Microsoft Access 2016 Basics
Importing & Exporting with Excel
Microsoft Access is a relational database application. It is the perfect tool when you begin to outgrow your data collection in Excel. With Access, you can obtain better collection results by creating user-friendly forms with rules to protect the validity of your data. You can create queries to analyze and filter your data, and reports that can be regenerated anytime you need them. Topics for this workshop include database concepts, planning a database, and a hands-on introduction to tables, queries, forms, and reports.

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Class Exercise Bringing Data into Access
Create Tables from Existing Data
You can bring existing data into your Access database from another file, such as an Excel Spreadsheet, a character delimited (CSV) file, or any other data file that is structured in a database format (including other Access files).

The first group of the External Data tab is Import & Link. Access will provide you a different wizard depending on the kind of file you are trying to Import/Link. You can import from: Excel, Access, ODBC, Text (such as CSV and TXT files), XML, SharePoint, HTML, Outlook, and dBase.

Importing from Microsoft Excel
From the External Data tab, choose Excel from the Import & Link group.

Step 1: Source and Destination
Choose where the file is located and how you want to store the data. The Browse... button will help you navigate through your file structure to find the Excel file you want to bring into your database.

There are three options:
- **Importing** a table will place a copy of the data in your database, entirely separate from the original data source.
- **Appending** data will add the new set of data to an existing table within your database.
- **Linking** will place a copy of the data into your database but the new table will still be connected to the original data.

If you link to another Access database the data can be changed in the original table or in the linked table. If you link to any other data source you will only be able to make changes in the original file.

You will not be able to change all of the properties of a linked Excel table (such as field size or setting primary keys) because Access cannot enforce these rules on data outside of the program. If you need to change these options, or you would just like a complete copy of the data in your database that is not linked to the original, you should Import instead of Link.
**Step 2: Worksheet or Range**

Choose the worksheet or named range that contains your data within the Excel file. (see *Excel Basics II: Math and Functions* documentation to find how to name a range of cells).

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**Step 3: Specify Column Headings**

Decide if you should use the Excel column headings. If you leave this option unchecked Access will assign field names to each column for you (Field1, Field2...). If any of the field names are invalid Access will label them with a Field number as well. Invalid names would include anything with a period, bracket, or duplicate field names.
**Step 4: Specify information about fields**

Here you can change the name and data type of each field; skip columns so they will not be imported; and set indexing.

![Import Spreadsheet Wizard](image)

**Step 5: Set Primary Key field**

Remember a primary key means there will be no blanks and no duplicates within that column. If you let Access add its own key, it will create an AutoNumber ID field.

![Import Spreadsheet Wizard](image)
**Step 6: Name the Table**
This window also allows you to choose if you want Access to launch the Table Analyzer (See Access: Tables and Field Properties packet for more information).

![Image](image1.png)

**Step 7: Save the Import Steps**
The final step asks if we want to save the steps of this import. This saves time if you have several similar data sets to import that you have customized (i.e. changing DOB into Birth Date). Once it’s saved you can recall it from the **Saved Imports** button on the **External Data** tab.

![Image](image2.png)
Linking from Microsoft Excel

If you follow the link wizard instead of the import wizard you will go through the same first three steps.

Step 1 – Specify where the data is coming from and that you want to Link to it.
Step 2 – Specify the worksheet or named range you want to Link into your table.
Step 3 – Specify if the first row contains the column headings.
Final Step – Name your new Table

The linked table will look different on your list of tables. For all linked files you will see an icon representing the original data source and an arrow representing that this table is linked to an outside source.

An imported table becomes a true Access table. A linked table which comes from a source outside of Microsoft Access has limitations. For example, you cannot set a primary key or limit the field size of a linked file. You can, however, use the table as the data source for your queries, forms, and reports. You can also make simple relationships (though no data integrity) between your true tables and the linked tables.

Import Errors
To help reduce import errors you should make sure your Excel file is a consistent dataset. By this I mean the first row of the worksheet (or named range) contains a column heading for every column, and that there are no completely blank columns or rows.

It's also important the dataset has a consistent data type (all dates/number/text/no errors). One way to help ensure this is to sort each column ascending then descending, one at a time to bring the "extremes" to the top of your dataset.

Failed Import
The main reason that I have seen Access fail to pull in a dataset from Microsoft Excel is a conflict in the field/column headings. Most of the time Access will recognize the name violations and replace them with a generic field name (i.e. Field26). However, its blind spot is a leading space. If the first character of any heading is a space, the Wizard will fail to import the Table.

Access will let you go through the entire wizard before it fails:

As you are cleaning up your data, keep in mind Access's limitations. There are only 255 columns per table, and 64 characters per field name. For the field names, each field should have a unique name, the first character cannot be a space, and there should be no periods ( . ), brackets ( [ ] ), or exclamation marks ( ! ). Also any calculations you have in your Excel sheet will be pulled into Access as their true "value" not as the equation.
**Table $\_ImportErrors**

Microsoft Access determines a field's data type from the first eight rows in Excel. If the first ten rows or so are all listed as numbers in Excel, even if the 11th is a text field, Access will pull this field in as a number. In step four (page 3) you have a chance to change the field types to reflect their true contents. If you miss any, when the data is completely imported, if any of the data points don't match their specified data type, Access will create a $\_ImportErrors table.

The import error table tells us the reason for the error and which field (column) and row in Excel caused the error. With this information we can return to Excel and look up the issue and determine how to fix the issue.

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**Importing and Linking from Access**

To import from another Access database choose Access from the Import group of the External Data tab.

**Step 1: Source and Destination**

The Browse... button will help you navigate through your file structure to find the Access file you want to bring into your database. This is the same as the Importing from Excel.
**Step 2: Choose the Objects**

Access will open the Import Objects (or Link Objects) window. When you are linking you can select the tables, if you are importing you can select the Tables, Queries, Forms, Reports, Macros and Modules from the other database. Again, linking will keep the data 'alive' between both Access databases, importing will place a copy of the objects, not touching the original.

By default the relationships between the tables and queries in the original database will be copied through to the new database. When importing your tables you can change the "options".

**Exporting to Excel**

If your data set is small enough you can copy and paste from Access into an Excel worksheet. "Small enough" is relative, depending on the kind of data and size of your clipboard. Doing this preserves the data formats shown in the datasheet view in Access, but it will not change the column widths.

To "export" to Excel we must remember the record (row) limitations. Excel 97-2003 has 65,536 rows; Excel 2007-2010 has 1,048,576 rows. If your dataset is larger than these values you will not be able to send it to the Excel sheet. If this is the case, create queries to pull out smaller sets of data.

**Step 1: Select the Database Object**

In Access 2010, we must select an object from our Navigation Pane before we use an automatic function, such as Wizards, AutoForms, AutoReports, and Exporting. Select the object from the navigation pane and then choose Excel from the Export group of the External Data tab.
Step 2: Specify Destination and File Format
Because we chose "Excel" from our Export group, the File Formats will only be Excel. We can maintain the data formatting like capitalization and input masks if we check the "Export data with Formatting and Layout". (formulas will not be exported)

Step 3: Save Export Steps
If you are planning to create this Excel workbook on a regular basis, it’s a good idea to save the steps to help you automate your database.
**Running Saved Import/Exports**
The **External Data** tab has buttons for **Saved Imports** and **Saved Exports**. Either button opens this window. Choose the import/export you want to use and click **Run**.

![Screen capture of the Manage Data Tasks window with buttons for Saved Imports and Saved Exports.](image)

**Automating the Import/Export with a Macro**
You can create a macro to run one or more of your saved import/exports. Once the macro is created we can make a button on a form that runs the macro.

On the **Create** tab you will find the **Macros** button to create a new macro. You will have to turn on the "Show All Actions" button on the **Design** tab. The **Action** is "RunSavedImportExport". The Action Arguments at the bottom of the window will provide a list of the saved imports and saved exports.

![Screen capture of the Macro Tools pane with an active macro named RunSavedImportExport.](image)
Class Exercise Bringing Data into Access

Viewing Files
1. Open the Patients.xlsx file to see the dataset
   a. Close the file or Exit Excel
2. Open the Visits.xlsx file to see the dataset

Cleaning up Excel Title
Access will reject an imported datasets for a few reasons, but the main ones are (1) the file is open and needs to be saved, or (2) the first character of a field name is a space.
1. Select Row 1
   a. Please make sure the row *is* selected
2. Open Replace from the Home tab or press Ctrl-H
3. In the Find What box type in a space, Replacing it with nothing
4. Replace all

Cleaning up Excel Data
Excel's Sort tool can be used to find the data that is out of bounds of the expected results. You can find spaces in front of the data points; incorrectly entered dates, times, and numbers; and possibly strange total lines that were imported into this dataset.
1. Sort Med Rec column, Ascending and then Descending
2. Sort Patient column, Ascending and then Descending
3. Sort Reason column, Ascending
   a. Delete contents of the empty cells
   – Caution, do NOT delete the cells themselves
4. Sort Reason column, Ascending and then Descending
5. Sort Visit Date column, Ascending and then Descending
   a. Fix 2/6/208 to be 2/6/2008
6. Sort Visit Time column, Ascending and then Descending
   a. Fix 9:45AM to be 9:45 AM, the space is important in Excel
7. Sort Length column, Ascending and then Descending
8. Sort DocFirst column, Ascending and then Descending
9. Sort DocLast column, Ascending and then Descending
10. Sort by Visit Time and then Visit Date to put the data set in chronological order for our import
11. Save the file and Exit Excel
Create a new Access Database
1. Open Microsoft Access
2. Create a Blank Desktop Database
   a. Save As, Import Patient Visits
3. Close the new table automatically created by Access

Linking Excel Data
1. Turn to the External Data tab
2. Click on the Excel button
3. Browse for the Patients.xlsx file
4. Choose Link to the data source by creating a Linked table
   a. Click OK to start the wizard

Linking Spreadsheet Wizard
1. Click the check box for First Row Contains Column Headings
2. Click the Next > button at the bottom of the window
3. Name the Linked sheet Patients
4. Click the Finish button at the bottom of the window
5. Click the OK button the confirmation window
6. Notice the green Excel icon in front of the new table

Working with a Linked Excel table
You cannot modify the data in an Linked Excel table, but you can change the formatting.
1. Open the new table, notice you cannot add a new record
2. Try to change Jeffery to Jeff, you cannot
3. Go to the Design view of the table
4. Change the format of the Zip to Scientific
5. Save the table and goto the Datasheet view

Changing Data of a Linked Excel table
1. Close the table, but not the database
2. Open the Patients.xlsx file in Excel
3. Change Jeffery to Jeff
4. Save changes and Exit Excel
5. Open the Linked Patients Table in Access
Delete the Linked Excel table
1. Close the Patients Table
2. Delete the Patient's table
   a. Use keyboard delete button, or the right-click menu
   b. Confirm the deletion

Importing Excel Data
1. Turn to the External Data tab
2. Click on the Excel button
3. Browse for the Patients.xlsx file
4. Choose **Import the source data into a new table in the current database.**
   a. Click OK to start the wizard

Import Spreadsheet Wizard
See the steps on Pages 1-4 of this handout for step by step pictures of this wizard.
1. Click the check box for **First Row Contains Column Headings**
2. Click the Next > button at the bottom of the window
3. Change Field Names
   a. Last → Last Name
   b. First → First Name
   c. Zip → Zip Code
   d. DOB → Birth Date
4. Check the Data Types
   a. Zip → Short Text
   b. DOB → Date with Time
5. Click the Next > button at the bottom of the window
6. Click the **Choose my own primary key**
   a. We are using Med Rec
7. Click the Next > button at the bottom of the window
8. Name the imported table Patients
9. Click the Finish button at the bottom of the window
10. Click the **Save Import Steps**
11. Click the Save Import button at the bottom of the window
12. Notice the two new tables
Working with ImportErrors

See Page 5 of this handout.

1. Open the ImportError table
   a. Type Conversion Error for the DOB field (column) on Row 41 of the original dataset
2. Open the Patients.xlsx file
3. Go to Row 41
4. Delete the N/A
5. Exit, save the Excel file
6. In Access, delete both tables
   a. Make sure you've closed the tables first!

Using a Saved Import

1. From the External Data tab, choose Saved Imports
2. Run the Import-Patients import

Manage Data Tasks

Import Visits.xlsx

1. Click the check box for First Row Contains Column Headings
   a. Click the Next > button at the bottom of the window
2. Field Names are good, Click the Next > button at the bottom of the window
3. Let Access add primary key, Click the Next > button at the bottom of the window
4. Name the imported table Visits
5. Click the Finish button at the bottom of the window
6. Click the Save Import Steps
7. Click the Save Import button at the bottom of the window