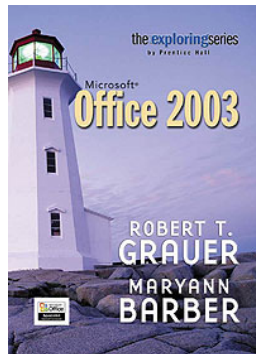


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Chapter 3 - Information From the Database: Reports and Queries

Robert Grauer and Maryann Barber

Committed to Shaping the Next Generation of IT Experts.

Objectives

- Describe types of reports
- Describe similarities between forms and reports with respect to controls
- List sections in a report
- Use conditional formatting in a report
- Differentiate between a query and a table

Objectives (continued)

- Use design grid to create and modify a select query
- Explain multiple criteria rows in a query
- Use concatenation to combine fields
- Use an immediate If statement
- Define an action query
- Create a crosstab query

Case Study: The Garden Club

The case requires students to create output from the database:

- Members who have donated more than \$25 dollars
- Members willing to open their homes for tours
- Reports based on the above queries

Report Types

- Columnar (vertical) report
 - Simplest type
 - Lists every field for every record in a single column (one record per page)
- Tabular report
 - Displays selected fields in a row
 - One record per row

Anatomy of a Report

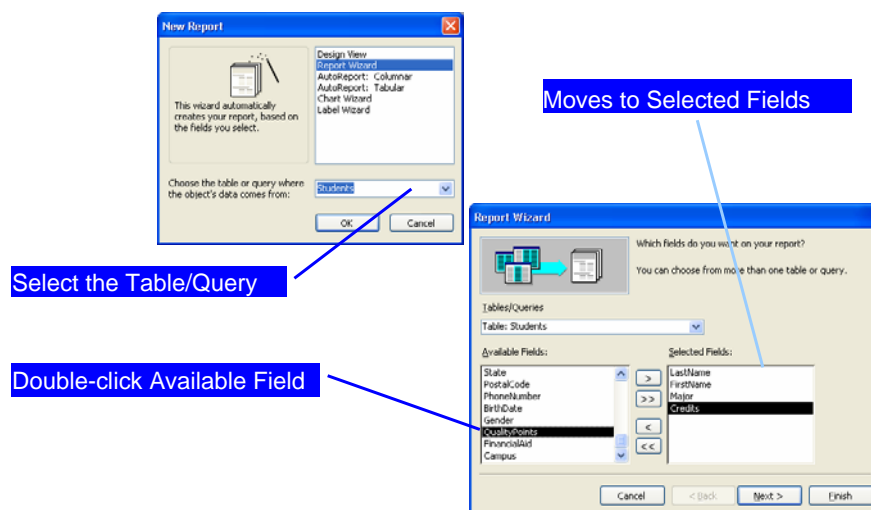
- Report header & footer
- Page header & footer
- Group header & footer
- Detail section

Report Wizard

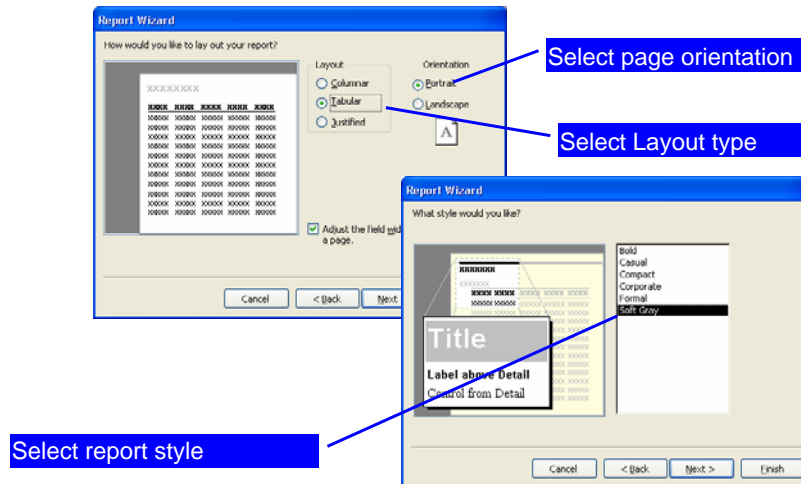
Easiest way to create a report

- Specify the table or query
- Select one or more fields
- Select layout (columnar/ tabular)
- Select a style
- Modify the resulting report

Report Wizard (continued)



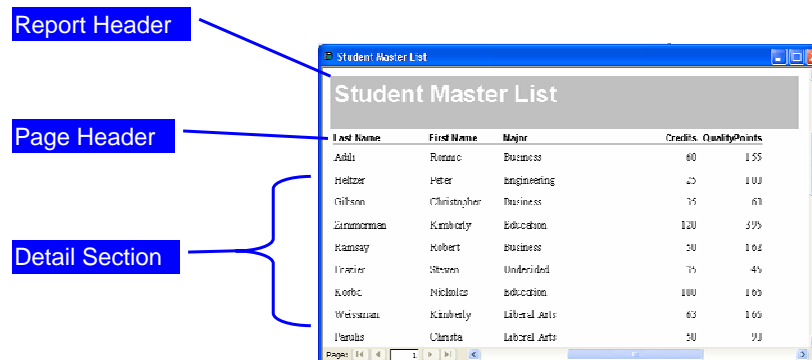
Report Wizard (continued)



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Report Wizard (continued)



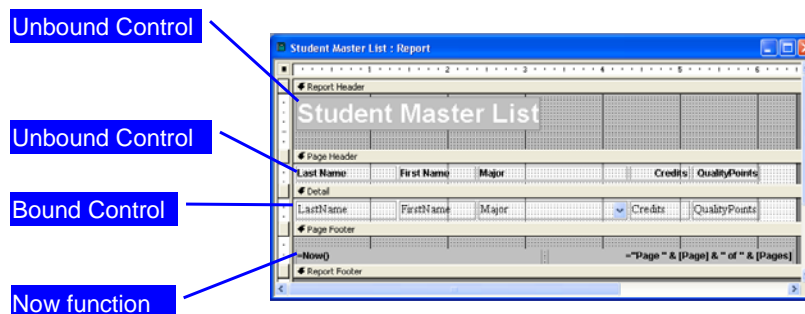
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Report Design View

- **Bound Controls**
 - Data source is a field in the table/query
- **Unbound Controls**
 - Has no data source
 - Used to display titles, labels, lines, rectangles, and graphics
- **Calculated Controls**
 - Data source is an expression (avg, sum)

Report Design View (continued)



Hands-on Exercise 1

- Title of Exercise: The Report Wizard
- Objective: to use the Report Wizard; to modify an existing report by adding, deleting, and/or modifying its controls
 - Input file: Our Students
 - Output file: Our Students (modified)

Introduction to Queries

- Query provides the resulting records from a question
- Design grid: graphical tool used to develop queries
- Dynaset: The records that satisfy the query criteria

Dynaset

- Looks and acts like a table
- Is a dynamic subset of a table
- Allows for entry, updating and deletion of records
- Changes update the underlying table

Select Query Dynaset

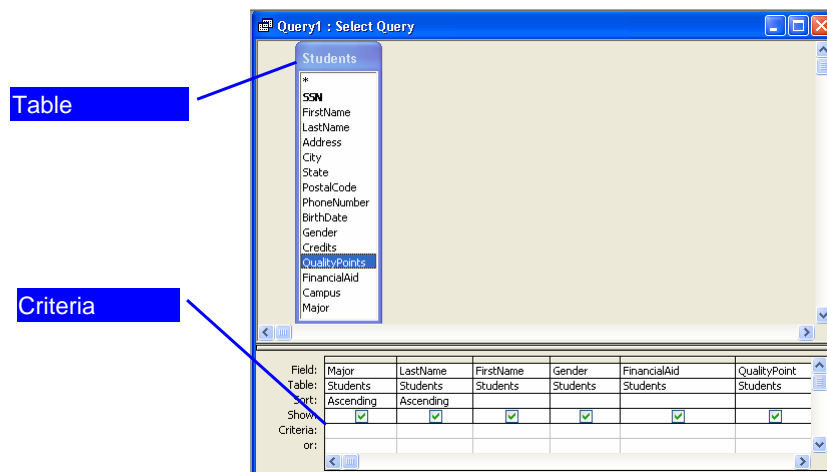
The results of a query are displayed as a dynaset

Major	Last Name	First Name	Gender	FinancialAid	QualityPoints
Business	Adili	Ronnie	F	No	155
Business	DiGiacomo	Kevin	M	Yes	375
Business	Gibson	Christopher	M	Yes	60
Business	Ramsay	Robert	M	Yes	162
Business	Watson	Ana	F	No	75
Communications	Faulkner	Eileen	F	No	80
Communications	Joseph	Cedric	M	Yes	170
Communications	Ortiz	Frances	F	Yes	60
Communications	Price	Lori	F	Yes	42
Communications	Slater	Erica	F	Yes	390
Education	Korba	Nickolas	M	No	166
Education	Zimmerman	Kimberly	F	No	395

Creating a Query

- Select query
- Query window views
 - Datasheet view
 - Design view

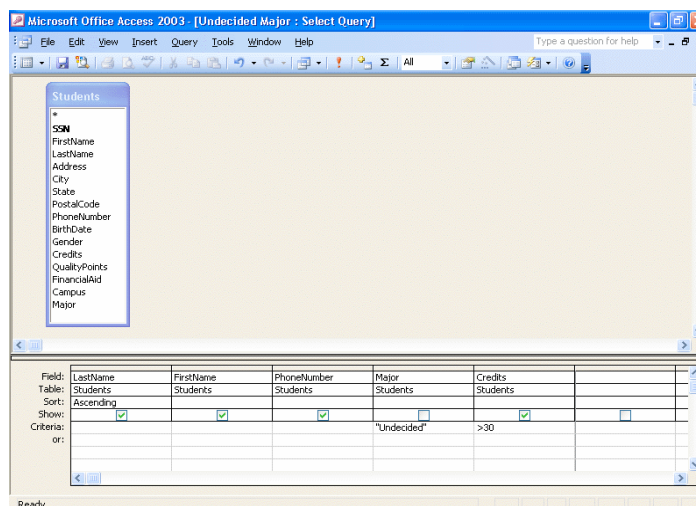
Select Query Design View



Query Selection Criteria

- AND condition
- OR condition
- Relational operators
- Between function
- NOT function
- Wild card

“And” Query



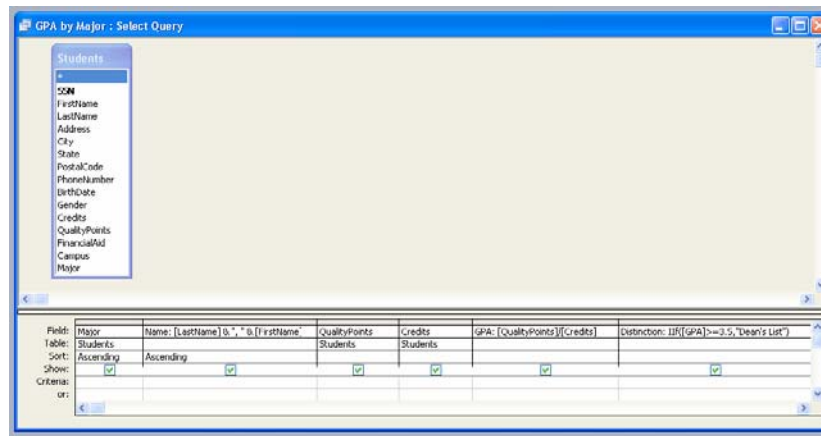
Hands-on Exercise 2

- Title of Exercise: Creating A Select Query
- Objective: to create a select query using Simple Query Wizard; to show how changing values in a dynaset changes values in underlying table; to create a report based on a query
 - Input file: Our Students (from Hands-on Ex. 1)
 - Output file: Our Students (modified)

Access Functions and Calculated Controls

- Concatenate
 - Joins together fields, such as first and last names, into a single field
 - Name: [LastName]&" "&[FirstName]
- Immediate IF (IIF) function
 - Similar to the IF function in Excel
 - Condition, what happens if true, what happens if false

Example of IIF Function



Grouping Records

- Use report anatomy to group records
- Grouping allows calculations like:
 - Count function
 - Sum function
 - Min function
 - Max function
 - Avg function

Hands-on Exercise 3

- Title of Exercise: Grouping Records
- Objective: to create a query containing a calculated control, then create a report based on that query; use sorting and Grouping to add a group header and footer to a report
 - Input file: Our Students (from Hands-on Ex. 2)
 - Output file: Our Students (modified)

Crosstab Queries

Average GPA/Major by Gender

Listing of Majors

Major	F	M
Business	2.54	2.66
Communications	2.57	3.78
Education		1.66
Engineering	3.50	3.25
Liberal Arts	2.41	2.80
Undecided	2.96	2.23

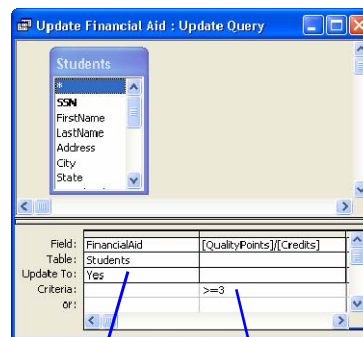
Record: 1 of 6

Action Queries

Enables table updates. Four types:

- **Update:** Changes multiple records
- **Append:** Adds records from one table to another
- **Delete:** deletes records that meet a criteria
- **Make-table:** Creates a new table from existing records

Action Queries



Changes Financial Aid to Yes

A GPA greater than 3

Hands-on Exercise 4

- Title of Exercise: Crosstab and Action Queries
- Objective: to use action queries to modify a database; to create a crosstab query to display summarized values from a table
 - Input file: Our Students (from Hands-on Ex. 3)
 - Output file: Our Students (modified)

Chapter 3 Summary

- Report prints and displays information from a database
- Report Wizard easily creates reports
- Each report section comprised of controls
- Reports: based on table or query
- Query displays records that meet a criteria

Chapter 3 Summary (continued)

- Queries display selected records in a dynaset
- Grouping records by a field for summaries
- Action queries modify records
- Crosstab queries display aggregated rather than individual records

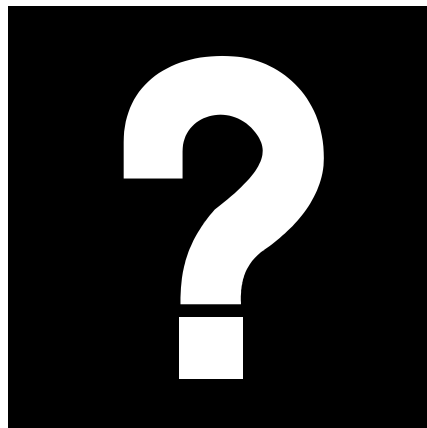
End-of-chapter Exercises

- Multiple Choice
- Practice With Access
 - Exercise 1 – The Oscars
 - Exercise 2 – The United States
 - Exercise 3 – The Super Bowl
 - Exercise 4 – The Shopping Mall
 - Exercise 5 – Best Realty
 - Exercise 6 – The Fishing Pole
 - Exercise 7 – Salary Increases
 - Exercise 8 – Action Queries

End-of-chapter Exercises (continued)

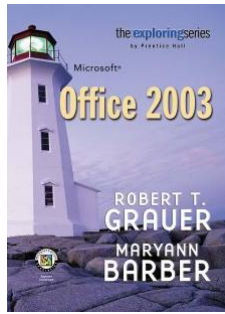
- Practice With Access (continued)
 - Exercise 9 – Events Extraordinaire
 - Exercise 10 – Paw Prints
- Mini Cases
 - Mail Merge
 - Oh Canada
 - Compacting versus Compressing
 - Chapter Recap – Citizen of the World

Questions?



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Chapter 5: One-to-Many Relationships: Subforms and Multiple-Table Queries

Robert Grauer and Maryann Barber

Committed to Shaping the Next Generation of IT Experts.

Objectives

- Distinguish between primary and foreign keys
- Define referential integrity
- Use the Relationships Window to create a one-to-many relationship
- Explain how AutoNumber simplifies data entry

Objectives (continued)

- Distinguish between a main form and a subform
- Create a report based on a multi-table query
- Create a main form with linked subforms

Case Study: The Residential Colleges

The case requires students to create a database that includes:

- Three tables: students, faculty, and colleges
- One-to-many relationships
- Form and report templates
- A switchboard, an About form and a relationship diagram

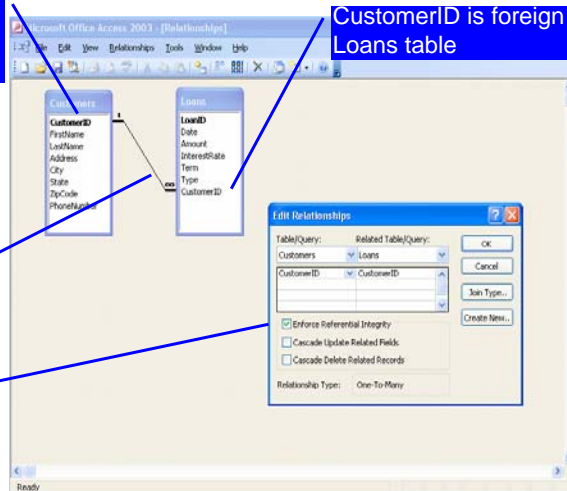
Relationships Window

CustomerID is primary key in Customers table

CustomerID is foreign key in Loans table

Relationships line

Enforce Referential Integrity



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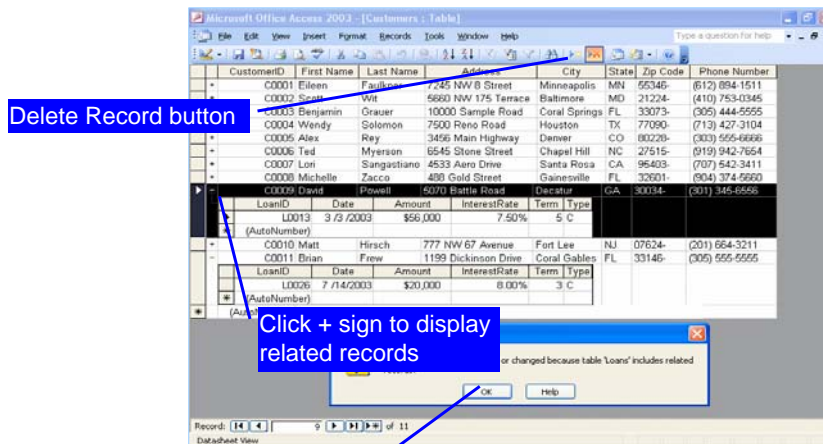
Referential Integrity

- Access automatically implements a form of data validation during data entry
- Can enter a record in the “one” table, but not in the “many” table if record contains an invalid value for the foreign key
- This ensures that related tables are consistent with one another

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Referential Integrity (continued)



Cannot delete Customer without first deleting related Loan and Barber

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Hands-on Exercise 1

- Title of Exercise: One-to-Many Relationships
- Objective: to create a one-to-many relationship between existing tables; demonstrate referential integrity between the related tables
 - Input file: National Bank
 - Output file: National Bank (modified)

Subforms

- Subform is a form within a form
- Main form would be based on primary table, while subform is based on related table
- Use Subform Wizard
- Can be created on main form or can be dragged from a separate form

Subforms (continued)

Customer C0001

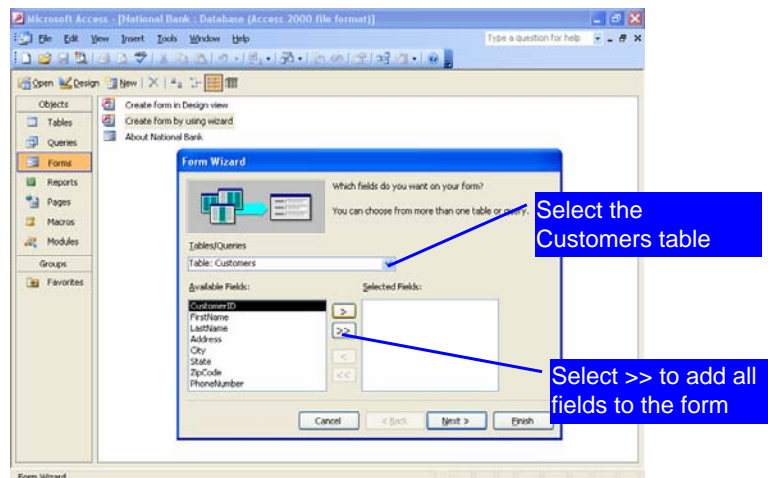
Loans for Customer C0001

LoanID	Date	Amount	InterestRate	Term	Type	Payment Due	CustomerID
L0010	2/28/2003	\$200,000	7.00%	15 M		\$1,797.66	C0001
L0016	3/21/2003	\$150,000	7.50%	15 M		\$1,390.52	C0001
L0017	3/22/2003	\$100,000	7.00%	30 M		\$665.30	C0001
(Add Number)						#Error	C0001

Status bar for Loans form

Status bar for Customers form

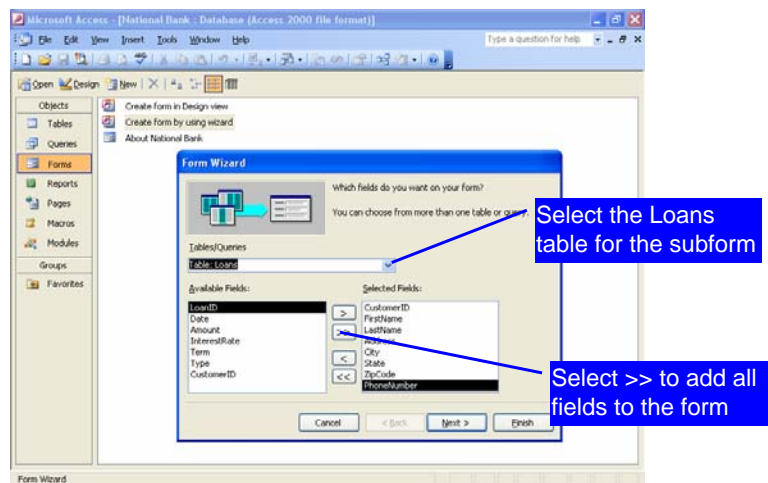
Form Wizard (1 of 4)



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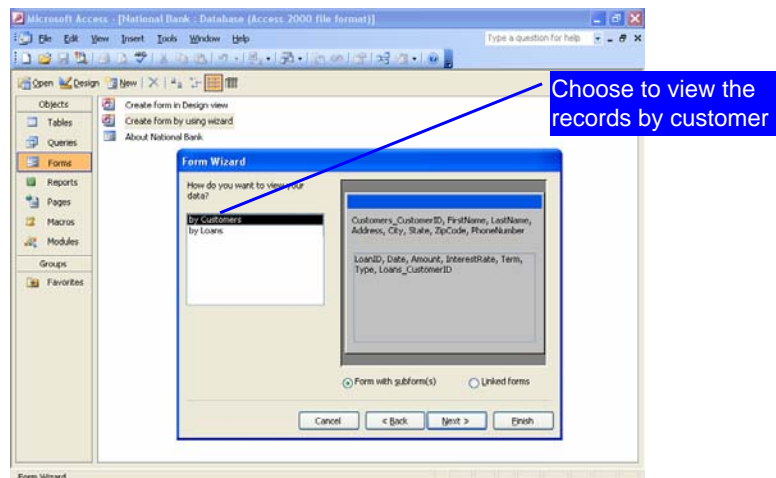
Form Wizard (2 of 4)



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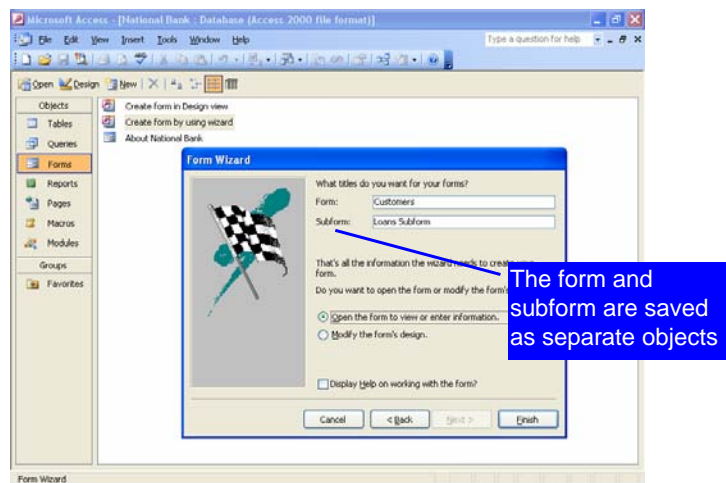
Form Wizard (3 of 4)



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Form Wizard (4 of 4)



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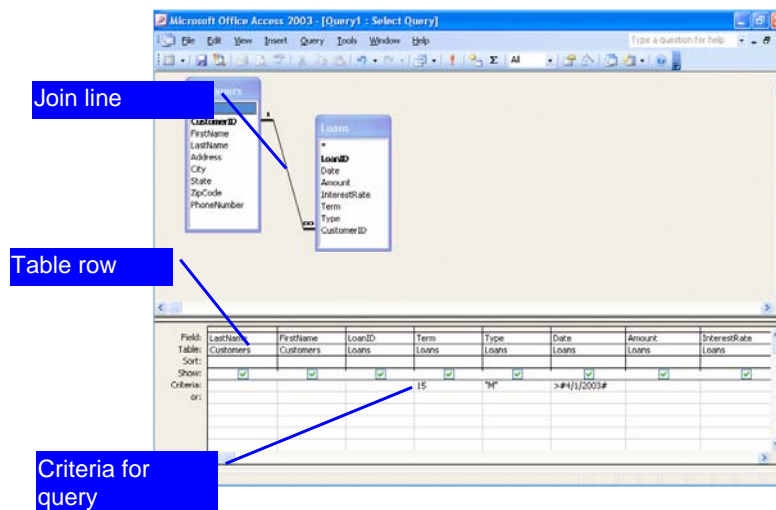
Hands-on Exercise 2

- Title of Exercise: Creating a Subform
- Objective: to create a subform that displays many records; move and size controls in a form; enter data in a subform
 - Input file: National Bank (from Exercise 1)
 - Output file: National Bank (modified)

Multiple Table Queries

- Query information from two tables
- Create a select query using both tables
- Query window displays selected fields of each table

Multiple Table Queries



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Hands-on Exercise 3

- Title of Exercise: Queries and Reports
- Objective: to create a query that relates two tables to each other; base a report on that query; use the query to update the records
 - ❑ Input file: National Bank (from Exercise 2)
 - ❑ Output file: National Bank (modified)

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Multiple Subforms

- A main table can have multiple levels of subforms
- Useful for displaying a one-to-many relationship within a one-to-many relationship

Multiple Subforms (continued)

Customer C0005

CustomerID: C0005 Phone Number: (303) 995-6666
 First Name: Alex Last Name: Ray
 Address: 3456 Main Highway
 City: Denver State: CO Zip Code: 80020

Loan L0003 for Customer C0005

LoanID	Date	Amount	InterestRate	Term	Type	Payment Due
L0003	1/25/2003	\$10,000	5.50%	3	C	\$301.96

Payments for Loan L0003

PaymentID	LoanID	PaymentDate	AmountReceived
P0003	L0003	2/25/2003	\$301.96
P0012	L0003	3/25/2003	\$301.96
P0028	L0003	4/25/2003	\$301.96
P0049	L0003	5/25/2003	\$301.96
P0073	L0003	6/25/2003	\$301.96

Record: 14 of 10
Form View

Hands-on Exercise 4

- Title of Exercise: Linked Subforms
- Objective: to create a main form with two levels of subforms; display a subform in Form view or Datasheet view
 - Input file: National Bank (from Exercise 3)
 - Output file: National Bank (modified)

Summary

- Access database may contain multiple tables
- Each table has a primary key which is the foreign key of a related table
- Relationships window is used to create one-to-many relationships
- AutoNumber field assigns next number to primary key of a new record
- Referential integrity ensures consistency between related tables

Summary (continued)

- Subform is a form within a form
- A main form can have multiple subforms
- Select query can include fields from several tables
- Results of a query are displayed in a dynaset
- Tables can be added at any time without disturbing existing data

End-of-chapter Exercises

- Multiple Choice
- Practice With Access
 - Exercise 1 – Understanding Database Design
 - Exercise 2 – Widgets of America (database design)
 - Exercise 3 – Expanding National Bank
 - Exercise 4 – National Bank Customer List
 - Exercise 5 – Customer Payment Information
 - Exercise 6 – National Bank Switchboard
 - Exercise 7 – Turkeys to Go Restaurants

End-of-chapter Exercises (continued)

- Practice With Access (continued)
 - Exercise 8 – Turkeys to Go Switchboard
 - Exercise 8 – The Richards Company
 - Exercise 9 – The Richards Company Switchboard
- Mini Cases
 - University Apartments
 - The Automobile Dealership
 - Chapter Recap – Evergreen Flying Club

Questions?

