Access 1 Class Guide
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Part 1: Database Basics

1.1 What is a Database?
A database is a structured collection of related data. Examples include a checkbook register, a phone book, and the library's online catalog.

1.2 What is Access?
Access is Microsoft's database software program. You can use Access to create databases for work or home. We will be using Access 2010 in class. **.accdb** is the file extension for Access 2007 and later.
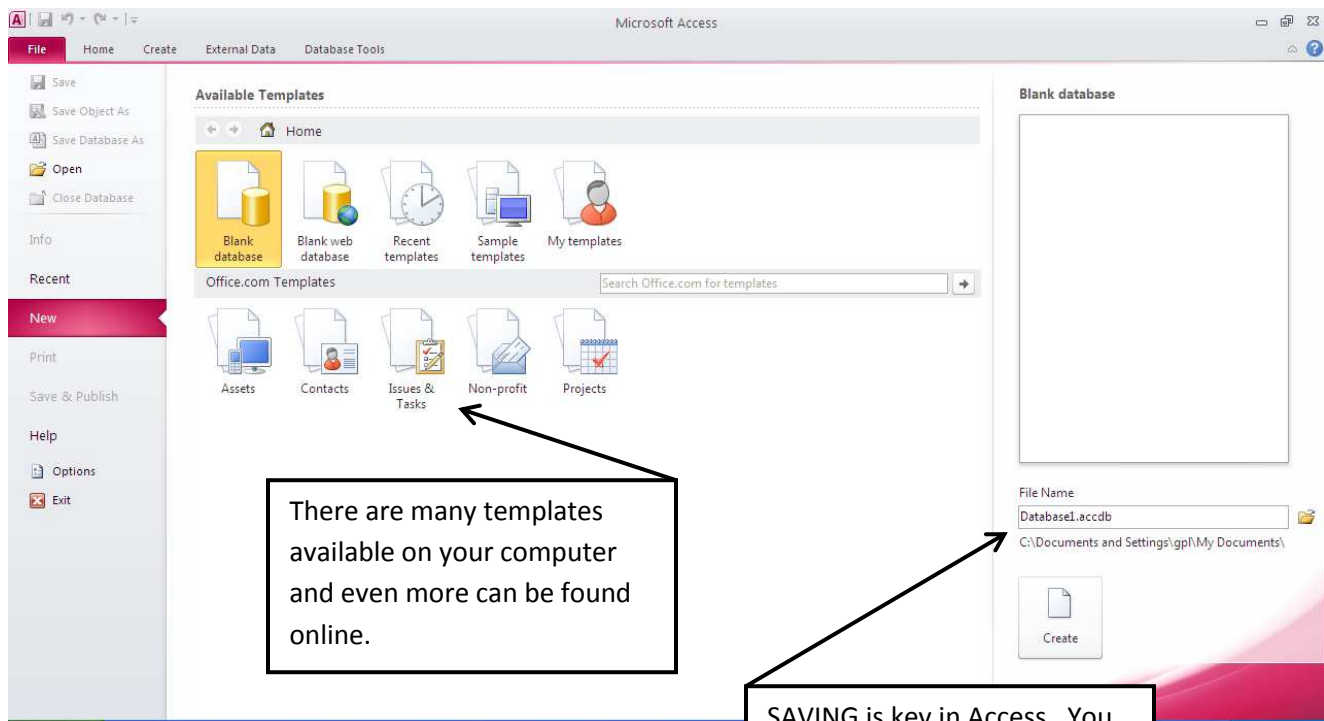
1.3 Why use Access? Can't Excel do everything?
Excel is an excellent program for crunching numbers. It can do a good job acting as a database, but Access can give you much more versatility when working with data that is not being computed. You can create relational databases to retrieve and compare data in Access that surpass Excel's capabilities.

Part 2: Delving into Access

### 2.1 WAIT...first you must plan!
The key to making an Access database useful is to plan the database before you actually start creating it in Access. This will save you many headaches down the road. Break out a fresh sheet of paper and a pencil and flesh out your organizational concepts for your data. Then you can open Access and find this:

There are many templates available on your computer and even more can be found online.

SAVING is key in Access. You have to save your database before you even create your first table.

EXERCISE 1: Create a database called *Company*.

2.2 The Access Window

Access has some similarities to other Office programs including the Quick Access Toolbar and the Ribbon. However, you'll notice that the contents of the Ribbon's tabs are fairly different.
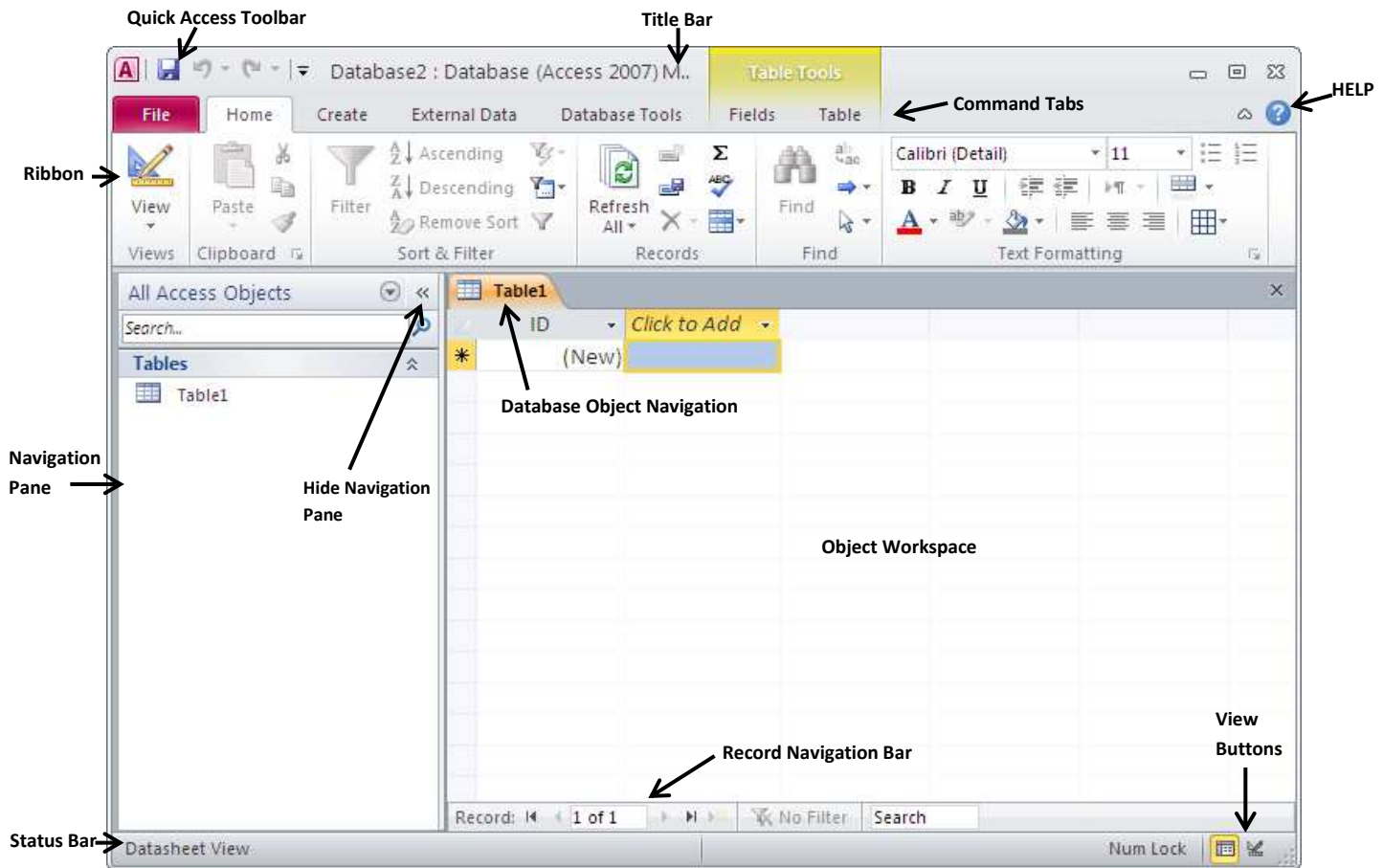
2.3 Object Types

An Access database consists of at least one object, a table. You can create more than one table in addition to several other types of objects that will allow you to add and utilize data differently. Once saved, these objects appear in the Navigation Pane. You can make new objects using the buttons on the **Create tab** of the Ribbon.

Table (saved with tbl prefix) – the backbone of your database. By creating multiple tables that have relationships, you can fully utilize Access's functionality.
Query (qry) – a way to pull specific data from a table or tables; can combine tables and calculate fields on the fly
Form (frm) – a quick and easy way to enter data into a table
Report (rpt) – can be used to summarize data culled from tables using queries; they are nicely formatted to print out like a Word document.

2.4 Viewing Objects

You can view the objects in different ways. And the views will vary depending on the type of object you are currently using. Two of the most common views are…

Datasheet View – shows records and fields in a spreadsheet-like format
Design View – delves more deeply into the make-up of the object (varies by object type)

You can change the view off of the **Home tab** of the Ribbon or on the right side of the Status Bar.
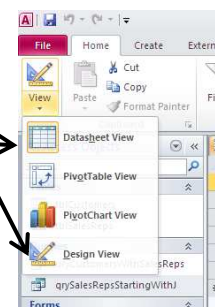
EXERCISE 2: Create tblSalesReps using the Table Parameters on the _white_ handout.

Part 3: More on Tables
3.1 Components of a Table
   Field Name (preferably no spaces) – labels the "column" of data
   Field Value – data entered into a "cell"
   Record – a complete entry in a database table composed of one or more fields
   Primary Key – each table in a database should have a unique field called a primary key which is not duplicated anywhere in the database. It can be linked into other tables, but it can never be duplicated.

3.2 Fields Fleshed Out
   There are several different Field Data Types you can choose from when creating a table including:

Data Type	Description (from *Picture Yourself Learning Microsoft Access 2007* by Faithe Wempen 005.7565 WEM)
Text	Includes any characters up to a maximum of 255 (determined by field size). If the data includes a mix of numbers and any amount of letters, choose this field type. Examples include name and address fields. Phone numbers, Social Security numbers, and ZIP codes are also usually assigned this type, even though they contain only digits, because the entries in these fields will never need to be used in math formulas.
Memo	Use this type when Text is not large enough. Like Text, this type can also have letters and numbers but can be much larger, up to 65,536 characters. Don't use Memo unless you need that extra length, however, because you can't perform certain actions (indexing, for example) on a Memo Field.
Number	Includes various forms of numerical data that can be used in calculations.
Date/Time	Date and time entries in formats showing the date only, the time only, or both.
Currency	Use for currency values with up to four digits after the decimal point.
AutoNumber	Usually this is used to create an ID number for each record. The value for each record increments by one.
Yes/No	Only two possible values can be in this field. You can set the field options to appear as Yes/No, True/False, or On/Off. The default style shows a check box rather than a text value.

3.3 Tables in DESIGN VIEW
   Field Properties give you the power to limit what is entered into a cell and how it is displayed and stored. They vary depending on the field's data type (see above).
- **Field Size** – limiting field size will help with consistency in data entry and limit your database's file size.
- **Input Masks** – a wonderful way to make sure a correct number or character is entered into a field.
   -Only work with fields having a Text, Date/Time, Number, or Currency data type.

   -The Input Mask Wizard can help with common entries such as phone numbers and ZIP codes.
   -Go to **http://tinyurl.com/cs9kjyx** for more masks.
- **Caption** – allows you to have a multi-word name for a field that will be displayed as the column heading in Datasheet view as well as the field label in forms or reports.
- **Validation Rule** – can be used for numbers and/or text; restricts the content of a field. Example: require a date entered be within a certain range.
- **Validation Text** – this message will display whenever a validation rule isn't followed.
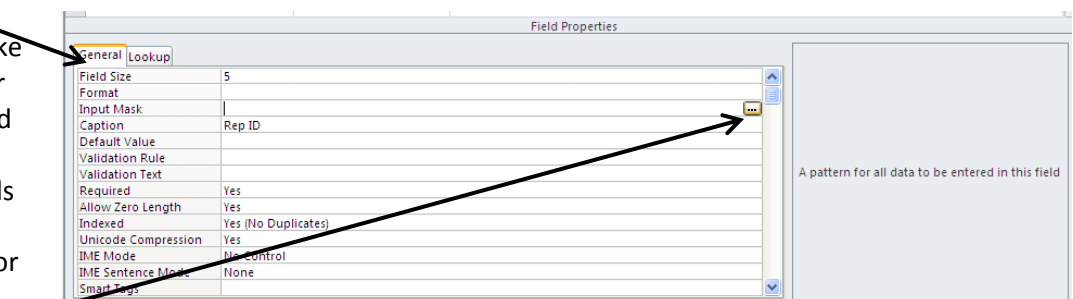
- **Required** – make the field have an entry before the record will be saved. Primary key and AutoNumber fields must be set to Yes.

EXERCISE 3: Enter tblSalesReps data from the _colored_ paper

EXERCISE 4: Create tblCustomers using the Table Parameters on the _white_ sheet and enter Customers data from the _colored_ paper.

3.4 Table Relationships

Why relate tables?
- Using multiple tables can reduce data redundancy and data entry errors
- Reduces disk space storage
- Allows you to pull data from multiple tables to create forms, queries, or reports

What kind of relationships are there?
- 1-to-Many
  -by far the most commonly used relationship
  -in general, a primary key in one table is related to a non-primary key in another table (the **foreign key**)
- 1-to-1
- Many-to-Many

Steps to create a relationship:
- The easiest time to relate tables is after they've been created but no data entered.
- Click on the **Database Tools tab** of the Ribbon
- Click **Relationships**
- Choose the objects you want to relate so they show up in the Object Workspace
- Click and drag the field you want to relate from one table (the parent—the ONE) to the other table (the child—the MANY)
- An **Edit Relationships** window pops up. Decide whether or not to Enforce Referential Integrity and the Cascade options.


  Enforce Referential Integrity – makes it impossible for users to enter a value in one table that does not have a corresponding value in the related table.
  Cascade Update Related Fields – if you change the value in the primary key of the parent table, the related foreign key in all of the related child tables will automatically change as well.
  Cascade Delete Related Records – if you delete the record in the parent table, all related records in the child tables will be deleted as well.
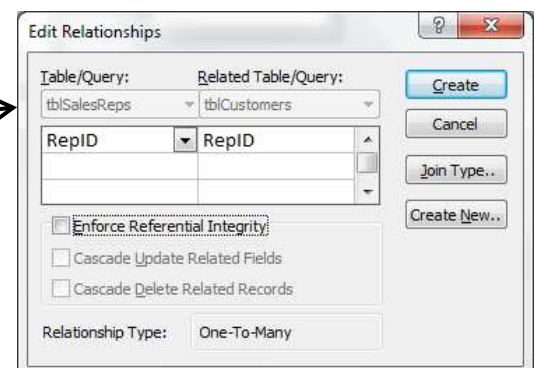
- Click **Create**
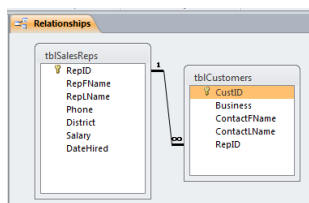
- While on the Relationship window, click on **Design** tab and then **Relationship Report** to save the layout as _rptRelationships_ for future reference.

3.5 Lookup Fields in a Table

Lookup Fields can make life a little easier by streamlining data entry and ensuring data integrity. The most powerful (i.e. complicated!) lookup fields use existing tables or queries. Here is how to type in values for a lookup field:

- Open the table that will have the lookup field in Design View
- Change the field's Data Type to **Lookup Wizard…**
- Choose **I will type the values I want** and click **Next** to type in values and finish the Wizard.

EXERCISE 5: Change tblSalesReps's District to a drop-down list and add in a new sales rep from the _colored_ paper.

Here is how to use an existing table for the lookup field data:

- Open the table that will have the lookup field in Design View
- Change the field's Data Type to Lookup Wizard… (NOTE: You may need to delete a previous relationship for this to work).
- Follow the Wizard to complete the Lookup Field.

EXERCISE 6: Edit RepID in tblCustomers to be a lookup field. Then add additional customers from the _colored_ paper.

Part 4: Other Objects

4.1 Queries

- Click on the **Create tab**
- Click on **Query Wizard** or **Query Design**
- Choose the table or tables you need for the query
- Choose the fields to include in the query
- Click ![Run] in the Ribbon
- Save   the query as "qry…"
- Return to Design View at any point to alter/enhance the query.
- In some cases, you can enter new records into a table or tables via a query.
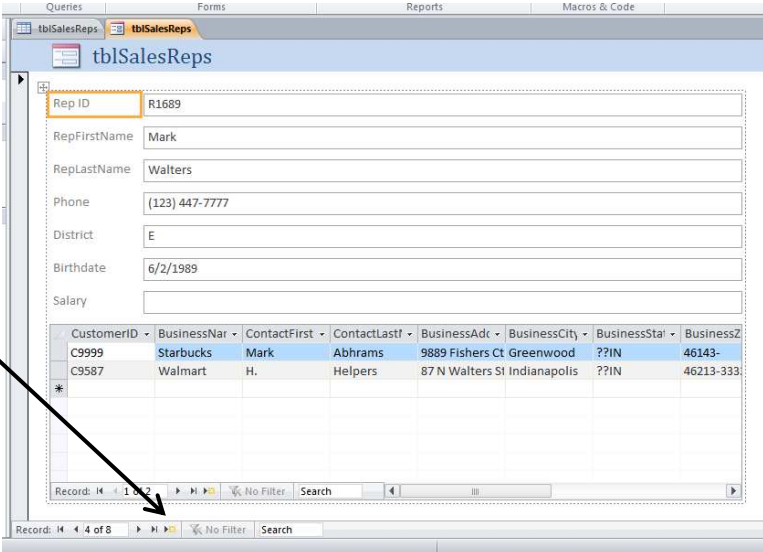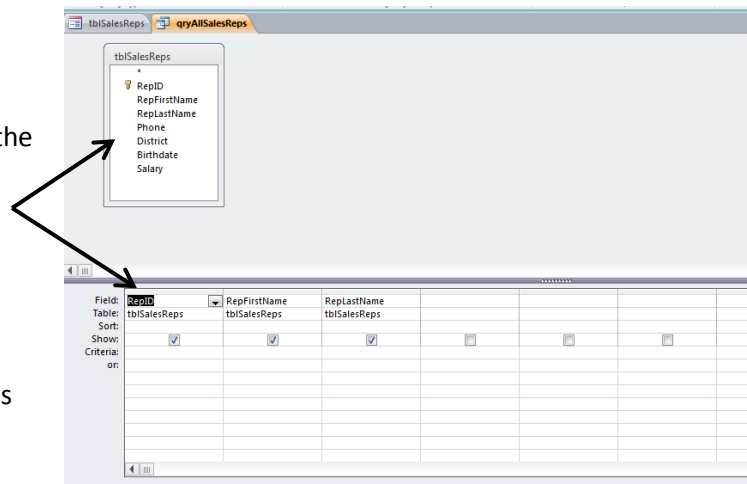

Exercise 7: Create qryAllSalesReps that pulls RepID, RefFName and RepLName from tblSalesReps. Sort by RepLName and then add in Salary and DateHired. Then add in additional sales rep.

Exercise 8: Use Query Wizard to find sales reps with no customers (use Unmatched…). Save the query as qrySalesRepsWithNoCustomers.

Exercise 9: Use the Simple Query Wizard to calculate Average Salary by District. Save the query as qryAverageSalaryByDistrict.

4.2 Forms

- Open the table you want to use as the basis for the form or simply click on it once in the Navigation Pane.
- Click on the **Create tab** and then **Form**
- Yes, it was that easy!
- Use the arrows of the Form window to scroll through records.
- Click ▶▦ to create a new record (make sure you are in Form View).
- Save the form as "frm…"
- Make sure you are in **Form View** when adding data. **Layout View** and **Design View** allow you to customize the display.

Exercise 10: Create frmSalesReps and add new sales rep and new customer from <u>colored</u> sheet. *Make sure you are in Form View to edit/add data.*

4.3 Reports

- Select the table or query you would like to use for the report in the Navigation Pane.
- Click on the **Create tab** and then **Report**
- Redo the title if necessary
- Save as "rpt…"

**Exercise 11:** Create rptAllSalesReps from qryAllSalesReps. Then add in the Phone field.

Part 5: The Last Bits

5.1 Opening a Saved Database

   Whenever you open an Access database, you will almost always be prompted with a security warning. This is because virus code can be embedded into database files. When opening other people's databases on your computer, be sure they are trustworthy before clicking on **Enable Content**.
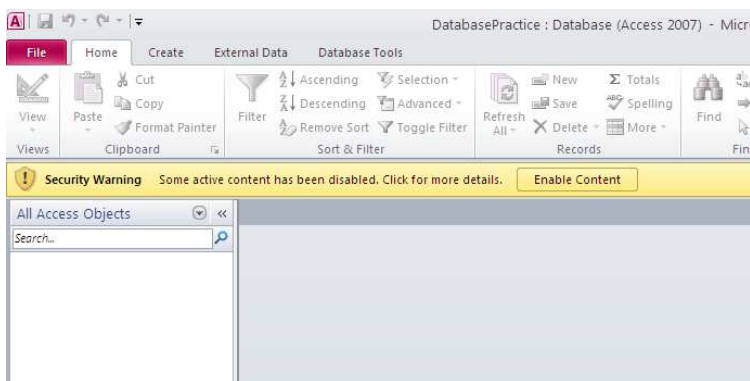
If you are opening a database from a shared drive, you may have a further security warning. Click **Yes** if you are sure there is no threat.
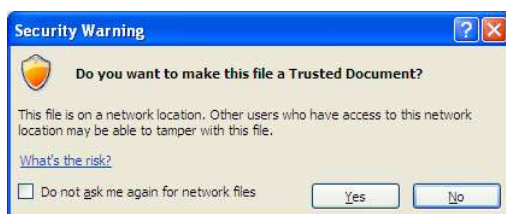
5.2 Further Study

Online Resources:

- **Testing & Education Reference Center**
  www.inspire.in.gov – click on the TERC graphic at the bottom:
  Go to **Career Tools→Basic Computer Skills→Microsoft Access 2010** (you will need to register for a free account)

- **Microsoft Office Online Training**
  http://office.microsoft.com/en-us/training/
  Find free online training for Access as well as the other Office programs.

Classes:

- **UITS IT Training & Education** – University Information Technology Services at IUPUI and IU-Bloomington
  http://ittraining.iu.edu/
  Offers a wide range of computer classes for free to students, faculty, and staff and for a fee to outside people.

- **Monroe County Public Library** – Bloomington, IN
  www.monroe.lib.in.us
  Offers a free 6-session course on Access. Call 812-349-3050 to verify dates and eligibility.

Library Materials include...

  Office 2010 Simplified by Kate Shoup – 004 SHO
  Microsoft Access Step By Step by Joyce Cox – 005.7565 COX
  Microsoft Office Access 2010 Quicksteps by John Cronan – 005.7565 CRO
  Picture Yourself Learning Microsoft Access 2007 by Faithe Wempen – 005.7565 WEM

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