft.com news server offers various Access-related newsgroups at microsoft.public.access.subject. When this book was written, there were 28 Access subject areas.
- The Usenet comp.databases.ms-access newsgroup is an active community of Access users and developers.