

Chapter 5

Making Tables and Importing Data into Access

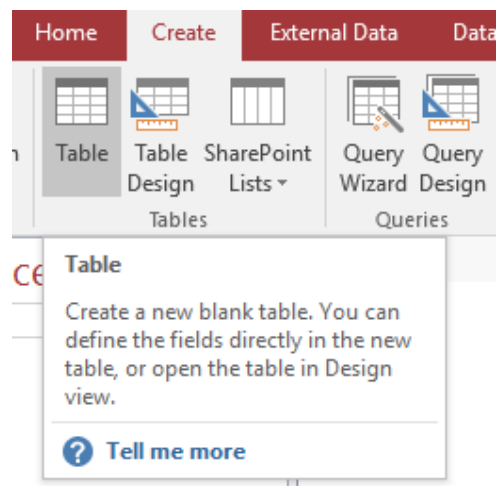
Summary: Getting data into your database is an important first step to analysis. This tutorial shows you how to perform the necessary tasks, in Microsoft Access.

What you will learn:

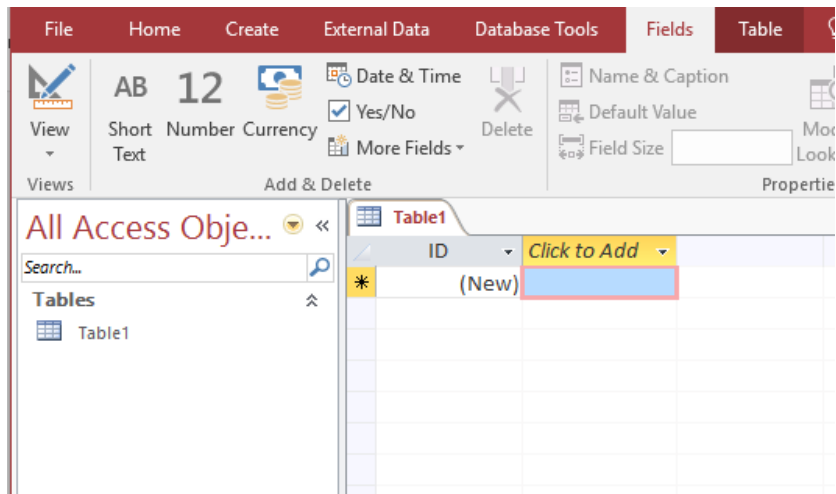
1. How to create an empty table in Access
2. How to use the import text wizard to import text files.

In Microsoft Access, you can choose to create your table, then add data manually, through the import wizard, or via an append query that appends data from another table.

To begin creating a table manually, go to the Create ribbon and click on Table in the Tables area.



That will bring up a generic, blank table with a default name such as Table1.

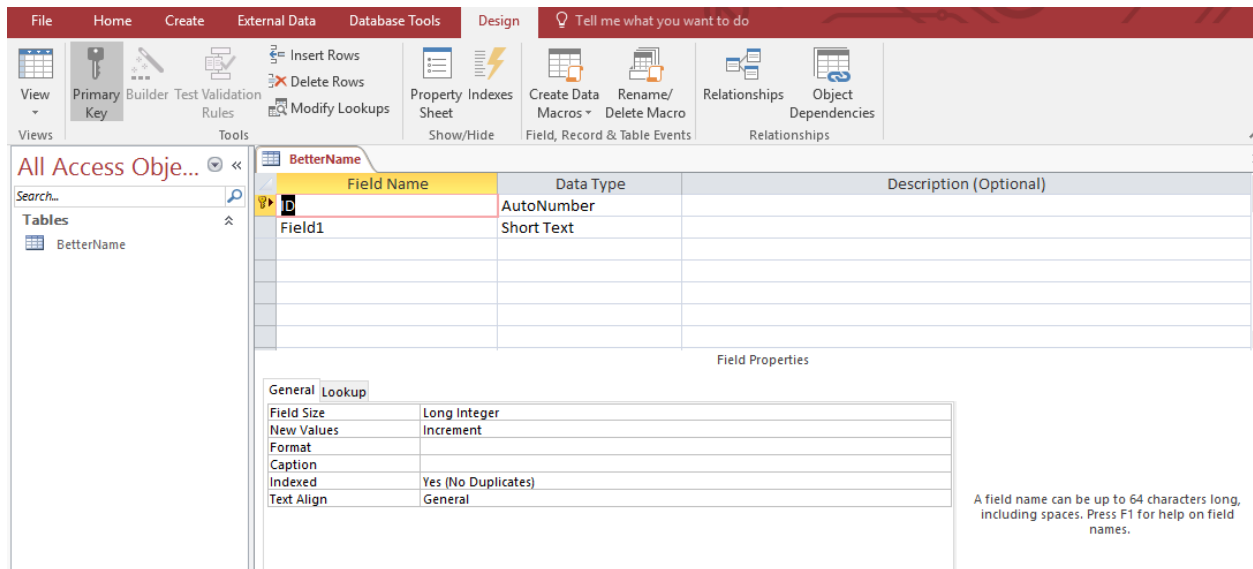


If you wish, you can build the table right in this interface, by clicking at the top of each column, picking a data type, and then naming the column.

If you click on the View icon in the upper left of the screen, you can switch to Access's table design view. You'll be asked to give your table a name. It's essential to change the name from the default Table1 to something that describes what's in the table.



Here, we have given our demonstration table the name BetterName. That's not really descriptive either, but it serves the purposes here. Click OK, and you will be taken to the design view screen.



You will notice that Access has automatically opened a Design ribbon for us.

The task of adding fields and assigning data types is done in the grid in the centre of the screen. You'll see that Access has automatically assigned a primary key to the table using the AutoNumber data type, and a generic field called Field1 of the Short Text type. See chapter 5 of the main text for a discussion of data types. A detailed explanation of Access data types is available at <https://support.office.com/en-us/article/Data-types-for-Access-desktop-databases-df2b83ba-cef6-436d-b679-3418f622e482>

From here, designing our table is straightforward, though some of the options change depending on the data type.

BetterName

Show/Hide | Field, Record & Table Events | Relationships

| Field Name | Data Type |
|------------|------------|
| ID | AutoNumber |
| Last_name | Short Text |
| | |
| | |
| | |

Field Properties

General | Lookup

| | |
|---------------------|------------|
| Field Size | 255 |
| Format | |
| Input Mask | |
| Caption | |
| Default Value | |
| Validation Rule | |
| Validation Text | |
| Required | No |
| Allow Zero Length | Yes |
| Indexed | No |
| Unicode Compression | Yes |
| IME Mode | No Control |
| IME Sentence Mode | None |
| Text Align | General |

The options in the Field Properties area, under the General tab, allow you to control a number of properties. The Field Size controls the maximum number of characters that can be stored in the text field, up to the maximum of 255 for this type of text field. If the Allow Zero Length property is set to true, Access will permit zero-length strings in the field. If it is set to False, zero length strings cannot be created, though Null values are still permitted. The Indexed property allows you to create an index for the field; the choices are Yes(Duplicates OK) and Yes(No duplicates). Indexes can speed up queries. See the tutorial **Indexing Tables in Microsoft Access**.

We'll go ahead and add a First_Name field, and an Age field. We'll make the Age field an integer. Notice that the options change for an integer:

SHOW/HIDE | Field, Record & Table Events | Relationships

BetterName

| Field Name | Data Type |
|------------|------------|
| ID | AutoNumber |
| Last_name | Short Text |
| First_Name | Short Text |
| Age | Number |

Field Properties

General | Lookup

| | |
|-----------------|--------------|
| Field Size | Long Integer |
| Format | |
| Decimal Places | Auto |
| Input Mask | |
| Caption | |
| Default Value | 0 |
| Validation Rule | |
| Validation Text | |
| Required | No |
| Indexed | No |
| Text Align | General |

The Data Type is noted as Number here, and the specific data type as Long Integer, in the Field Properties area. The Decimal Places property is intended for Single and Double precision floating point numbers and for decimal numbers. For integers, leave it set to Auto.

For Date fields, there are several display options. Choose the one you prefer.

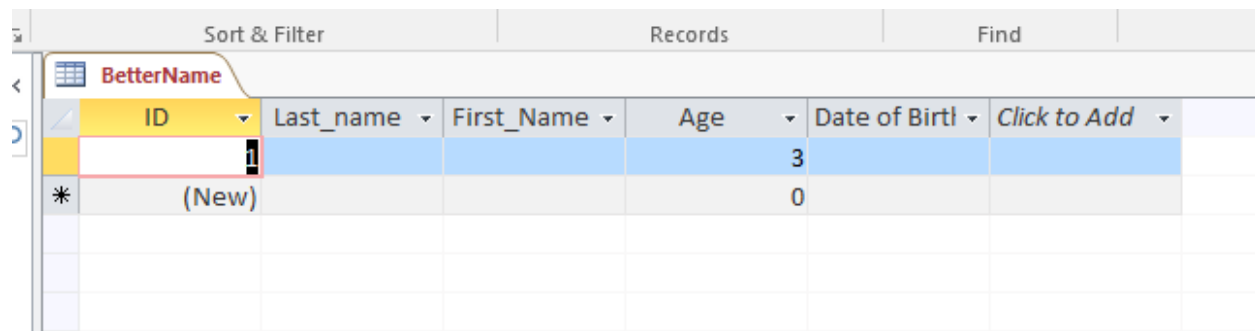
| | |
|---------------|------------|
| ID | AutoNumber |
| Last_name | Short Text |
| First_Name | Short Text |
| Age | Number |
| Date of Birth | Date/Time |

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General | Lookup

| | |
|-----------------|------------------------------------|
| Format | Long Date |
| Input Mask | General Date 2015-11-12 5:34:23 PM |
| Caption | Long Date November 12, 2015 |
| Default Value | Medium Date 12-Nov-15 |
| Validation Rule | Short Date 2015-11-12 |
| Validation Text | Long Time 5:34:23 PM |
| Required | Medium Time 5:34 PM |
| Indexed | Short Time 17:34 |
| IME Mode | No Control |

When you have finished designing your table, make sure you save it. Now, you can switch to Datasheet View by clicking on the View icon in the upper left hand corner of the screen. You can type data directly into the table, or import external data using the External Data wizard.



The screenshot shows the Datasheet View of a table named 'BetterName'. The table has six columns: ID, Last_name, First_Name, Age, Date of Birth, and Click to Add. The first row contains the value '3' in the Age column. The second row is a new record, indicated by an asterisk and '(New)', with '0' in the Age column. The interface includes a 'Sort & Filter' tab, a 'Records' section, and a 'Find' section.

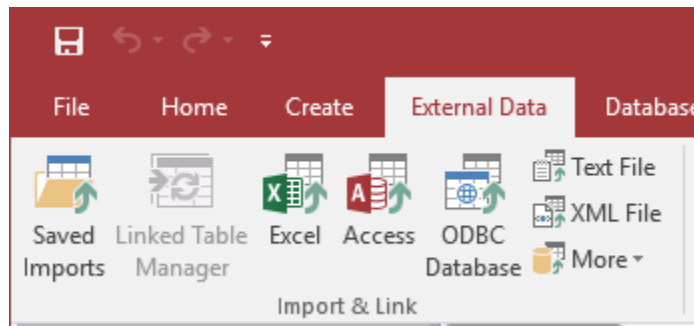
| ID | Last_name | First_Name | Age | Date of Birth | Click to Add |
|----|-----------|------------|-----|---------------|--------------|
| | | | 3 | | |
| * | (New) | | 0 | | |

Any time you want to modify a table, simply go back to Design View.

Normally, when you use the external data wizard, you create and import the table in one procedure, and we'll turn to that now.

Importing existing data

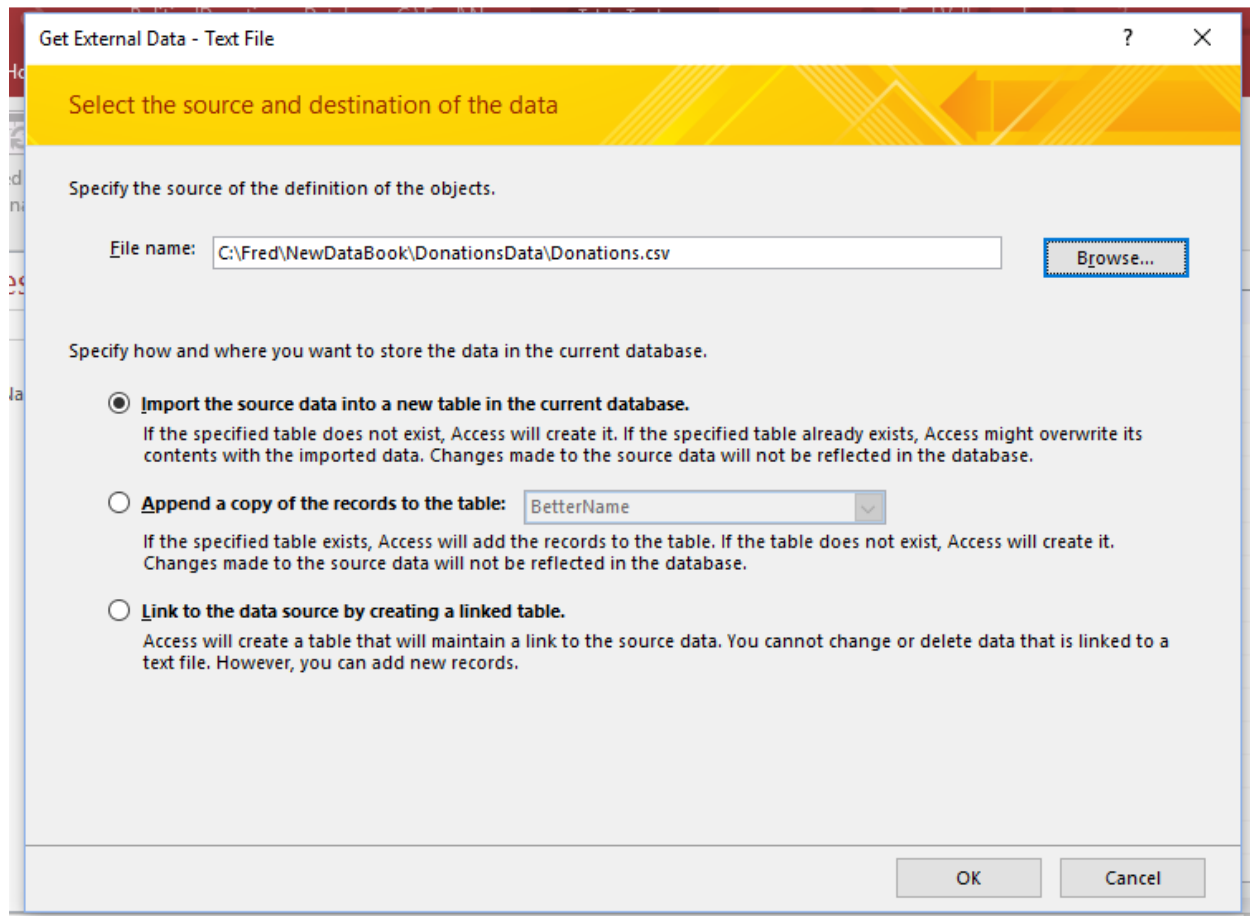
Access makes importing data from common formats extremely easy. To begin, go to the External Data Ribbon.



Access can import most of the common data interchange formats, including Excel (both xls and xlsx files), data in other Access databases, text files, XML Files (as long as they are not too complex), and HTML files (found under the More menu).

We'll walk through the process of importing a delimited text file. We'll import the same data tables that are used in the SQL query examples in Chapter 5. The three files, Donations.csv, Parties.csv, and PreviousDonations.csv are available for download from the companion website to *The Data Journalist*.

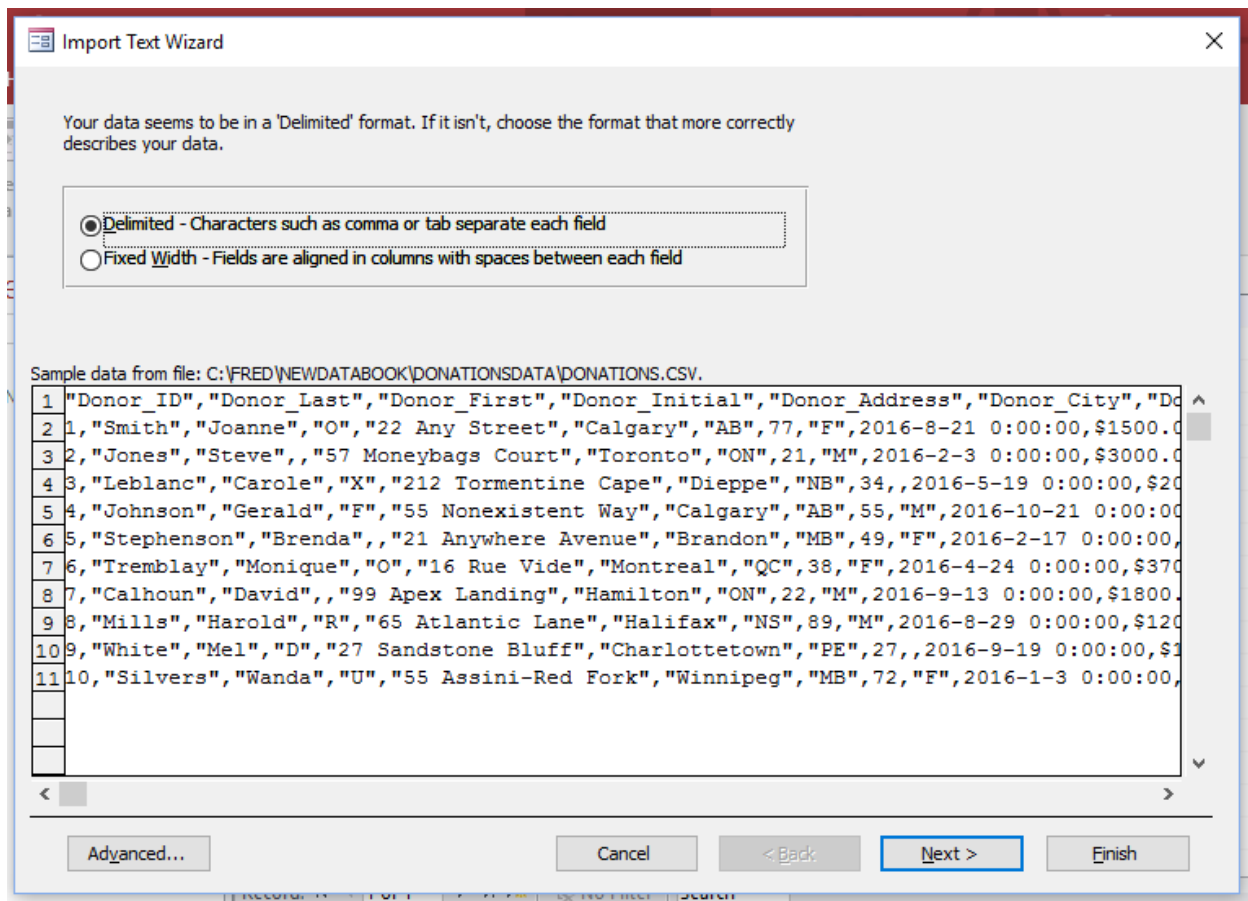
To begin, click on Text File in the Import & Link area of the Create ribbon. That brings up this dialogue.



Next, we need to browse to the location of the Donations.CSV file, on our hard drive.

In the lower area of the dialogue box, you have three options. You can import the data into a new table in the database, append, or add, the data to an existing table that has the same field structure as the data you are importing, or link the table. Linking is an Access-specific operation that allows you to use the original data from its location on your computer, rather than importing a new copy into Access. Linking is most often used when you are linking to data in another Access database. Putting data into more than one Access database is one way to circumvent the maximum database size limits in Access (2 gb). The data can be stored in one or more Access databases, and a separate database used to query the data.

We are going to create a new table, the top option. When you have made your choice, click OK.

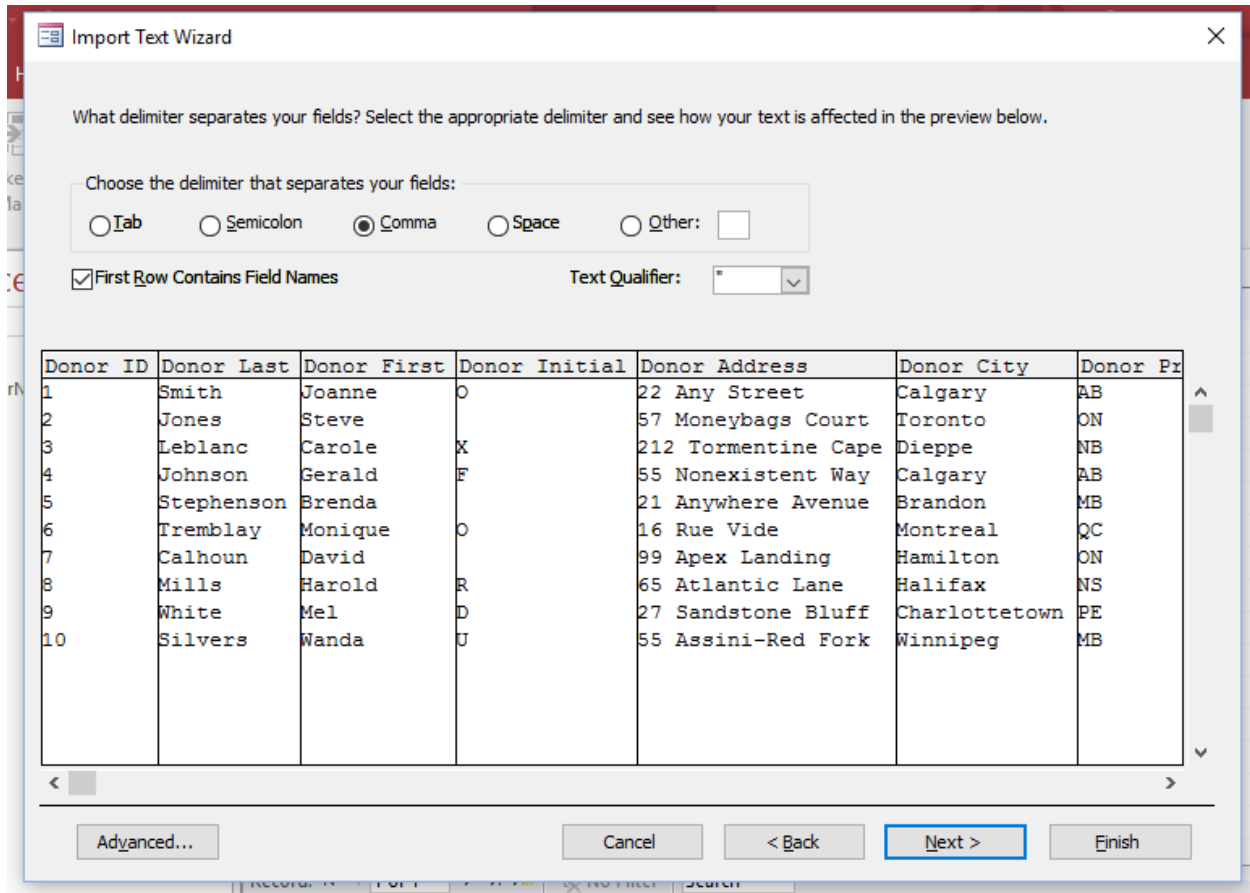


We are now given a snapshot of the data in the table, the first dozen or so rows. The Donations table only has 10 rows, so we can see them all.

This particular CSV file uses what are called Text Qualifiers around each text field. These ensure that if there are any commas within fields they won't be treated as delimiters.

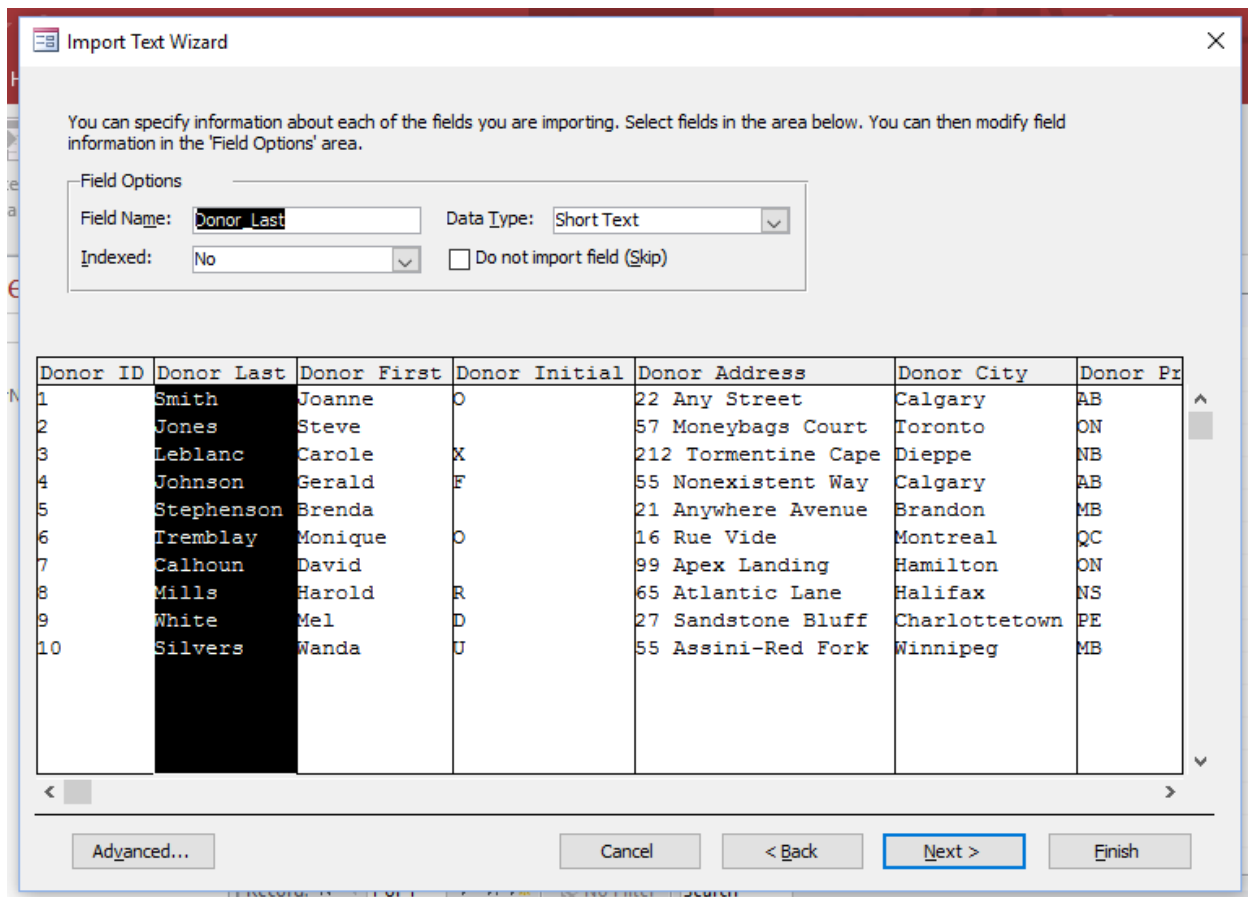
At the top of the dialogue we have the choice of Delimited or Fixed Width for the file type. Ours is delimited, so we will stick with that option. Fixed width files space out fields so each field start the same number of characters in from the left. The procedure for importing a fixed-width file is slightly different, and we'll demonstrate it at the end of this tutorial.

When we are satisfied with the look of the data, we click Next.



In the above window, we set several aspects of our import. At the top, we indicate the delimiter character, in this case a comma. By ticking off the First Row Contains Field Names box, Access will use the first row of the CSV file to extract the field names. The Text qualifier can be set to double quotes, single quotes or None.

When you are finished making your selections, click Next.



In this dialogue, we can verify the data type for each field, as well as determine if any of the fields will be indexed. To set a field, click on the field name at the top of a column, then edit the information in the Field Options area above. In this case, Donor_Last will go into the database as a Short Text data type and will not be indexed. Note that you can change the field name here, as well, if you like.

You can also click on the Advanced... button. This will bring up a dialogue in which you can modify all of the properties of the table in one place.

Donations Import Specification

File Format: Delimited Fixed Width
 Field Delimiter: ,
 Text Qualifier: "

Language: English
 Code Page: Western European (DOS)

Dates, Times, and Numbers
 Date Order: YMD Four Digit Years
 Date Delimiter: - Leading Zeros in Dates
 Time Delimiter: : Decimal Symbol: .

Field Information:

| Field Name | Data Type | Indexed | Skip |
|----------------|--------------|---------------------|--------------------------|
| Donor_ID | Long Integer | Yes (Duplicates OK) | <input type="checkbox"/> |
| Donor_Last | Short Text | No | <input type="checkbox"/> |
| Donor_First | Short Text | No | <input type="checkbox"/> |
| Donor_Initial | Short Text | No | <input type="checkbox"/> |
| Donor_Address | Short Text | No | <input type="checkbox"/> |
| Donor_City | Short Text | No | <input type="checkbox"/> |
| Donor_Province | Short Text | No | <input type="checkbox"/> |
| Donor_Age | Long Integer | No | <input type="checkbox"/> |
| Donor_Gender | Short Text | No | <input type="checkbox"/> |

Buttons: OK, Cancel, Save As..., Specs...

If you click on the Specs.... Button, you can save the import specifications so that if you have to enter the same or identically-structured data in future.

Click OK to return to the wizard.

Import Text Wizard

You can specify information about each of the fields you are importing. Select fields in the area below. You can then modify field information in the 'Field Options' area.

Field Options

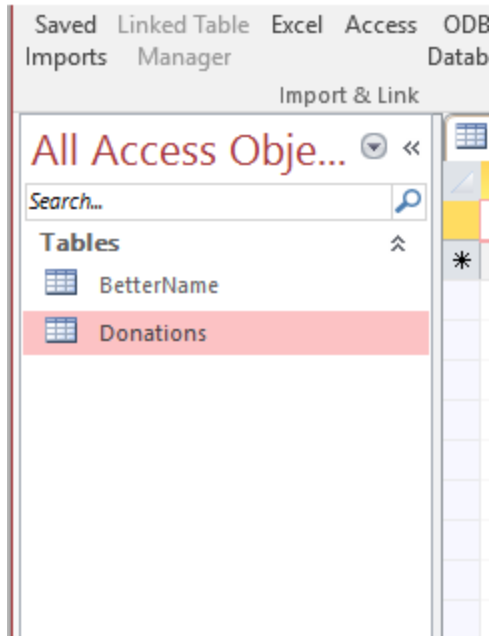
Field Name: Data Type:

Indexed: Do not import field (Skip)

| Donor | Donor Province | Donor Age | Donor Gender | Donation Date | Donation Amount | PartyCode |
|-------|----------------|-----------|--------------|--------------------|-----------------|-----------|
| | AB | 77 | F | 2016-8-21 0:00:00 | \$1500.00 | Red |
| | ON | 21 | M | 2016-2-3 0:00:00 | \$3000.00 | Blue |
| | NB | 34 | | 2016-5-19 0:00:00 | \$2000.00 | Orange |
| | AB | 55 | M | 2016-10-21 0:00:00 | \$1750.55 | Red |
| | MB | 49 | F | 2016-2-17 0:00:00 | \$1900.00 | Orange |
| | QC | 38 | F | 2016-4-24 0:00:00 | \$3700.91 | Blue |
| | ON | 22 | M | 2016-9-13 0:00:00 | \$1800.00 | Red |
| | NS | 89 | M | 2016-8-29 0:00:00 | \$1200.00 | Orange |
| town | PE | 27 | | 2016-9-19 0:00:00 | \$1375.28 | Blue |
| | MB | 72 | F | 2016-1-3 0:00:00 | \$2700.00 | Red |

Advanced... Cancel < Back Next > Finish

When you have set all of the field names and data types to what you want, click Finish, and Access will ask you if you want to save your import steps for re-use, before importing your data. The new table will now appear in the table of contents area.



You can now double click on the table name to view it.

| ID | Donor_ID | Donor_Last | Donor_First | Donor_Initia | Donor_Address | Donor_City | Donor_Prov |
|--------|----------|------------|-------------|--------------|---------------------|---------------|------------|
| 1 | 1 | Smith | Joanne | O | 22 Any Street | Calgary | AB |
| 2 | 2 | Jones | Steve | | 57 Moneybags Court | Toronto | ON |
| 3 | 3 | Leblanc | Carole | X | 212 Tormentine Cape | Dieppe | NB |
| 4 | 4 | Johnson | Gerald | F | 55 Nonexistent Way | Calgary | AB |
| 5 | 5 | Stephenson | Brenda | | 21 Anywhere Avenue | Brandon | MB |
| 6 | 6 | Tremblay | Monique | O | 16 Rue Vide | Montreal | QC |
| 7 | 7 | Calhoun | David | | 99 Apex Landing | Hamilton | ON |
| 8 | 8 | Mills | Harold | R | 65 Atlantic Lane | Halifax | NS |
| 9 | 9 | White | Mel | D | 27 Sandstone Bluff | Charlottetown | PE |
| 10 | 10 | Silvers | Wanda | U | 55 Assini-Red Fork | Winnipeg | MB |
| *(New) | | | | | | | |

The steps for importing an Excel file are almost identical to those for importing a delimited text file.

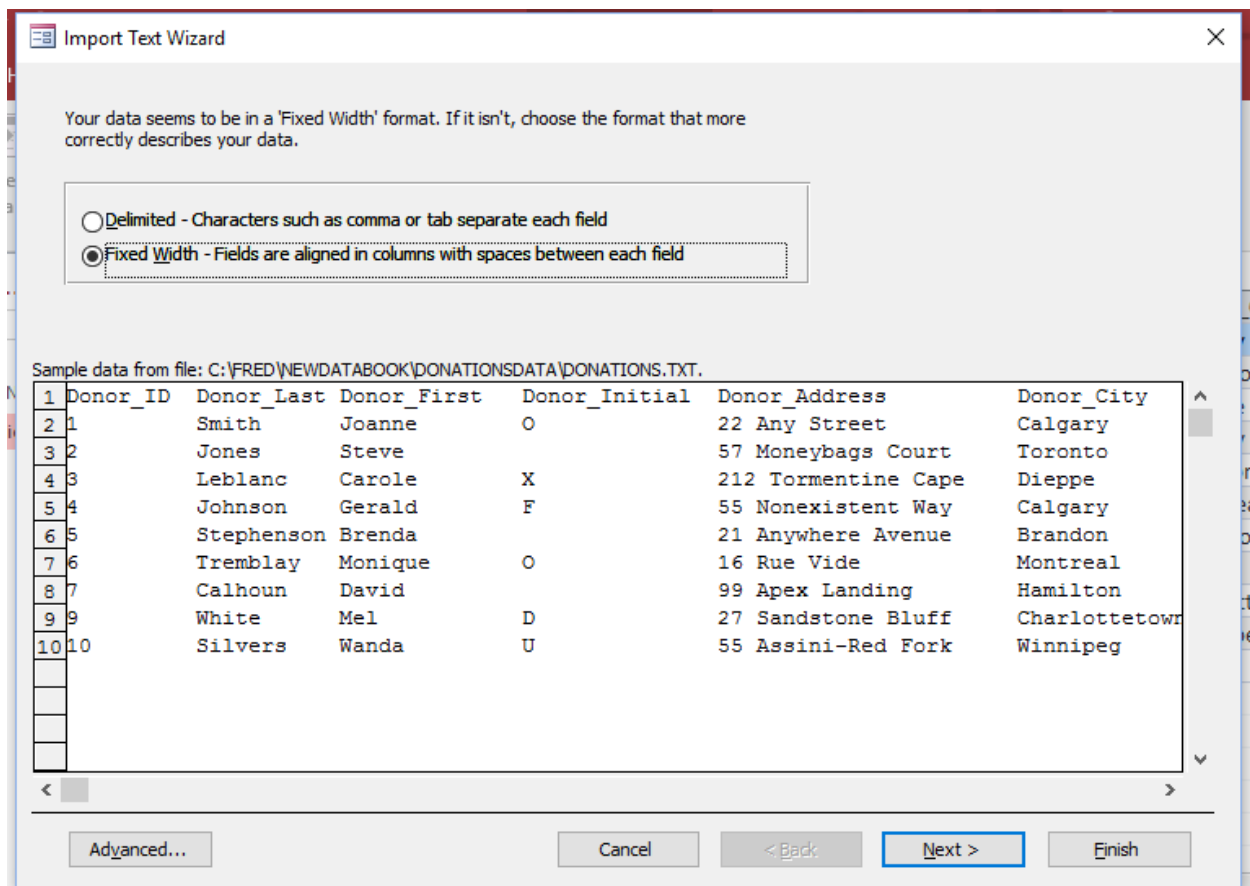
Importing Fixed Width files

Fixed-width file are actually quite rare, but sometimes you will see them from legacy computer systems.

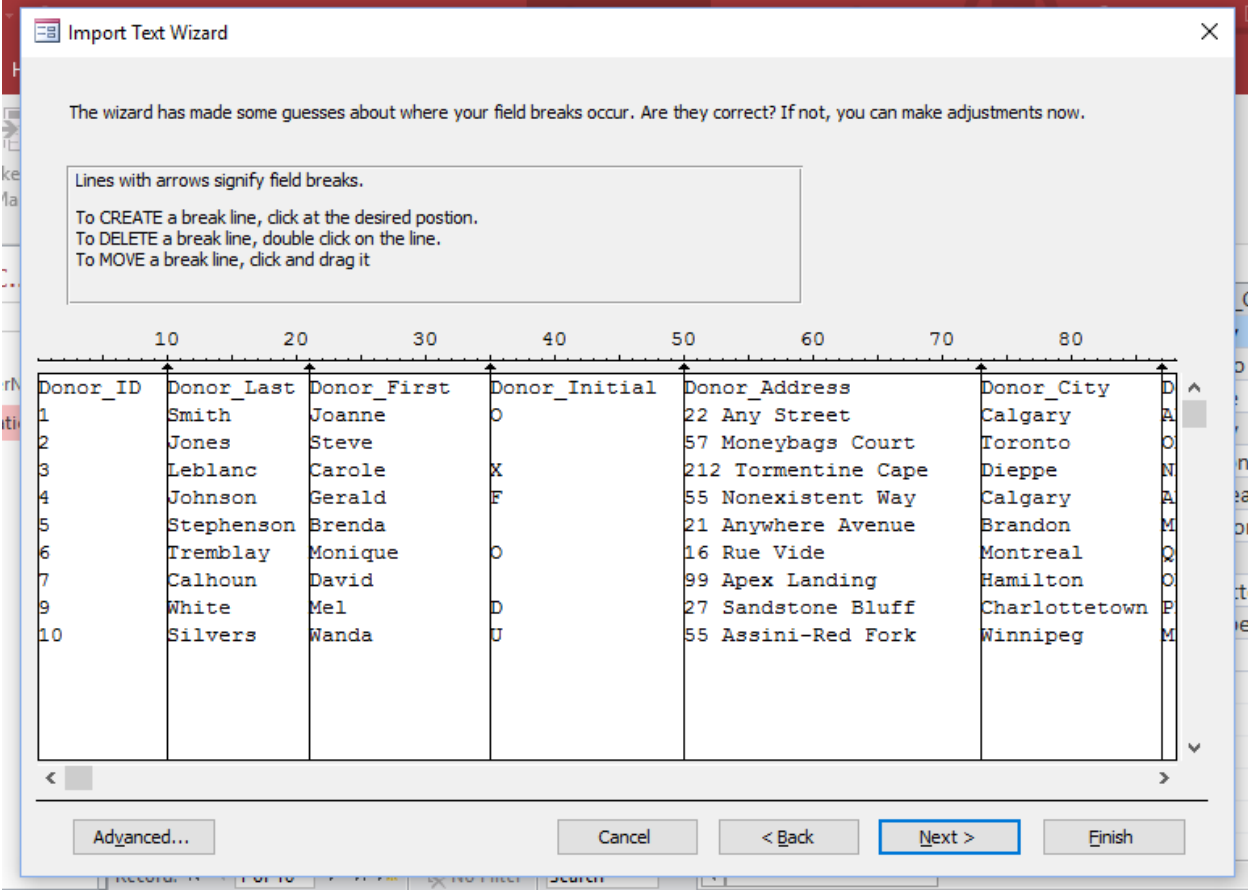
This is what the csv we have been working with would look like if it were arrayed as a fixed-width file.

| Donor_ID | Donor_Last | Donor_First | Donor_Initial | Donor_Address | Donor_City | Donor_Province | Donor_Age | Di |
|----------|------------|-------------|---------------|---------------------|---------------|----------------|-----------|----|
| 1 | Smith | Joanne | O | 22 Any Street | Calgary | AB | 77 | F |
| 2 | Jones | Steve | | 57 Moneybags Court | Toronto | ON | 21 | M |
| 3 | Leblanc | Carole | X | 212 Tormentine Cape | Dieppe | NB | 34 | |
| 4 | Johnson | Gerald | F | 55 Nonexistent Way | Calgary | AB | 55 | M |
| 5 | Stephenson | Brenda | | 21 Anywhere Avenue | Brandon | MB | 49 | F |
| 6 | Tremblay | Monique | O | 16 Rue Vide | Montreal | QC | 38 | F |
| 7 | Calhoun | David | | 99 Apex Landing | Hamilton | ON | 22 | M |
| 9 | White | Mel | D | 27 Sandstone Bluff | Charlottetown | PE | 27 | |
| 10 | Silvers | Wanda | U | 55 Assini-Red Fork | Winnipeg | MB | 72 | F |

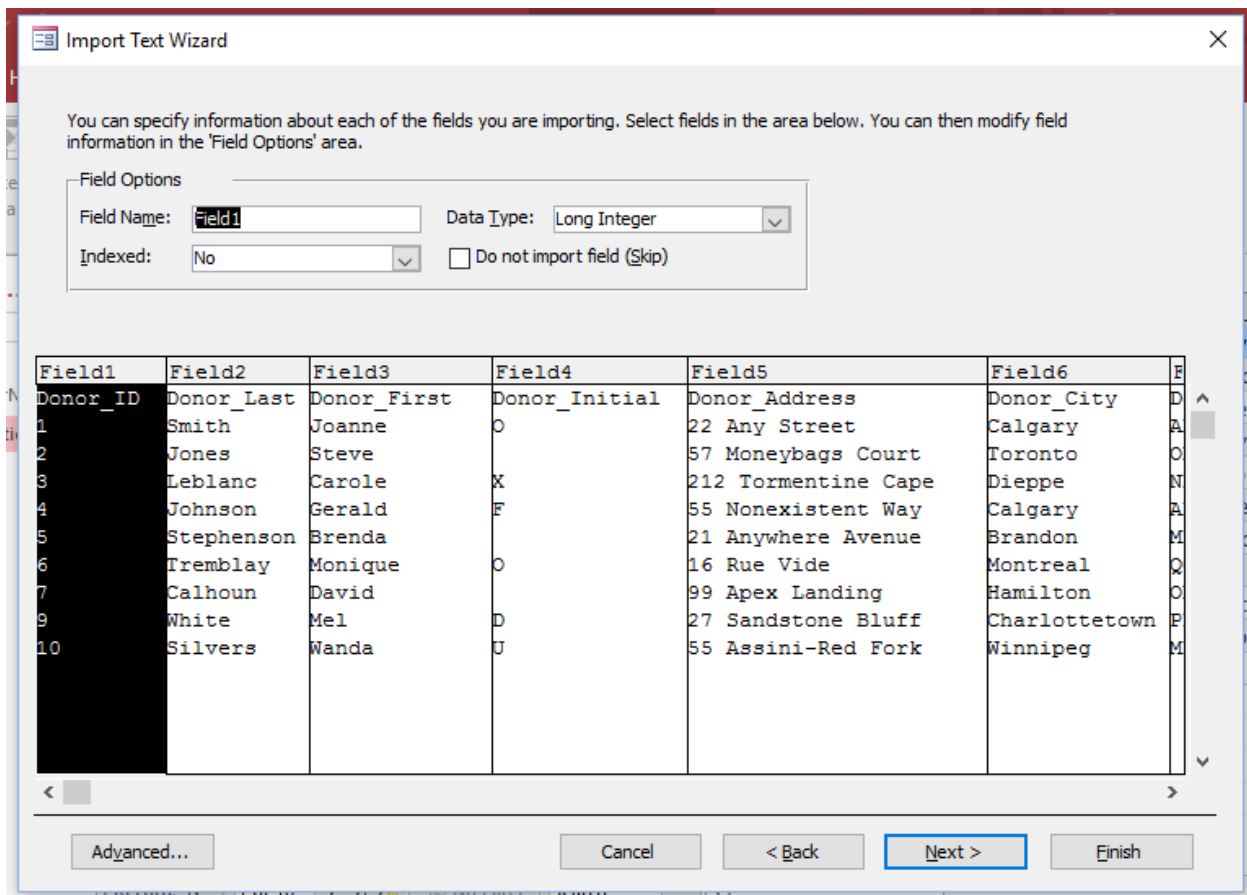
To import the file, we would once again go to the External Data ribbon, and choose to import a text file. This time, as the wizard starts, it recognizes that this is a fixed-width file.



Clicking Next brings up the fixed-width fields dialogue.



Access places vertical lines where it believes the field boundaries are. If it puts a field boundary in the wrong place, double click on the vertical line to delete it, then click to place the line in the correct location. When all the fields have been correctly demarcated, click Next.



Because Access doesn't provide an option to grab the field names from the first row, they now need to be entered manually. Beyond that, the import proceeds in the same way as it did with a delimited text file.

With your data now imported into your Access database, you can now start writing queries.