

Microsoft Office 2007

Access 2007

Getting Started



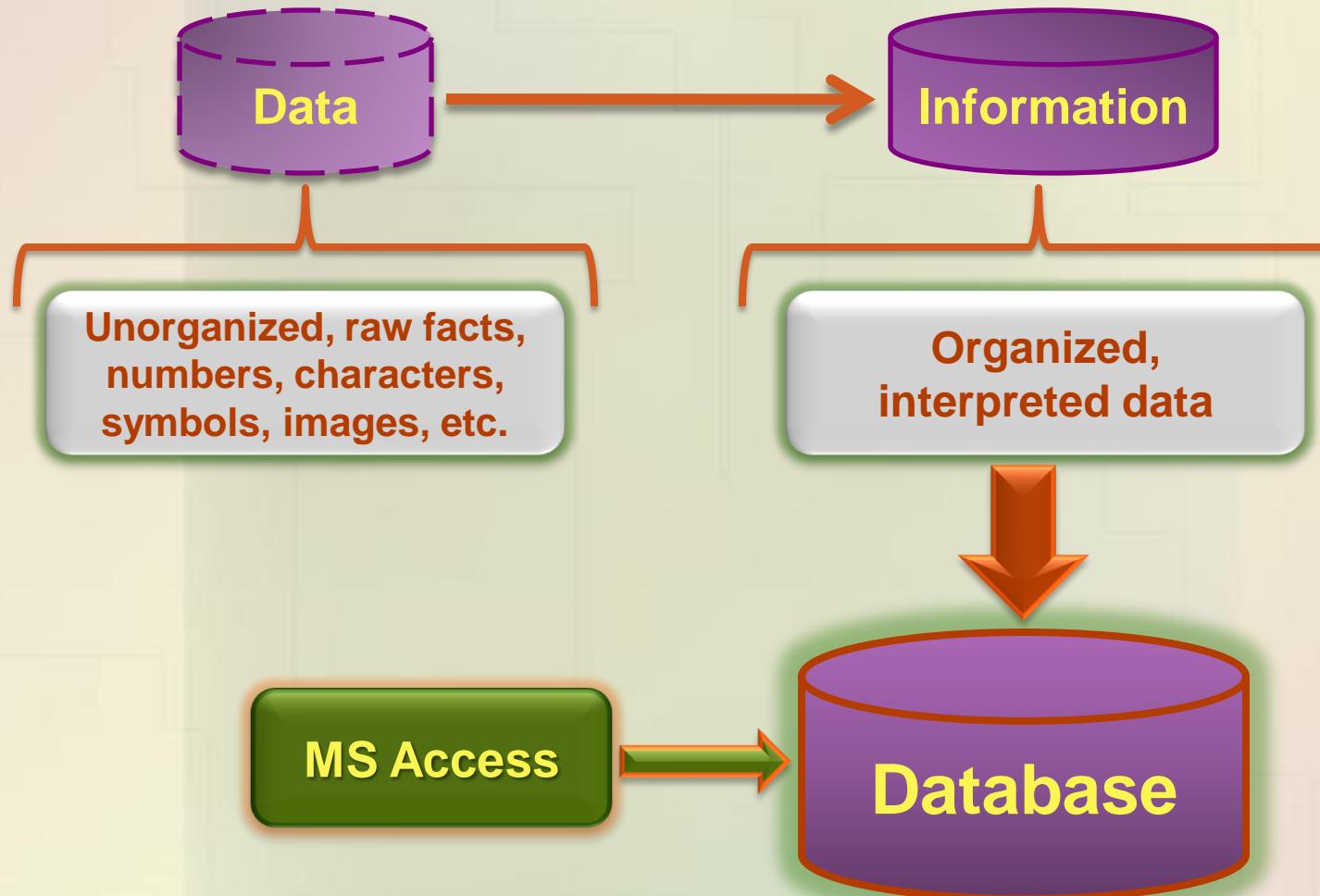
Workshop Outline

- Introduction to Database
- What is Access 2007?
- New features of Access 2007
- Database design and creation
- Essential tools and specific features



Introduction to Database

Data, Information, Database



Introduction to Database (cont)

- In its simplest form, a database is a collection of information that is organized into a list and stored in a manner similar to a file cabinet
- Whenever you make a list of information, such as names, addresses, products, invoices, or recipes, you are creating a database
- Technically speaking, you don't even have to use a database application to create a database. You can make a list of information in Microsoft Excel, Word or Notepad



Similar to a file cabinet...

Introduction to Database (cont)

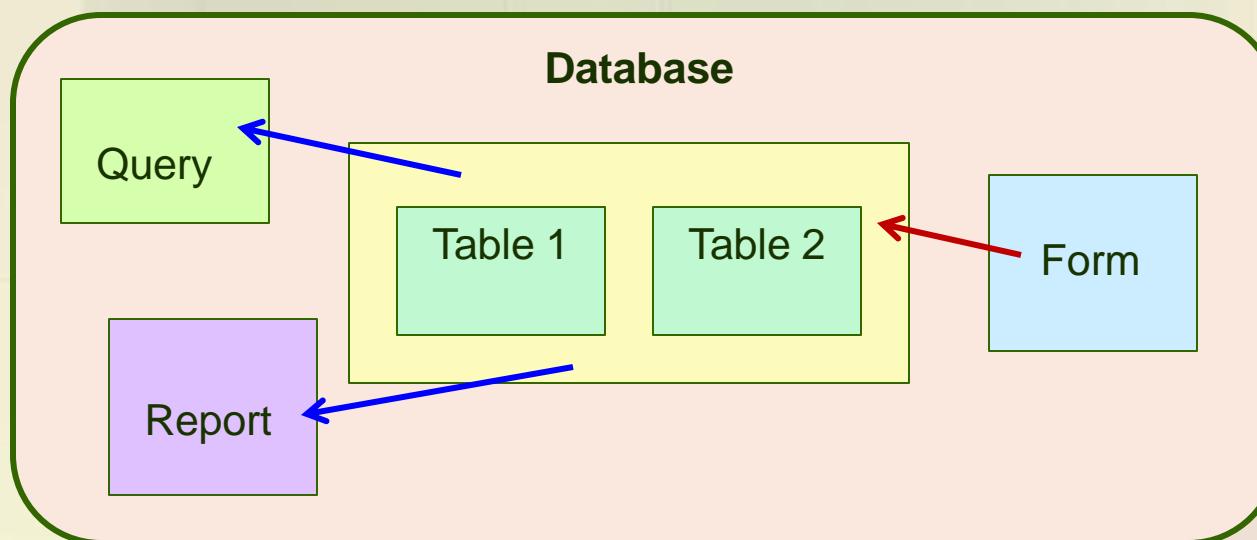
- A database application, however, is much more powerful than a simple list in a Microsoft Word document. It lets the user:
 - **Store information:** a database stores information that are related to a particular subject or purpose (e.g. business information such as a list of hundreds of thousands of customers)
 - **Find information:** you can instantly locate information stored in a database (find all the customers with the last name "Johnson" or customers who live in the 55444 zip code)
 - **Analyze and print information:** you can perform calculations on information in a database and present information in a professional-looking printed report
 - **Manage information:** it is easy to work with and manage huge amounts of information (with a few keystrokes you can change the area code for hundreds of customers)
 - **Share information:** Access allows more than one user to view and work with the same information at once

What is Access 2007?

- **Microsoft Office Access 2007** is a powerful relational database management system (DBMS) allowing user to create and process data in a database
- **Database** is a collection of data organized in a manner that allows access, retrieval, and use of data
- In Access, a database consists of a **collection of tables**
 - Each table contains information on a specific subject
- Access 2007 files typically have the file extension .accdb

Access Database Objects

- **Tables** (data entry and update) – allow to store, add, change, and delete data
- **Queries** (questions) – for finding and retrieving data. Allows to ask complex questions concerning the data and receive quick answers
- **Forms** – allow viewing and updating data in tables
- **Reports** – allow to produce reports for analyzing, presenting and printing data in professional-looking form



Database Table Structure

- A table is a collection of related data stored in **rows** and **columns**
- The **rows** in the tables are called **records**. A record contains information about a person, product, or event
- The **columns** in the tables are called **fields**. A field contains a specific piece of information within a record (e.g. in the Client table, the field City contains the name of the city where the client is located)

The diagram shows a screenshot of a Microsoft Access database table named "Client". The table has columns: Client Num, Client Name, Street, City, State, Postal Code, Client Type, and Specialties Needed. A specific row is highlighted with a pink selection bar, and the first cell of that row (Client Num) is highlighted with a blue selection bar. A pink callout bubble labeled "Record" points to the top-left corner of the highlighted row. A blue callout bubble labeled "Field" points to the cell containing "Berls Hospital" in the "Client Name" column of the highlighted row.

Client Num	Client Name	Street	City	State	Postal Code	Client Type	Specialties Needed
AC34	Alys Clinic	134 Central	Berridge	CO	80330	MED	CNA, PA, Phy, RN
BH72	Berls Hospital	415 Main	Berls	CO	80349	MED	CLS, OT, PA, Phy, PT, R
FD89	Ferb Dentistry	34 Crestview	Berridge	CO	80330	DNT	DH, Dnt
FH22	Family Health	123 Second	Tarleton	CO	80409	MED	NP, Phy, RN
MH56	Munn Hospital	76 Dixon	Mason	CO	80356	MED	CRNA, OT, Phy, PT, RN
PR11	Peel Radiology	151 Valleyview	Fort Stewart	CO	80336	MED	RT
RM32	Roz Medical	315 Maple	Berls	CO	80349	MED	CNA, NP, PA, Phy, RN
TC37	Tarleton Clinic	451 Hull	Tarleton	CO	80409	MED	NP, PA, Phy, RN
WL56	West Labs	785 Main	Berls	CO	80349	LAB	CLS
*							MED

Primary Key

- When you design a database, you divide information into tables in a way that each table is about one subject, such as Clients or Recruiters. This helps prevent data redundancy and contradictory:
 - For example, each client might have many recruiters. Rather than store the client's address in each record in the Recruiter table, you store that information once in a record in the Client table. To combine the client information with the rest of the information about the recruiter, you create a relationship between the two tables by using **key** fields
- To quickly find and bring together information stored in separate tables, each table should include a field or set of fields that **uniquely identifies each record stored in the table**
- The first field in a table is usually represents a **unique identifier** - the number (can be with letters) assigned to the particular person or item (e.g. in the Client table - Client Number AC34). This unique identifier is called a **primary key**  (the Client Number field is a primary key for the Client table)

Primary Key (cont)

- Thus, the **primary key** provides a unique value for each row in the **table**. There cannot be more than one primary key, but there can be a multiple-field primary key (one primary key defined on several fields)
- Access can automatically create a primary key field when you create a table, or you can specify the fields that you want to use as the primary key
- One of the reasons to create a primary key is to create **table relationships**, in other words, to relate records to additional data stored in other tables
- You can add the primary key from one table to another table to create a relationship between them. In the other table, it is called a **foreign key**.
 - For example, you use the primary key of the Recruiters table in the Clients table. In the Clients table, it is a foreign key:

The diagram illustrates a primary key relationship between the Client and Recruiter tables.

Client Table:

Recruiter Number	Last Name	First Name	26
24	Kerry	Alyssa	
27	Reeves	Camden	31
34	Fernandez	Jaime	26
	Lee	Jan	18

Recruiter Table:

Client Number	Amount P.	Current D.	Recruiter Number
AC34	\$0.00	\$17,500.00	21
BH72	\$29,200.00	\$0.00	24
BL12	\$16,500.00	\$38,225.00	24
EA45	\$12,750.00	\$15,000.00	27
FD89	\$21,000.00	\$12,500.00	21
FH22	\$0.00	\$0.00	24
MH56	\$0.00	\$43,025.00	24

A green callout bubble labeled "Primary Key" points to the "Recruiter Number" column header in the Client table. A red arrow points from the "Recruiter Number" column in the Client table to the "Recruiter Number" column in the Recruiter table. A green callout bubble labeled "Foreign Key" points to the "Recruiter Number" column header in the Recruiter table.

Foreign Key

- Simply stated, a **foreign key** is “another” table's primary key
- The values in a foreign key field match values in the primary key, indicating that the two records are related
- However, unlike primary keys:
 - A table can have more than one foreign key in a table
 - A foreign key does not necessarily have unique values
 - A foreign key cannot reliably identify a particular record. For example, you cannot always tell which record you are viewing from the Clients table by looking at the Recruiter Number

Client Num#	Amount Pd	Current Dl	Recruiter Number
AC34	\$0.00	\$17,500.00	21
BH72	\$29,200.00	\$0.00	24
BL12	\$16,500.00	\$38,225.00	24
EA45	\$12,750.00	\$15,000.00	27
FD89	\$21,000.00	\$12,500.01	21
FH22	\$0.00	\$0.00	24
MH56	\$0.00	\$43,025.00	24

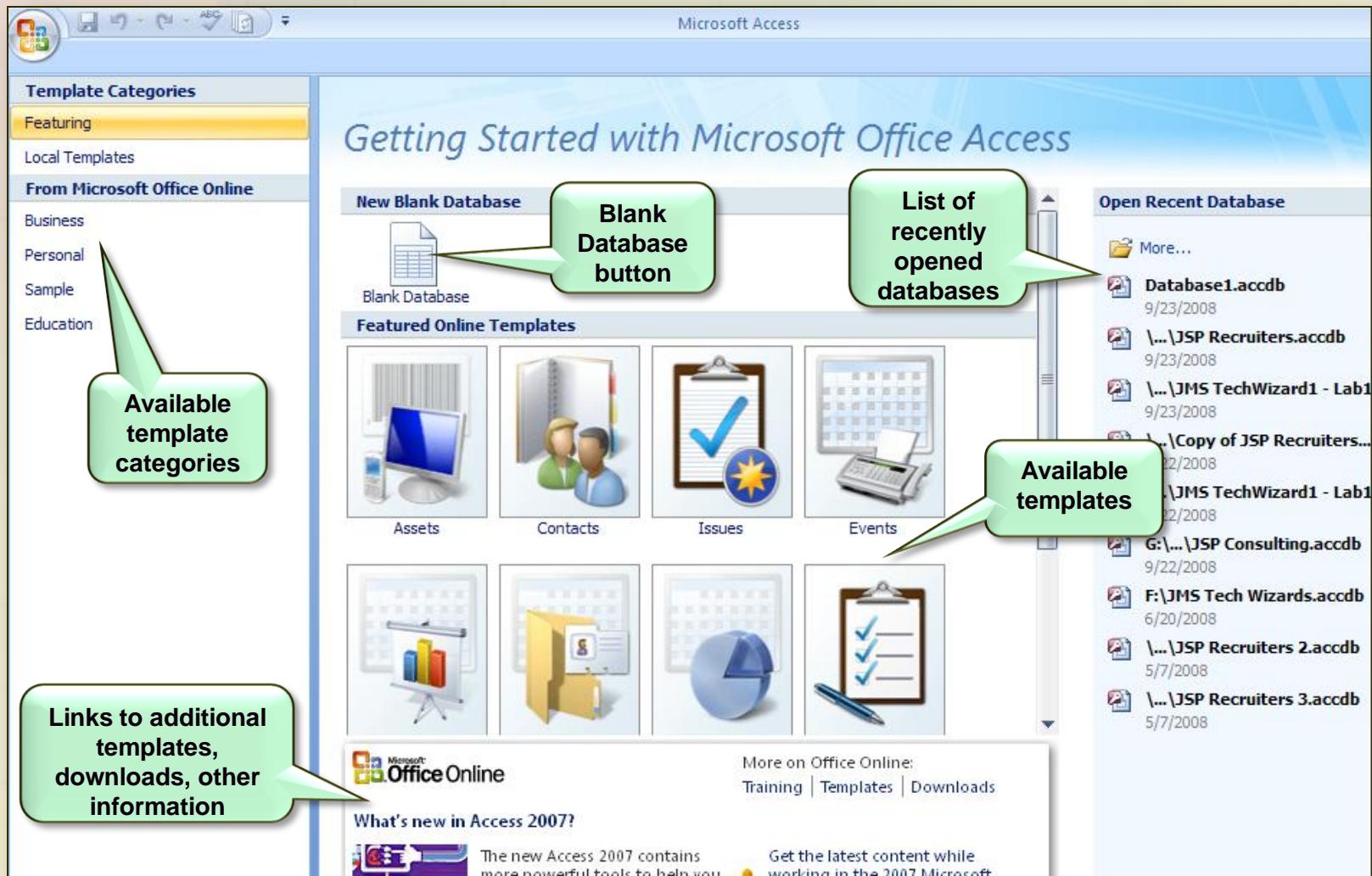
Designing a Database

■ Database design is the arrangement of data into tables and fields.

You should follow the general guidelines:

- **Identify the tables.** Identify the mail objects that are involved (e. g. clients and recruiters). There will be a table for each object
- **Determine the primary keys** (Client Number and Recruiter Number)
- **Determine the additional fields** (client name, address, city, etc.)
- **Determine relationships among the tables.** If the tables are related, include matching fields in the tables (recruiter can have several clients assigned to him)
- **Identify data types for the fields.** Fields can contains: numbers, dates, currency amount, text, etc.
- **Identify and remove redundancy.** Redundancy is the storing of a specific data in more than one place. If it causes the problem (wasted space, updates problem, and data inconsistency). Remove it (e.g. by splitting the table into two)
- **Determine a location for the database.** The designed database will be stored in a single file in a particular place (e.g. Access folder)

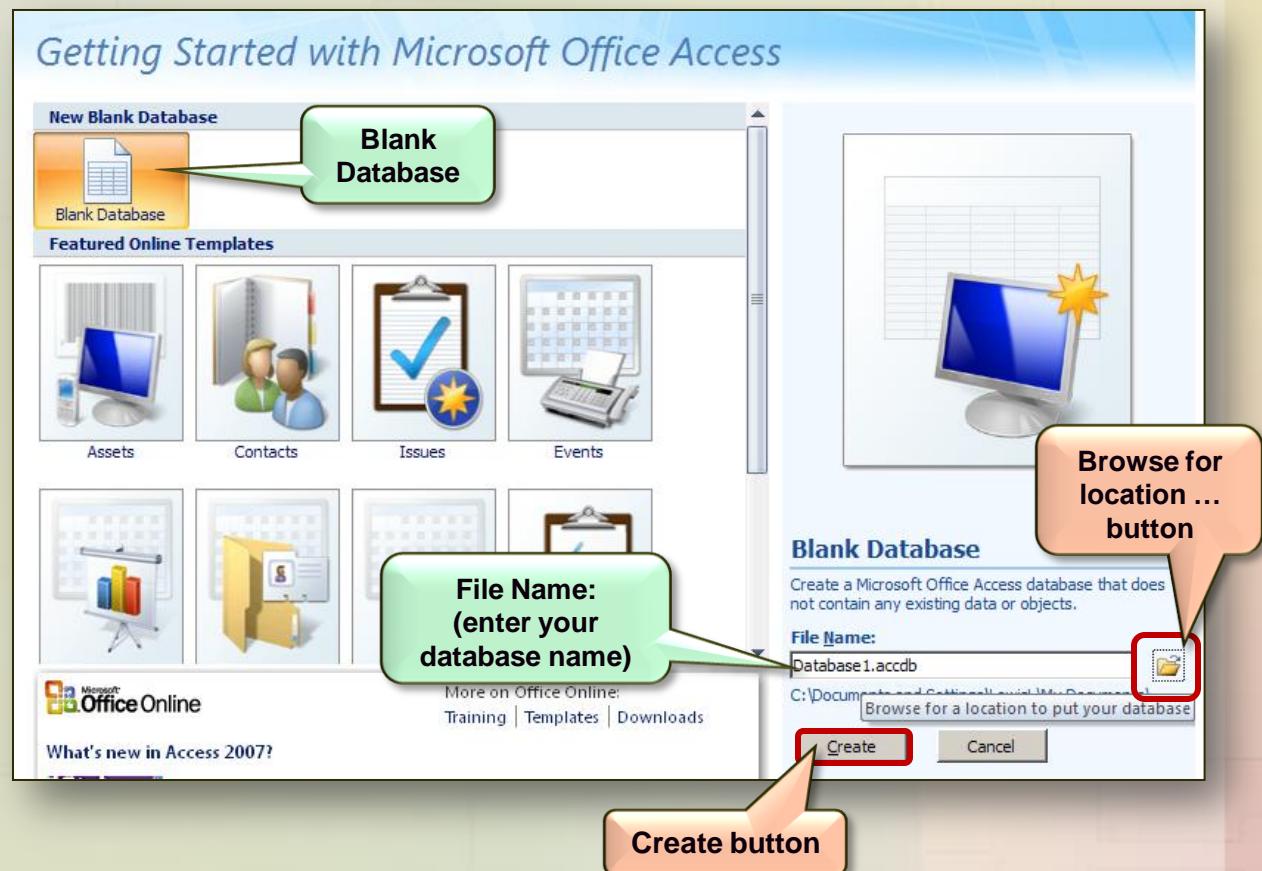
Starting Access



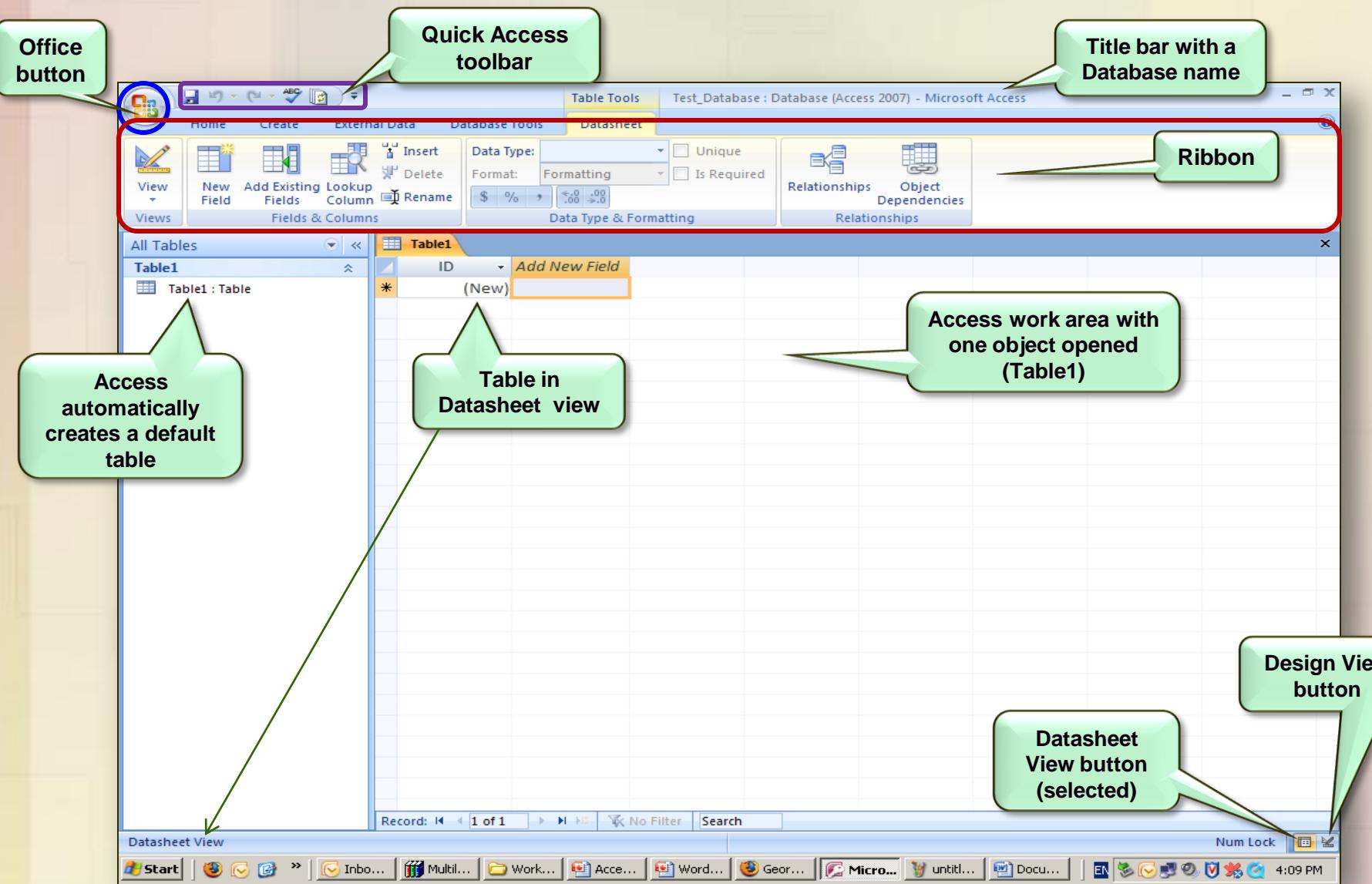
Creating a Database

To create a database:

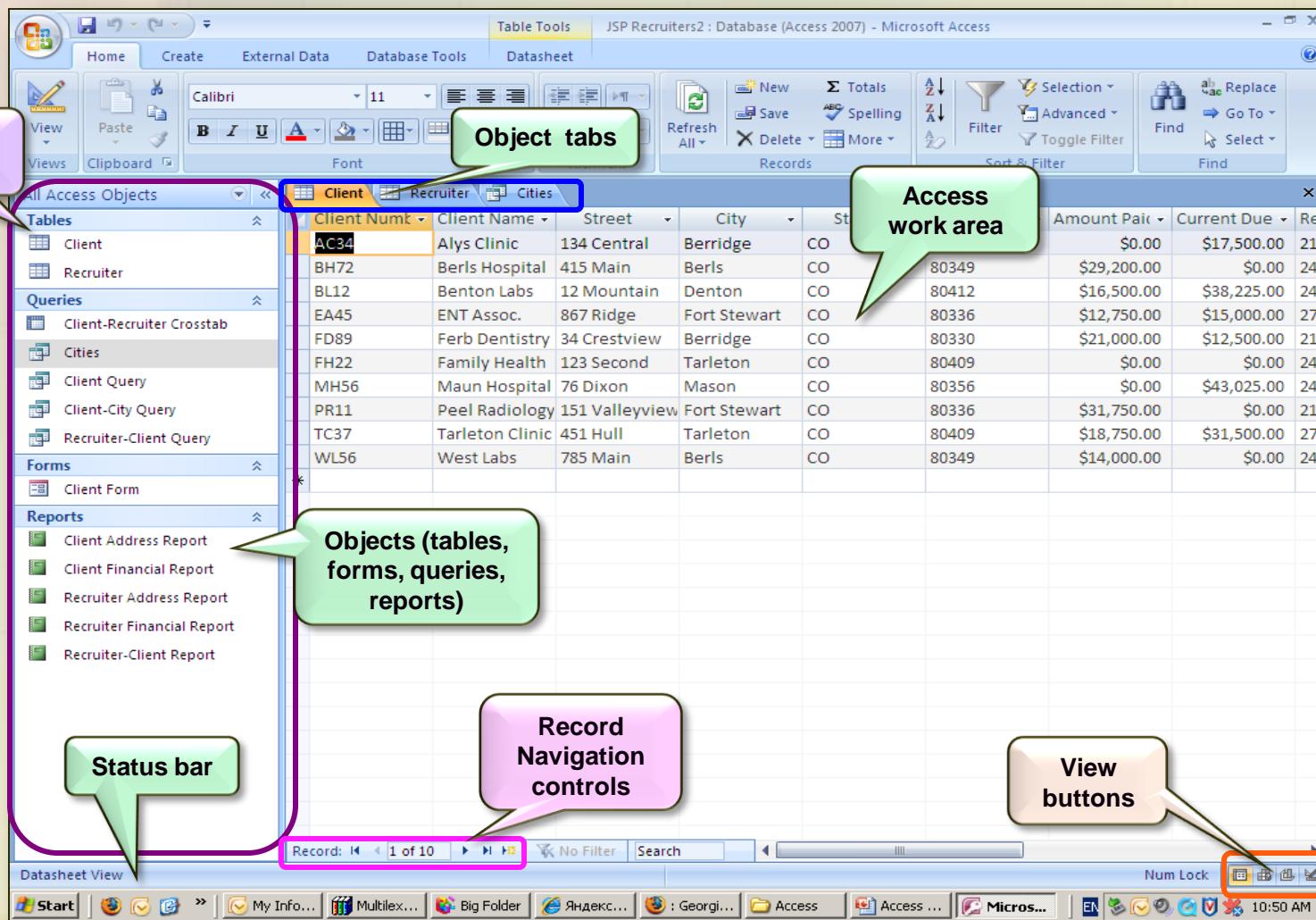
- click the **Blank Database icon**
- Type in the new database name in the “**File name:**” field instead of the default file name
- Click the **“Browse for a location...”** button
- Locate the places where you will store the database
- Click the **Create** button



The Access Window



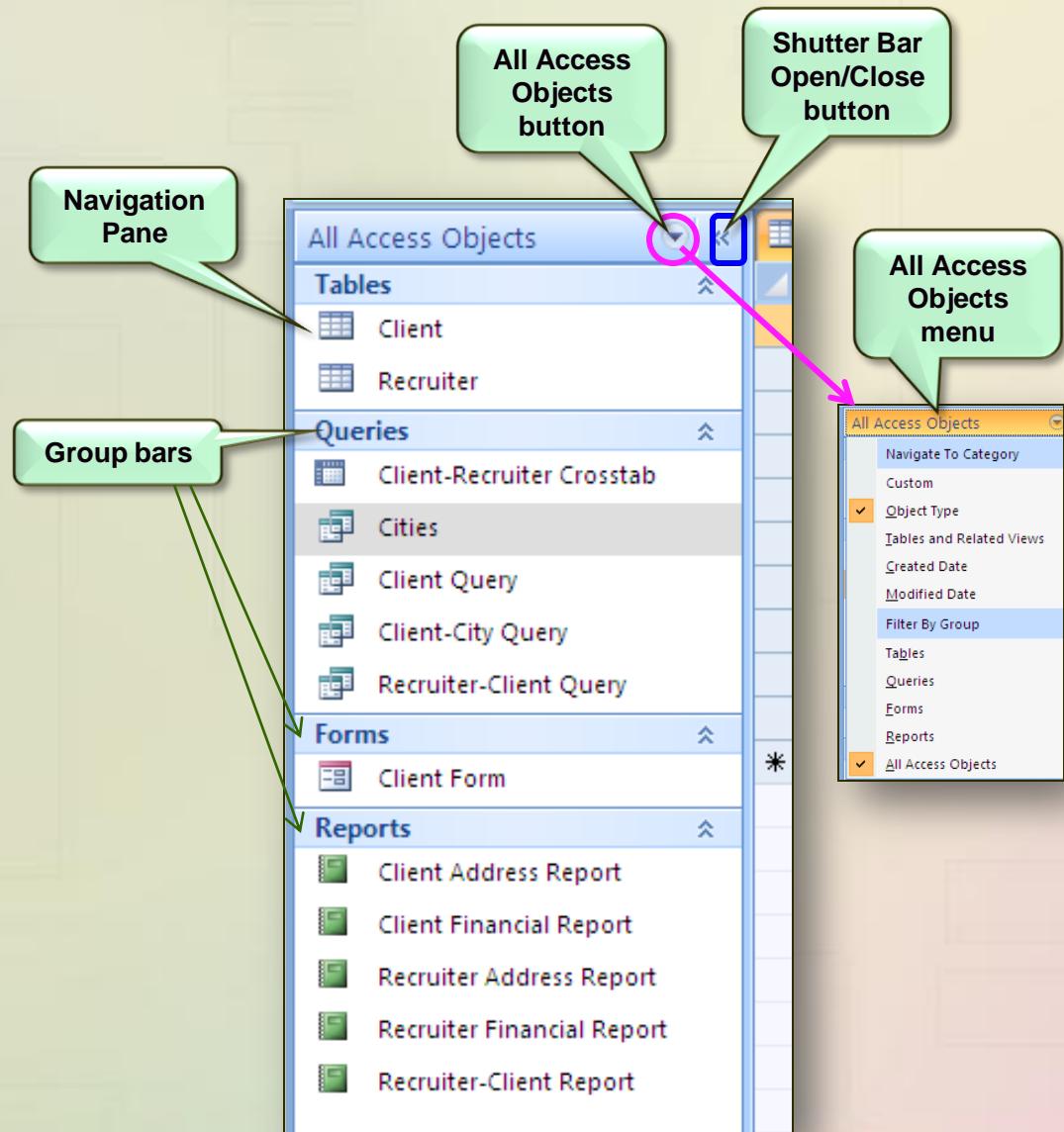
Navigation Pane and Access Work Area



Navigation Pane

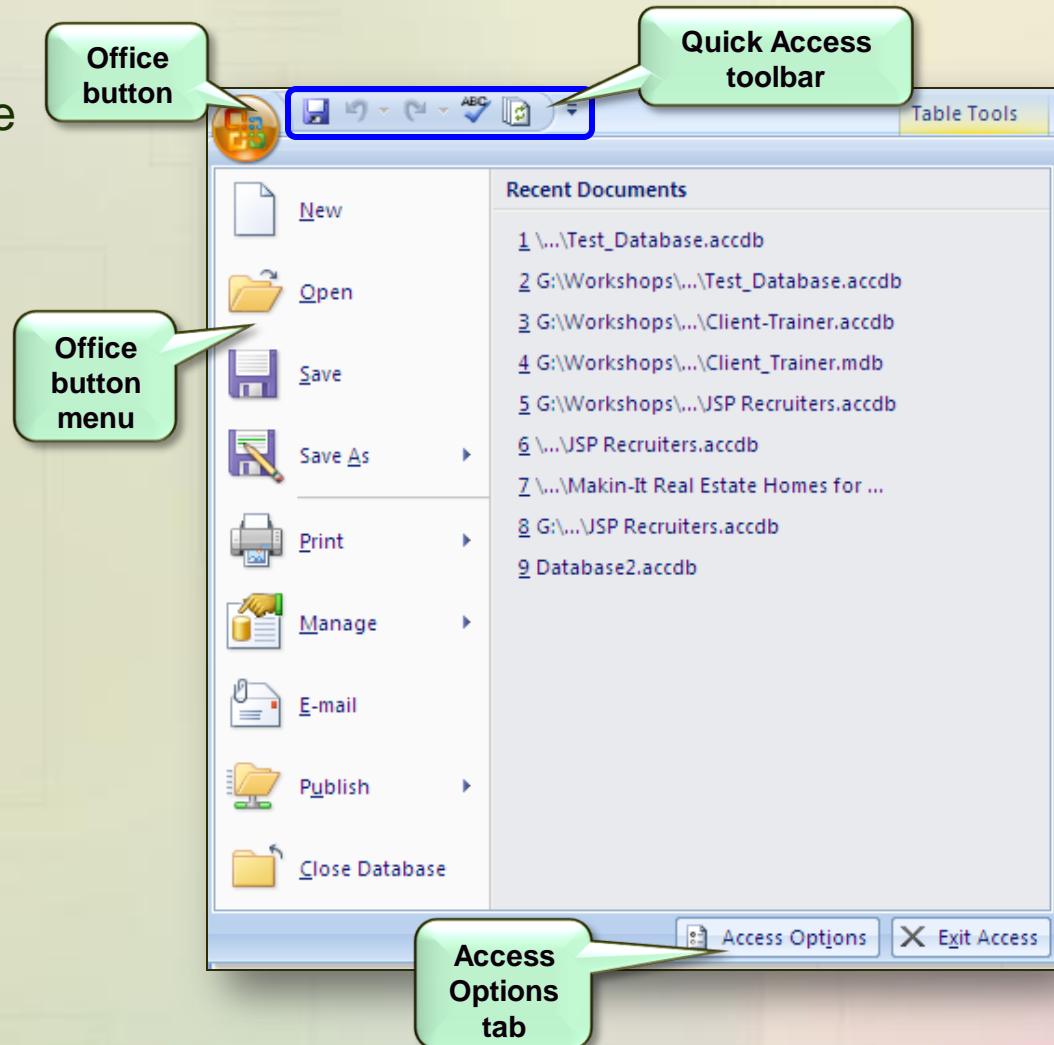
The **Navigation Pane** allows to work with all objects contained in the database:

- Display any or all database objects (tables, forms, queries, reports)
- Open an object from the Navigation Pane
- Create groups of objects
- Sort the list of objects
- Collapse or expand the Navigation Pane

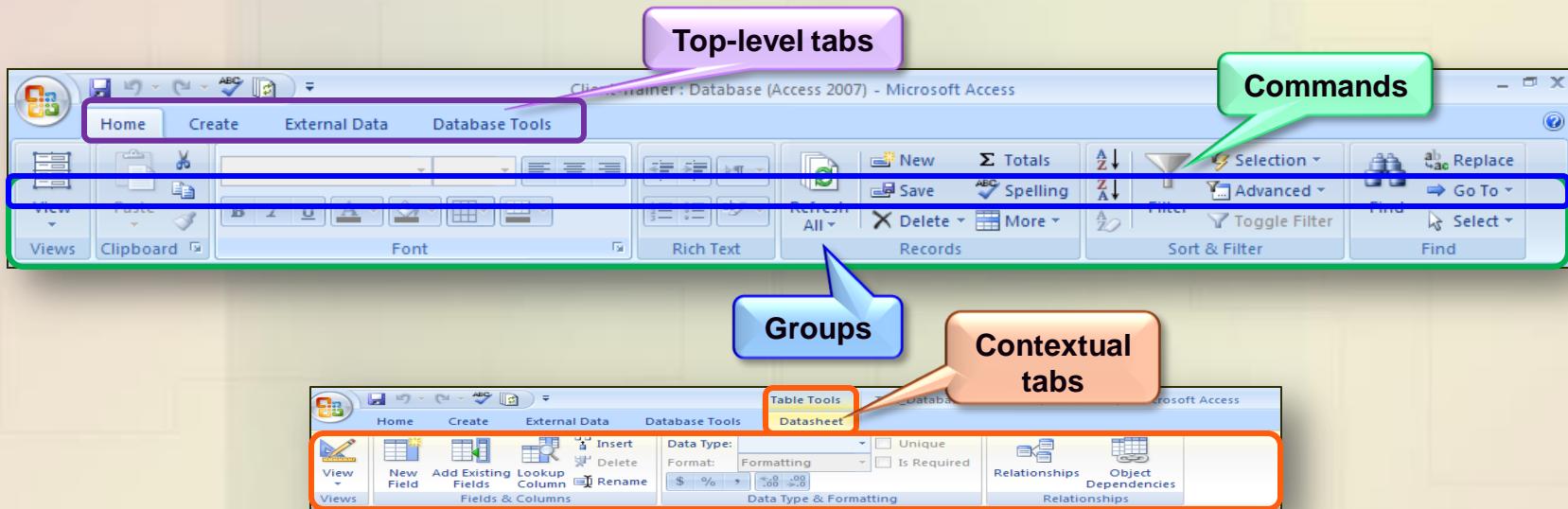


Office Button Quick Access Toolbar

- **Office button** performs the tasks previously available on the File menu in earlier versions of Access
- **Quick Access Toolbar** contains commands you use most frequently
 - The commands always are available. Initially, there are **Save**, **Undo**, and **Redo** commands
 - You can customize the toolbar using **Access Options tab** (see the Word or Excel tutorials to learn how to do that)

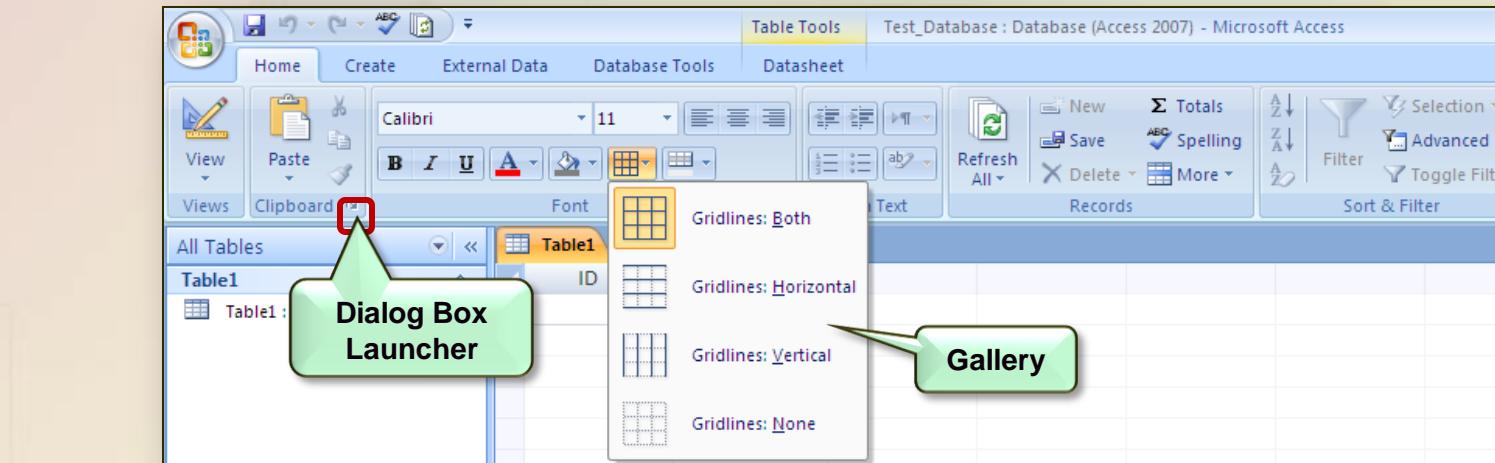


Ribbon



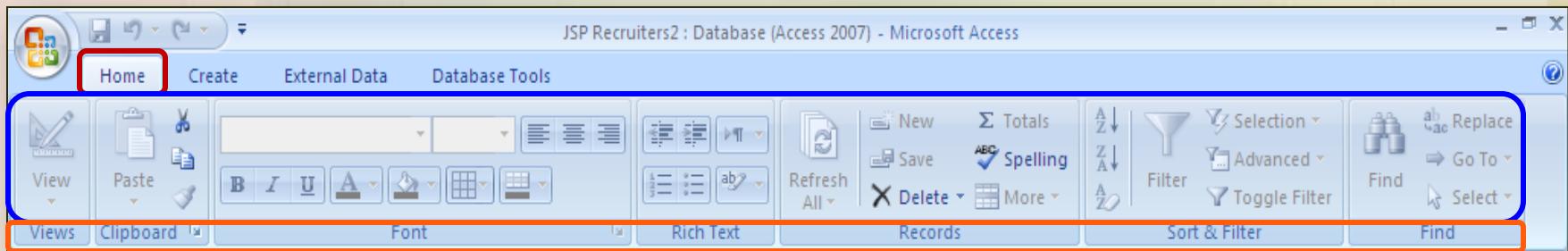
- Instead of toolbars and drop-down menus, Access uses the Ribbon and the Office button
- The **Ribbon** is a control center. It consists of tabs, groups, and commands
- Each tab surrounds a collection of groups, each group contains related commands
- By default, there are four top-level tabs: **Home**, **Create**, **External Data**, and **Database Tools**. **Home tab** is a primary tab.
- The tab currently displayed is called the **active tab**

Ribbon (cont)



- Word also displays **contextual tabs** when certain tasks with objects (pictures or tables) are performed
- Commands on the Ribbon include buttons, boxes (text boxes, check boxes, etc.), and galleries
 - **Gallery** is a set of choices (graphical) arranged in a grid or in a list. To display gallery options, click on gallery arrow
 - Most galleries support live preview
- Some groups have a small boxed arrow in the lower-right corner called **Dialog Box Launcher** that displays additional options

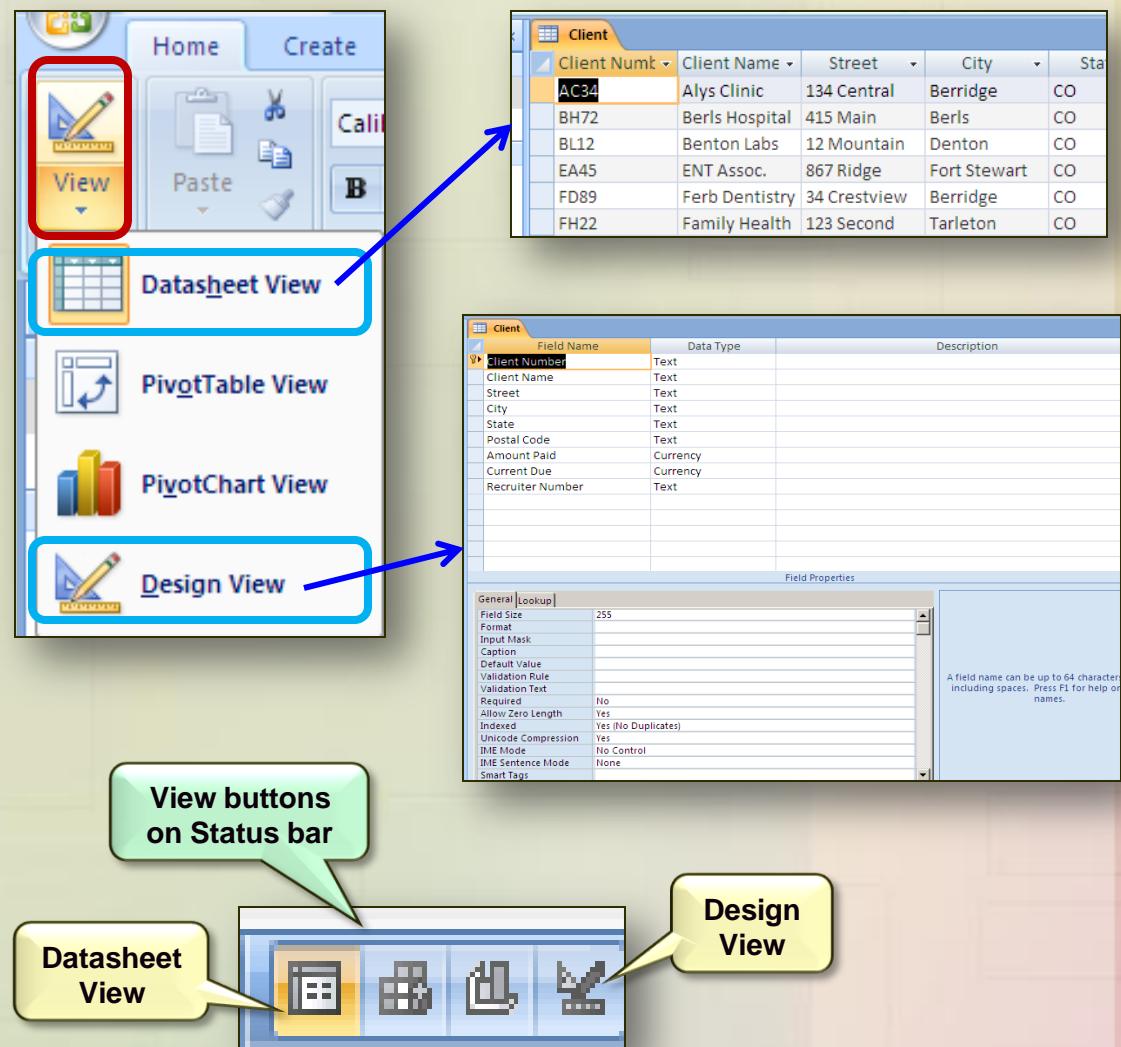
Home Tab



- The **Home tab** contains the majority of the most frequently used commands in Access:
 - Work with and change views of objects
 - Copy, paste, cut objects, change fonts, colors, create bulleted list, etc.
 - Perform calculations, delete objects, check spelling
 - Sort and filter rows, columns, tables
 - Search, replace, select

Working with Views

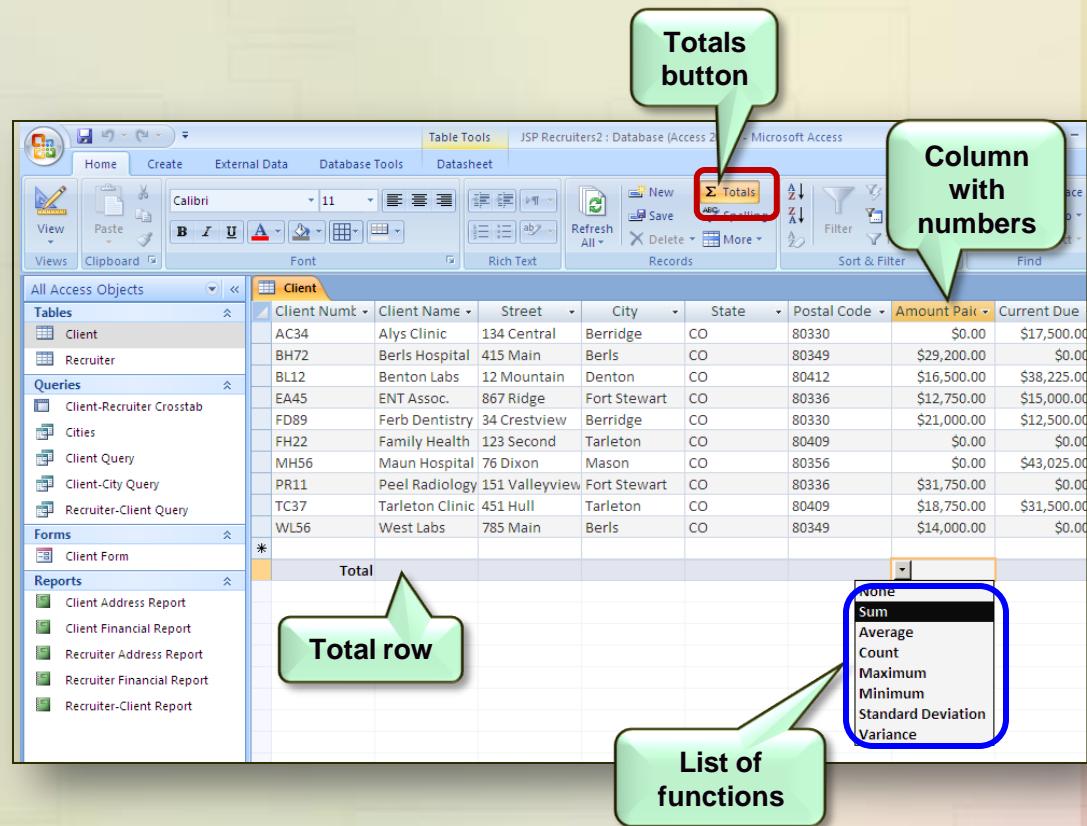
- Each type of database object has different views available.
- Click the **View** button to switch between views. Or click the **View** buttons on the **Status bar**
 - Datasheet View** – allows to view and enter data in tables, forms, and queries in a spreadsheet format
 - Design View** – allows to change the design of objects
 - PivotTable View** – allows to create a pivot table form table or query data
 - PivotChart View** - allows to create a pivot chart form table or query data



Performing Calculations

You can perform a calculation on one or more columns

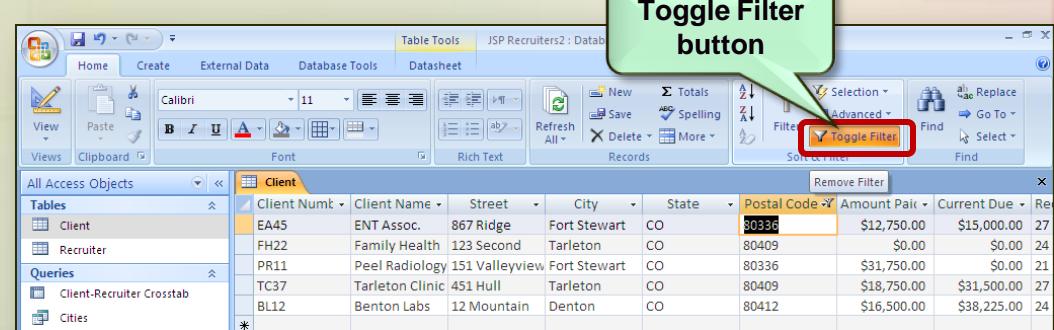
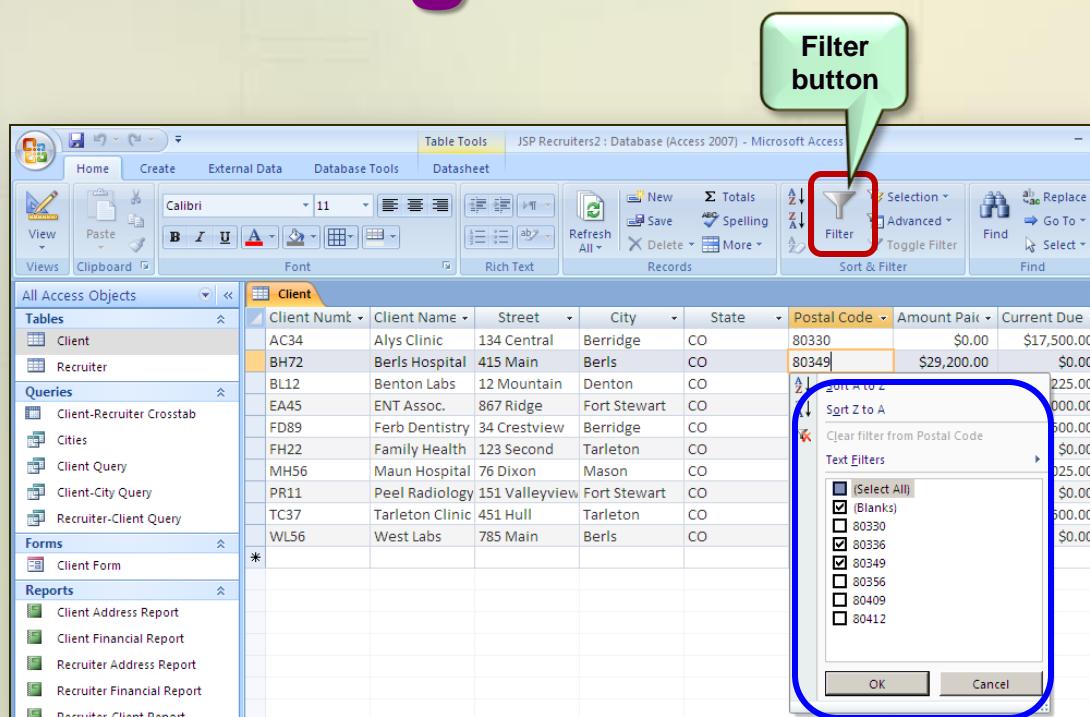
- Open a table, in the **Records** group, click the **Totals button**
- Access displays the **Total row** at the bottom of the table
- Click the blank cell at the bottom of a column that contains numbers
- Click the arrow displayed in the cell to see and click the available **functions** – the result will be displayed in the cell
- To hide the Total row, click the **Totals button** again



Filtering

- To filter rows in a table based on one or more specific values:

- Open a table
- Click the cell that contains the value(s) on which you want to filter
- In the **Sort & Filter** group, click the **Filter** button
- The dialog box containing check boxes for each value in the column is displayed
- Select the appropriate check boxes for the values on which you want to filter and remove the rest of checks. Click OK
- To clear the filter, click the **Toggle Filter** button



Sorting a Table

To sort a table

- click a cell in the column on which you want to sort
- In the **Sort & Filter group**, click either **Ascending** or **Descending** button

A screenshot of the Microsoft Access Datasheet view. The ribbon at the top shows 'Table Tools' and 'Datasheet'. The 'Sort & Filter' group on the ribbon has two buttons highlighted with a blue box: 'A to Z' (Ascending) and 'Z to A' (Descending). A green callout bubble labeled 'Sort buttons' points to these buttons. The main area shows a table named 'Client' with columns: Client Num#, Client Name, Street, City, State, Postal Code, Amount Paid, and Current Due. The first row ('AC34') is selected. The 'Client Num#' column header is also selected.

Client Num#	Client Name	Street	City	State	Postal Code	Amount Paid	Current Due
AC34	Alys Clinic	134 Central	Berridge	CO	80330	\$0.00	\$12,500.00
BH72	Berls Hospital	415 Main	Berls	CO	80349	\$29,200.00	\$38,500.00
BL12	Benton Labs	12 Mountain	Denton	CO	80412	\$16,500.00	\$38,500.00
EA45	ENT Assoc.	867 Ridge	Fort Stewart	CO	80336	\$12,750.00	\$15,000.00
FD89	Ferb Dentistry	34 Crestview	Berridge	CO	80330	\$21,000.00	\$12,500.00
FH22	Family Health	123 Second	Tarleton	CO	80409	\$0.00	\$0.00
MH56	Maun Hospital	76 Dixon	Mason	CO	80356	\$0.00	\$43,000.00
PR11	Peel Radiology	151 Valleyview	Fort Stewart	CO	80336	\$31,750.00	\$0.00
TC37	Tarleton Clinic	451 Hull	Tarleton	CO	80409	\$18,750.00	\$31,500.00
WL56	West Labs	785 Main	Berls	CO	80349	\$14,000.00	\$0.00

To clear the table's sorting, click the **Clear All Sorts** button

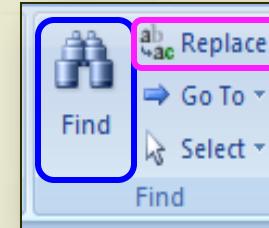
A screenshot of the Microsoft Access Datasheet view. The ribbon at the top shows 'Data', 'Database Tools', and 'Datasheet'. The 'Sort & Filter' group on the ribbon has a button highlighted with a blue box: 'Clear All Sorts'. A green callout bubble labeled 'Clear All Sorts button' points to this button. The main area shows the same 'Client' table as the previous screenshot, but the rows are now unsorted. The 'Client Num#' column header is selected.

Client Num#	Client Name	Street	City	State	Postal Code	Amount Paid	Current Due
WL56	West Labs	785 Main	Berls	CO	80349	\$14,000.00	\$0.00
TC37	Tarleton Clinic	451 Hull	Tarleton	CO	80409	\$18,750.00	\$31,500.00
PR11	Peel Radiology	151 Valleyview	Fort Stewart	CO	80336	\$31,750.00	\$0.00

Search and Replace

- If you want to **search** the contents of a column, click the cell in the column:

- On the Home tab, in the **Find group**, click **Find**

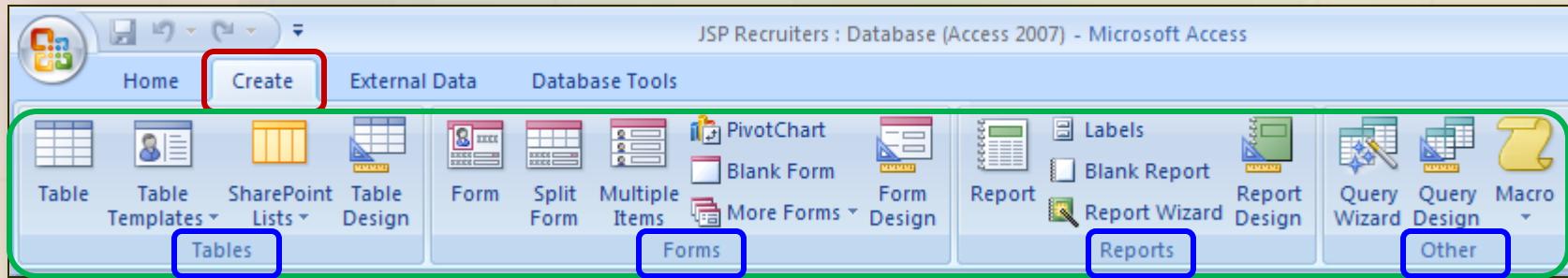


- In the **Find and Replace** pop-up window, in the **Find What** field, type the value
 - If you want to search the entire table for the value, click the arrow in the **Look In** field and click the table name
 - Click **Find Next** to find the first row that contains the value

- To replace the value:

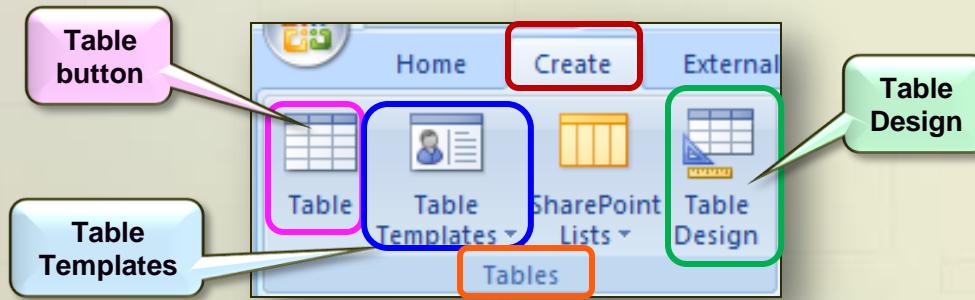
- In the **Find group**, click the **Replace** button
 - In the **Find and Replace** pop-up window, in the **Find What** field, type the value you want to search for
 - In the **Replace With** field, type the value you want to replace it with
 - Click **Find Next**. Confirm replacement by clicking **Replace**

Create Tab



- Using commands on the **Create tab** you can create:
 - **Tables**
 - **Queries**
 - **Forms**
 - **Reports**

Tables

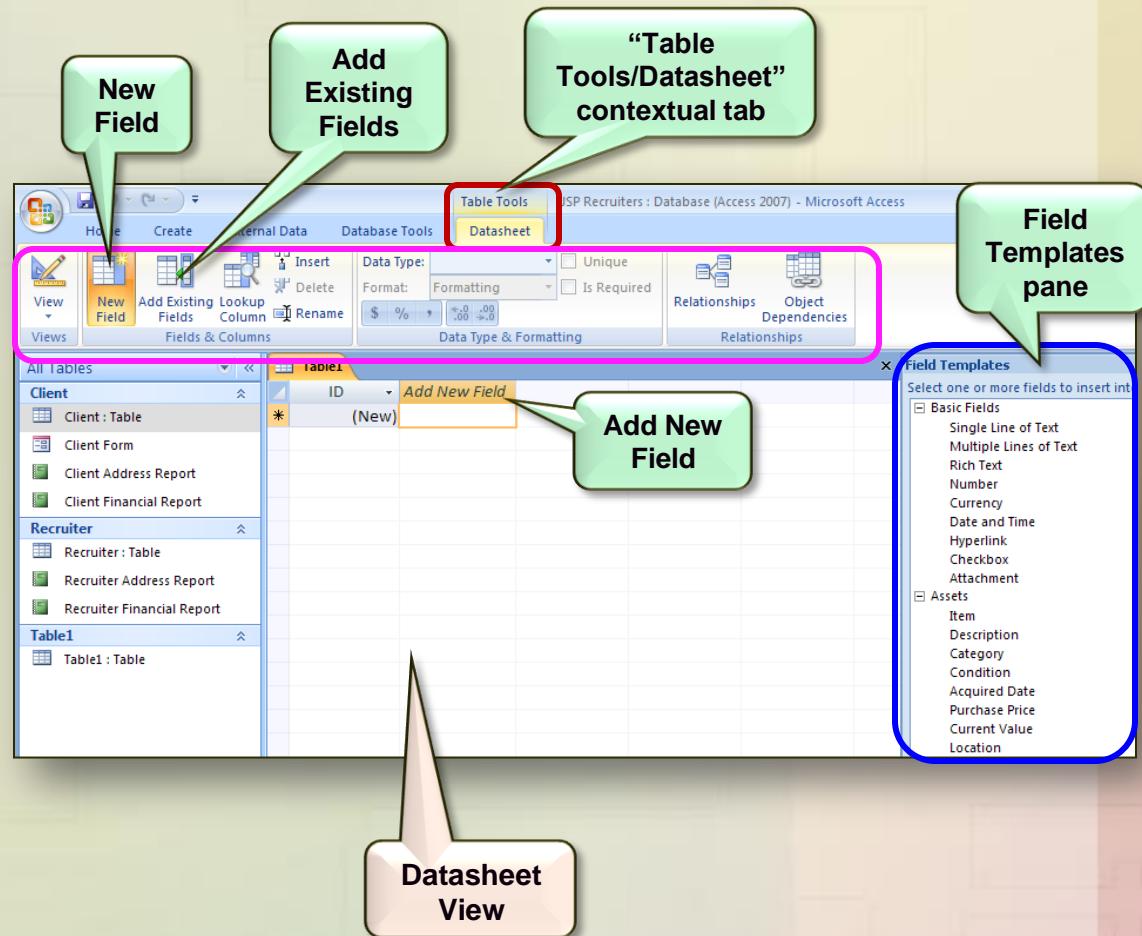


- A **table** is a collection of data about a particular subject in spreadsheet form
- Tables contain records (rows) made up of fields (columns)
- By default, a table (Table1:Table) is automatically created when you create a new database
 - To create a new blank table and see it in Datasheet view, click the **Table** button in the **Tables** group
 - To create a table based on a template, click the **Table Templates** button and select a template from the menu
 - To create a new blank table and open it in Design view, click the **Table Design** button

Adding a Field to a Table

- In Datasheet view, use the “*Table Tools/Datasheet*” contextual tab and do one of the following:

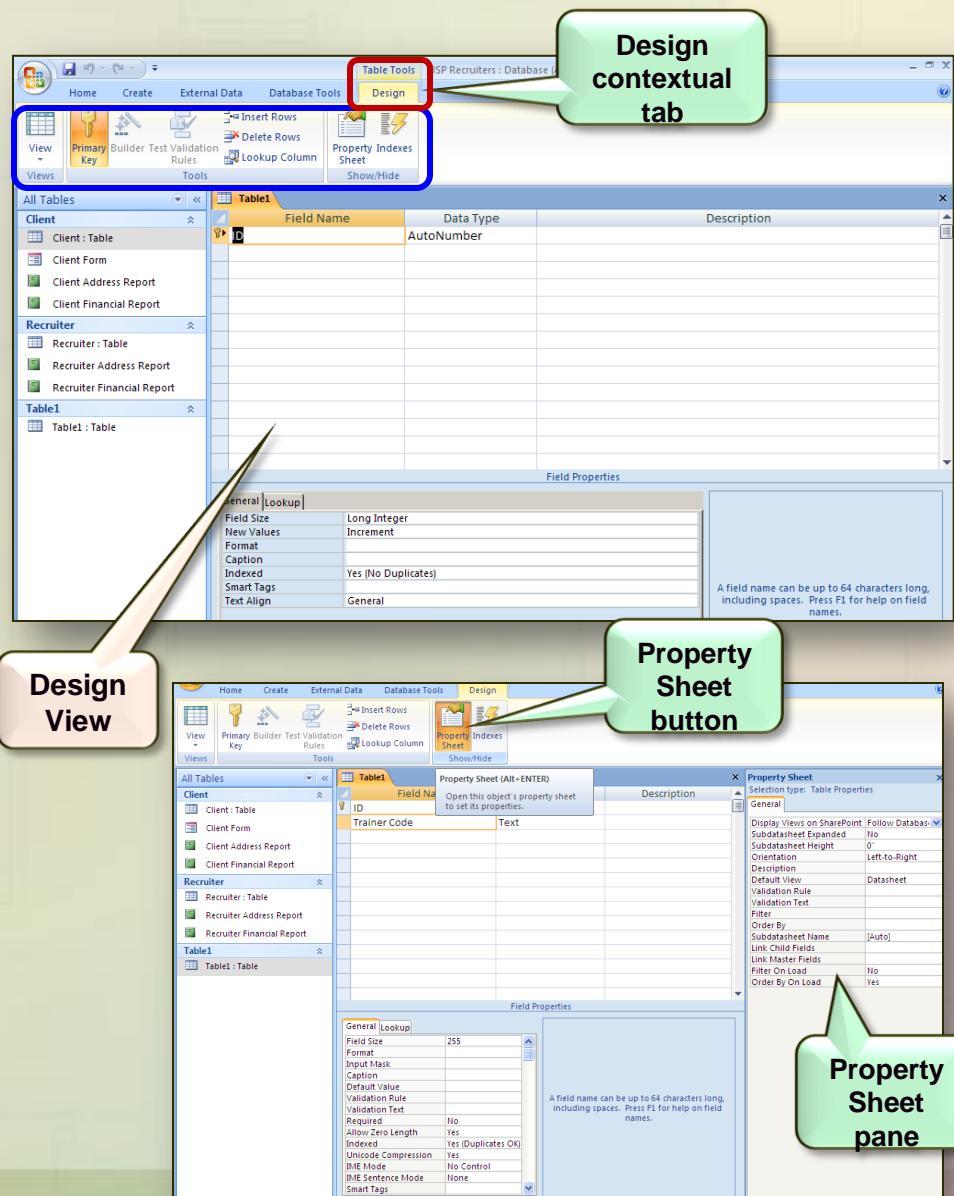
- To insert a field based on a template, click the **New Field** button in the **Fields & Columns** group. In the **Fields Templates pane**, double click the field you want to add
- To insert a blank filed (column), double click the **Add New Field** column header and enter a field name
- To insert a field based on a filed in another table, click the **Add Existing Fields** button. Click the plus sign next to a table name in the **Field List pane** to expand the list and double click the filed name



Adding a Field in Design View

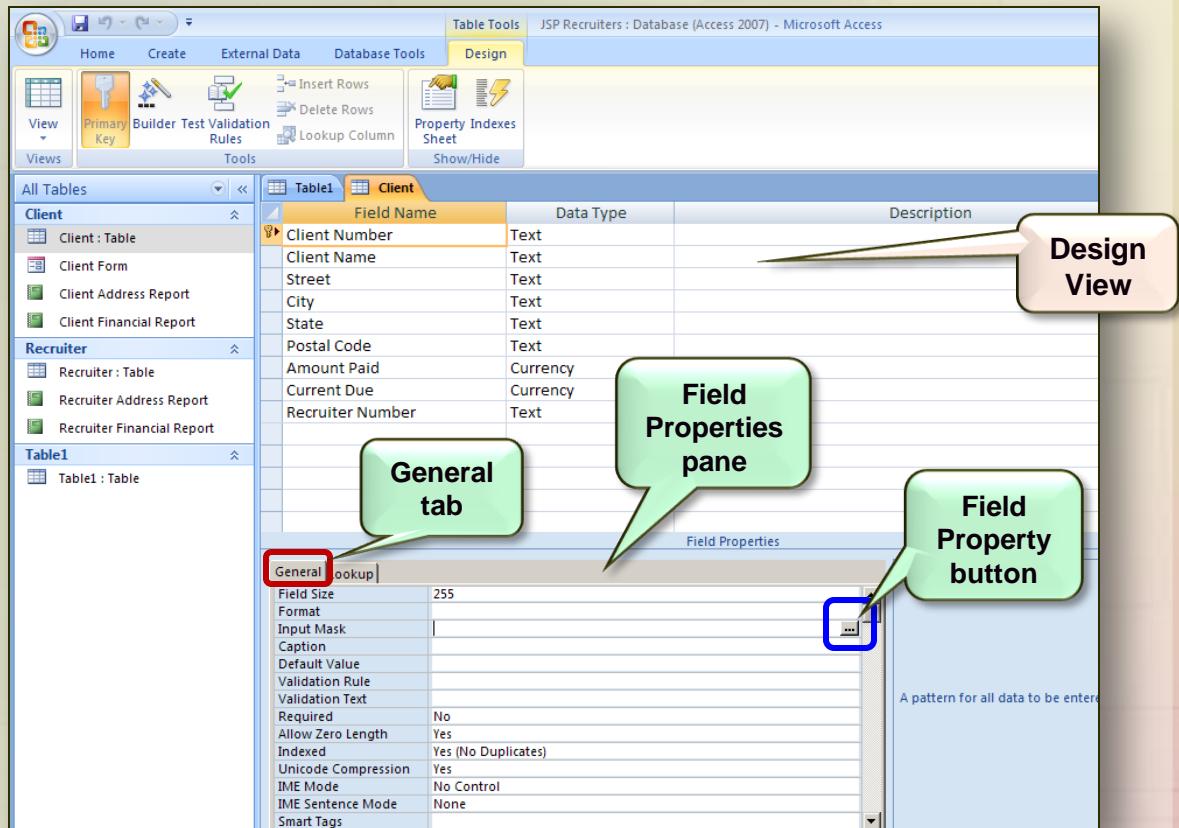
- From the Home tab, click the View tab in the Views group and click the **Design View** tab

- Click the **Design** contextual tab and in the **Tools** group, click the **Insert Row** button or just click the cell under the **Field Name** and enter a name. Press the Enter key
- To assign or change the data type, click the cell adjacent to the field name in the **Data Type** column, click the arrow on the field, and select a data type from the menu
- To view or change the field properties, click the **Property Sheet** button in the **Show/Hide** group. Enter or select properties in the **Property Sheet** pane
- To enter a description, enter details in the cell in the **Description** column



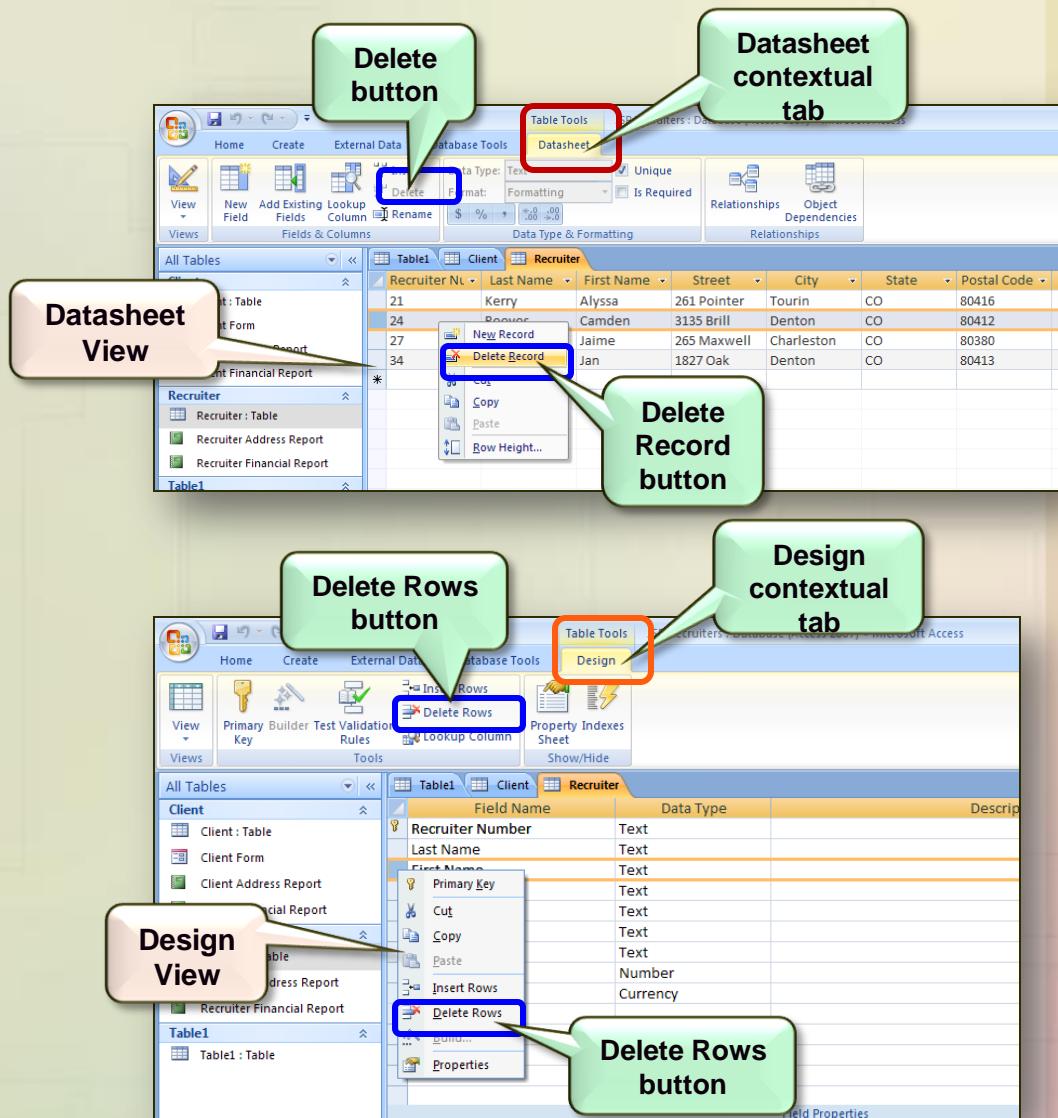
Field Properties

- To set or change a table's field properties:
 - In **Design view**, click the **General tab** in the **Field Properties pane**
 - Select the field you want to set or change
 - In the Field Properties pane, enter or select properties from the pop-up menu by clicking on the field button



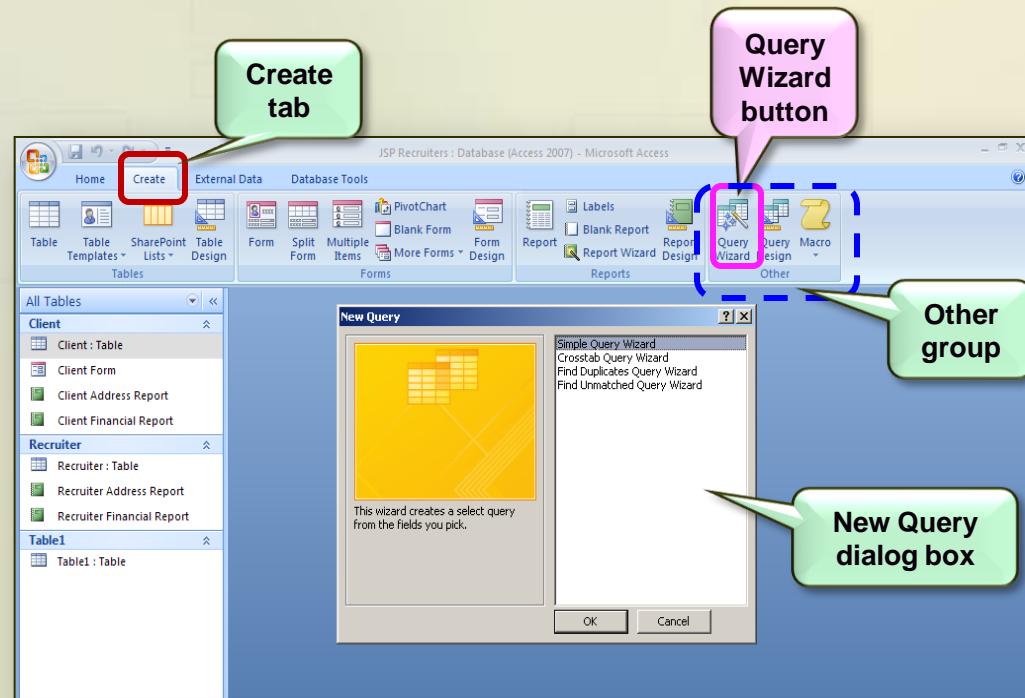
Deleting a Field or Row

- Select the field or row you want to delete
- Do one of the following:
 - In **Datasheet view**, click on the **Datasheet contextual tab** and click the **Delete** button in the **Fields & Column** group
 - Or right click the selected row and click the **Delete Record** button from the drop-down menu
 - In **Design view**, click the **Design contextual tab** and click the **Delete Rows** button in the **Tools** group
 - Or right click the selected field and click the **Delete Rows** button from the drop-down menu
- Click the **Yes** button to confirm deletion



Queries

- A **Query** helps to summarize data from multiple tables, sort and filter data, and perform calculations on records or groups.
- A query can be also used as a data source for forms and reports
- To create a query using the **Query Wizard**:
 - From the **Create tab**, click the **Query Wizard button** in the **Other group**
 - In the **New Query dialog box**, select the type of query and click the **OK** button
 - Follow the instructions provided by the wizard
 - Click the **Finish** button to view the query



Queries (cont)

To design a query:

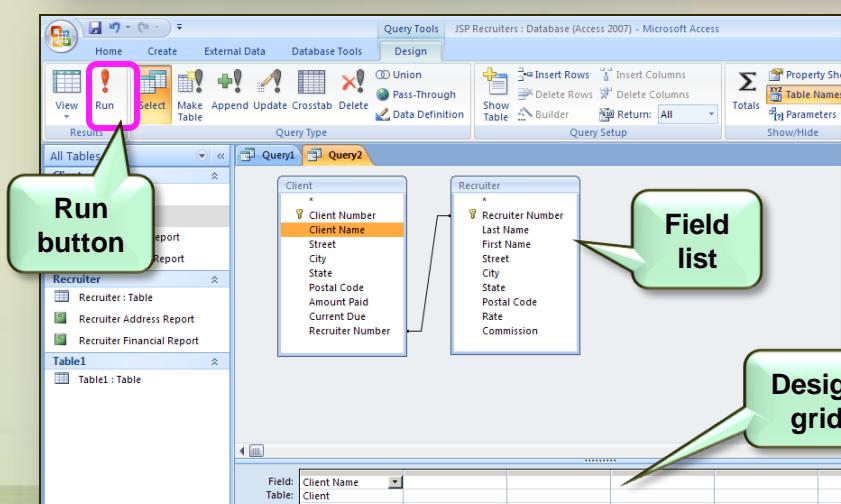
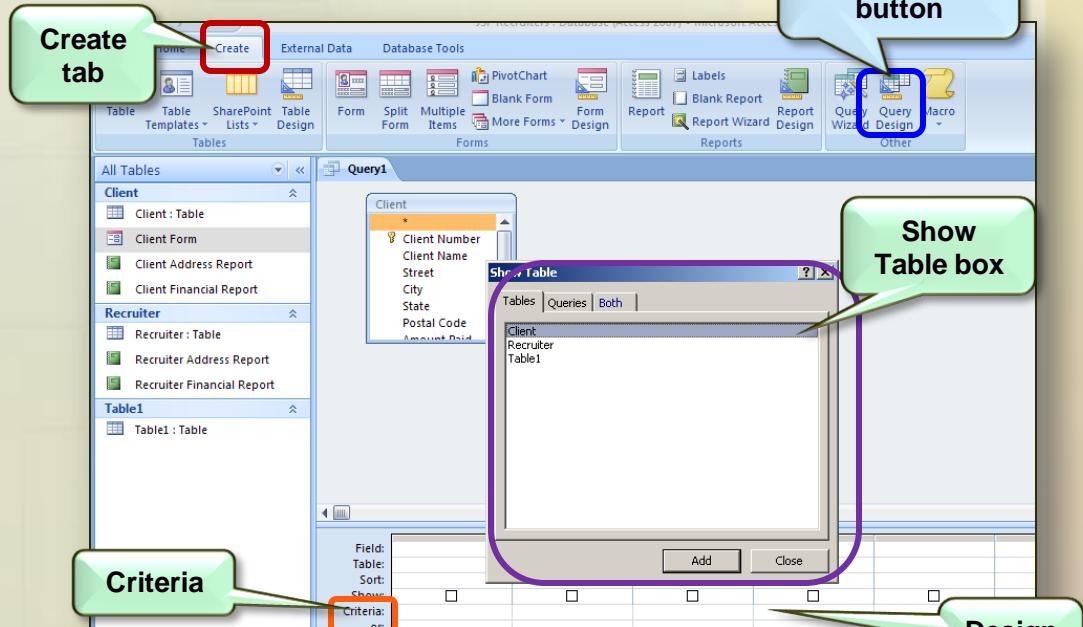
- From the **Create tab**, click the **Query Design** button in the **Other group**
- Click the **Tables, Queries, or Both** tab in the appeared **Show Table dialog box** and select a table or query (to select multiple related items, hold the **Ctrl** key and click each item)
- Click the **Add** button
- Click the **Close** button

To add a field to a query:

- Select the field in the field list and double click it or drag it to a column in the design grid

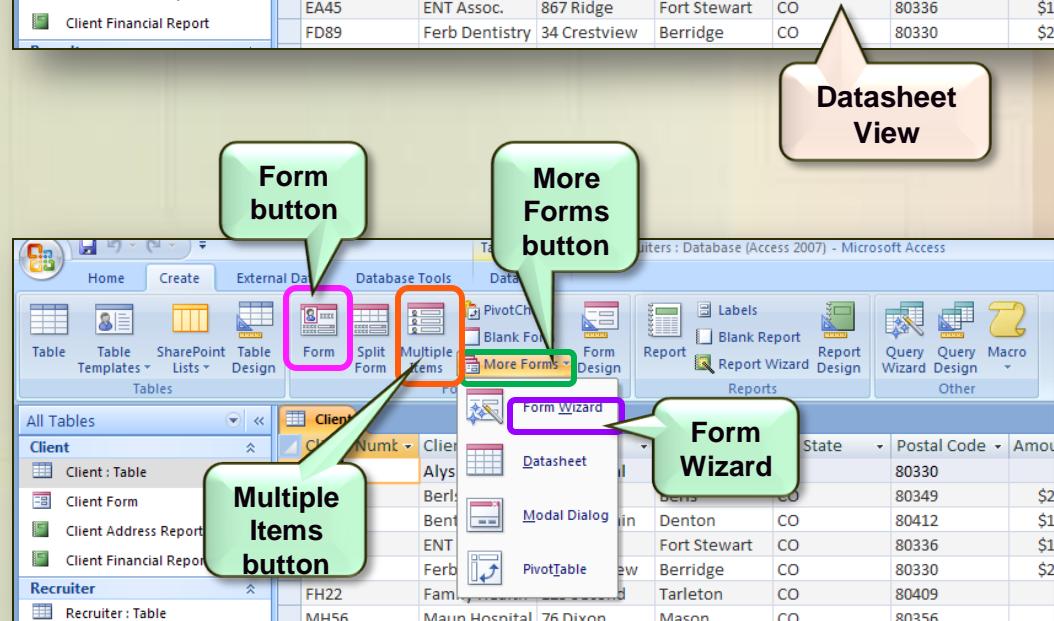
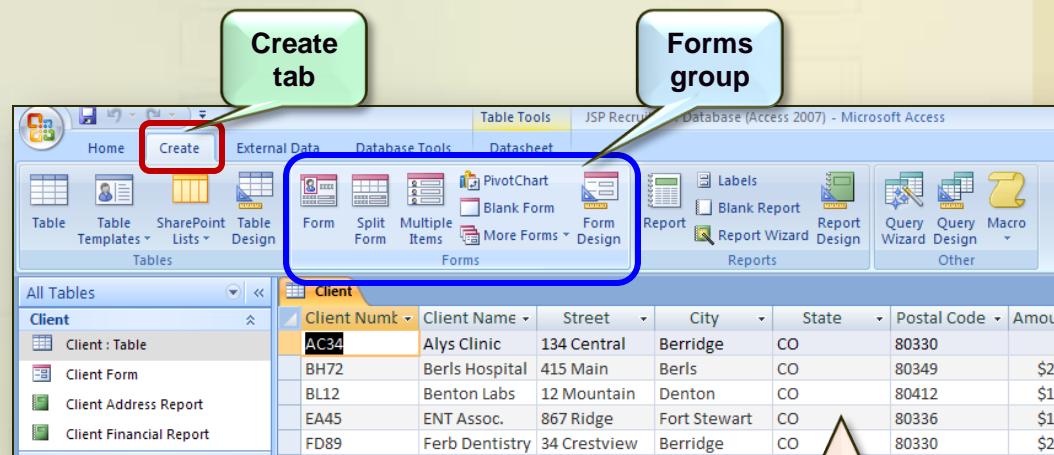
To enter criteria for the query, click in the **Criteria** cell and enter the criteria

Click the **Run** button in the **Results group** to view the query



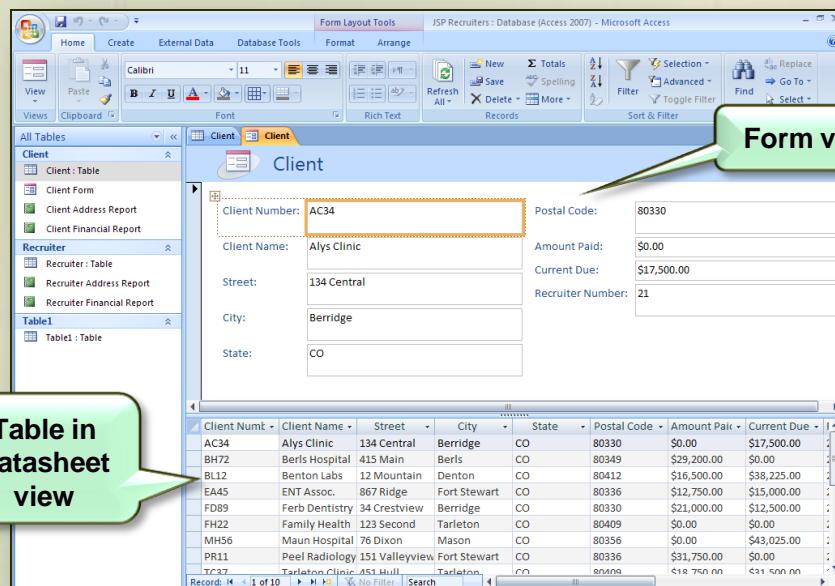
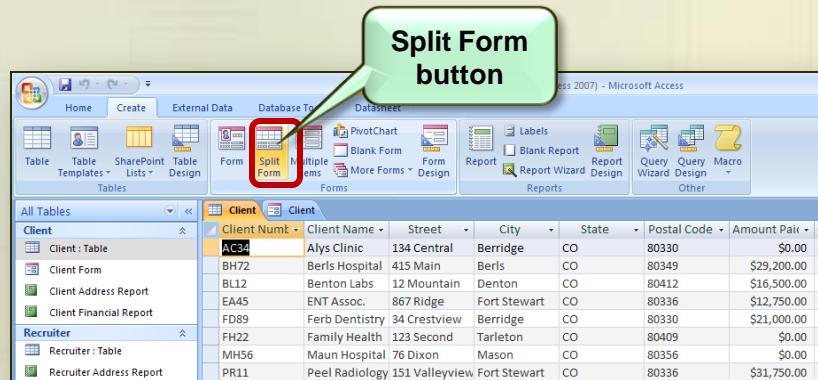
Forms

- **Forms** provide a way to enter, edit, and display data from a table or query. Forms can be used to edit existing records,, display information from multiple tables and calculated values
- In **Datasheet view**, select the table or query and click the **Create tab**
- In the **Forms group**, do one of the following:
 - To create a simple form, click the **Form button**
 - To create a form displaying multiple records, click the **Multiple Items button**
 - To use the **Form Wizard**, click the **More Forms button** and select **Form Wizard**. Follow the Wizard to create a form



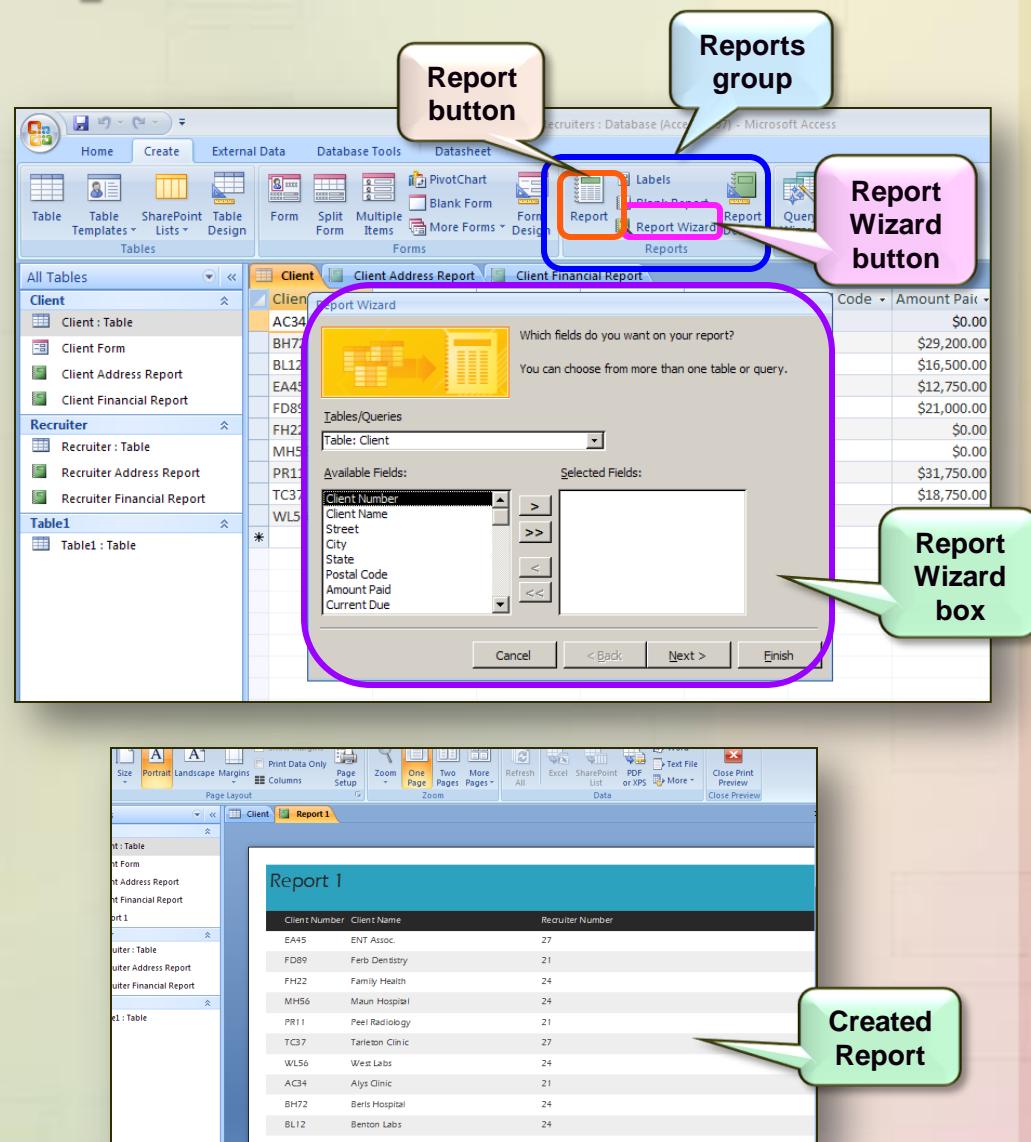
Creating a Split Form

- The **Split Form** allows to view the data in Form or Layout view and Datasheet view at the same time
 - Select the table or query
 - Click the **Create** tab and click the **Split Form** button in the **Form** group
 - The form and the table will appear

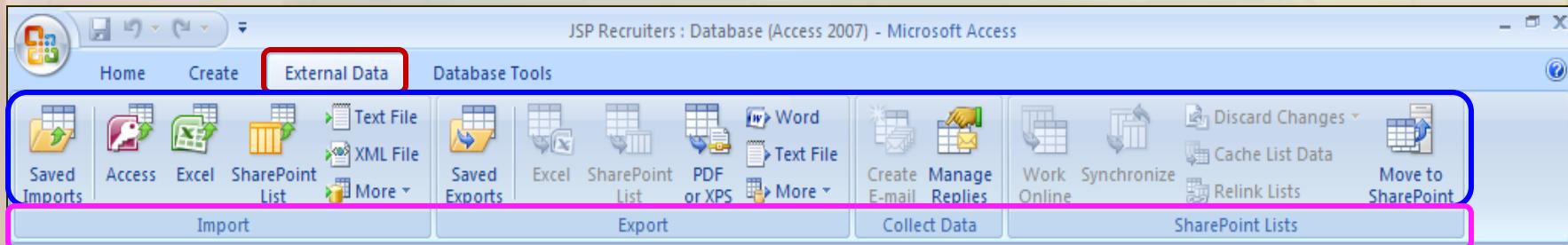


Reports

- **Reports** allow to analyze, present, and print data in professional-looking form
- To create a report:
 - Select the table or query
 - From the **Create button**, in the **Reports group**, do one of the following
 - To create a simple report, click the **Report button**
 - To use the Report Wizard, click the **Report Wizard button** and follow the wizard to create a report



External Data Tab

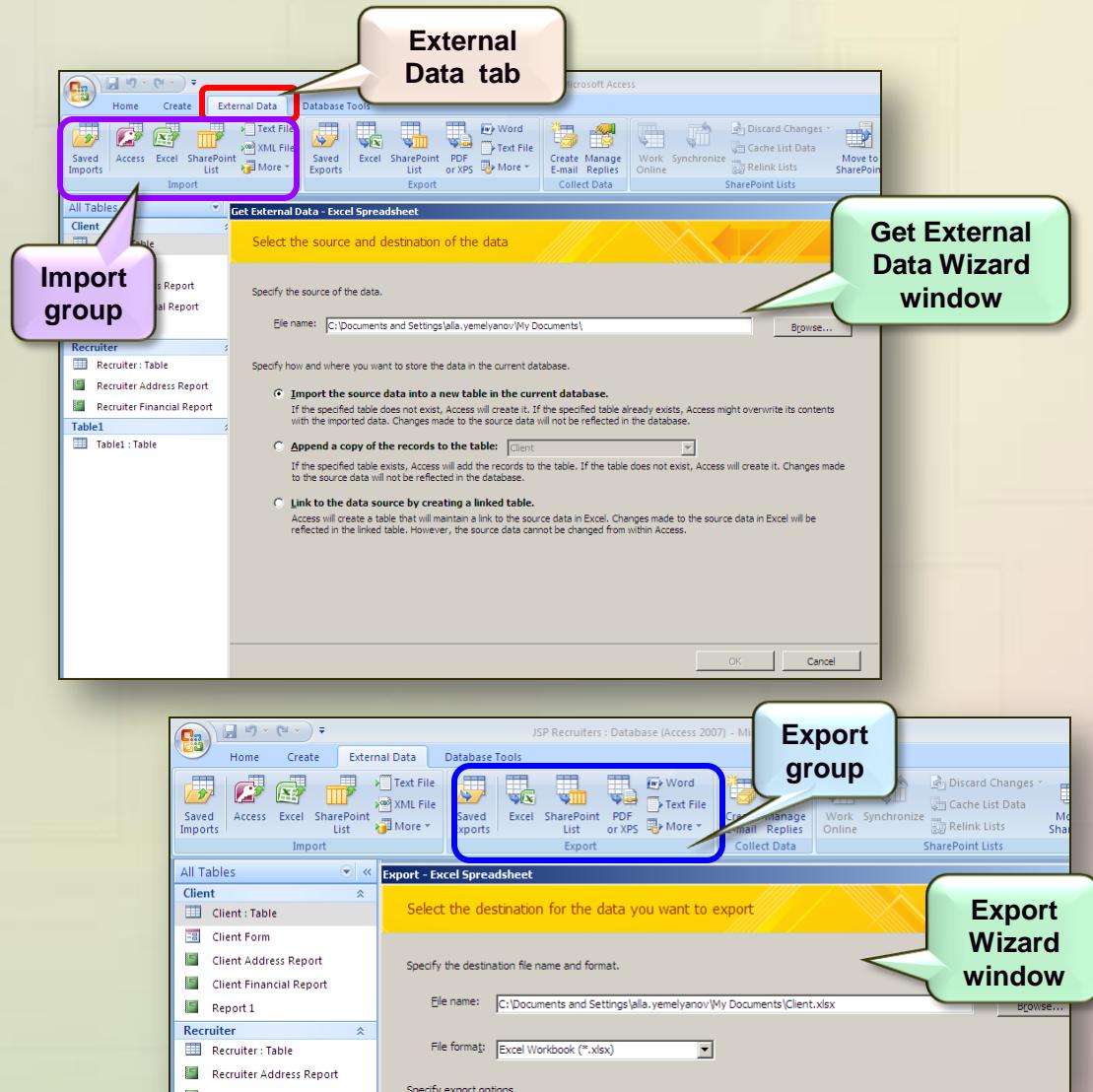


The External Data Tab allows:

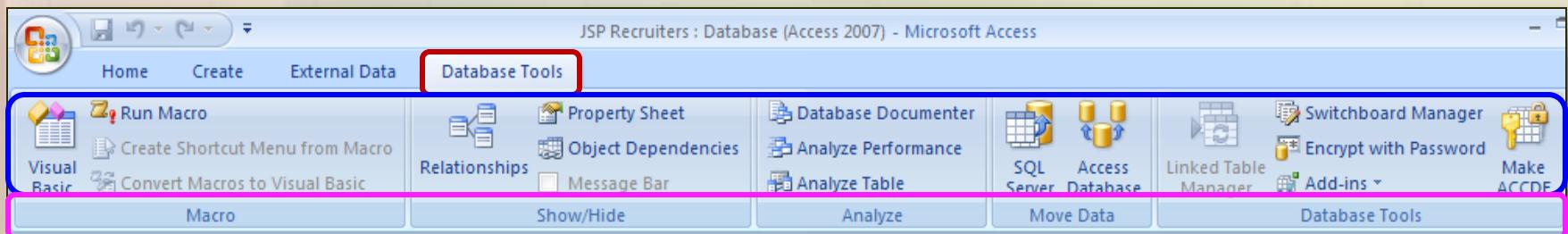
- To import data into the Access database and export data in a variety of formats
- To create a form that can be used to collect new or updated existing data for tables via email
- To use SharePoint commands to integrate the Access database with a SharePoint server (a specialized web server designed to facilitate collaboration)

Importing-Exporting Data

- In the **External Data tab**, in the **Import group**:
 - Click **Access, Excel, SharePoint, etc. buttons** and follow the instructions provided by the **Get External Data wizard** to import the data
- In the **Export group**:
 - click the **Excel, SharePoint, Word, etc. buttons** and follow the instructions provided by the **Export wizard** to export the data



Database Tools Tab



The Database Tools Tab:

- Used to define the relationship between tables for maintaining data integrity
- Contains commands for converting macros to Visual Basic modules, identifying object dependencies, and analyzing the performance of the database

Table Relationships

- A relationship links tables together to provide distribution and organization to a large amount of data to prevent redundancy
- A relationship works by matching key fields in each table
- To create a table relationship:
 - From the **Database Tools** tab, click the **Relationships** button in the **Show/Hide** group
 - In the **Show Table** dialog box, click the **Tables**, **Queries**, or **Both** tab (if the **Show Table** box is not displayed, click the **Show Table** button in the **Relationships** group)
 - Select the table or query and click the **Add** button (repeat for each item you want to add)
 - Click the **Close** button

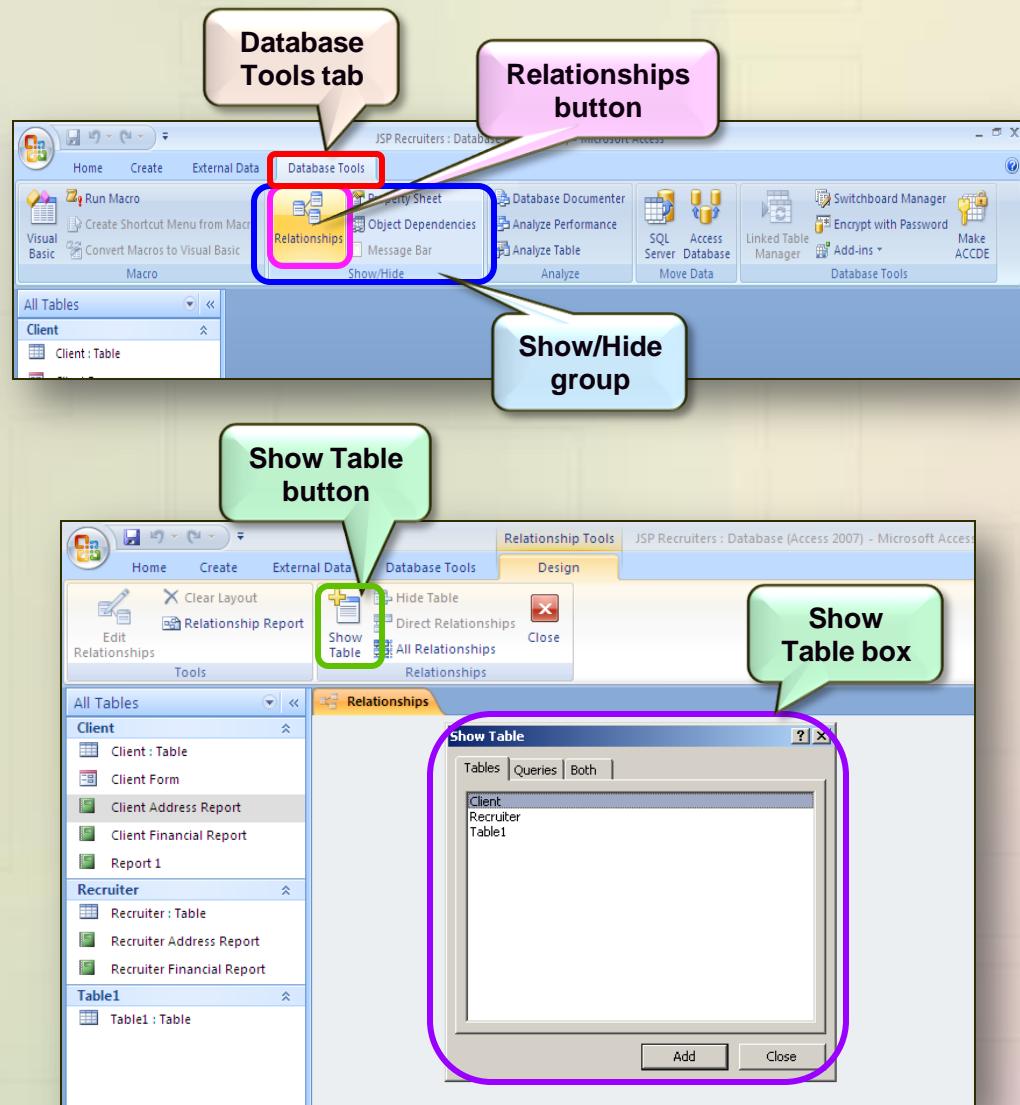
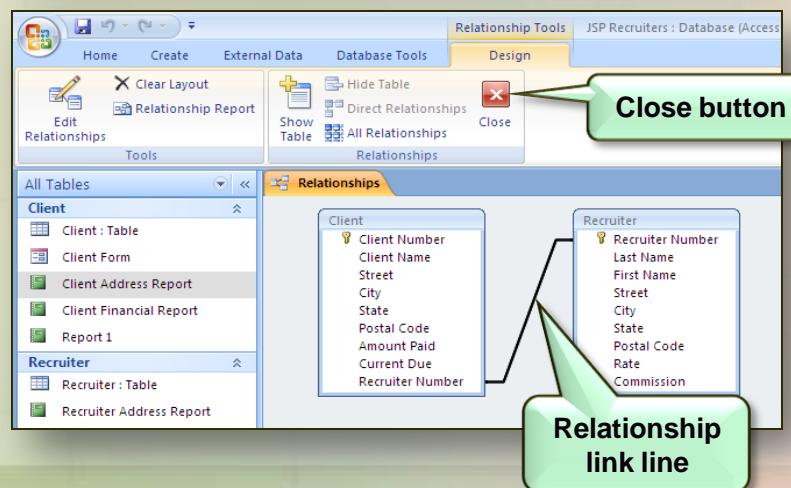
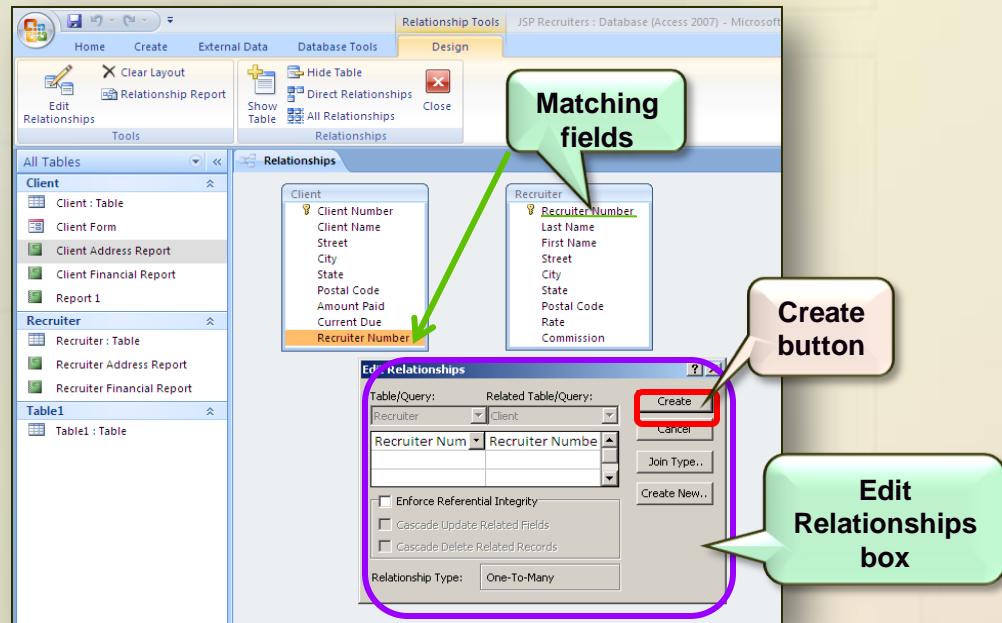


Table Relationships (cont)

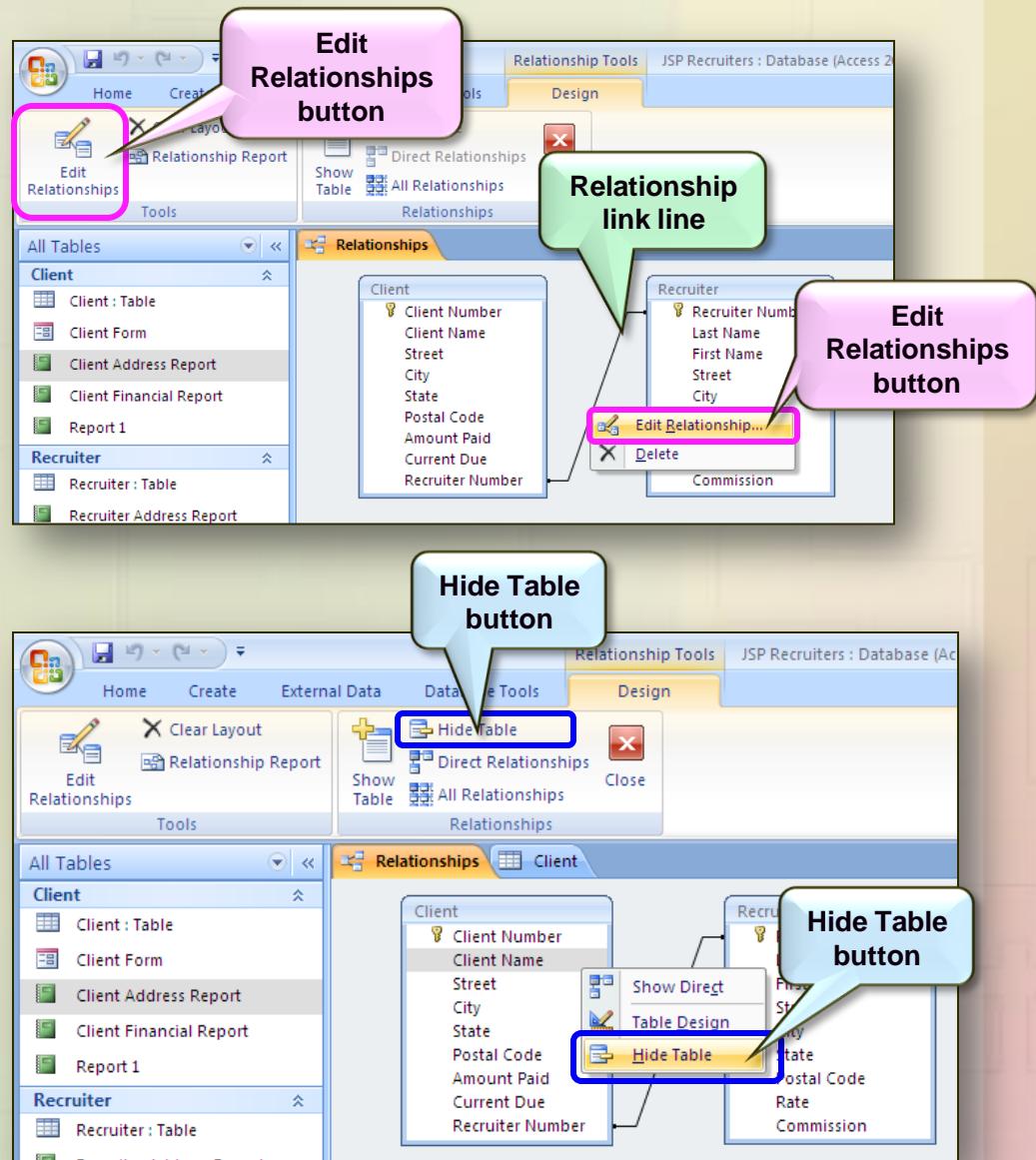
- Drag the field in one table to a matching field in the second table
 - Access displays the **Edit Relationships** dialog box
 - Click the **Create** button in the box to create the relationship
 - Click the **Save** button on the Quick Access toolbar
 - Click the **Close** button to close the Relationships group



Editing Relationships

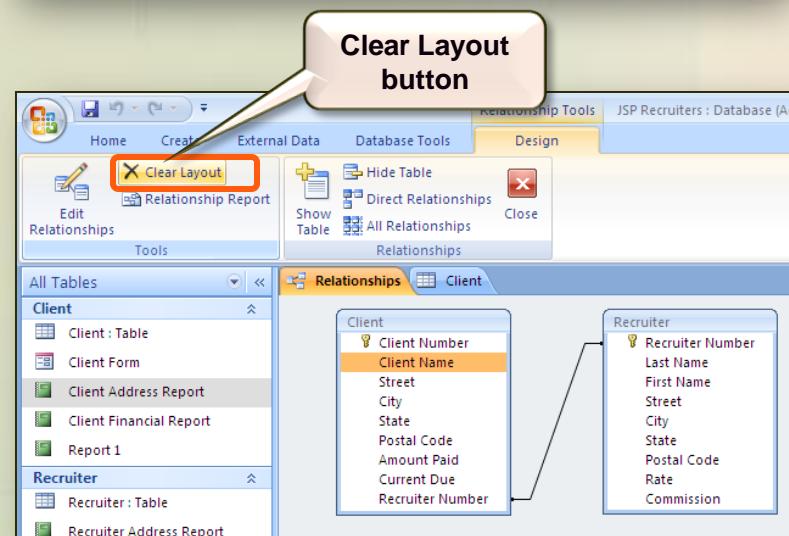
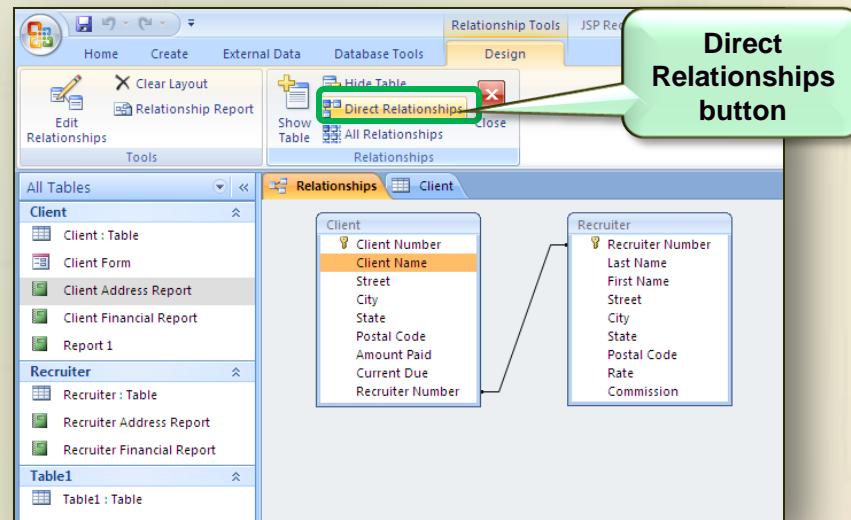
- With the **Database Tools** and **Design tabs**, click the **Relationships button** in the **Show/Hide group**. Do any of the following:

- To make changes in the relationship, double click (or right click) the **relationship link line**, or click the **Edit Relationship button** in the **Tools group**. Make changes in the dialog box and click the **OK** button
- To **delete** a relationship, right click the relationship link line and click the **Delete button** in the menu. Click Yes
- To **hide a table**, right click the table and click the **Hide table button**, or click the **Hide table button** in the **Relationships group** on the Ribbon



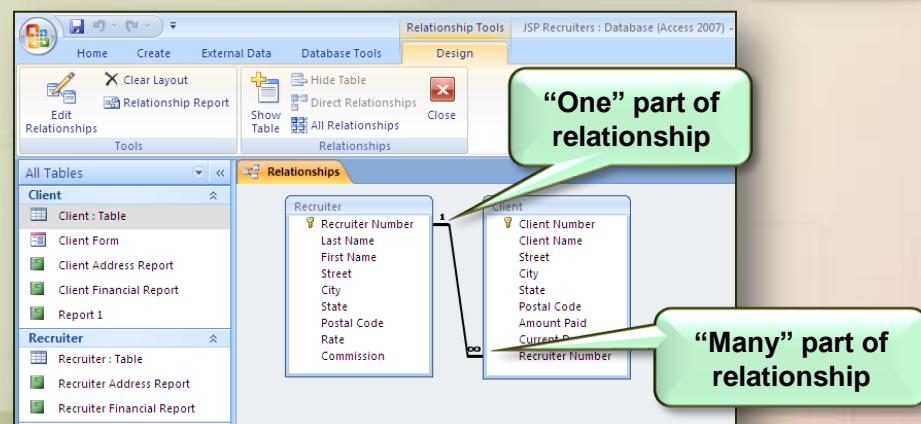
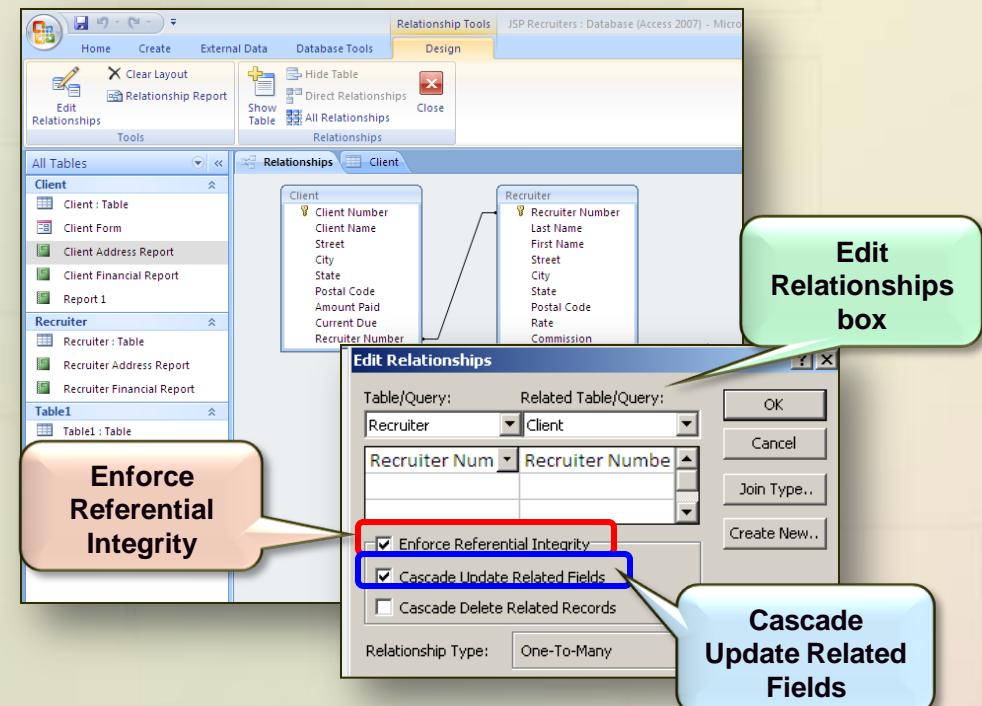
Editing Relationships (cont)

- To display **direct relationships**, select the table and click the **Direct Relationships button** in the **Relationships group**
- To **clear** the entire relationship layout, click the **Clear Layout button** in the **Tools group**
- Click the **Save** button and then the **Close** button in the **Relationship group**



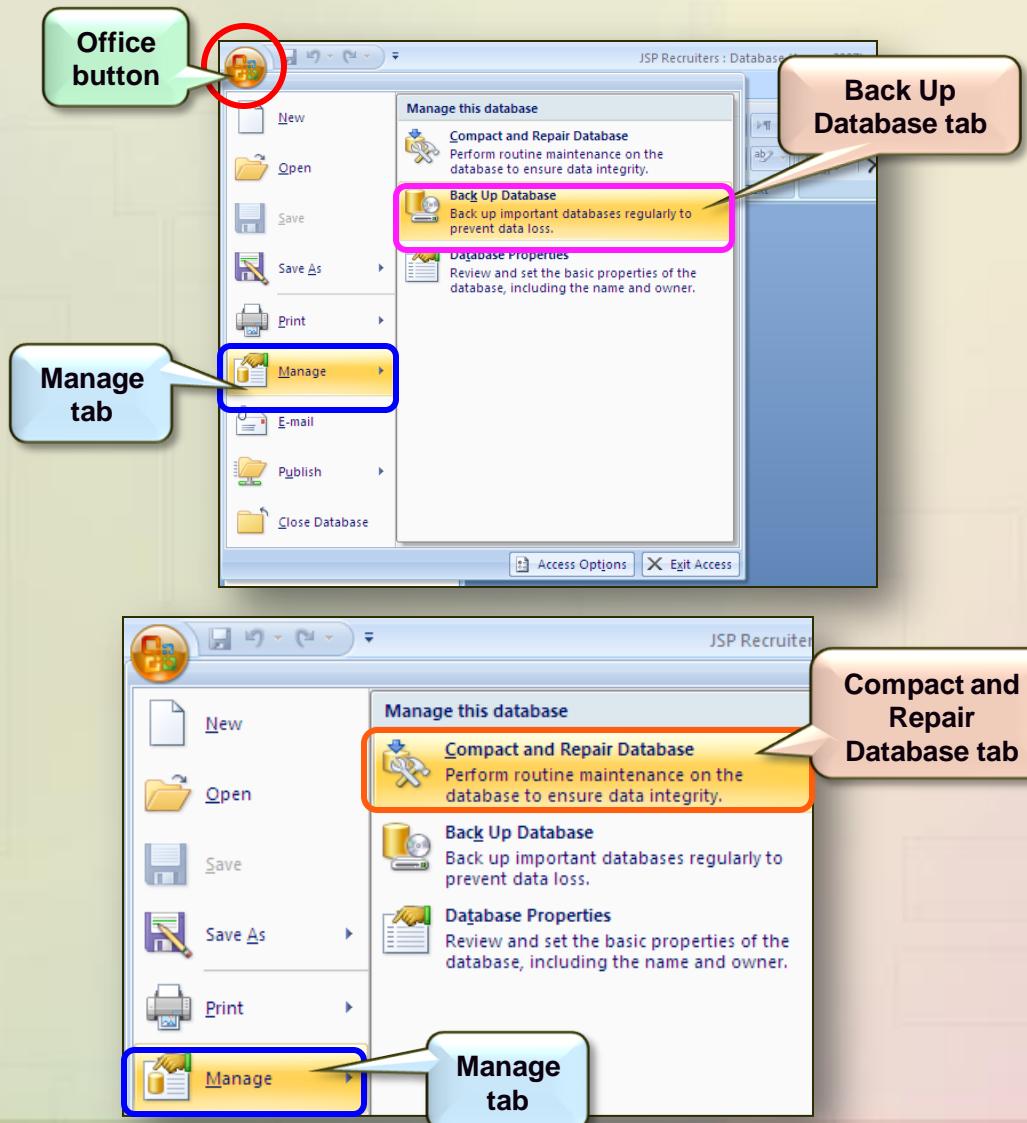
Referential Integrity

- Referential Integrity is a property that ensures that the value in a **foreign key** in one table must match a **primary key** of another table
 - To specify referential integrity, a relationship between tables has to be defined by using the **Relationships tab** in the **Show/Hide group**
 - If you want Access to automatically maintain integrity between the tables, select the **Enforce Referential Integrity check box** in the **Edit Relationships dialog box**
 - Click the **Cascade Update Related Fields** check box and click OK
 - A **one-to-many type of relationship** is created (one recruiter is related to many clients)



Backing Up a Database

- To prevent a database from damage and loosing data, you need to backup it
- To backup a database:
 - Save and close all object in the database (the database itself remains opened)
 - Click the **Microsoft Office button** and select the **Manage tab**
 - Click **Back Up Database** from the menu and select the location for the backup copy in the Save As dialog box
 - Enter a name of a copy and click Save
- To repair and compact (remove any wasted space) a database, click the **Compact and Repair Database tab**



Additional Operation

- To open another database
 - Click the Office button and click the Open tab in the menu
 - Select the database to be opened and click the Open button
- To close a database without exiting Access
 - Click the Office button and click Close Database
- To check for dependent objects
 - Select the object you wish to check
 - Click the Database Tools tab on the Ribbon
 - Click the Object Dependencies button in the Show/Hide group
 - In the Object Dependencies pane, click the “Object that depend on me” radio button to display any objects that depend on the selected object
- To rename an object
 - Right click the object and click the Rename tab on the shortcut menu, type the new name
- To delete an object
 - Right click the object and click the Delete tab on the shortcut menu and click Yes

Textbook and Materials

■ Textbook

- **Microsoft OFFICE 2007/ Introductory Concepts and Techniques, Premium Video Edition**, by Shelly, Cashman, Vermaat; ISBN: 978-0-324-82684-5 © 2010.

■ Online Tutorials:

- <http://office.microsoft.com/en-us/access/HA100140991033.aspx>
- <http://inpics.net/tutorials/access2007/basics.html>
- <http://www.functionx.com/access/>
- http://cisnet.baruch.cuny.edu/holowczak/classes/2200/access/accesall2007.html#sec_intro

