

Contents at a Glance

| | |
|---------------------------|------|
| Preface | xi |
| Acknowledgments | xxxi |

Part I: Creating Desktop Applications 1

Section I: Working with Data Tables and Queries 1

| | |
|------------------------------------------------------------------------------------|-----|
| Chapter 1: Understanding Data | 3 |
| Chapter 2: Creating and Building Tables | 35 |
| Chapter 3: Entering Data into Tables and Forms | 85 |
| Chapter 4: Creating and Understanding Relationships | 123 |
| Chapter 5: Displaying Selected Data with Queries | 153 |
| Chapter 6: Using Operators and Expressions in Multi-table Select Queries | 203 |
| Chapter 7: Working with External Data | 247 |

Section II: Building Forms and Reports 299

| | |
|-----------------------------------------------------------------------------------------------|-----|
| Chapter 8: Understanding the Many Uses of Forms and Controls | 301 |
| Chapter 9: Building and Manipulating Forms and Controls | 321 |
| Chapter 10: Creating Bound Forms and Placing Controls | 349 |
| Chapter 11: Adding Data-Validation Features to Forms | 391 |
| Chapter 12: Creating Professional-Looking Forms and Reports | 421 |
| Chapter 13: Understanding and Creating Reports | 443 |
| Chapter 14: Working with Subforms | 503 |
| Chapter 15: Creating Calculations and Summaries in Reports | 539 |
| Chapter 16: Presenting Data with Special Report Types | 575 |
| Chapter 17: Using OLE Objects, Graphs, Pivot Tables/Charts, and ActiveX Controls | 603 |

Section III: Automating Your Applications 653

| | |
|---------------------------------------------------------------------------|-----|
| Chapter 18: Understanding Visual Basic and the VBA Editor | 655 |
| Chapter 19: Introduction to Programming and Events | 679 |
| Chapter 20: Working with Expressions and Functions | 713 |
| Chapter 21: Working with SQL, Recordsets, and ADO | 737 |
| Chapter 22: Automating, Searches, Filters, and Query Parameters | 757 |
| Chapter 23: Calling Subprocedures and Functions | 771 |
| Chapter 24: Effective Debugging and Error Handling in VBA | 783 |

| | |
|-------------------------------------------------------------------------------------------------|-------------|
| Chapter 25: Creating Switchboards, Command Bars, Menus, Toolbars, and Dialog Boxes | 805 |
| Chapter 26: Programming Continuous Forms, Tab Dialogs, and Command Buttons | 865 |
| Part II: Creating Enterprise Applications | 883 |
| Section IV: Upsizing to SQL Server and MSDE 2000 | 883 |
| Chapter 27: Upsizing Data to a SQL Server Database | 885 |
| Chapter 28: Working with Access Projects | 903 |
| Chapter 29: Working with Access Projects and SQL Server Tables and Queries | 921 |
| Part III: Creating Web Applications | 945 |
| Section V: Creating Data Access Pages and Using XML and InfoPath | 945 |
| Chapter 30: Using and Creating Access Objects for Intranets and the Internet | 947 |
| Chapter 31: Building and Working with Data Access Pages | 981 |
| Chapter 32: XML, Access, and InfoPath | 1037 |
| Part IV: Advanced Access Database Topics | 1081 |
| Chapter 33: Exchanging Data with Office Applications | 1083 |
| Chapter 34: Adding Security to Applications | 1101 |
| Chapter 35: Creating Help Systems | 1143 |
| Chapter 36: Working with Advanced Select Queries and Other Query Topics | 1179 |
| Chapter 37: Working with Action and SQL Queries | 1229 |
| Chapter 38: Increasing the Speed of an Application | 1265 |
| Chapter 39: Preparing Your Application for Distribution | 1309 |
| Part V: Appendixes and Reference Material | 1331 |
| Appendix A: Access 2003 Specifications | 1333 |
| Appendix B: Access Auto Auction Tables | 1339 |
| Appendix C: Using the CD-ROM Included with the Book | 1345 |
| Appendix D: Using Standard Naming Conventions | 1355 |
| Index | 1363 |

Contents

Preface xi
Acknowledgments xxxi

Part I: Creating Desktop Applications 1

Section I: Working with Data Tables and Queries 1

Chapter 1: Understanding Data 3

The Database Terminology of Access 4
 What is a database? 4
 Databases, tables, records, fields, and values 5
Using More Than One Table 7
 Working with multiple tables 8
 Why you should create multiple tables 8
Access Database Objects and Views 9
 Datasheets 9
 Queries and dynasets 10
 Data-entry and display forms 10
 Reports 11
 Designing the system's objects 11
The Seven-Step Design Method 12
 Step 1: The overall design—From concept to reality 13
 Step 2: Report design—Placing your fields 15
 Step 3: Data design—What fields do you have? 17
 Step 4: Table design and relationships 24
 Step 5: Field design data-entry rules and validation 27
 Step 6: Form design—Input 30
 Step 7: Automation design—Menus 32

Chapter 2: Creating and Building Tables 35

Creating Database Tables 35
Creating a Database 35
 Templates Section 37
 Blank database 39
The Database Window 41
 Objects menu bar 42
 Groups menu bar 43
 The Database window toolbar buttons 44
 The Access window toolbar 44

| | |
|------------------------------------------------------|----|
| Creating a New Table | 46 |
| The table design process | 46 |
| The New Table dialog box | 47 |
| Creating a new table with a Datasheet View | 49 |
| The Table Design Window | 51 |
| Using the Table Design window toolbar | 52 |
| Working with fields | 52 |
| Creating the tblContacts Table | 56 |
| AutoNumber fields and Access | 56 |
| Completing the tblContacts Table | 57 |
| Changing a Table Design | 59 |
| Inserting a new field | 59 |
| Deleting a field | 59 |
| Changing a field location | 60 |
| Changing a field name | 60 |
| Changing a field size | 60 |
| Changing a field data type | 61 |
| Understanding Field Properties | 62 |
| Entering field-size properties | 64 |
| Using formats | 65 |
| Entering formats | 69 |
| Entering input masks | 70 |
| The Input Mask Wizard | 72 |
| Entering decimal places | 73 |
| Creating a caption | 73 |
| Setting a default value | 73 |
| Working with validation | 73 |
| Understanding the Lookup Property window | 76 |
| Determining the Primary Key | 76 |
| Creating a unique key | 77 |
| Creating the primary key | 78 |
| The Indexes window | 78 |
| The Table Properties window | 79 |
| Printing a Table Design | 80 |
| Saving the Completed Table | 81 |
| Manipulating Tables in a Database Window | 81 |
| Renaming tables | 81 |
| Deleting tables | 82 |
| Copying tables in a database | 82 |
| Copying a table to another database | 83 |
| Adding Records to a Database Table | 83 |

Chapter 3: Entering Data into Tables and Forms 85

| | |
|-------------------------------------|----|
| Understanding Datasheets | 85 |
| The Datasheet Window | 86 |
| Moving within a datasheet | 88 |
| The Navigation buttons | 88 |
| The Datasheet toolbar | 89 |

Opening a Datasheet 92

Entering New Data 92

 Saving the record 94

 Understanding automatic data-type validation 95

 Understanding how properties affect data entry 96

Navigating Records in a Datasheet 98

 Moving between records 98

 Finding a specific value 99

Changing Values in a Datasheet 102

 Replacing an existing value manually 102

 Changing an existing value 103

 Fields that you can't edit 104

Using the Undo Feature 104

Copying and Pasting Values 105

Replacing Values 105

Adding New Records 106

Deleting Records 107

Adding, Changing, and Deleting Columns 107

 Deleting a column from a datasheet 108

 Adding a column to a datasheet 108

 Changing a field name (column header) 108

Displaying Records 108

 Changing the field order 108

 Changing the field display width 110

 Changing the record display height 111

 Displaying cell gridlines 112

 Changing display fonts 113

 Hiding and unhiding columns 114

 Freezing columns 115

 Saving the changed layout 115

 Saving a record 115

Sorting and Filtering Records in a Datasheet 115

 Using the QuickSort feature 116

 Using Filter By Selection 116

 Using Filter By Form 118

Printing Records 118

 Printing the datasheet 119

 Using the Print Preview window 119

Chapter 4: Creating and Understanding Relationships 123

Tables Used in the Access Auto Auctions Database 123

Understanding Keys 126

 Deciding on a primary key 128

 Benefits of a primary key 129

 Creating a primary key 130

 Understanding foreign keys 132

Understanding Relations between Tables 132

 A review of relationships 133

 Understanding the four types of table relationships 133

| | |
|------------------------------------------------------------------------------------------------|-----|
| Understanding Referential Integrity | 136 |
| Creating Relationships | 136 |
| Using the Relationships window | 137 |
| Creating relationships between tables | 139 |
| Specifying relationship options in the Edit Relationships dialog box | 140 |
| Finishing the relationships between the tables of the Access Auto Auctions system | 144 |
| Saving the relationships between tables | 146 |
| Adding another relationship | 146 |
| Deleting an existing relationship | 147 |
| Join lines in the Relationships window | 147 |
| Printing a report of the relationships | 147 |
| Using Subdatasheets | 148 |
| Setting up sub-datasheets | 149 |

Chapter 5: Displaying Selected Data with Queries 153

| | |
|---------------------------------------------------------|-----|
| Understanding Queries | 153 |
| What is a query? | 154 |
| Types of queries | 156 |
| Query capabilities | 157 |
| How dynasets work | 158 |
| Creating a Query | 158 |
| Selecting a table | 159 |
| Using the Query window | 161 |
| Navigating the Query Design window | 161 |
| Using the Query Design toolbar | 162 |
| Using the QBE pane of the Query Design window | 163 |
| Selecting Fields | 163 |
| Adding a single field | 163 |
| Adding multiple fields | 165 |
| Adding all table fields | 166 |
| Displaying the Dynaset | 167 |
| Working with the datasheet | 168 |
| Changing data in the query datasheet | 168 |
| Returning to the query design | 168 |
| Working with Fields | 168 |
| Selecting a field | 168 |
| Changing field order | 170 |
| Resizing columns in design mode | 170 |
| Removing a field | 171 |
| Inserting a field | 171 |
| Changing the field display name | 171 |
| Showing table names | 172 |
| Showing a field | 173 |
| Changing the Sort Order | 173 |
| Specifying a sort | 174 |

| | |
|-------------------------------------------------------------------|-----|
| Displaying Only Selected Records | 175 |
| Understanding record criteria | 175 |
| Entering simple character criteria | 176 |
| Entering other simple criteria | 177 |
| Printing a Query Dynaset | 178 |
| Saving a Query | 179 |
| Adding More than One Table to a Query | 180 |
| Working with the Table/Query Pane | 181 |
| The join line | 181 |
| Resizing the Table/Query pane | 182 |
| Manipulating the Field List window | 184 |
| Moving a table | 184 |
| Removing a table | 184 |
| Adding more tables | 185 |
| Resizing a Field List window | 185 |
| Adding Fields from More than One Table | 185 |
| Adding a single field | 185 |
| Viewing the table names | 186 |
| Adding multiple fields at the same time | 186 |
| Adding all table fields | 187 |
| Understanding the Limitations of Multiple-Table Queries | 188 |
| Updating limitations | 188 |
| Overcoming query limitations | 190 |
| Creating and Working with Query Joins | 191 |
| Joining tables | 192 |
| Specify the type of join | 193 |
| Deleting joins | 194 |
| Understanding Types of Table Joins | 195 |
| Inner joins (Equi-joins) | 195 |
| Changing join properties | 196 |
| Inner and outer joins | 198 |
| Creating a Cartesian product | 201 |

**Chapter 6: Using Operators and Expressions
in Multi-table Select Queries 203**

| | |
|----------------------------------------------------|-----|
| What Are Operators? | 203 |
| Types of operators | 204 |
| When are operators used? | 204 |
| Mathematical operators | 204 |
| Relational operators | 208 |
| String operators | 210 |
| Boolean (logical) operators | 213 |
| Miscellaneous operators | 216 |
| Operator precedence | 217 |
| Moving beyond Simple Queries | 219 |
| Using query comparison operators | 220 |
| Understanding complex criteria selection | 222 |
| Using functions in select queries | 225 |
| Referencing fields in select queries | 226 |