

Microsoft Access

An Introduction



IDENTIFY GOOD DATABASE DESIGN

A **database** is an organized collection of **data** – facts about people, events, things, or ideas – related to a specific topic or purpose. **Information** is data that is accurate, timely, and organized in a useful manner. Your contact list is a type of database, because it is a collection of data about one topic – the people with whom you communicate. A simple database of this type is called a **flat database** because it is not related or linked to any other collection of data. Another example of a simple database is your music collection. You do not keep information about your music collection in your contact list because the data is not related to the people in your contact list.

A more sophisticated type of database is a **relational database**, because multiple collections of data in the database are related to one another. For example, data about the students, the courses, and the faculty members at a college. Microsoft Access is a relational **database management system**, also referred to as a **DBMS** which is software that controls how related collections of data are stored, organized, retrieved, and secured.

Objects are the basic parts of a database; you create objects to store your data, to work with your data, and to display your data. The FOUR database objects are **tables, queries, forms** and **reports**. Think of an Access database as a container for the objects that you create.

Using Good Design Techniques to Plan a Database

Before creating a new database, the first step is to determine the information you want to keep track of by asking yourself, *What questions should this database be able to answer?* The purpose of a database is to store the data in a manner that makes it easy to find the information you need by asking questions. For example, in a student database, the questions to be answered might include:

- How many students are enrolled at the college?
- How many students have not yet been assigned a faculty advisor?
- Which students live in Phoenix, Arizona?
- Which students owe money for tuition?
- Which students are majoring in Information Systems Technology?

Tables are the foundation of an Access database because all of the data is stored in one or more tables. A table is similar in structure to an Excel worksheet because data is organized into rows and columns. Each table row is a **record** – all of the categories of data pertaining to one person, place, even, thing, or idea. Each table column is a **field** – a single piece of information for every record. For example, in a table storing student contact information, each row forms a record for only one student. Each column forms a field for every record – for example, the student ID number or the student first name.

When organizing the fields of information in your table, break each piece of information into its smallest, most useful part. For example, create three fields for the name of a student – one field for the last name, one field for the first name, and one field for the middle name or initial.

The tables of information in a relational database are linked or joined to one another by a **common field** – a field in two or more tables that stores the same data. For example, a Students tables include the Student ID, name and full address of every student. The Student Activities table includes the club name and the Student ID of members, but not the name or address, of each student in the club. Because the two tables share a common field – Student ID – you can use the data together to create a list of names and addresses of all of the

students in a particular club. The names and addresses are stored in the Students table, and the Student IDs of the club members are stored in the Student Activities table.

The **first principle of good database design** is to organize data in the tables so that **redundant** – duplicate – data does not occur. For example, record the student contact information in only one table, so that if a student's address changes, you can change the information in just one place. This conserves space, reduces the likelihood of errors when inputting new data, and does not require remembering all of the places where a student's address is stored.

The **second principle of a good database design** is to use techniques that ensure the accuracy and consistency of data as it is entered into the table. Proofreading data is critical to maintaining accuracy in a database. Typically, many different people enter data into a database – think of all the people who enter data about students at your college. When entering a state in a student contacts table, one person might enter the state as Texas, while another might enter the state as TX. Use design techniques to help those who enter data into a database to enter the data more accurately and consistently.

Normalization is the process of applying design rules and principles to ensure that your database performs as expected. Taking the time to plan and create a database that is well designed will ensure that you can retrieve meaningful information from the database.

CREATE A TABLE AND DEFINE FIELDS IN A BLANK DESKTOP

Three methods are used to create a new Access database. One method is to create a new database using a **database template** – a preformatted database designed for a specific purpose. A second method is to create a new database from a **blank desktop database**. A blank desktop database is stored on your computer or other storage device. Initially, it has no data and has no database tools; you create the data and the tools as you need them. A third method is to create a **custom web app** database from scratch or by using a template that you can publish and share with others over the Internet.

Regardless of the method you use, you must name and save the database before you can create any **objects** in it. **Objects** are the basic parts of a database; you create objects to store your data, to work with your data, and to display your data. The four database objects are **tables, queries, forms** and **reports**. Think of an Access database as a container for the objects that you create.

Create a Blank Desktop Database

1. Open Access
2. Click **Blank database**. Notice: in the **File Name** box, *Database1* displays as the default file name. This will be changed next. **Do not type a name here – it may get lost!**
3. Click **Browse** in the right of the File Name box.



Navigate where you will save your database in File Explorer.

4. **Create a New Folder** named **Access Chapter 1** and press Enter.

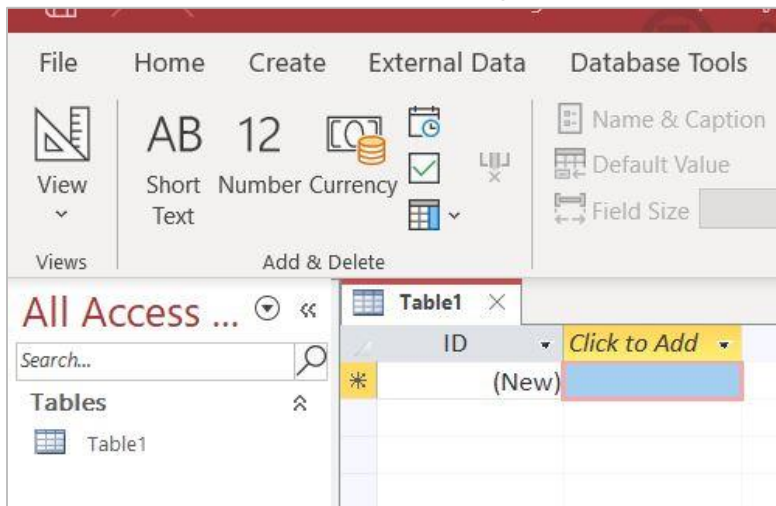
5. Click in the File name box, type

Your Initials 1A_Student_Advising.

For example, for Jackie Strobel the database file name would be **JS 1A_Student_Advising**. Click **OK**.

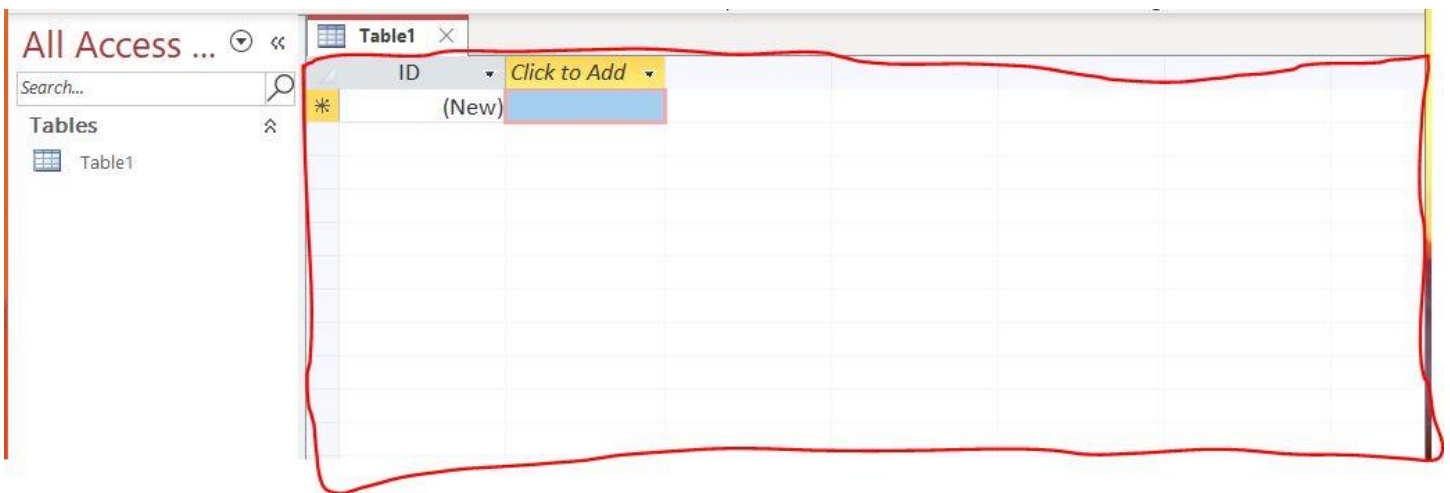
Click **Create**.

Access creates a new database and opens **Table1**



After you have named and saved your database, in a real-world application, the next step would be to consult your database design plan and then create the tables for your data. *Limit the data in each table to one subject.*

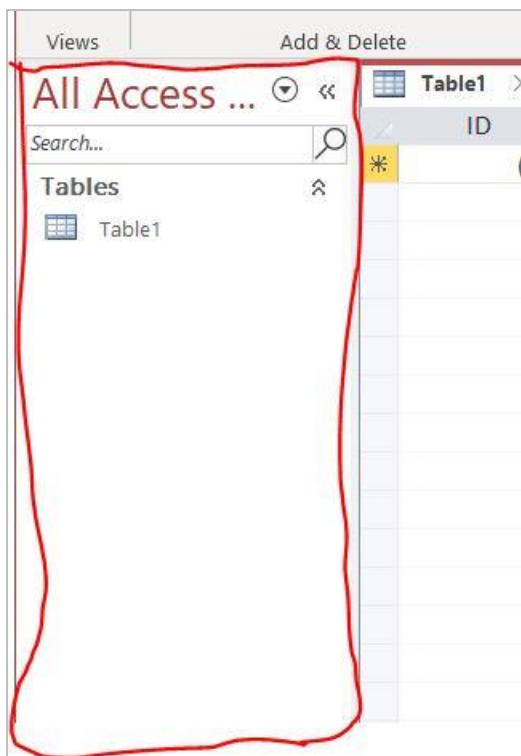
A new blank table is displayed in Datasheet view which displays the data in columns and rows. Another way to view a table is in **Design view**, which displays the underlying design – the **structure** – of the table's fields. The **object window** displays the open object – in this instance, the Table1 object.



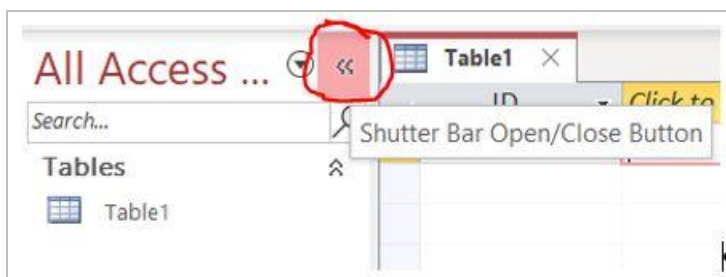
In a new blank database, there is only one object – a new blank table. Because the table has not been named, the object tab displays the default name *Table1*. Access creates the *first field* and names it *ID*. In the ID field, Access assigns a unique sequential number – each number incremented by one – to each record as it is entered into the table.

Each column in a table is a field. Field names are displayed at the top of each column of the table. Each row in a table is a **record** – all of the data pertaining to one person, place, thing, event, or idea. Each record is broken up into its smallest usable parts – called **fields**. Use meaningful names for fields: for example, Last Name.

The **Navigation Pane** displays and organizes the names of the objects in a database. From the Navigation Pane, you can open objects. Collapse or close the Navigation Pane to display more of the object – in this case, *Table1*.



Explore: In the **Navigation Pane**, click the **Shutter Bar Open/Close** to collapse the **Navigation Pane** to a narrow bar on the left.



TIP: Press F11 to close or open the Navigation Pane

Determine Data Types for Fields

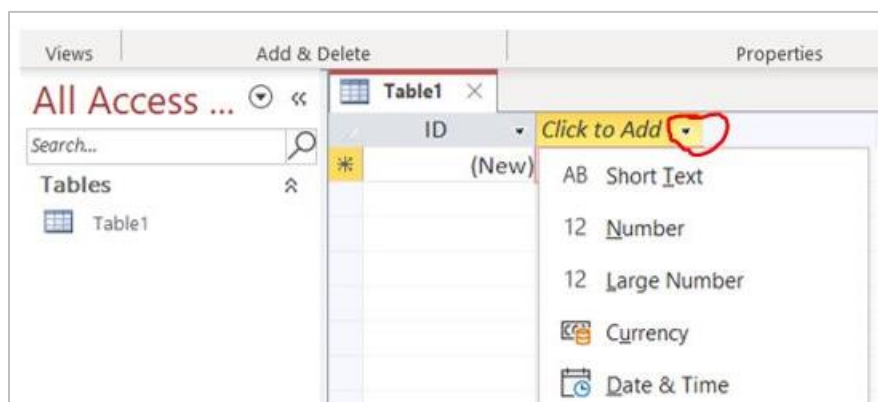
A **data type** classifies the kind of data you can store in a field, such as numbers, text, or dates. For each field in your database, you must determine the field's data type. Only one data type can exist in a field. After selecting the data type, you can name the field. The four commonly used data types in Access are *Short Text*, *Number*, *Currency*, and *Date & Time*.

The table below shows a complete list of data types with a description.

DATA TYPE	DESCRIPTION
AutoNumber	Field stores a unique sequential number that Access assigns to a record. Access will increment the number by 1 as each new record is added. Use this when records have no unique value. This is the <i>Default</i> data type for New Tables
Short Text	A field with a combination of text, numbers or numbers that do not represent a quantity or are not used in calculations such as: <i>postal codes, SSN, Driver's License, Student ID number</i> A maximum number of 255 characters is allowed in a field.
Number	The field can contain only numbers. The numbers can be either positive or negative. Number Fields can be used in arithmetic operations.
Currency	The field can contain only monetary data. The values will appear with currency symbols, commas, and decimal point followed by two digits. Currency fields can be used in arithmetic operations. Access assigns a size to currency fields automatically.
Date & Time	The field can contain dates and/or times
Calculated	Field specified as a calculation based on other fields. The value is not actually stored.
Long Text	Field can store a variable amount of text or combinations of text and numbers where the total number of characters may exceed 255.
Yes/No	Field can store only one of two values. The choices are Yes/No, True/False, or On/Off
OLE Object	Field can store an OLE object, which is an object linked to or embedded in the table
Hyperlink	Field can store text that can be used as a hyperlink address
Attachment	Field can contain an attached file, images, spreadsheets, documents, charts, and other elements can be attached to this field in a record in the database. You can view and edit the attached file.

Assign Data Types and Names to Fields

1. In the field names row, click down arrow next to *Click to Add* to display a list of data types. DO NOT CLICK IN THE BLANK BOX. Photo below is **not** a full list of items.



TYPING FIELD NAMES MUST BE PERFECT. NO TYPOS. IF THEY ARE NOT PERFECT, WHEN YOU IMPORT LATER. YOU WILL HAVE PROBLEMS.

2. Click **Short Text**. The *Click to Add* changes to *Field1* and is selected.
3. Type **Last Name** and press **Enter**. The second column displays *Last Name* as the field name and in the third column the data type list displays.

TIP: With the list of data types displayed, type the character that is underscored to select the data type. For example, type t to select Short Text or type u to select Currency.

4. While the list is still displayed, in the third field box, type **t** to select *Short Text*, type **First Name** and press Enter
5. In the fourth field name box, click **Short Text**, type **Middle Initial** and press Enter
6. Create the remaining from the table below. PRETEND THE LABELS ARE ON ONE ROW NOT TWO OR THREE. First select the data type, type the field name, and press Enter. The field names in the table will display on one line. Field names will not completely display in the column, but will be adjusted later. Access automatically creates the *ID* field. The default data type is AutoNumber.

Data Type		Short Text	Short Text	Short Text	Short Text	Short Text	Short Text	Short Text	Short Text	Short Text	Short Text	Currency
Field Name	ID	Last Name	First Name	Middle Initial	Address	City	State	Postal Code	Phone	Email	Faculty Advisor ID	Amount Owed

Another way to Create Fields...

You can create a new field in Datasheet view by typing the data in a new column. Access automatically assigns a data type based on the data you enter. For example, if you enter a date, Access assigns the Date & Time data type. If you enter a monetary amount, Access assigns the Currency data type. If Access cannot determine the data type based on the data entered, the Short Text data type is assigned. You can always change the data type if an incorrect data type is assigned. If you use this method to create fields, you must check the assigned data types to ensure they are correct. It is vital you rename the fields because Access assigns the names as Field1, Field2, etc. which is not appropriate.

Rename Fields and Change Data Types in a Table

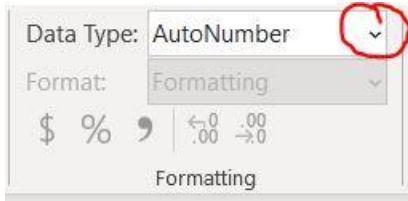
Field names need to be clear. In the *Enter Field Properties* dialog box, you have the option to use the Caption property to display a name for a field different from the one that displays in the Name box. Many database designers do not use spaces in field names; instead, they may name a field LastName or LName and then create a caption for the field so it displays as Last Name in tables, forms, or reports. In the Enter Field Properties dialog box, you can also provide a description for the field.

Another way to rename...right click the field name to display the shortcut menu, and then click Rename Field, or double-click the field name to select the existing text, and then type the new field name.

1. In the first column, click anywhere in the text *ID*
2. Click the **Table Fields** tab, in the *Properties group*, click **Name & Caption** button.
3. In the **Enter Field Properties** dialog box, in the **Name** box, change *ID* to **Student ID**, click **OK**

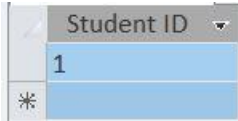
The screenshot shows the 'Enter Field Properties' dialog box. It has three input fields: 'Name' (containing 'Student ID'), 'Caption' (empty), and 'Description' (empty). At the bottom, there are 'OK' and 'Cancel' buttons. The 'OK' button is highlighted with a blue border.

4. In the *Formatting group*, notice the **Data Type** is *AutoNumber* for the **Student ID** field. This is the default.



5. Click the **Data Type** arrow, click **Short Text**.

Notice the Student ID number is now left aligned which means this is text and no longer a number



In the new record row, the Student ID field is selected. By default, Access creates an ID field for all new tables and sets the data type for the field to AutoNumber. The **AutoNumber data type** describes a unique sequential or random number assigned by Access as each record is entered. Changing the data type of this field to Short Text enables you to enter a custom Student ID number.

When records in a database have no unique value, such as a book ISBN or a license plate number, the AutoNumber data type is a useful way to automatically create a unique number. This ensures every record is different from the others.

Adding a Record to a Table

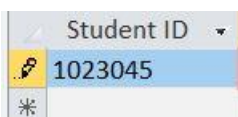
A database is meaningless until you populate it with one or more tables with data. You can **populate** a table with records by typing data directly into the table. The pencil icon in the **record selector box** indicates that a record is being entered or edited. The record selector box is the small box at the left of a record in Datasheet view. When clicked, the entire record is selected.



Pressing Enter or Tab in the last field moves the insertion point to the next row. Access automatically saves the record as soon as you move to the next row.

Correcting Typing Errors: Use the Backspace or Delete keys as you would in other Office applications. Press the Escape key to exit out of a record that has not been completely entered.

1. In the first new record row, under the field **Student ID** click in the field to display the insertion point; type **1023045**. Press Enter



2. In the **Last Name** field, type **Fresch** and press Enter
3. In the **First Name** field, type **Jenna** and press Enter

4. In the **Middle Initial** field, type **A** and press Enter
5. In the **Address** field, type **7550 Douglas Ln** and press Enter
6. Continue entering the data in the fields as shown in the table below, pressing Enter to move to the next field

City	State	Postal Code	Phone	Email	Faculty Advisor ID
Austin	TX	78749	(512) 555-7550	jfresch@ticc.edu	FAC-2289

7. In the **Amount Owed** field, type **250** and press Enter.
8. Click the **Save** button on the Quick Access Toolbar
9. In the **Save As** dialog box, in the **Table Name** box, type **your initials 1A Students**. For example: for Jackie Strobel the name would be *JS 1A Students*
Save each database object with a name that identifies the data that is contains. When you save objects within a database, it is not necessary to use underscores in place of the spaces between words.
10. In the Save As dialog box, click **OK**

Rename or Deleting a Table: To change the name of a table, close the table, display the Navigation Pane, right-click the table name, click Rename. Type the new name or edit as you would any selected text. To delete a table, close the table, display the Navigation Pane, right-click the table name, and the click Delete.

Adding Additional Records to a Table

1. In a new record row, enter the data for two additional students as shown in the table below; Press Enter or Tab to move from field to field.

Student ID	Last Name	First Name	Middle Initial	Address	City	State	Postal Code	Phone	Email	Faculty Advisor ID	Amount Owed
2345677	Ingram	Joseph	S	621 Hilltop Dr	Leander	TX	78646	(512) 555-0717	jingram@ticc.edu	FAC-2377	378.5
3456689	Snyder	Amanda	J	4786 Bluff St.	Austin	TX	78610	(512) 555-9120	asnyder@ticc.edu	FAC-9005	0

Import Data from Excel Workbook

You can type records directly into a table and you can **import** data from a variety of sources. Importing is the process of copying data from one source or application to another application. For example, you can import data from a Word table or an Excel spreadsheet into an Access database because the data is arranged in columns and rows, similar to a table in Datasheet view.

There are three options for importing data specifically from an Excel spreadsheet:

1. Import the data into a *new* table in the current database
2. Append a copy of the records to an *existing* table
3. Link the data from the spreadsheet to a linked table in the database.

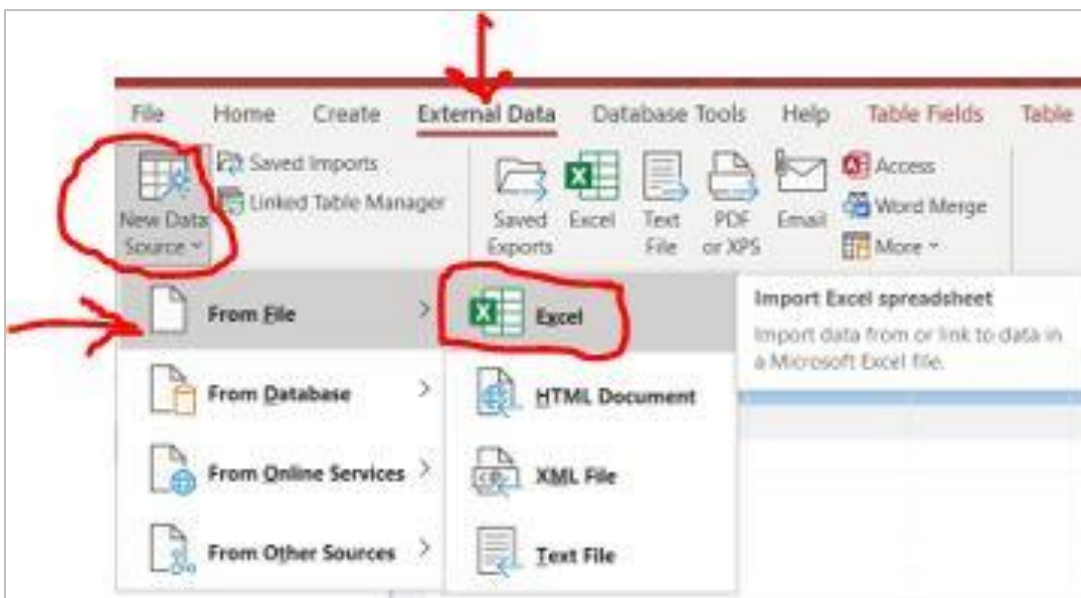
A **link** is a connection to data in another file. When linking, Access creates a table that maintains a link to the source data, so that changes to the data in one file are automatically made in the other – linked – file.

In the following step the Append method will be use. **Append** means to add data from an Excel spreadsheet to your 1AStudents Table. To append data, the table in Access must already be created, and it must be closed.

1. If not already done, download the data file **a01A_Students** that is located in Canvas and save it in your Access Chapter 1 folder.
2. Click the **Object Close** button located on the upper right corner to close the 1AStudents table. There should be no objects opened.



3. Click the **External Data** tab. In the *Import & Link* group, click **New Data Source** button, point to **From File**; click **Excel**



4. The *Get External Data – Excel Spreadsheet* dialog box opens; Click **Browse**. The *File Open* in File Explorer opens. Navigate to where you saved the Excel file **a01A_Students**. *Note:* The path to the **source file** (the file being imported) displays in the File name box of the *Get External Data – Excel Spreadsheet* dialog box.
5. Click the **Append a copy of the records to the table** option button. *Note:* Since only one table exists, the table listed is Your initials 1A Students. When you have multiple tables, click the down arrow and select the table you want to append records to. The table into which you import or append data is referred to as the **destination table**.

Get External Data - Excel Spreadsheet

Select the source and destination of the data

Specify the source of the definition of the objects.

File name: E:\Saddleback CC\CIM1\01A_Students.xlsx Browse...

Specify how and where you want to store the data in the current database.

We will not import table relationships, calculated columns, validation rules, default values, and columns of certain legacy data types such as OLE Object.

Search for "Import" in Microsoft Access Help for more information.

☐ Import the source data into a new table in the current database.
 If the specified table does not exist, Access will create it. If the specified table already exists, Access might overwrite its contents with the imported data. Changes made to the source data will not be reflected in the database.

☒ Append a copy of the records to the table: JS 1A Students
 If the specified table exists, Access will add the records to the table. If the table does not exist, Access will create it. Changes made to the source data will not be reflected in the database.

☐ Link to the data source by creating a linked table.
 Access will create a table that will maintain a link to the source data in Excel. Changes made to the source data in Excel will be reflected in the linked table. However, the source data cannot be changed from within Access.

OK Cancel

6. Click OK.

If a security message displays, click Open.

The first screen of the *Import Spreadsheet Wizard* displays. A **wizard** is a feature in Microsoft Office program that walks you step by step through a process. The presence of scroll bars in the window indicates that records and fields are out of view.

To append records from an Excel workbook to an existing database table, the column headings in the Excel worksheet or spreadsheet must be **identical** to the field names in the table. The wizard identified the first row of the spreadsheet as column headings, which are equivalent to field names.

Import Spreadsheet Wizard

Microsoft Access can use your column headings as field names for your table. Does the first row specified contain column headings?


☒ First Row Contains Column Headings

	Student ID	Last Name	First Name	Middle Initial	Address	City
1	2034834	Telfer	Larry	J	162 Rattlesnake Ln	Red Rock
2	2349535	Vohra	Ashwin	M	316 Lost Cove Dr	Spicewood
3	2583697	McElaney	Cleta	E	13273 Copperfield Dr	Austin
4	3128456	Wall	WenLi	Z	14380 Ceylon Tea Cir	Pflugerville
5	3458632	Caputo	Stephanie	G	1731 Primrose Trl	Round Rock
6	3569325	Thomas	Carlis	A	28A 4th Ave	Smithville
7	3572184	Reid	Carla	N	715 Pampas Ricas Dr	Leander
8	3586943	Stavish	Joseph	C	660 Bayou Bend Dr	Buda
9	3593653	Hernandez	Anna	R	2132 Mesquite Ln	Georgetown
10	3768532	Alexander	Rebekah	A	218 Chapparral Trl	Dale
11	3852938	Morris	Atonye	O	1172 Buttonwood St	Bastrop
12	3856930	Nguyen	Cong	L	444 E Alamo St	Elgin
13	4352863	Bradley	Christine	Y	2708 Kickapoo Cavern Dr	Pflugerville
14	4719238	DiAntonio	Avelina	A	1008 Sunset Canyon Dr	Dripping Sprin

Cancel < Back Next > Finish

7. Click **Next**.
The name of the table to Import to displays under **Import to Table**.
8. Click **Finish** located in the lower right corner
9. In the *Get External Data – Excel Spreadsheet* dialog box, click **Close**
10. Open the **Navigation Pane**
11. If needed, display the double headed arrow on the right edge of the Navigation Pane, click and drag to the right to increase the width to view the entire table name.



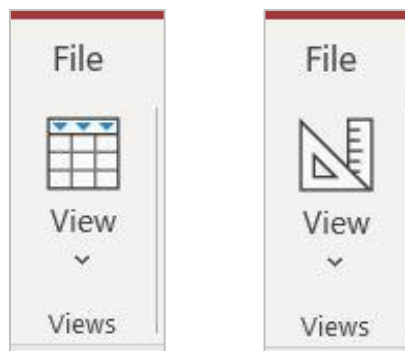
12. In the Navigation Pane, double-click the **1A Students** table to open it in Datasheet view
13. In the lower left corner, locate the navigation area that shows a total of **25** records in the table – you entered three and imported 22.
The navigation area has controls in the form of arrows to click to move through the records as well as to add a new record 



CHANGE THE STRUCTURE OF TABLES AND ADD A SECOND TABLE

The structure of a table is the underlying design of the table and includes field names and data types. You can create or modify a table in Datasheet view. To define and modify fields, many database experts prefer to work in Design view, where you have more options for defining fields in a table.

There are two views for tables: **Datasheet view** and **Design view**. Other objects have different views.

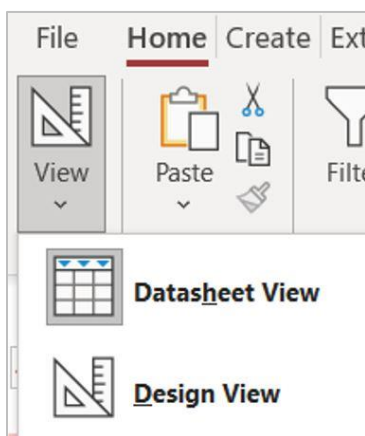


Datasheet view is represented by a picture of a table arranged in columns and rows. In the Views group, if the top of the View button displays the ruler and protractor, that means you are in Datasheet View. Clicking the View button toggles you between the Datasheet and Design View.

Design View is represented by a ruler and protractor. If the View button displays a table format of columns and rows, this means you are in Design View.

Design View displays the underlying design, the structure, of the table and its fields. In Design view, the records in the table do not display. In Design view, you can only view the information about each field's attributes. Each field name is listed, along with its data type. You can add explanatory information about a field in the Description column, but it is not required. Lastly, in Design View, you can decide how each field should look and behave in the *Field Properties* area. For example, you can set a specific field size in the Field Properties area. In the lower right corner, information displays about the active selection such as the Field Name.

In addition, you can click the bottom part of the Views button and make your selection from the drop down list.

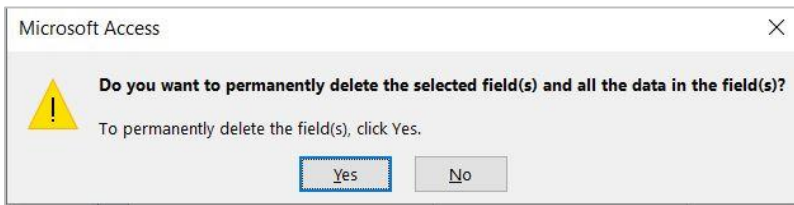


Delete a Table Field in Design View

1. Click the **Home** tab, in the *Views group*, click the **View** arrow
2. Click **Design View**
3. In the **Field Name** column, to the left of **Middle Initial**, point to the row selector box to display the right black arrow pointer, ➡ then click once to select the row. Tap the Delete key on your keyboard.

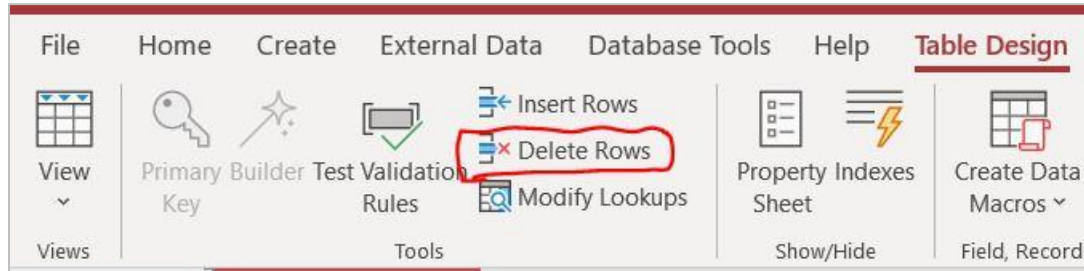
JS 1A Students	
Field Name	Data Type
Student ID	Short Text
Last Name	Short Text
First Name	Short Text
➡ Middle initial	Short Text
Address	Short Text
City	Short Text
State	Short Text
Postal Code	Short Text
Phone	Short Text
Email	Short Text
Faculty Advisor ID	Short Text
Amount Owed	Currency

The following message will appear. Click **Yes**.

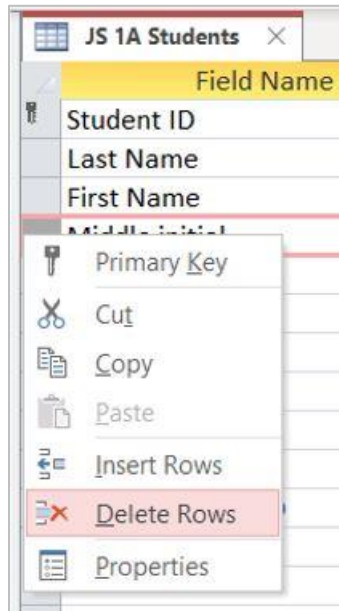


Other Ways to Delete a field....

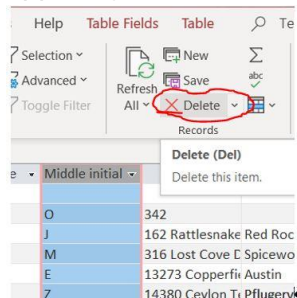
1. Select the field in Design View, in the **Table Design tab**, in the *Tools group*, click **Delete Rows**.



2. Select the field in Design View, right-click on the row and select **Delete Rows**



3. In Datasheet view, select the field – column (move mouse over field name until a black down arrow appears), click to select, on the Home tab, in the *Records group*, click **Delete** button

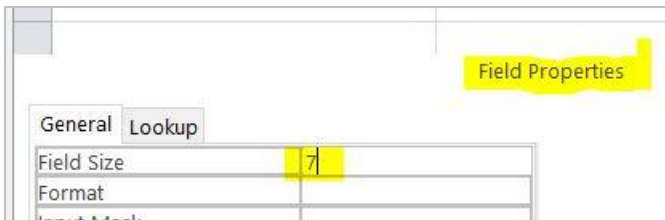


Deleting the field deletes both the field and its data. After you save the changes, you cannot undo this action.

Change Field Size and Add a Description

Typically many different individuals have the ability to enter data into a table. For example, at a college, Registration Assistants enter and modify student and course information daily. Two ways to help reduce errors are to *restrict* what can be typed in a field and to *add descriptive information*.

1. In **Design** view, in the **Field Name** column, click anywhere in the **Student ID** field name
2. In the lower part of the screen, under **Field Properties**, click **Field Size** to select **255** and type **7**. This limits the number of characters. No more than 7 characters can be entered. However, this does not eliminate the fact that the 7 characters could be wrong or if less than 7 characters are entered.



3. In the **Student ID** row, click the **Description** box, type **Seven-digit Student ID number** and press Enter.
Note: Descriptions for fields in a table are optional.
4. Click in the **State** field name box. In the **Field Properties**, change the **Field Size** to **2**; in the **Description** box type **Two-character state abbreviation** and press Enter
5. Click in the **Faculty Advisor ID** field name box. In the **Field Properties**, change the **Field Size** to **8**; in the **Description** box type **Eight-character ID of the instructor assigned as advisor** and press Enter
6. Click **Save** in the Quick Access Toolbar

Observe the message informing you that if more characters exist, the data will be truncated (cut off or shortened). Click **Yes**

MORE KNOWLEDGE: Add a Table Description

You can create a description to provide more information to users regarding the entire table. With the table displayed in Design view, click the Design tab. In the Show/Hide group, click Property Sheet. Click in the Description box, type the table description, and then press Enter. Close the Property Sheet.

View Primary Key in Design View

Primary key refers to the required field in the table that uniquely identifies a record. For example in a college registration database, your Student ID number identifies you as a unique individual. Other examples include a Social Security Number, a driver's license, license plate number, or a Patient ID number. In the 1A Students table, the Student ID uniquely identifies each student.

When you create a table using the blank desktop database template, Access designates the first field as the primary key field and names the field ID. However, you can set any field as the primary key by clicking the field

name, and then in the Tools group, click Primary Key. It is good database design practice to establish a primary key for every table, because doing so ensures that you do not enter the same record more than once.

1. In **Design** view, in the **Field Name** column, click in the **Student ID** box. To the left of the box, notice the small icon of a key. This is for observation purposes only. No action is needed.

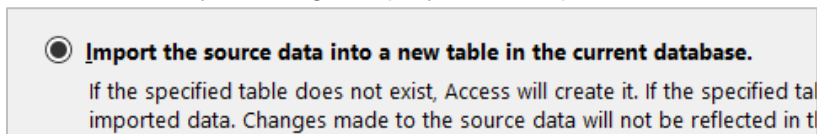


2. On the **Design** tab, in the *Views* group, notice the View button displays a picture of a datasheet, indicating that clicking the View will switch to Datasheet view. Click the top of the **View** button.
Note: If you make design changes to a table and switch views without first saving the table, Access will prompt you to save the table before changing views.
3. Close the table

Add a Second Table to a Database by Importing an Excel Spreadsheet

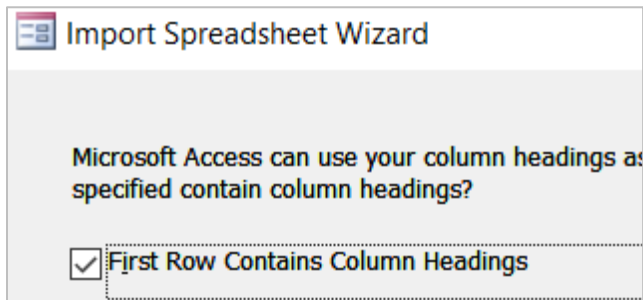
Microsoft Excel is used to track data. The sorting and filtering capabilities of Excel are useful for a simple database where all of the information resides in one large Excel spreadsheet. However, Excel is limited as a database management tool because it cannot *relate* the information in multiple spreadsheets in a way that you can ask a question and get a meaningful result. Because data in an Excel spreadsheet is arranged in columns and rows, the spreadsheet can easily convert to an Access table by importing the spreadsheet.

1. Click the **External Data** tab, and then in the *Import & Link* group, click **New Data Source** button, point to **From File**, click **Excel**. In the *Get External Data – Excel Spreadsheet* dialog box, to the right of the **File name** box, click **Browse**
2. In the **File Open** dialog box, navigate to where you saved the data file **a01A_Faculty_Advisors** and double click on it.
3. Be sure the **Import the source data into a new table in the current database** option is selected; click **OK**. If a security message displays, click Open.



Note: The Import Spreadsheet Wizard displays the spreadsheet data

4. In the upper left corner of the wizard, select the **First Row Contains Column Headings** check box.
Note: The Excel data is framed, indicating that the first row of Excel column titles will become the Access table field names, and the remaining rows will become the individual records in the new table.



5. Click **Next**.

Notice that the first column – *Faculty ID* – is selected, and in the upper area of the wizard, the **Field Name** and the **Data Type** display.

Note: In this step, under *Field Options*, you can review and change the name or the data type of each selected field. You can also identify fields in the spreadsheet that you do not want to import into the Access table by selecting the *Do not import field (Skip)* check box

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

Field Options

Field Name: Data Type:

Indexed: ☐ Do not import field (Skip)

	Faculty ID	Rank	Campus	Last Name	First Name
1	FAC-0393	Professor	Northeast	Betancourt	Clara
2	FAC-0767	Professor	Southeast	Soja	Brian
3	FAC-1133	Professor	Northwest	Bell	Debra
4	FAC-1283	Professor	Northwest	Hart-Rodriguez	Martha

6. Click **Next**

7. In the upper area of the wizard, click the **Choose my own primary key** option button and be sure that **Faculty ID** displays.

Note: In the new table, *Faculty ID* will be the primary key. By default, Access selects the first field as the primary key, but you can click the arrow and select a different field.

☐ Let Access add primary key.

☒ Choose my own primary key.

☐ No primary key.

8. Click **Next**

9. In the **Import to Table** box, use **Your initials 1A Faculty Advisors**. For example, for Jackie Strobel the name would be JS 1A Faculty Advisors. Click **Finish**

10. In the **Get External Data – Excel Spreadsheet** dialog box, click **Close**

11. Open the **Navigation Pane**, double click your **1A Faculty Advisors** table to open it in Datasheet view. If desired you can close the Navigation Pane.

12. In your **1A Faculty Advisors** table, click in the **Postal Code** field in the first record. Under **Table Fields**, in the *Formatting* group, notice the Data Type is Number. Why is this wrong? Because you will never use the Postal Code for calculations. Click the **Data Type arrow**, click **Short Text**. The labels are now left aligned to denote text.

TIP: When you import data from an Excel spreadsheet, check the data types of all fields to ensure they are correct. If a field, such as the Postal Code, contains numbers that do not represent a quantity or are not used in calculations, the data type should be set to Short Text.

Adjust Column Widths

Adjust column widths in a table displayed in Datasheet view by using techniques similar to those used for Excel spreadsheet.

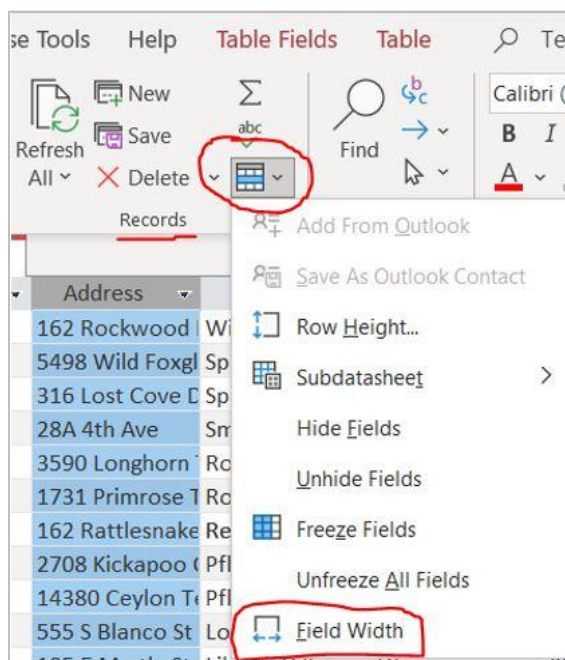
Clicking an Object tab along the top of the object window enables you to display the open object and make it active. All the columns in the datasheet are the same width, regardless of the length of the data in the field, the length of the field name, or the field size. If you print the table as is, some of the data or field names will not print completely, therefore adjusting column widths is necessary.

Various ways to change the width of a column:

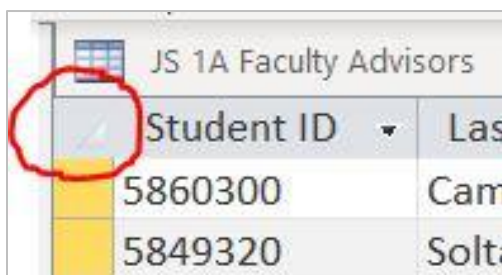
1. Use the solid cross with double arrow (like Excel) click hold and drag



2. Use the solid cross with double arrow and double click
3. Use the solid black down arrow to select field name, right click, select Field Width, click **Best Fit**
4. Select Field Name, use the **More** command in the Home tab in the *Records group* and select **Field Width** and select **Best Fit**



5. Use the *Select All* feature to change the width of all columns at one time using the More option



Like Excel, you can select multiple columns and adjust the column width using any of these methods.

In Access, adjusting the column width to fit the contents is referred to as **Best Fit**.

1. Click the **object tab** for your **1A Students** table
2. Using any of the methods listed above, change the width of **Address, City, Email** and All the Fields so all the data is in full view.
3. Click **Save** on the Quick Access Toolbar to save the table design changes.
If you don't save the table, Access prompts you to save it when you close the table

Print a Table, Orientation, Headers & Footers

You may print a table as a quick reference or to proofread the data that has been entered.

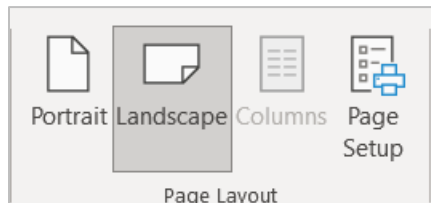
1. Click the **File tab**, click **Print**, click **Print Preview**

Note: The table displays in Print Preview with the default Zoom setting of One Page, a view that enables you to see how your table will print on the page. It is good to view any object in Print Preview before printing so you can make changes before printing.

In the navigation area, the Next Page button is darker which means that more than one page will print. When the Next Page is dimmed, it means there are no more pages to print.



2. In the Navigation area, click **Next Page** to display page 2
3. Point to the top of the page to display the magnifying glass pointer, click once to zoom in.
Note: The Print Preview display enlarges, and the Zoom Out pointer displays. The second page of the table displays the last five fields. The Next Page button is dimmed, indicating that the button is unavailable because there are no more pages after Page 2. The Previous Page button is available, indicating that a page exists before this page.
4. On the **Print Preview tab**, in the *Zoom group*, click **Zoom** to change the setting back to One Page
5. In the *Page Layout Group*, click **Landscape**.



Notice: there are three fields on Page 2.

If needed, in the navigation area, click **Previous Page** to display Page 1

The orientation of the page to be printed changes.

The header on the page includes the table name and current date, and the footer displays the page number. The change from portrait orientation to landscape is not saved with the table. Each time you

print, you must check the page orientation, the margins and any other print parameters so that the object prints as you intend.

NOTE: HEADERS AND FOOTERS IN ACCESS OBJECTS

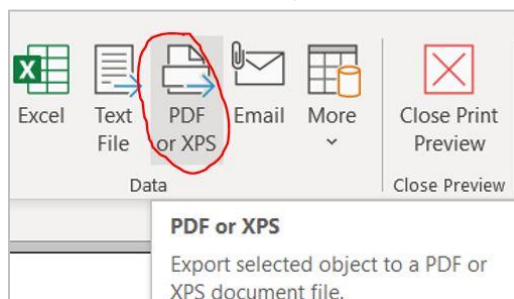
The headers and footers in Access tables and queries are controlled by default settings; you cannot enter additional information or edit the information. The object name displays in the center of the header area, and the current date displays on the right. Adding your name to the object name is helpful in identifying your paper printouts or electronic results. The page number displays in the center of the footer area. The headers and footers in Access forms, and reports are more flexible to add or edit the information.

Prep for 1 of 5

The following steps will guide you in preparing your object as an electronic image (or PDF).

PLEASE NAME FILES AS INDICATED

6. While in Print Preview, click **PDF or XPS** in the Data group



Navigate to your Access folder and save the object as **Your Initials Students 1 of 5**.

For example, for Jackie Strobel the name would be *JS Students 1 of 5*

Note: If you wish to view the PDF file, in the dialog box, select the *Open file after publishing* check box.

7. Click **Publish**. Wait for the process, If needed, close any window that displays your PDF; Close the Export – PDF dialog box. If the *Save Export Steps* dialog box appears, click *Close*. On the ribbon, click *Close Print Preview*; your electronic image is saved.

WHEN DONE CORRECTLY, THE STUDENTS FILE WILL BE ON LANDSCAPE ON 2 PAGES

8. Close the **1A Students** table by clicking the **Close Object** in the upper right corner of the object.

Notice: the 1A Faculty Advisors table is the active object in the object window.

Prep for 2 of 5

9. In your **1A Faculty Advisors** table, click the **Select All** button.
10. On the **Home** tab, in the *Records group*, click **More**, click **Field Width**; in the **Column Width** dialog box, click **Best Fit**. Click in any field to de-select. Scroll vertically and horizontally to verify all content is in full view. **Save** any changes.
11. Click the **File** tab, click **Print**, click **Print Preview**, click **Landscape** in the *Page Layout Group*. In the *Page Size group*, click **Margins**, click **Normal**. This will be on two pages.

12. In the *Data group*, click **PDF or XPS**, navigate to your Access folder and save the object as **Your initials Faculty Advisors 2 of 5**.

For Example, for Jackie Strobel the name would be JS Faculty Advisors 2 of 5.

WHEN DONE CORRECTLY, THE FACULTY ADVISORS FILE WILL BE ON LANDSCAPE ON 2 PAGES

13. Close the **1A Faculty Advisors** table by clicking the Close Object in the upper right corner of the object

CREATE A QUERY

Recall..Tables, an object, are the foundation of an Access database because all of the data is stored in one or more tables. You can use the data stored in tables in other database objects such as *queries, forms, and reports*. Each object has a unique icon associated with it to distinguish the type of object.

A **Query** is a database object that retrieves specific data from one or more database objects – either tables or other queries – and then, in a single datasheet, displays only the data that you specify when you design the query. The word **query** means *to ask a question*. Think of a query as a question formed in a manner that Access can answer such as: *How many students are enrolled in Accounting?* or *How many students have an outstanding balance?* or *How many students are Marketing Majors?*

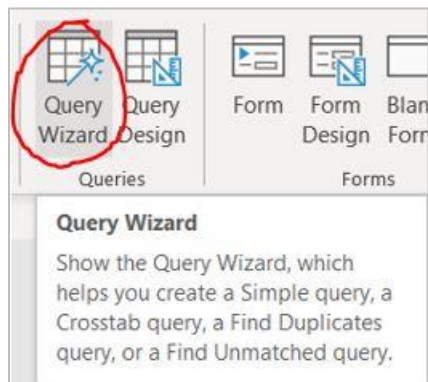
A **Select Query** is one type of Access query. A select query, also called a **simple select query**, retrieves data from one or more tables or queries and then displays the selected data in a datasheet. A select query creates a subset of the data to answer specific questions; for example, *Which students live in Austin, TX?*

The objects from which a query selects the data are referred to as the query's **data source**. In the following exercise you will create a Simple Query using the Wizard which provides step by step guidance through the process. The process involves selecting the data source and indicating the fields that you want to include in the query results.

The query or question you will answer is ***What is the name, email address, phone number and Student ID of every student?***

Create a Query Using Simple Query Wizard

1. Click **Create tab**, in the *Queries group*, click **Query Wizard**.



2. In the **New Query** dialog box, be sure **Simple Query Wizard** is selected and click **OK**.

If a security message displays, click Open

Note: In the wizard, the displayed table or query name is the object that was last selected on the

Navigation Pane. Click the down arrow on the right of Tables/Queries and if needed select Your 1A Students

- Under **Available Fields**, click **Last Name**, click **Add Field** (the right arrow) to move the field to the **Selected Fields** list on the right. Double-click the **First Name** field to add the field to the **Selected Fields** list

Note: Use either method to add fields to the Selected Fields list. Fields can be added in any order.

- Use the **Add Field** (right arrow) or double click to add the following fields to the **Selected Fields** list in the order specified: **Email**, **Phone**, and **Student ID**. Use the down arrow or scroll bar to view all fields

Note: selecting these five fields will answer the question, *What is the name, email address, phone number and Student ID of every student?*

Simple Query Wizard

Which fields do you want in your query?

You can choose from more than one table or query.

Tables/Queries

Table: JS 1A Students

Available Fields:

- Address
- City
- State
- Postal Code
- Faculty Advisor ID
- Amount Owed

Selected Fields:

- Last Name
- First Name
- Email
- Phone
- Student ID

Buttons: Cancel, < Back, Next >, Finish

- Click **Next**
- Click in the **What title do you want for your query?** box, edit/type so the query name is **Your Initials 1A All Students Query**; Click **Finish**.
- Select all the columns and apply **Best Fit** and **Save**
- In any record, click in the **Last Name** field to cancel the selection.
Note: A select query selects – pulls out and displays – only the information from the data source that you request, including the specified fields.
- Click the **File** tab, click **Print**, click **Print Preview**.

Prep for 3 of 5

- In the *Data group*, click **PDF or XPS**, navigate to your Access folder and save the object as **Your Initials All Students Query 3 of 5**
- Click **Close Print Preview**
- In the object window, **Close** the query.

CREATE AND PRINT A FORM

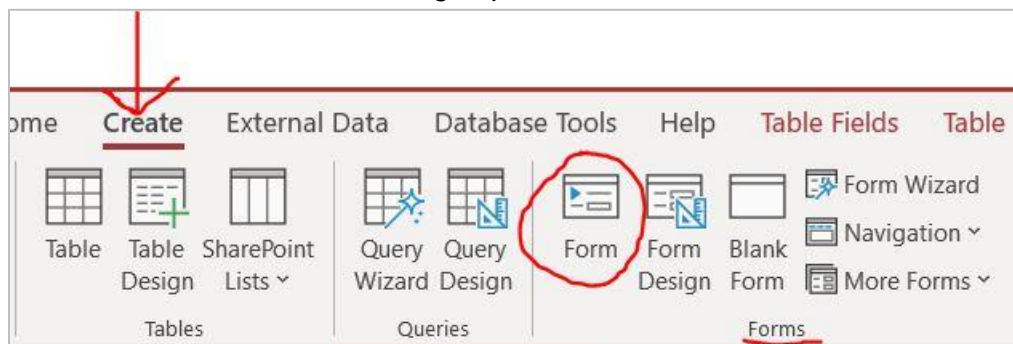
A **form** is an Access object where you can enter data, edit data, or display data from a table or query. In a form, the fields are laid out in an attractive format on the screen, which makes working with the database easier for those who must enter and look up data. The default layout is simple with each field in a row. More advance design features are presented in a later Chapter.

One type of form displays only one record at a time. Such a form is useful not only to the individual who performs the data entry – typing in the records – but also to anyone who has the job of viewing information in the database. For example, when you visit the Records Office at your college to obtain a transcript, someone displays your record on the screen. For the viewer, it is much easier to look at one record at a time using a form than to look at all of the student records in the database table.

1. If needed open the **Navigation Pane**. Drag the edge of the Navigation Pane if needed to display the full object name
2. Right click on **Your 1A Students** table and view the menu of options
3. Click **Open**, to display the table in the object window. Notice there are 11 fields in the table. Close the Navigation Pane.

Note: You can also double-click on the object to open it

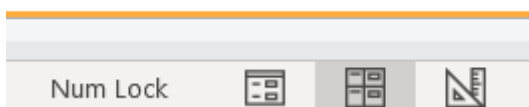
4. On the **Create** tab, in the *Forms* group, click **Form**



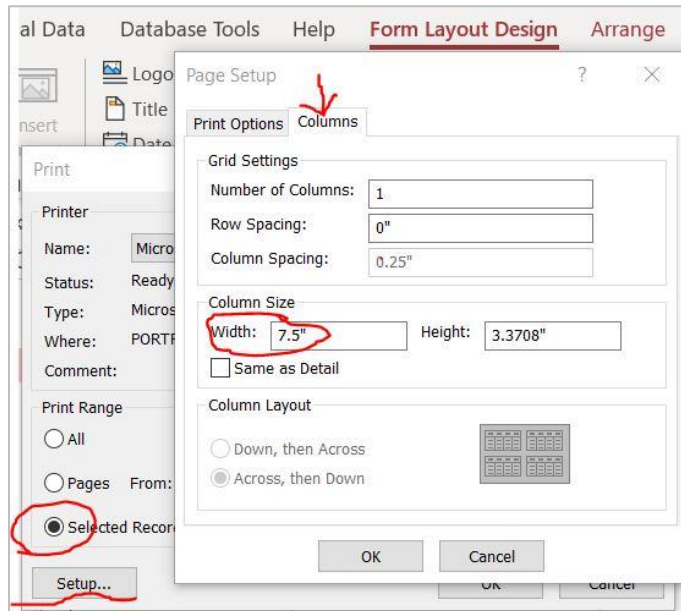
Note: The Form tools creates a form based on a selected object. The form displays all of the fields from the underlying data source - one record at a time - in a simple top-to-bottom format with all 11 fields in a single or two columns. You can use this form as it displays, or you can modify it. Records that you create or edit in a form are automatically added to or updated in the underlying table also known as the data source.

By default the new form displays in **Layout view**. In Layout View you can make changes to elements of an object while it is opened and displays the data from the data source. Each field in the form displays the data for the first student record in Your 1A Students table. Also notice the orange border around the object window.

5. Observe the three buttons on the bottom right of the status bar. The three buttons are: *Form View*, *Layout View*, and *Design View*. These are similar to other views other applications such as Excel or Word. The **Layout View** is active (the middle button) is the Layout View. Notice in the photo below, the orange border on top of the buttons. Point to each to display the ScreenTip



6. Click **Form View** to view the results. The orange border goes away.
In *Form view*, you can view the records, create a new record, edit a record, and delete a record. You **cannot** change the layout or design of the form in Form View. Form view is useful for individuals who *access records* in your database. Layout view is useful for individuals who *design* the form.
7. In the Navigation area, click **Next record** two times to display the third record for *Joseph Ingram*.
Note: Use the scroll buttons to scroll among the records and to display any single record.
8. Click **Save** to save the form as **Your Initials 1A Student Form**
9. Click the **File** tab, click **Print**, on the right, click **Print** – do not click Print Preview because you are going to print a *single* record – not all the records.
10. In the **Print** dialog box, under **Print Range**, click the **Selected Record(s)** option button and click **Setup**
11. In the **Page Setup** dialog box, click the **Columns** tab. Under **Column Size**, double click in the **Width** box, type **7.5**. Click **Cancel** twice because you will print an electronic copy.



Prep for 4 of 5

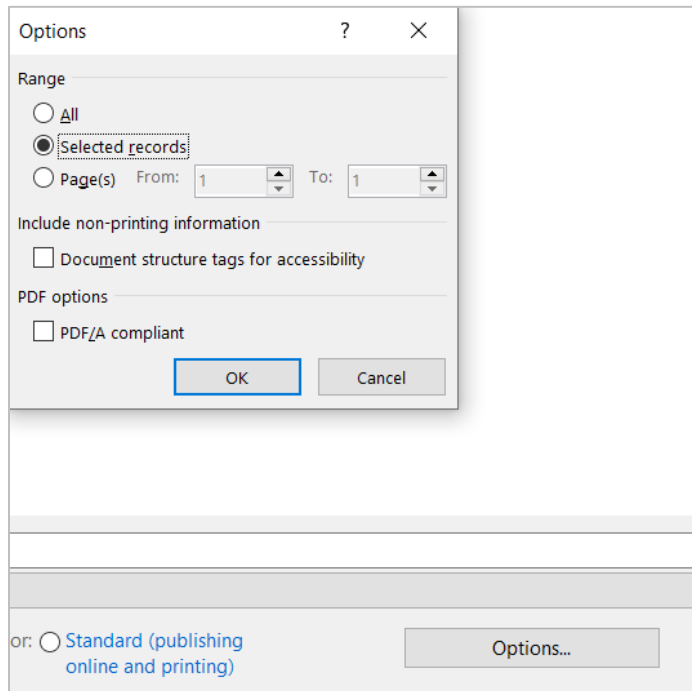
Select a Record and Save as a PDF File

12. Return to your form. To select a record, click on the **record selector bar** located on the left of the form. After clicking on it, it will become solid black.
13. Click the **External Data** tab, in the *Export group*

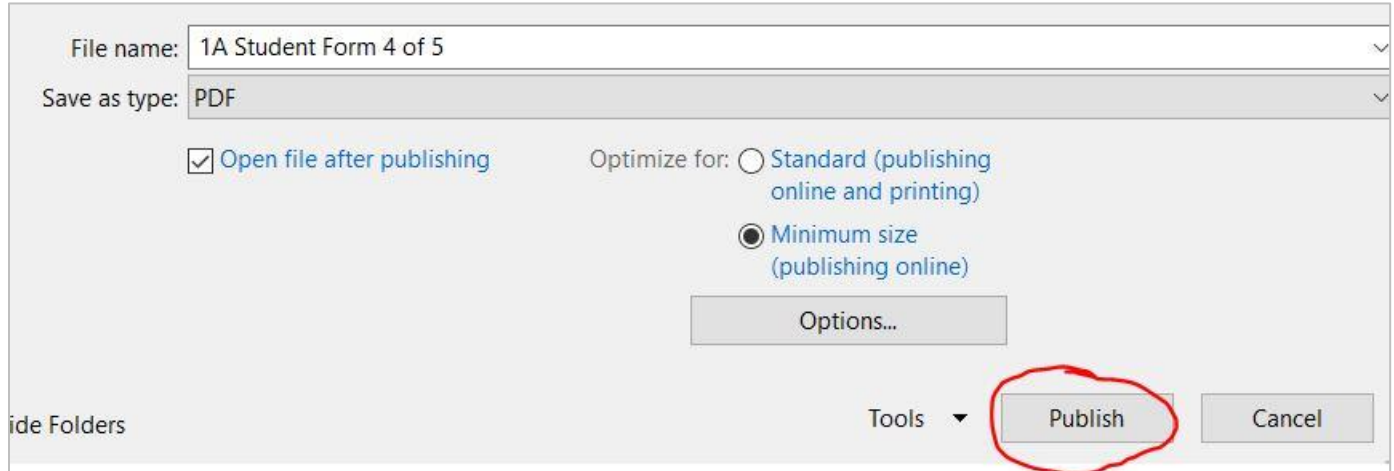


Account	
AC#	AC001
Account Name	Avondale Comm
Street	256 Main St.
City	Avondale
State	IL
Postal Code	60311

14. Click **PDF or XPS**; navigate to your Access folder, in the file name box type **1A Student Form 4 of 5** and in the lower right corner of the dialog box, click **Options**. The Options Dialog box will open. Under Range, click the **Selected records** option button and click **OK**.



Click **Publish**.



When done correctly, only **one** record is saved and published

15. Close the object window. Close the query.

TIP: Forms are usually not printed. The default width for a form created with the form command is larger than most printers can handle to print on one page. If you do not change the width, the form will print on two pages because the column flows over the margins allowed by the printer. If, after changing the width to 7.5, your form still prints on two pages, enter a different value such as 7 or 6.5

CREATE, MODIFY AND PRINT A REPORT

A **report** is a database object that displays the fields and records from a table or query in an easy-to-read format suitable for printing. Create professional-looking reports to summarize database information.

When you create a report using the *Report tool*, the default margins are 0.25 inch. Some printers require a greater margin, so your report may result in two pages. If a printer is not installed on your system, the electronic PDF printout might result in a two-page report.

The Report tool creates a report in Layout view and includes all of the fields and all of the records in the data source which is your 1A Faculty Advisors table. Dotted lines indicate how the report would break across pages if you print it now. In Layout view, you can make quick changes to the report layout while viewing the data from the table.

Modify a Report by Deleting Fields

1. **Open** the **Navigation Pane**, open your **1A Faculty Advisors** table. Close the **Navigation Pane**
2. Click the **Create tab**, in the *Reports group*, click **Report**
3. Click the **Faculty ID** field name, under the **Report Layout Tools**, click the **Arrange tab**.
4. In the *Rows & Columns group*, click **Select Column**, press Delete.
5. Use the same method to delete the **Rank** field

Note: When fields along with the data are deleted from the report, the fields readjust by moving to the left. Deleting the fields from the report does not delete the fields and data from the data source.

Another way....Right click the field name, click Select Entire Column, then press Delete key on keyboard

Warning: During the step below, be careful to **not** click in the report

6. Click the **Address** field name, scroll to the right to until you see the **Cell Phone** field
7. Hold the **Shift key**, click the **Cell Phone** field name
(This selects all the fields from *Address* through *Cell Phone* and will have a colored border).
8. In the *Rows & Columns group*, click **Select Column** and press **Delete** key on your keyboard

TIP: Use this method to select and delete multiple columns in Layout view.

9. **Scroll** to the left to observe the four remaining fields that display within the dotted lines which means they are within the margins of the report.

Change Widths, Sort, Format Fields

10. Click the **Campus** field name.
11. Hold the **Shift key** and click the **First Name** field to select the first three fields.
12. In the *Rows & Columns group*, click **Select Column** to select all three fields.
13. Click **Design tab**, in the *Tools group*, click **Property Sheet** which displays on the right.

Note: Every item in an object has an associated **Property Sheet** to make precise changes to the properties or characteristics of selected items

14. In the **Property Sheet**, click the **Format tab**. Click **Width**, type **1.5** and the press Enter.

Note: The width of the selected fields changes to 1.5" and the fields readjust by moving to the left. You can change the Width property if you need to move columns within the margins of a report. In this report, the fields already displayed within the margins, but some reports may need this minor adjustment to print on one page.

15. Close the **Property Sheet**.

Another way....Select the column, drag the right edge of the column to the left to decrease the width of the field, or drag to the right to increase the width of the field.

16. Click the **Last Name** field name. Click **Home tab**, in the *Sort & Filter group*, click **Ascending**.

Note: Access sorts the report in ascending alphabetical order by the Last Name field. By *default*, tables are sorted in ascending order by the primary key field – in this instance, the Faculty ID field.

Changing the sort order in the report does not change the sort order in the underlying table.

17. At the top of the report, to the right of the green report icon, click anywhere in the title of the report to select the title placeholder.

18. On the **Home tab**, in the *Text Formatting group*, click the **Font Size arrow**, and click **14**.

19. **Save** the report. In the Save As dialog box, in the Report Name box, save the Report as **Your Lastname Firstname 1A Faculty Advisors_Report** and click **OK**

20. On the **File Tab**, click **Print**, click **Print Preview**. On the **Print Preview tab** in the *Zoom group*, click **Two pages**.

Note: As currently formatted, the report will print on two pages, because the page number at the bottom of the report is positioned beyond the right margin of the report.

21. In the *Close Preview group*, click **Close Print Preview**.

22. Scroll down to display the bottom of the report, and then scroll right to display the page number. Click the page number **Page 1 of 1** and press **Delete**.

Note: Because all of the data will print on one page, the page number is not necessary. If you want the page number to display, drag it within the margins of the report.

23. Display the report in **Print Preview**. Notice the report will now print on one page. In the *Zoom group*, click **One Page**. Click **Save** to save the changes to the design of the report.

Prep for 5 of 5

24. Create a PDF electronic image and save as **Your Initials 1A Faculty Advisors Report 5 of 5**. Click **Close Print Preview**.

25. Right click on any object tab and click **Close All**.

CLOSE A DATABASE AND CLOSE ACCESS

When you close a table, any changes made to the records are saved automatically. If you made changes to the structure or adjusted column widths, you will be prompted to save the table when you close the table or when you switch views. Likewise, you will be prompted to save queries, forms, and reports if you made changes to the layout or design. If the Navigation Pane is open when you close Access, it will display when you reopen the database. When you are finished using your database, close the database and close Access.

1. Open the **Navigation Pane**, increase the width of the Navigation Pane to view all the objects.

2. On the **File tab**, click **Close** to close the database. This keeps Access open in the event you want to work on a different database.
3. Click **Close** on the top right corner to close Access

Submit the following five objects: two tables, one query, one form, and one report in Canvas:

Your Initials_1A Students_1 of 5

Your Initials _1A Faculty Advisors 2 of 5

Your Initials _1A All Students Query 3 of 5

Your Initials 1A Student Form 4 of 5

Your Initials 1A Faculty Advisors_Report 5 of 5