Access 2007 - Beginning

103-133

Tutorial 1 - Database Basics

Notes	Activity

Quick Links

Overview

- Microsoft Access is a *relational database* program
- Database programs are designed to store and organize large quantities of data
- Once the data has been stored and organized, database programs are designed to efficiently retrieve all or part of that data.
- Retrieving data can include displaying it on the screen using custom forms or printing the data using reports.

Notes	Activity

Database Concepts

- Remember that *data* is raw, related facts.
- At the lowest level, databases store data in *fields*.
  - One field stores one kind of data (e.g. phone number, name, age, etc)
  - One piece of data is also known as the *field's value*.
- When all the related fields (name, phone number, age of **one person**) are combined, they form a *record*.
- Multiple records (e.g. all the people in our club) combine to form a *table*.
  - Tables are what store the data in a database
  - Each record in a table has the same set of fields.
- Every table includes a *primary key* field.
  - This is the field that has a unique value for every record in the database. It's the field that uniquely describes each record in the table.
  - Some tables combine two or more fields to create *combination key fields.* The data in these fields *combined* form a unique value.
- Most databases contain many tables (members, projects, officers) that are *linked* together
  - The primary key of one table is used as the *linking field* in another table.
  - The linking field is often referred to as the *foreign key*.

Creating a New Database

- Microsoft Access stores all database components (tables, queries, forms and reports) in one file.
- Before we create the components, we must create a database file to store them all
- Locate the Microsoft Access 2007 icon  on your Desktop or on the Start menu and click (or double-click) to start the program.
- The Access *Getting Started* screen appears. This screen is organized into three primary parts
  - Templates: The Access templates allow you to quickly create *common* database tables.
    - Each can be customized if necessary
    - I have found that because of the amount of customizing normally required, these templates are not very useful.
    - We will not be using the templates in this class

Notes	Activity

- Recently used database list
  - This list shows the databases you've recently used.
  - Again, this list is not very useful. The Windows recently used file list contains most of the same information and is more readily accessible.
  - Normally, I will find the database I want to open using Windows Explorer and open the database directly.

- New Blank Database
  - This option allows you to start a database from scratch.
  - This is the feature we will use to create databases when necessary

- Click the New Blank Database button to create a new database

  Create a new database named Sample1.accdb on the desktop
  - The Recently Used Files list will be replaced with a dialog that allows you to designate the name of the database file and where that file is to be stored.
  - First, enter the name for the database
    - You don't need to enter the **accdb** extension—Access will append it to the end of your file name automatically.
  - Normally, you'll want to store you database in a location other than that suggested by Access
    - Click the *Browse* button at the end of the File Name box
    - Locate the folder that should contain your database and ensure the file name is still appropriate
    - Click the OK button
  - Click the Create button to complete the database creation.

Notes	Activity

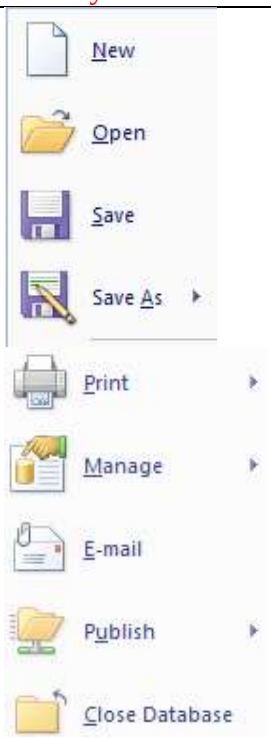
A Tour of the MS Access Screen

- Title Bar
- Office Button
- Quick Access Toolbar
- Ribbon
- Help Button
- Status Bar

- See details below

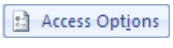
Notes	Activity

Office Button



- New
  - Displays the New Document dialog box.
  - Allows you to create new Word documents of varying types
- Open
  - Displays the Open Document dialog box.
  - Allows you to open an existing document.
- Save
  - Allows you to save changes to the existing document.
  - There is also a Save button on the Quick Access toolbar
- Save As
  - Displays the Save As dialog box.
  - Allows you to save the current document with a different name, or in a different location, or as a different file type.
- Print
  - Displays the Print dialog box.
  - Allows you to print the current document or a part of that document.
- Manage
  - Allows you to quickly make backups of your database
  - Allows you to repair and compact (make smaller) your database
- E-Mail
  - Allows you to send the document via email.
- Publish
  - Allows you to post the document to a blog.
- Close
  - Closes the current document.
  - If the document has not been saved, you will be provided the opportunity to do so.

- Recent Documents
  - Allows you to quickly open documents you have worked on recently.

- Access Options 

  - Replaces Tools ▸ Options
  - Allows you to customize the settings that control the way Access works

Notes	Activity

Quick Access Toolbar 

- Provides quickest access to commonly used commands
- Initially includes:
  - Save
  - Undo
  - Redo
- Can be customized using the dropdown arrow on the right

The Ribbon

- Replaces menus from previous versions of Access
- Provides toolbars to access most of the program's features.
- Divided into groups using tabs
  - With experience, you'll learn which tabs contain which features
  - Simply click a tab to see the features it provides
  - Home tab contains the most commonly used features
- Click a button icon to implement that feature
- Some buttons include a *button arrow* that displays a list of choices

Click button arrow next to font color

- Most tabs include groups of related features. Some groups include a *dialog box launcher*  that provides all the features for that group including some that aren't on the ribbon
  - Small button  located to the right of the group name at the bottom of the ribbon.
- You'll get a lot of experience using the Ribbon throughout the course.

Click the Font dialog box launcher

- Power Tip: To increase the amount of workspace in a Access database, you can temporarily collapse or minimize the Ribbon.
  - Double-click any Ribbon tab
  - Then simply click any Ribbon tab to display its groups.
  - When you click a Ribbon button, the Ribbon automatically hides again.
  - Double-click any tab to permanently display the Ribbon again.
  - You can also minimize the Ribbon by right-clicking it and choosing Minimize Ribbon from the popup menu

Minimize and restore the Ribbon

Notes	Activity

Status Bar

- The status bar shows the status of many features related to the current database.
- Status bar indicators appear only when appropriate, based on the type of database object you're working on
- To add or remove items from the status bar, right-click it and select or remove the item you want.

Creating a Table

- The foundation of any database is its tables
- When you first create a database, Access immediately creates a new, empty table, shown in *datasheet view*.
  - Datasheet view shows your table data organized by fields and records.
  - *Design view* allows you to control the underlying *structure* of the table
  - The table *structure* defines its fields and the types of data each field can hold
- In Access 2007, you can define a table's structure using datasheet view
  - This is normally only done for tables with simple structures
  - Normally, you'll used design view to define structure. You'll learn how in the next unit.
- Because every table has to have a primary key field (uniquely identifies each record), Access automatically adds an *ID* field to every new table that is already designated the primary key field.
  - If you want to change the name of the field (ID is not very descriptive), right-click the ID field header and choose Rename Column

Rename the ID field to ProductNum

- Next, you'll name and provide a data type for the remaining fields in the table
- Field name guidelines
  - Up to 64 characters (no . ! ` [ ])
  - Can't start with a space
  - Capitalize first letter of each word in the field's name
  - Keep field names brief, but descriptive
  - Use standard abbreviations (Amt, Qty, Num)
  - If your database will link to a computer program, avoid spaces in field names

Notes	Activity
• To describe a new field, ➢ double-click in the column labeled *Add New Field* ➢ type the name of the field ➢ When you press Enter to complete the field name, Access automatically moves the insertion point to the next column, prepared to accept the next field name.	Create fields for: ProductName, Color, Price, QuantityOnHand, ReOrderDate
• If fields names are fairly long, they don't completely display in the column header ➢ Point the right edge of the column header box until the cursor changes to a double-headed arrow  ➢ Double-click to make the column *size to fit*. ➢ Tip: to resize all the fields at once, select them all (position mouse until dark arrow appears  , then drag), then double-click the right edge of any selected column.	Resize all columns to fit column headers
• If necessary, you can change the type of data the field will store. ➢ In most cases, Access will determine the type of the data based on values entered in the field. You only need to follow the step below if Access chooses the wrong type. ➢ Click the Table Tools Datasheet tab to change the field's type (type of data it can store) ➢ In the Data Type & Formatting group, drop down the Data Type list and choose the appropriate one. ➢ Data types will be covered in greater detail in the next unit	

Notes	Activity

Entering Data

- Once the table's structure has been defined, you enter the actual data into the fields
  - Click the field cell whose value you want to enter
  - Type the appropriate data
  - Press the Enter key (insertion point is moved to the next field or first field of the next record)
- Tips for entering data
  - Many primary key fields (but by no means all) are *Autonumber* fields. Their value is entered automatically by Access and you can't override that number. Simply press Enter to move to the next field.
  - Capitalize text they way you want it stored in the table. Access won't automatically capitalize
  - Enter currency values with a leading "$"
    - Access automatically changes the type of the field to Currency and adds two decimal places if appropriate.
    - After entering the first value in the Currency field, you no longer have to enter the $, Access will add it.
  - Access accepts Date values in just about any format
    - 7-11-2008
    - 7/11/2008
    - Jul 11, 2008
    - If the date you're entering is in the current year, you don't have to type the year, Access will add it automatically.
  - Tip: To quickly copy the data from the field above, press Ctrl-" (quotation marks)

Enter the following data in the first record:

T-Shirt
Red
$29
55
7/11

Enter the second record:
Pen
Various
2.9 (note formatting)
1100
Dec 13, 2008

Notes	Activity

Saving Tables (Records)

Save the table as tblProduct

- Access automatically saves changes to a record whenever you leave that record—saving data is not necessary.
- Access does however require you to save changes to the structure of a table
  - Access will prompt you to save a table as you're closing it (if you haven't already saved it).
  - You can manually save changes by clicking the Save  button on the Quick Access bar or in the Microsoft Office menu.
  - If this is the first time you're saving a table's structure, you'll also have to provide a name for the table.
  - I recommend adding the letters *tbl* to the beginning of every table name to make what's stored in the object more obvious (you might have a table named Product and a form named Product and a report named Product).
- Access also saves changes you make to the layout of the datasheet view (column widths, column order, and sorting)
  - When you close a table, Access will prompt you to save the changes to the layout.
  - Click Yes or No as appropriate.

Change the width of one of the columns. Close the table.

Close the Database.

Opening an Existing Database

Copy the In Class folder to the desktop.

- There are numerous ways to open an existing Access. The following are listed in the order I use them most
  - Use Windows Explorer (Computer) to locate the database file. Double-click it.
  - Use the Window Recent Items list (if database is on the list). Click the database file.
  - Open Access. Use Recent Files or Browse.

Open the Bookstore Database in the In Class folder.

Notes	Activity
• Once the database is open, use the Navigation Pane on the left side of the window to select the table, query, form or report you wish to modify or use. ➢ Navigation pane organizes database objects by type – Click the drop down arrow to select a different navigation pane grouping – Select *All Access Objects* to see all objects ➢ If you need more screen space, you can minimize the navigation pane by clicking the *Shutter button* – Click the shutter button again or the big Navigation Pane button to restore the navigation pane. ➢ To open an object from the navigation pane, simply double-click it.	Shutter the navigation pane. Restore it. Select All Access Objects. Open the Products table

Importing Data

- Often, the data you need to add to a table already exists in another electronic form.
  - ➢ Another Access database maintained by another organization.
  - ➢ Another type of database program, perhaps an outdated one that is being replaced
  - ➢ Another type of program. Some companies store their data using Excel
  - ➢ Raw text format. Mainframe computers often share data with other database programs by converting their data to raw text.
- Instead of retyping all this data, it can usually be imported into Access.

Notes	Activity

- Copying Data from Other Access Databases
  - In order to copy data from one Access database to another (probably in different databases), the databases need to have the same structure (field types)
    - The field names do not have to be the same, but the order of the fields and the types of the fields have to match.
  - Open the table the contains the data to copied (*imported*)
  - Using the row selectors (the boxes on the left edge of each record), select the rows to be copied
    - Tip: to select all the rows, click the triangle in the upper left corner of the datasheet
  - Copy the records to the clipboard (Ctrl-C, toolbar button or right-click)
  - Open the table to receive the copied records
    - Note: you do not have to close the first database.
  - Click the star (*) in the record selector of the last row of the datasheet (labeled *New)*. You must select the entire row.
  - Paste the records from the clipboard into the datasheet (Ctrl-V, right-click, or toolbar button)

Copy the data in Sample1 to the Products table

Notes	Activity
• Importing Data from Excel ➢ Select External Data tab ➢ Select Excel from the Import group, a dialog box will appear ➢ Click the Browse button in the dialog box and locate the Excel spreadsheet to import from. ➢ Select whether to import into an existing table or a new table – If importing to existing table, fields must be compatible. ➢ Click the OK button ➢ Select the worksheet or range of cells to import from—click Next ➢ Designate if worksheet includes column names (probably) – click Next ➢ For each column, designate its type of data—click Next ➢ Designate the primary key column—click Next ➢ Designate the table name (for new tables)—click Finish ➢ After the import is complete you'll be asked if you want to save the steps (probably not). – Convenient if you have import similar data on a regular basis.	Import Lopez.xlsx into a new Locations table Try to import again, into the existing Locations table Note differences in dialog boxes. Note errors because of duplicate keys.

Notes	Activity
• Importing Data from Text Files ➢ Data imported from a text file must be *delimited* in some way. – A delimiter is a character used to separate the fields of the record – Data can be imported using fixed size fields, but this is rare. ➢ Select External Data tab ➢ Select Text File from the Import group, a dialog box will appear ➢ Click the Browse button in the dialog box and locate the Excel spreadsheet to import from. ➢ Select whether to import into an existing table or a new table – If importing to existing table, fields must be compatible. ➢ Click the OK button ➢ Designate whether the data is delimited or fixed field size--click Next ➢ Designate the delimiter character – Access normally chooses correctly – Click Next ➢ Designate the field name for each field – Alternatively, you can retain the default names and change the field types using Access ➢ Designate the primary key column—press Next ➢ Designate the table name—click Finish ➢ After the import is complete you'll be asked if you want to save the steps (probably not). ➢ Convenient if you have import similar data on a regular basis.	Import the Coffee.txt file from the In Class folder

Notes	Activity

Creating a Query

- Once data has been entered into the tables, you'll want to *query* the database – ask Access to answer questions about the data.
- Tutorial 3 is dedicated to creating queries. In this unit, we'll learn to create simple queries
- Select the Create tab on the Ribbon
- Designate how you want to create the query—in this unit, we'll use the Query Wizard
- In the dialog box that appears, ensure *Simple Query Wizard* is selected
- In the next dialog box, first select the table the query should be based on.
- Select the fields to be included in the query result (answer)
  - Click the field name, then click >
  - Tip: you can also double-click a field to move it to the Selected Fields list (or back again)
  - Click >> to select all the (remaining) fields in the order they are listed.
  - Click Next
- Enter the name for the query.
  - Again, I recommend adding prefix to the query *object* so it is easily recognized as a query
  - I use *qry* as the prefix.
- Click the Finish button to see the query results

Create query based on Customer table.

Choose first name, last name, address and phone number

Name the query qryCustomers

- Note the results of the query look like a table in datasheet view.
  - Not all the fields may be listed
  - In the future, not all the records may be listed
  - HOWEVER, this is *live* data—any changes you make to data here, will be reflected in the table itself
  - Some database programs refer to queries as *views*, considering them simply different views of the data in a table.

- You can resize the fields in a query just like you resize them in a datasheet
  - Tip: If you have lots of data that scrolls off the screen be sure to scroll through all the data when resizing fields. **Access only resizes the field based on the data that is currently visible**.

Resize all fields to fit

Notes	Activity

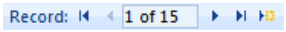
- Though not discussed in this tutorial, you can sort the query in different ways
  - Right-click anywhere in the column you wish to sort by
  - From the popup menu, choose the appropriate sort option
  - When you sort a query, the underlying table is NOT permanently sorted. Only the query (view) is sorted

Sort by last name

Creating a Form

Create a basic form for the Products table

- Instead of entering data in datasheet view many users prefer to view one record at a time, in form view.
  - Similar to forms you fill out on the Internet
- Access provides a quick way to create a form for the currently displayed table
  - Access also includes a Form Wizard that makes creating other forms easy
  - Access includes a *form designer* that allows you to completely customize a form. The designer will be covered in Tutorial 4.
- Open the table for which you'd like to create a form
- Click the Create tab on the Ribbon
- In the Form groups, click the Form  button. Access will create a simple form that includes all the fields in the table

Notes	Activity
• Navigating Records With a Form ➢ Because you can only see one record at a time in form view, you need a way to navigate from one record to another ➢ At the bottom of the form window, Access provides navigation buttons  ➢ The purpose of each button is fairly obvious: –  Display first record –  Display previous record –  Display next record –  Display last record –  Create new record –  Number of current record and total number of records ▪ Tip: If you know the number of the record you want to view, you can enter it in this box (click and type) ➢ These buttons are also available in datasheet view, but scrolling and clicking is usually a more efficient means of navigating in that view.	Use navigation buttons

Notes	Activity

Creating a Report

Create a report based on the Customer table.

- Often, you'll need to create a printed report based on the data in a database table
  - You can also create reports based on queries
- Access provides a quick way to create a basic report for the currently displayed table
  - Access also includes a Report Wizard that makes creating other report easy
  - Access includes a *report designer* that allows you to completely customize a report. The designer will be covered in Tutorial 4.
- Open the table for which you'd like to create a report
- Click the Create tab on the Ribbon
- In the Report groups, click the Report  button. Access will create a simple report that includes all the fields in the table
- In addition to the data, the report includes totals for all numeric columns
- The report also includes the current date and time
- To get a better view of the report and its pages, change the View (Home tab, Views group) to Print Preview
  - Use the Page navigation buttons to view different pages
  - Also available on right side of the status bar

Notes	Activity

Compacting a Database

Compact the Bookstore Database

- As you use a database, creating and deleting records, forms, queries and reports can become cluttered with out-dated objects.
- Access provides a way to permanently remove these objects, often significantly reducing the size of the database.
  - Click the Office button
  - Click Manage
  - Click Compact and Repair Database

  - CAUTION: Access creates a duplicate (compressed) copy of the database while compacting. This can cause problems with very large databases or small storage devices (such as floppy disks). Ensure your storage device has room for two copies (temporarily) of your database. The temporary copy is deleted when the compacting process is complete.

Note the location of Compact on Close.

- You can also instruct Access to compact and repair your database every time it is closed.
  - See Caution above
  - This option is less used because it does slow down the close process of large databases.

  - Click the Office button
  - Click the Access Options button
  - Click Current Database
  - Under Application Options, select Compact on Close