



CSCA0102

IT and Business Applications

Chapter 10

Database Management System

Database

- A **database** is a collection of data that is stored in a computer system.
- Databases allow their users to **enter, access, and analyze** their data quickly and easily.

Database

- If a database is essentially a collection of lists stored in tables and you can build tables in Excel, why do you need a real database in the first place?
- While Excel is great at storing and organizing numbers, Access is far stronger at handling non-numerical data, like names and descriptions.
- Non-numerical data plays a big role in almost any database, and it's important to be able to sort and analyze it.

Database

- However, the thing that really sets databases apart from any other way of storing data is **connectivity**.
- We call a database like the ones you'll work with in Access a **relational database**.
- A relational database is able to understand how lists and the objects within them **relate** to one another.

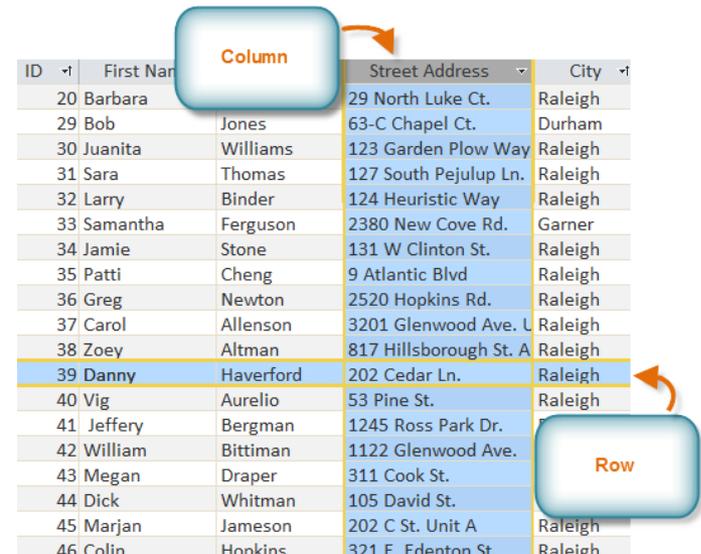
Database Objects

- Databases are composed of four objects:
 - **Tables**
 - **Queries**
 - **Forms**
 - **Reports**

Database Objects

Tables

- All data is stored in **tables**, which puts tables at the heart of any database.
- Tables are organized into vertical **columns** and horizontal **rows**.
- Rows and columns are referred to as **Records** and **Fields**.

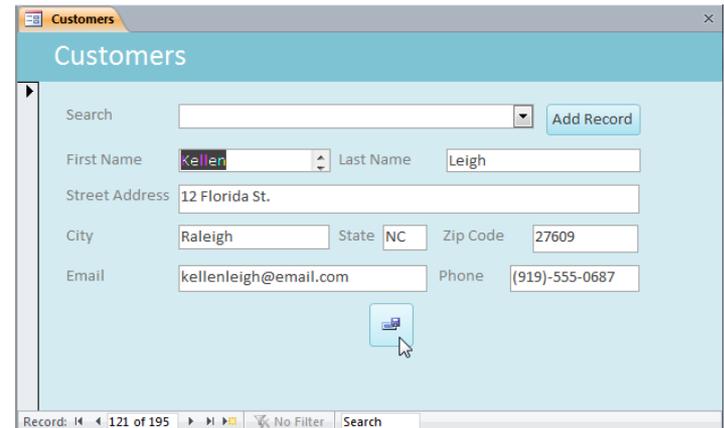


ID	First Name	Street Address	City
20	Barbara	29 North Luke Ct.	Raleigh
29	Bob Jones	63-C Chapel Ct.	Durham
30	Juanita Williams	123 Garden Plow Way	Raleigh
31	Sara Thomas	127 South Pejulup Ln.	Raleigh
32	Larry Binder	124 Heuristic Way	Raleigh
33	Samantha Ferguson	2380 New Cove Rd.	Garner
34	Jamie Stone	131 W Clinton St.	Raleigh
35	Patti Cheng	9 Atlantic Blvd	Raleigh
36	Greg Newton	2520 Hopkins Rd.	Raleigh
37	Carol Allenson	3201 Glenwood Ave. L	Raleigh
38	Zoey Altman	817 Hillsborough St. A	Raleigh
39	Danny Haverford	202 Cedar Ln.	Raleigh
40	Vig Aurelio	53 Pine St.	Raleigh
41	Jeffery Bergman	1245 Ross Park Dr.	
42	William Bittiman	1122 Glenwood Ave.	
43	Megan Draper	311 Cook St.	
44	Dick Whitman	105 David St.	
45	Marjan Jameson	202 C St. Unit A	Raleigh
46	Colin Honkins	321 F. Edenton St.	Raleigh

Database Objects

Forms

- **Forms** are used for **entering, modifying,** and **viewing** records.
- The reason forms are used so often is that they're an easy way to guide people into entering data correctly.



The screenshot shows a web-based form titled "Customers" with the following fields and values:

Field	Value
Search	[Dropdown menu]
First Name	kellen
Last Name	Leigh
Street Address	12 Florida St.
City	Raleigh
State	NC
Zip Code	27609
Email	kellenleigh@email.com
Phone	(919)-555-0687

Additional features include an "Add Record" button, a "No Filter" indicator, and a "Search" button at the bottom. The status bar shows "Record: 121 of 195".

Database Objects

Queries

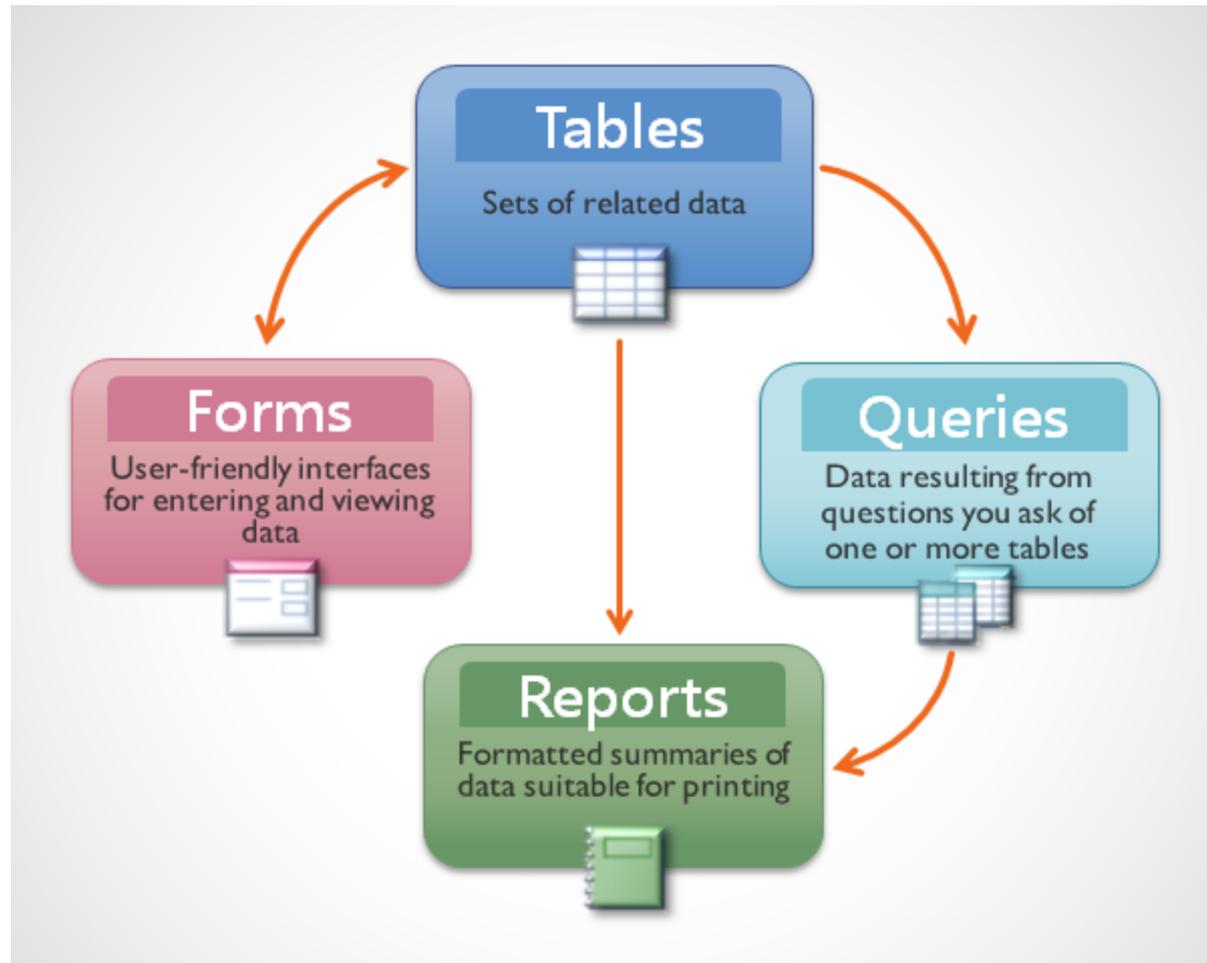
- Queries are a way of **searching** for and **compiling** data from one or more tables.
- When you build a query, you are **defining specific search conditions** to find exactly the data you want.

Database Objects

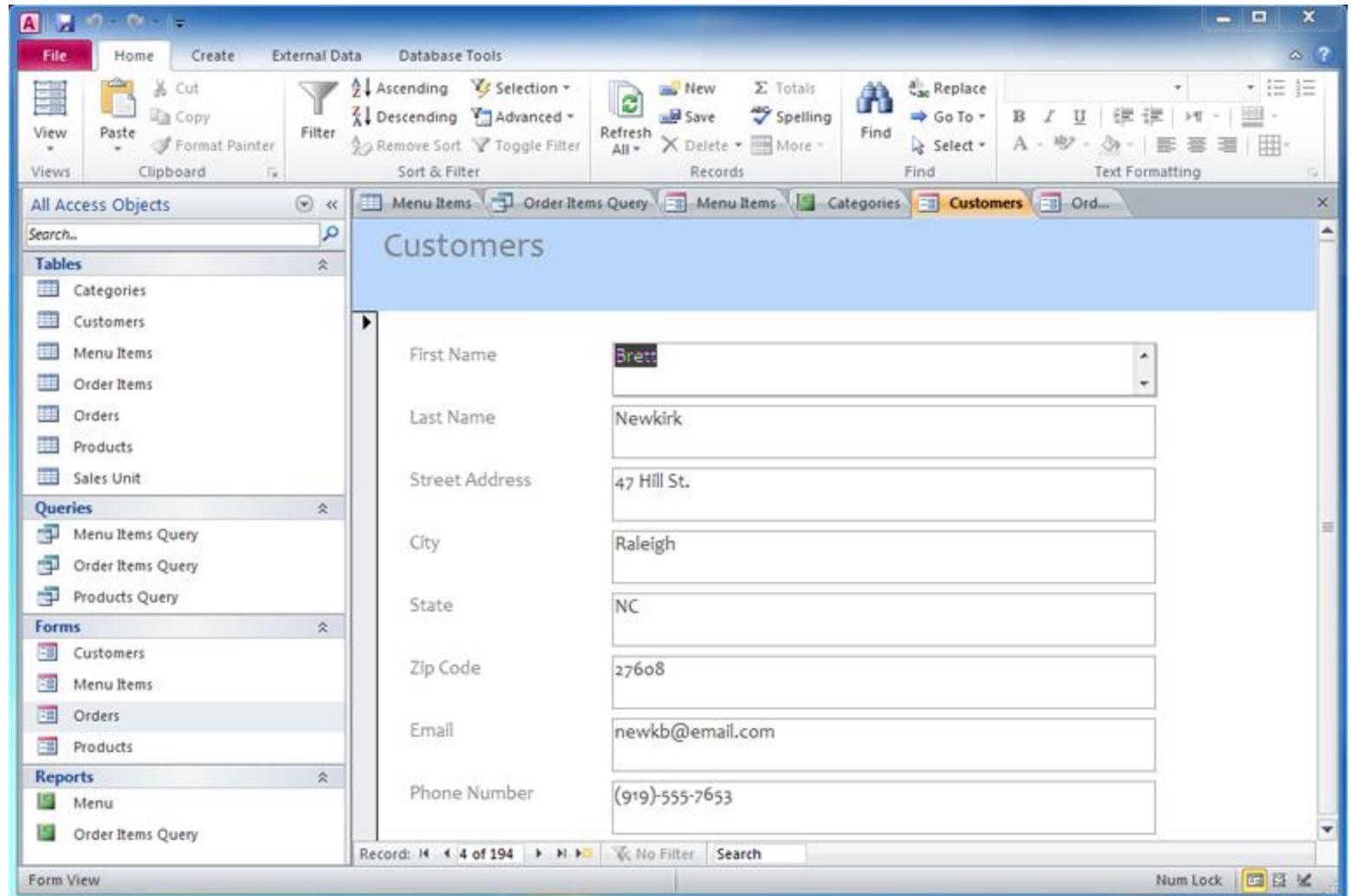
Reports

- **Reports** offer you the ability to **present** your data **in print**.
- Reports are useful, because they allow you to present components of your database in an easy-to-read format.
- You can create a report from any **table** or **query**.

Database Objects



MS Access - Interface



MS Access - Interface

The screenshot displays the Microsoft Access application window. The title bar shows the application name and standard window controls. The ribbon is set to the 'Database Tools' tab, with the 'Records' group selected. The Quick Access Toolbar is visible at the top left, containing icons for Save, Undo, and Repeat. The left-hand pane shows the 'All Access Objects' list, with 'Customers' selected under the 'Forms' category. The main window area displays the 'Customers' form in 'Form View'. The form contains several text boxes with the following data: Name (Kareigh), State (NC), Zip Code (27608), Email (newkb@email.com), and Phone Number ((919)-555-7653). The status bar at the bottom indicates 'Record: 4 of 194' and 'No Filter'.

The **Quick Access Toolbar** lets you access common commands no matter which tab you are on. By default, it shows the Save, Undo, and Repeat commands. You can add other commands to make it more convenient for you.

MS Access - Interface

The screenshot displays the Microsoft Access application window. The top ribbon is active, showing tabs for 'File', 'Home', 'Create', 'External Data', and 'Database Tools'. The 'Home' tab is selected, revealing various command groups such as 'Views', 'Clipboard', 'Filter', 'Sort & Filter', 'Records', and 'Text Formatting'. On the left, the 'All Access Objects' navigation pane is visible, with categories for Tables, Queries, Forms, and Reports. The 'Customers' table is selected under the Tables category. The main workspace shows a data entry form for the 'Customers' table. The form includes fields for 'First Name' (containing 'Brett'), 'Zip Code' (27608), 'Email' (newkb@email.com), and 'Phone Number' ((919)-555-7653). A status bar at the bottom indicates 'Record: 4 of 194' and 'No Filter'.

The **Ribbon** contains all of the commands you will need in order to do common tasks. It contains multiple tabs, each made up of several groups of commands.

MS Access - Interface

The screenshot displays the Microsoft Access application window. The ribbon at the top includes tabs for File, Home, Create, External Data, and Database Tools. The Database Tools ribbon is active, showing options like Filter, Selection, Advanced, Refresh, New, Save, Totals, Spelling, Find, and Replace. On the left, the Navigation Pane is titled 'All Access Objects' and contains a search bar and a tree view of database objects. The objects are grouped into Tables, Queries, Forms, and Reports. The 'Tables' group is expanded, showing a list of tables: Categories, Customers, Menu Items, Order Items, Orders, Products, and Sales Unit. The 'Orders' table is selected. The main area of the window shows a data entry form for the 'Orders' table. The form has several text boxes with the following values: Last Name (Newkirk), Street Address (47 Hill St.), City (Raleigh), State (NC), Zip Code (27608), Email (newkb@email.com), and Phone Number ((919)-555-7653). At the bottom of the window, the status bar shows 'Record: 4 of 194', 'No Filter', and 'Search'. The bottom-left corner of the window indicates 'Form View' and the bottom-right corner shows 'Num Lock' and system icons.

The **Navigation Pane** displays all of the **objects** contained in your database. The objects are grouped by type. To open an object, double-click it.

Last Name	Newkirk
Street Address	47 Hill St.
City	Raleigh
State	NC
Zip Code	27608
Email	newkb@email.com
Phone Number	(919)-555-7653

MS Access - Interface

The screenshot displays the Microsoft Access interface. The ribbon at the top includes tabs for File, Home, Create, External Data, and Database Tools. The Database Tools ribbon is active, showing options like Filter, Sort & Filter, Records, Find, and Text Formatting. On the left, the 'All Access Objects' pane is visible, with categories for Tables, Queries, Forms, and Reports. The 'Customers' form is open in the main window, showing fields for First Name, Last Name, Street Address, City, State, Zip Code, Email, and Phone Number. A 'Document Tabs bar' is located above the form, displaying tabs for 'Menu Items', 'Order Items', 'Menu Items', 'Categories', 'Customers', and 'Ord...'. A callout box points to this bar with the text: 'All open objects are displayed on the Document Tabs bar. To view an object, click on its tab.' The status bar at the bottom indicates 'Form View', 'Record: 4 of 194', and 'No Filter Search'.

All open objects are displayed on the **Document Tabs bar**. To view an object, click on its tab.

MS Access – Creating Database

To create a new Database:

- Choose 'Blank Database'.
- Type the filename.
- Click the create button.

MS Access – Table

- **Tables** are arguably the most important.
- Even when you're using forms, queries, and reports, you're still working with tables, since that's where all your **data** is stored.

MS Access – Table

The screenshot displays the Microsoft Access interface with a table named 'Customers'. The table has five columns: ID, First Name, Last Name, Street Address, and City. The data is as follows:

ID	First Name	Last Name	Street Address	City
32	Larry	Binder	124 Heuristic Way	Raleigh
33	Samantha	Ferguson	2380 New Cove Rd.	Garner
34	Christi	Cheng	9 Atlantic Blvd	Raleigh
35	Greg	Newton	2520 Hopkins Rd.	Raleigh
36	Paul	Allenson	3201 Glenwood Ave. Unit A	Raleigh
38	Zoey	Altman	817 Hillsborough St. Apt E1	Raleigh
39	Danny	Haverford	202 Cedar Ln.	Raleigh
40	Vig	Aurelio	53 Pine St.	Raleigh
41	Jeffery	Bergman	1245 Ross Park Dr.	Raleigh
42	William	Bittiman	1122 Glenwood Ave.	Raleigh
43	Megan	Draper	311 Cook St.	Raleigh
44	Dick	Whitman	105 David St.	Raleigh
45	Marjan	Jameson	202 C St. Unit A	Raleigh
46	Colin	Hopkins	321 E. Edenton St.	Raleigh
47	Hakim	Auden	921 Dawson St.	Raleigh

Annotations in the image:

- Field**: A callout box pointing to the 'Street Address' column header.
- Record**: A callout box pointing to the row for ID 39 (Danny Haverford).
- Cell**: A callout box pointing to the 'City' cell for ID 39 (Raleigh).

MS Access – Table

- A **field** is a way of organizing information by type.
- A **record** is one unit of information. Every cell on a given row is part of that row's record. Each record has its own **ID number**.

MS Access – Table

To create a table:

- Click the Create Tab.
- Choose Table.
- Go to Design View to design the table.
- Type the field name and choose the data type for each field. You also can change the field properties.

MS Access – Table

To add record:

- Go to Datasheet view.
- Begin typing in the row to add record.

MS Access – Form

- Using a form to enter data lets you be certain that you're entering the right data in the right location and format.
- This can help keep your database accurate and consistent.

MS Access – Form

The screenshot shows an MS Access form titled "Orders" with a light blue header. The form contains several fields and a table. At the top, there are navigation tabs for "Employee Database Navigation", "Order Items", "Orders", and "Orders Table". Below the header, there is a "New Order" button. The form fields include "Customer" (Tappen), "Order #" (13), and "Pickup Date" (12/16/2011). A "Notes" field contains the text: "For a kindergarten party. Write, 'Happy 6th Birthday, Matthew!' on the cake and draw a rabbit in icing next to the text." There are two checkboxes: "Pre Order" (checked) and "Paid" (checked). Below the notes, there are "Add Item" and "Print" buttons. A table displays the order items with columns for Category, Product, Quantity, Unit, Price, and Subtotal. The table shows three items: Oatmeal Raisin Cookies (\$14.00), Butter Pecan Cookies (\$14.00), and Cookies n' Cream Cakes (\$22.00). A total row shows a subtotal of \$50.00. At the bottom, there is a record navigation bar showing "Record: 1 of 3" and a search field.

Employee Database Navigation | Order Items | **Orders** | Orders Table

Orders

New Order

Customer: Tappen | Order #: 13 | Pickup Date: 12/16/2011

Notes: For a kindergarten party. Write, "Happy 6th Birthday, Matthew!" on the cake and draw a rabbit in icing next to the text. Pre Order Paid

Add Item

Category	Product	Quantity	Unit	Price	Subtotal
Cookies	Oatmeal Raisin	1	One Dozen	\$14.00	\$14.00
Cookies	Butter Pecan	1	One Dozen	\$14.00	\$14.00
Cakes	Cookies n' Cream	1	Single	\$22.00	\$22.00
*	Total				\$50.00

Record: 1 of 3 | No Filter | Search

MS Access – Form

To create a form:

- Click the Create Tab.
- Choose Form Wizard.
- Follow the steps.
- Note: You can go to Design View to modify the form.