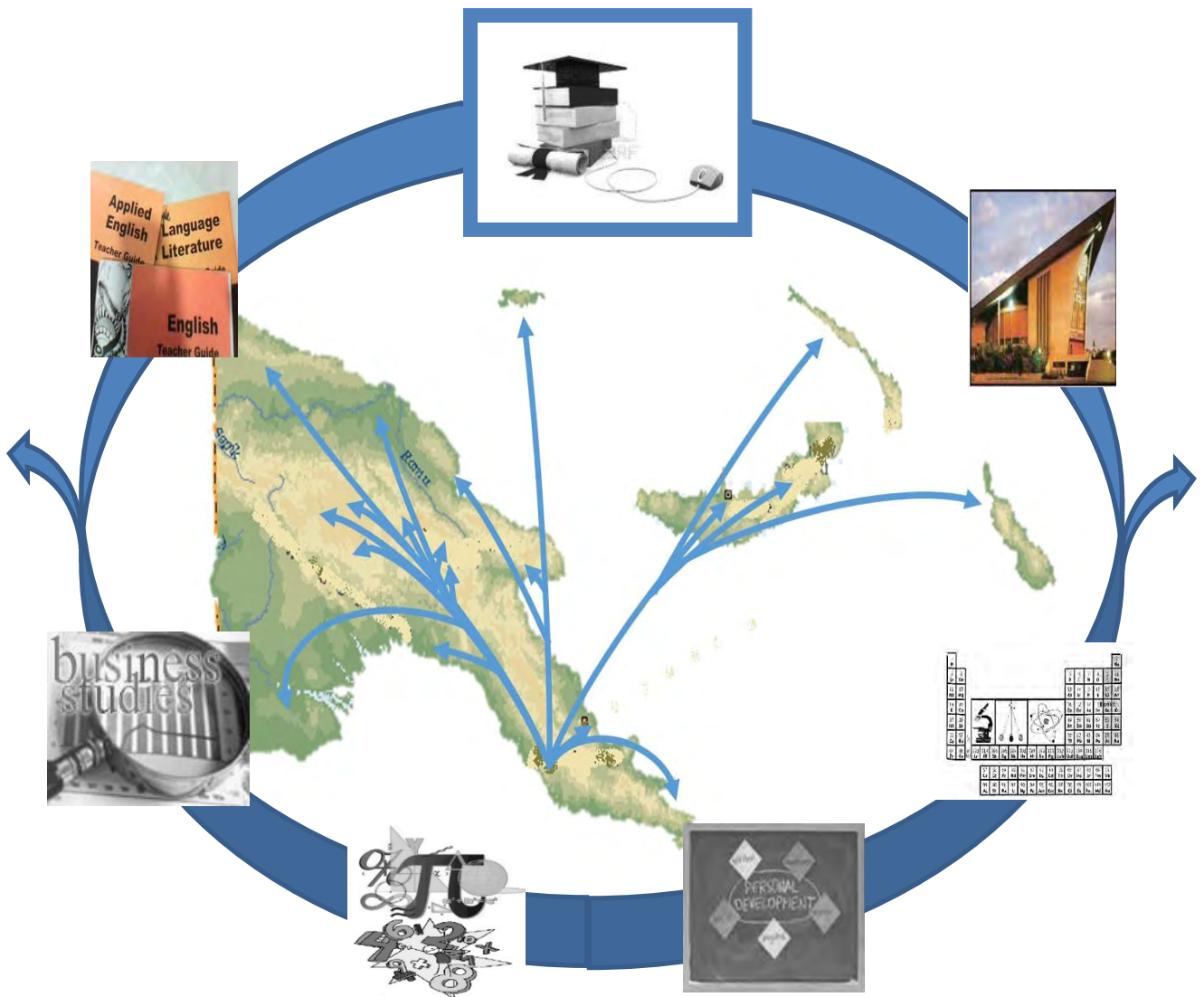




DEPARTMENT OF EDUCATION
GRADE 12
INFORMATION COMMUNICATION TECHNOLOGY
MODULE 2 – DATABASE 2



FODE DISTANCE LEARNING



**PUBLISHED BY FLEXIBLE OPEN AND DISTANCE EDUCATION
FOR THE DEPARTMENT OF EDUCATION
PAPUA NEW GUINEA**



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GRADE 12

INFORMATION COMMUNICATION TECHNOLOGY

UNIT MODULE 2

DATABASE 2

TOPIC 1: GETTING STARTED

TOPIC 2: WORKING WITH DATA, TABLE AND RELATIONSHIPS

TOPIC 3: CREATING AND CUSTOMISING QUERIES

TOPIC 4: CREATING AND CUTOMISING FORMS & REPORTS



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DIANA TEIT AKIS
Principal-FODE

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SECRETARY'S MESSAGE

Achieving a better future by individual students, their families, communities or the nation as a whole, depends on the curriculum and the way it is delivered.

This course is part and parcel of the new reformed curriculum – the Outcome Base Education (OBE). Its learning outcomes are student centred and written in terms that allow them to be demonstrated, assessed and measured.

It maintains the rationale, goals, aims and principles of the National OBE Curriculum and identifies the knowledge, skills, attitudes and values that students should achieve.

This is a provision of Flexible, Open and Distance Education as an alternative pathway of formal education.

The Course promotes Papua New Guinea values and beliefs which are found in our constitution, Government policies and reports. It is developed in line with the National Education Plan (2005 – 2014) and addresses an increase in the number of school leavers which has been coupled with a limited access to secondary and higher educational institutions.

Flexible, Open and Distance Education is guided by the Department of Education's Mission which is fivefold;

- to facilitate and promote integral development of every individual
- to develop and encourage an education system which satisfies the requirements of Papua New Guinea and its people
- to establish, preserve, and improve standards of education throughout Papua New Guinea
- to make the benefits of such education available as widely as possible to all of the people
- to make education accessible to the physically, mentally and socially handicapped as well as to those who are educationally disadvantaged

The College is enhanced to provide alternative and comparable path ways for students and adults to complete their education, through one system, many path ways and same learning outcomes.

It is our vision that Papua New Guineans harness all appropriate and affordable technologies to pursue this program.

I commend all those teachers, curriculum writers and instructional designers, who have contributed so much in developing this course.

UKE KOMBRA, PhD
Secretary for Education



UNIT 2: DATABASE 2

INTRODUCTION

Welcome to Database 2. In this Unit you will learn more about database and its objects such as Forms and Tables which were discussed previously in your Database 1. In depth knowledge of designing and formatting these objects will be featured. Furthermore, two remaining objects will be discussed, namely, Queries and Reports. The importance of each object will be elaborated for better understanding for you to be able to create a well-designed and useful database.

Take note that activities are found at the end of every module lesson and summative exercises after every topic. All answers to activities are found after the summative exercises.

The following icons are used in this module:



Student Aims



Student Activity



Time Frame



Note



Practical Student Activity



Answers to Learning Activities



Objectives or aims

On successful completion of this module, students will be able to:

- improve computer skills to create a useful database
- manage data with tables and forms
- accomplish output with the use of reports and queries



Time Frame

This unit should be completed within 10 weeks.

If you set an average of 3 hours per day, you should be able to complete the unit comfortably by the end of the assigned week.

Try to do all the learning activities and compare your answers with the ones provided at the end of the unit. If you do not get a particular exercise right in the first attempt, you should not get discouraged but instead, go back and attempt it again. If you still do not get it right after several attempts then you should seek help from your friend or your tutor. Do not pass any question without solving it first.



12.2.1 Getting Started

12.2.1.1 Understanding How Database Works

In Unit 4, Lesson 1 of your Database 1, we were able to define Database as a collection of data and a means to manipulate data in a useful way. Database must provide proper storage for large amounts of data, easy and fast access and facilitate the processing of data. You may be unaware but most of the time you are using databases. Some of the common databases might be:

- Address book
- Library catalogue
- Telephone directory
- Stock list

Often abbreviated DB, a database must organise the collected information in such a way that a “computer program” can quickly select desired pieces of data. You can think of a database as an electronic filing system.

Computer database are those data or information stored in the computer. To arrange and organise records, computer databases rely on database software or program. Database software allows the user to collect, edit, delete and organise information so that they can be easily managed, updated and accessed by the user.

Database software is a software application used by the user (like you and me) to manage. Management and retrieval queries database is called the database management system. There is a number of database software that are available. Examples of commonly used database software are:

- DB2
- Microsoft SQL Server
- Oracle
- Sybase
- Interbase
- Xbase
- MySQL
- dBaseIII



- FoxPro
- (Microsoft)Access

Uses of Database System

The advantages of using database are considerable. Without them, you would be hard-pressed to find a decent system of keeping and managing information. In recent years, the increased flexibility and user-friendliness of databases make these systems a crucial business component.

Databases are intended for storing and maintaining large amounts of information. The following is a list of examples of information that can be sorted and kept in a database:

- School enrolees
- Inventory
- Payroll
- Personal records
- Music collection catalogue
- Phone and address list

Why use a database?

- It can store very large numbers of records efficiently
- It is very quick and easy to find information
- It is easy to add new data and to edit or delete old data
- Data can be searched easily
- Data can be sorted easily
- Data can be imported into other applications
- More than one person can access the same database at the same time
- It is more secured compared to paper files.

Database Functions

The development of database technology is currently growing rapidly, many of the forms which were used only as a storage area consisting of field and records. It will then display the information in various formats with a simple display, then the simple form will be then obtained to display a database that is useful to analyse the data for a particular purpose. By



leveraging existing relational database then obtain a way to anticipate the need to analyse data quickly to help get a decision in an application or organisation.

The database provides a facility or ease in producing information that is used by users to support decision-making.

Here are some functions of database applications:

- Bank – customer data management, accounting, all banking transactions
- Airport – reservation data management, scheduling
- Universities – Management of registration, alumni
- Sales – Management of customer data, product, sales
- Factory – Management of production data, inventory, ordering, agent
- Personnel – Management of employee data, payroll, tax
- Telecommunications – management of billing data, number of pulses

Traditional database is organised by fields, records, and files. We will further discuss this topic in the upcoming lessons. To access information from a database, you need a database management system (DBMS). This is a collection of programs that enables you to enter, organise, and select data in a database.

There are many functions of a database that are key components to the operation of database management. There are five standard functions of database management and they are:

1. Ability to update and retrieve data

This is the fundamental component of database management and essential to database. Without the ability to view or manipulate data, there would be no point of using a database system. Updating data in a database includes adding new records, deleting existing records and changing information within the record.

2. Support concurrent updates

Concurrent updates occur when multiple users make updates to the database simultaneously. Supporting concurrent updates is also crucial to database management as this component ensures that updates are made correctly and the end result is accurate.

3. Recovery of data

In the event if a catastrophe occurs, database management must provide ways to recover a database so that data is not permanently lost. There are times a computer



may crash, a fire or other natural disaster may occur, or a user may enter incorrect information invalidating or making records inconsistent.

If the database is destroyed or damaged in any way, the database system must be able to recover the correct state of the database: this process is called Recovery.

4. Security

Security is the prevention of unauthorised users accessing the database. Database system uses features such as encryption, authentication, authorisation and views to provide security to the database.

5. Data integrity

Data integrity is an important function of database management. This is a set of rules applied to avoid incorrect or inconsistent data. It ensures the quality of the data in the database.



Student Activity 12.2.1.1

Answer the following.

1. What is Database?

2. What is Database software?

3. List down 4 examples of database software?

4. What are the functions of database application in the following:

- Bank - _____
- University - _____
- Sales - _____
- Personnel - _____



12.2.1.2 Getting Familiar With Database Screen

Microsoft Access is an information management tool that helps you store information for reference, reporting and analysis. It is a program that can create, format, save, maintain, retrieve and analyse volumes of related information or data in a format known as a database. Microsoft Access can store thousands of data which you can quickly search and sort. The way Access organises database is similar to the way Excel organises worksheets within a workbook.

Functions and Uses of MS Access

There is a need for a database management tool like Access for all corporate and private organisations where large amount of data is being handled. When large amounts of data is being saved and processed the name “Database” is used. Database Management as discussed in Lesson 1, is the process of manipulating stored data. Databases are designed to offer an organised mechanism for storing, managing, and retrieving information. Basically, database management involves the function of data storage and retrieval. In some cases, data stored in a database may be edited and manipulated according to the required needs of a certain individual, group or company.

MS Access has very easy operating procedure compared to other database management tools that are available. Besides it is fairly cheap and can be installed in most computers and it provides an excellent graphical user interface (GUI), whereas most database management tools provide console operating interface (CUI). This feature creates an excellent User-friendly environment.


Table creation for database management is easily done here. Direct interaction with tables created and editing are possible which leads to easy operation whereas other database management software needs complex syntaxes in creating these. There is no need for the user to have high programming knowledge in using MS Access.

Access is a flexible and relatively simple way to create database to store, manage and enter data. It offers simple, yet a robust way to manage your data.

In your Database 1, you have learned how to launch or start the MS Access program. However, we need to take some time to allow you to familiarise yourself once more with the Access environment.

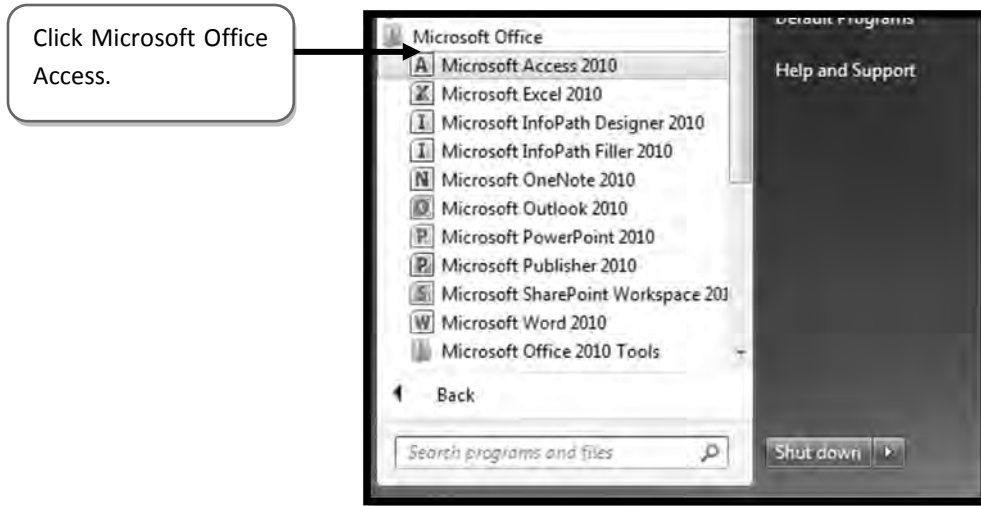
The Access Program Window

You can open MS Access 2010 by doing the following steps:

1. Click the **Start**  button.
2. Point your mouse to **All Programs**.

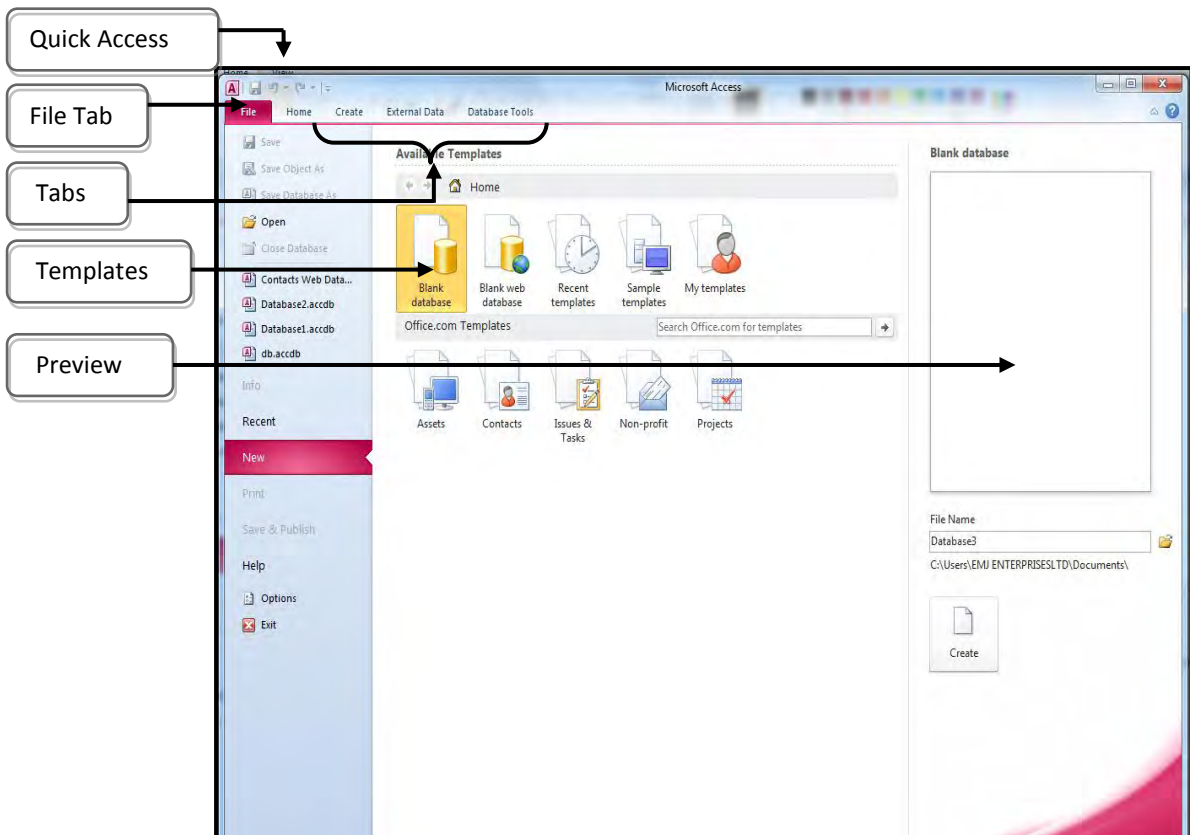


3. Point to **Microsoft Office**.



4. Click on **Microsoft Office Access 2010**.

Once opened, you will see the following on the Access program window:

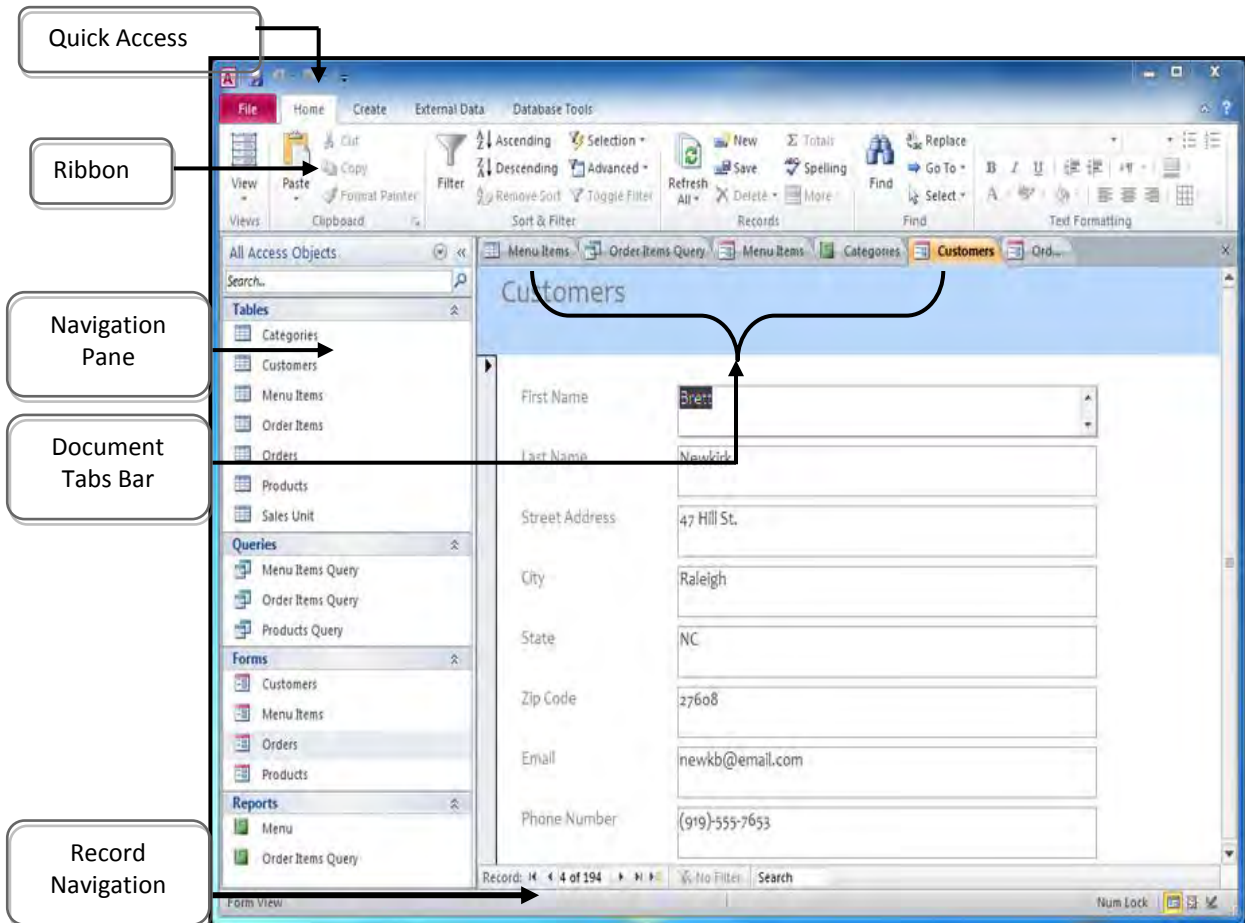


5. Click **Blank database**.

6. Finally, click **Create**.



Now, you can see the Access working interface, where you can start creating your database. MS Access Interface.



MS Access 2010 contains ribbons, tabs, commands which are organised into groups, status bar, views, navigation pane and quick access toolbar. The ribbon and quick access toolbar can be customised to suit your need.

Whenever you are learning a new program or updating yourself with new versions of the programs you already know, it is important to familiarise yourself with the program windows and the tools within it. Familiarising yourself with the tools will ease your work and help you maximise the uses of these different tools available and actual purpose of these application programs.

Let us now navigate and know the parts of the Access window.

1. The **Quick Access Toolbar** is located above the Ribbon. It lets you access common commands no matter which tab you have selected in the Ribbon. By default, it shows the Save, Undo, and Redo commands. By clicking the drop-





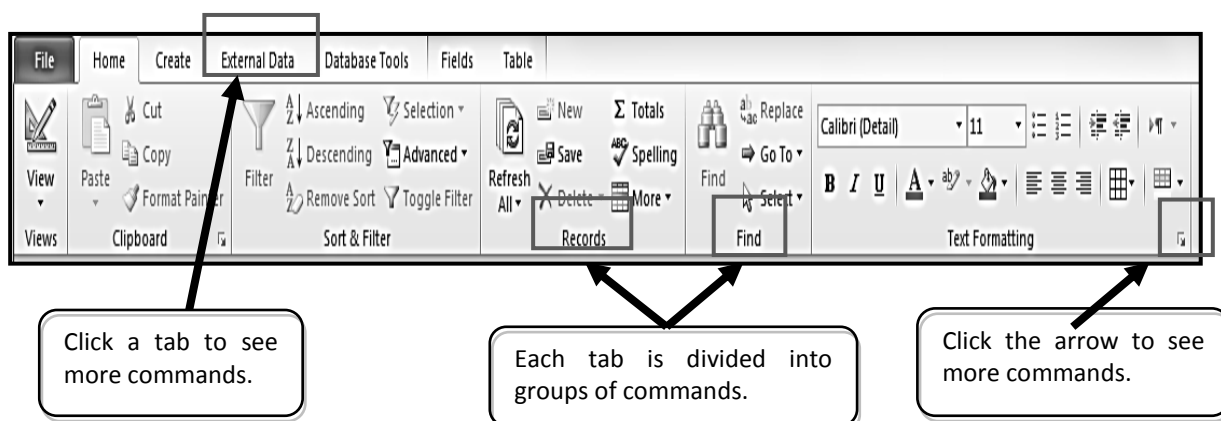
down arrow you can add additional commands to the toolbar.

- The **Ribbon** is the panel at the top portion of the document. It has six tabs: Home, Create, External Data, Database Tools, Fields and Table. These tabs contain commands and tools which are grouped according to their function.



Tabs – represents the activities you perform and contain related groups.

Groups – organise related commands. Group name appears below the group ribbon.

Commands – appear within each group.

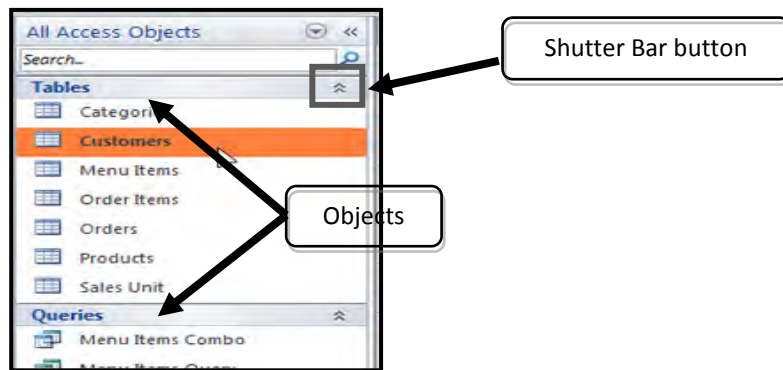


Moving the mouse pointer over each command or tool will display the name and function of the command tool.

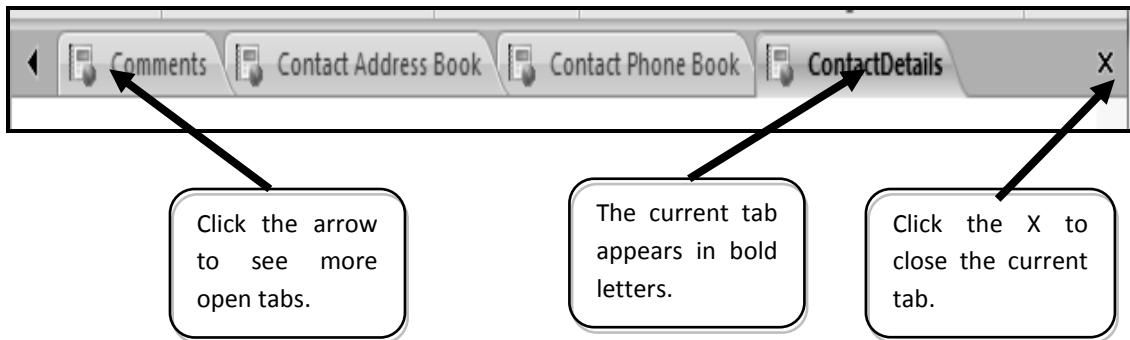
When you launch MS Access 2010, the Ribbon is displayed. You can hide or display the Ribbon by clicking **Minimise the Ribbon**  or **Expand the Ribbon** . To Display the full ribbon, click the tab or press **Ctrl+F1**. You can also minimise the displayed ribbon by double clicking the tab. The appearance of the commands on the Ribbon may change depending on its width. A command may appear as a large or a small button.



- The **Navigation Pane** allows you to view and manage your database objects. These objects are grouped according to its type such as tables, queries, reports and forms. To open an object, simply point the mouse to the object name and double-click it. You can display or hide the navigation pane by clicking the **Shutter Bar button**.



- 4. **Document Tabs Bar.** All open objects are displayed on the Document Tabs bar. To view an object, click on its tab. Each tab represents an open object, and is marked with an icon to show what type of object it is.



- 5. The **Record Navigation** bar allows you to navigate through records one at a time. You can click the arrows to navigate through the records. You can jump to a specific record by typing its Identification Card (ID) into the white box.



You can use the **record search box** to search for any term in the current open object. The first result that matches your search term will appear highlighted with a yellow border. To navigate through additional results, press the **Enter** key.

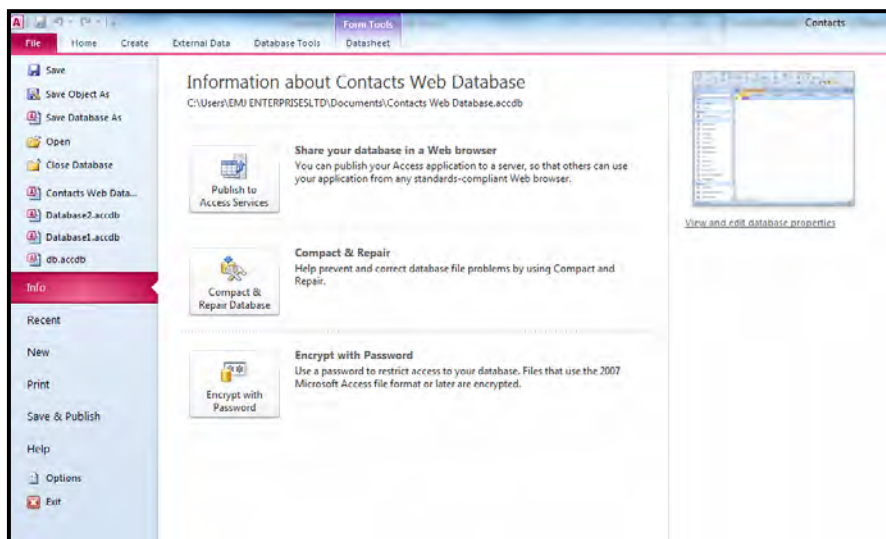
The **Backstage view** gives you various options for opening, saving, printing, and viewing more information about your database. It is similar to the Office Button Menu from Access 2007 or the File menu from earlier versions of Access. However, unlike those menus, it is a full-page view, which makes it easier to work with.



Follow the given steps to open the Backstage.

1. Click the **File** tab.
2. You can choose an option on the left side of the page.
3. To get back to your database objects, just click any tab on the Ribbon.

Below is the sample screen of the Backstage view.



The Backstage View

1. **Save, Open, and Close**
Various commands that let you Save, Open, and Close objects and databases are now found in Backstage view. Remember that command **Save** saves only the current object, not the entire database.
2. **Info**
It contains information about your database. It also contains options that let you **Compact and Repairs** your database to fix file problems and **Encrypt** it with password.
3. **Recently Opened**
The last four databases opened are displayed here for easy access.
4. **New**
From the **New** pane, you can create a new database from scratch, or you can choose from a selection of templates.
5. **Print**
The **Print** pane, contains options for printing the current object in your database.
6. **Save and Publish**
This pane provides advanced options for saving your database.



7. **Help**

This pane is use to access Microsoft Office Help or check updates to your software.

8. **Option**

This is where you can change various Access options. For instance, you can choose a form to automatically display when your database is opened or modify the default font style.

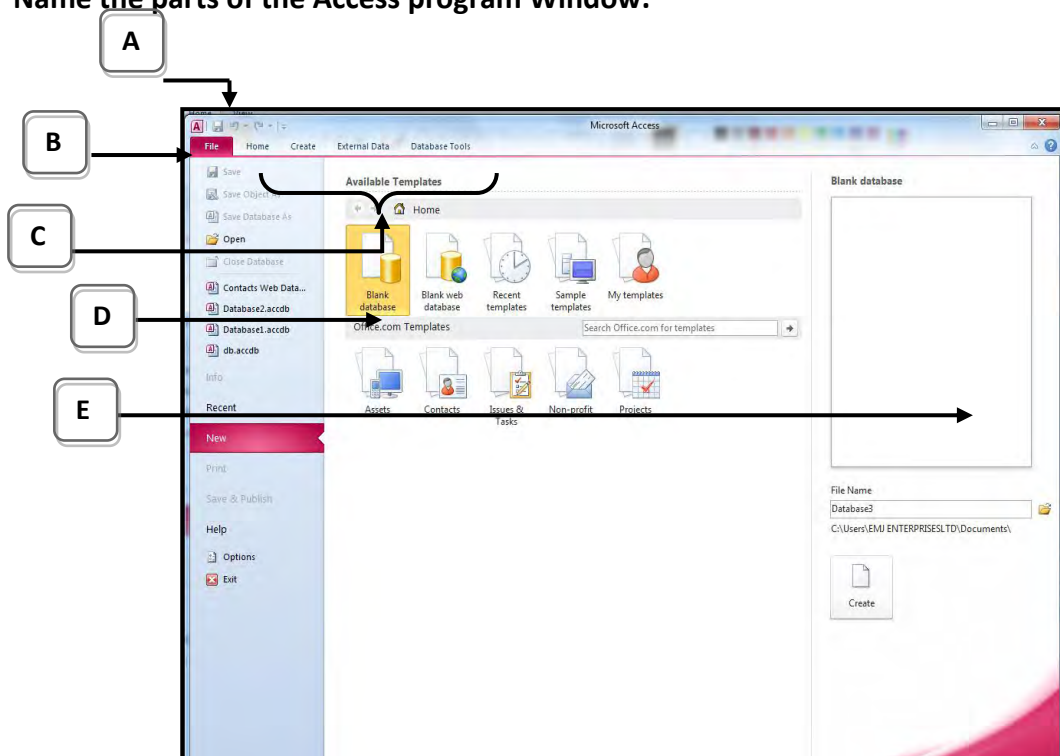


Student Activity 12.2.1.2

1. Write down the MS Access screen part that matches each given description.

PARTS	DESCRIPTION
	Tab that displays all the open objects in your database.
	This element allows you to navigate through records one at a time.
	This pane allows you to view and manage your database objects.
	This element lets you access common commands no matter which tab you have selected in the Ribbon.
	This is the panel at the top portion of the document.

2. Name the parts of the Access program Window.





A. _____

B. _____

C. _____


D. _____

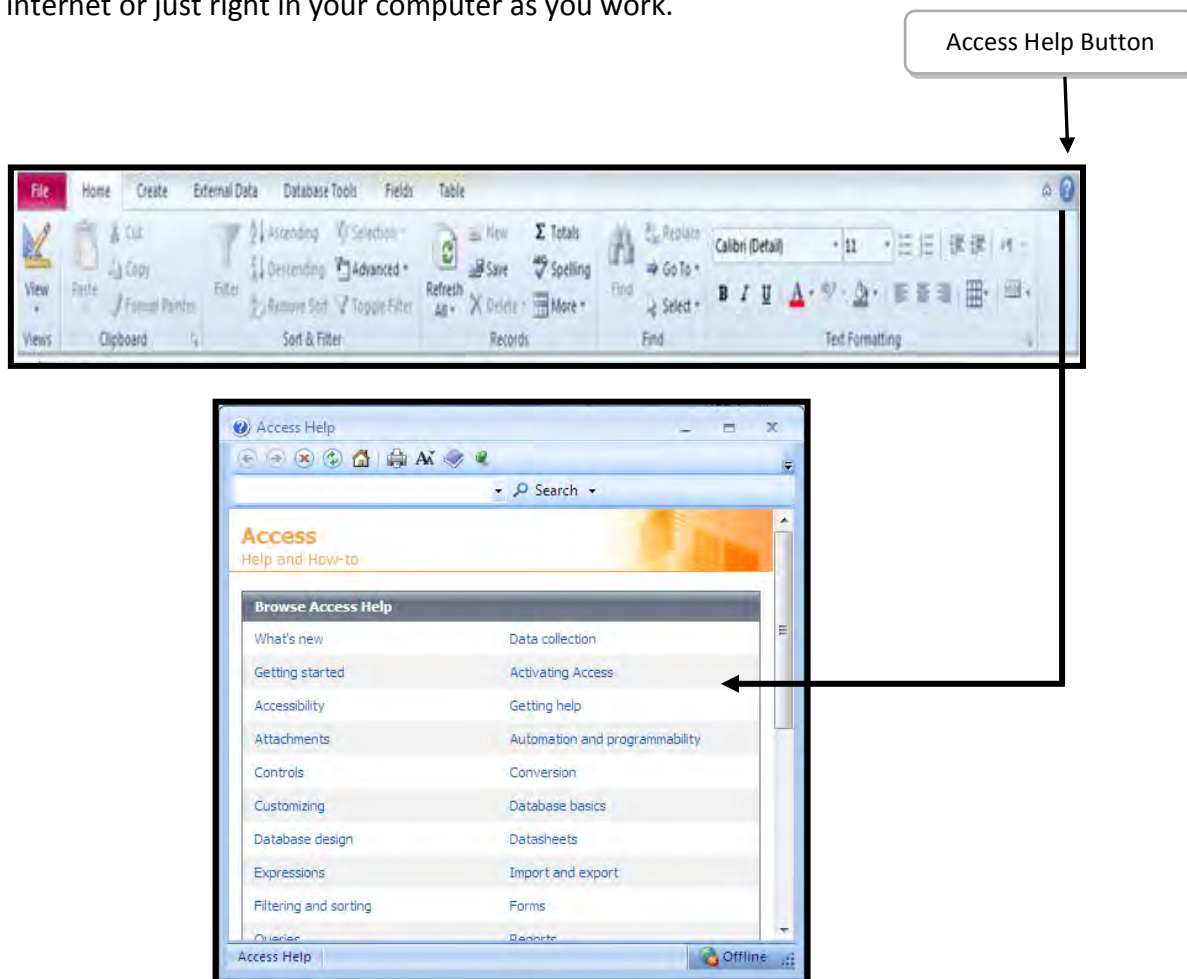
E. _____



12.2.1.3 Getting Help and Maintenance

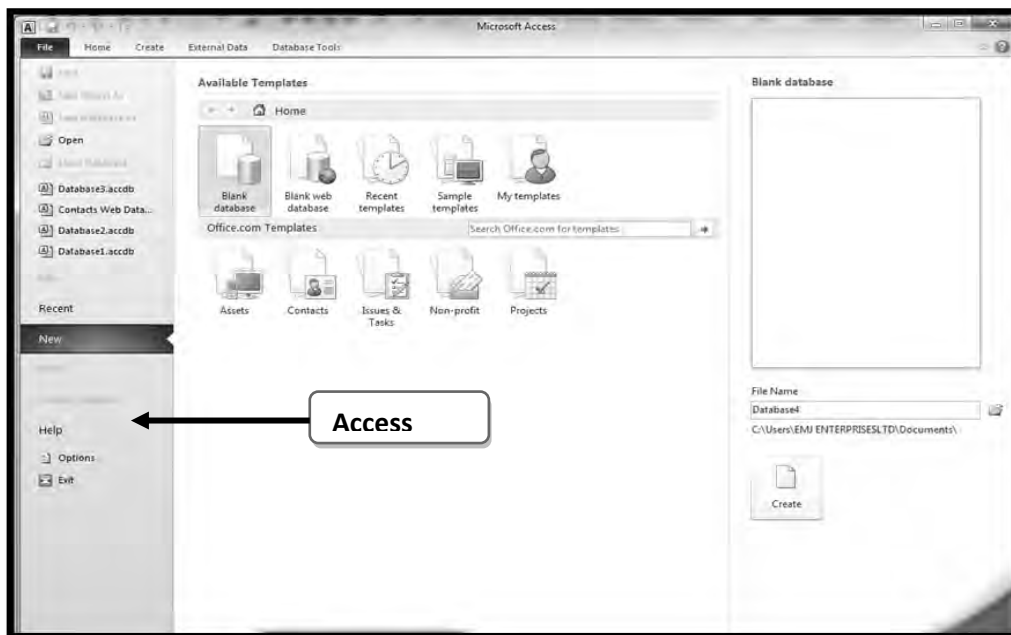
Getting Help

One of the best features of any MS Office programs is the Help menu. Help is available in many ways in MS Access. You can even get help from the **Help**  button through the internet or just right in your computer as you work.



The Access Help Window

In various sections of our lessons, we will use some objects that you may not be familiar with. Fortunately, to get help for these unfamiliar items, click it and press **F1**. The Help window would come up and would display one or more options on the topic you have clicked. If you see a link with the same name of the item you clicked, you can click that link and its explanation will be displayed. Help can also be access in the Backstage View. You have learned from Lesson 2, Backstage can be viewed once you click the File Tab.



The Roles and Ways to use help menu to troubleshoot MS Access

1. Help to solve problems
2. Simple and relevant
3. Ways to use menu

Helps to Solve Problems

Help menu in MS Access will help users to understand the primary mechanism itself. As the help menu is composed of different types of content so as to assist user when they are unable to complete a task it needs to understand the concept in detail. Users first make use of the help menu so as to solve their problem.

Simple and Relevant

The interface of the help menu is simple, efficient and relevant it enables users to get help easily and return to their tasks efficiently. The help menu will first encounter problems in your program and then it will solve the problem by incorporating fundamental assistance to the user interface directly, thereby creating clear and consistent entry points.

Ways to use Help Menu

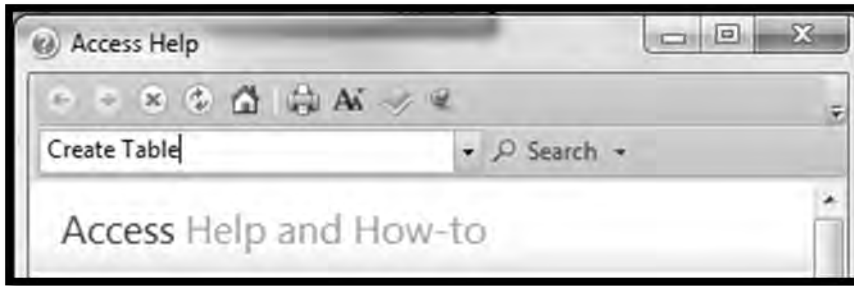
Access offers number of assistance and provides topic and index entries built in language technology of MS Access that will allow you to get assistance. These are also integrated into some wizards like Web Page Wizard, which will guide you to common tasks and offer more flexibility.



Student Practical Activity

Before doing this activity make sure you open your MS Access and that you have created a blank database. At this point let us use the Office Assistant.

1. Press **F1**.



2. In the **Access Help** window and on the left side of **Search**, type **Create Table**.
3. Click **Search**.
4. On the list that appears, click **Create** tables in a database.
5. On the **Access Help** window that appears, read the text, scroll down, and click **Create New Table**.
6. After reading it, on the toolbar of the **Access Help** window, click the **Back** button.
7. Close the Access Help window.



Student Activity 12.2.1.3

Answer the following.

1. What is the role of help menu in Access?

2. In your own words, discuss the roles and ways to use the Help Menu.



12.2.1.4 Working with Database Objects

Before we continue with the database objects, let us recall what Relational Database is. From Database 1, you have learned that Relational database is a collection of tables, forms, reports and queries all organised by a program. By this point, you should already understand that a database is a collection of data organised into many connected lists.

Databases in Access 2010 are composed of these four objects:

- a. tables
- b. queries
- c. forms
- d. reports

Together, these objects allow you to enter, store, analyse and compile your data as you wish.

A. Table

All database objects rely on the existence of a database table. A table contains grids of rows and columns that contain your data about a specific topic, such as name of products or name of persons. Tables organise data into vertical **columns** which are called **fields** and horizontal **rows** which are called **records**.

A **field** is more than just a column; it is a way of organising information by the type of data it is. Every piece of information within the field is of the same type.

ItemCode	ItemName	Category	Description	Price	Stocks	Click to Add
11	Pick Up Line S	TShirt	tshirt with pick u	100	50	
12	Never Give Up	TShirt	Never Give Up P	100	50	
13	Captain Ameri	TShirt	Captain America	150	80	
*	(New)					

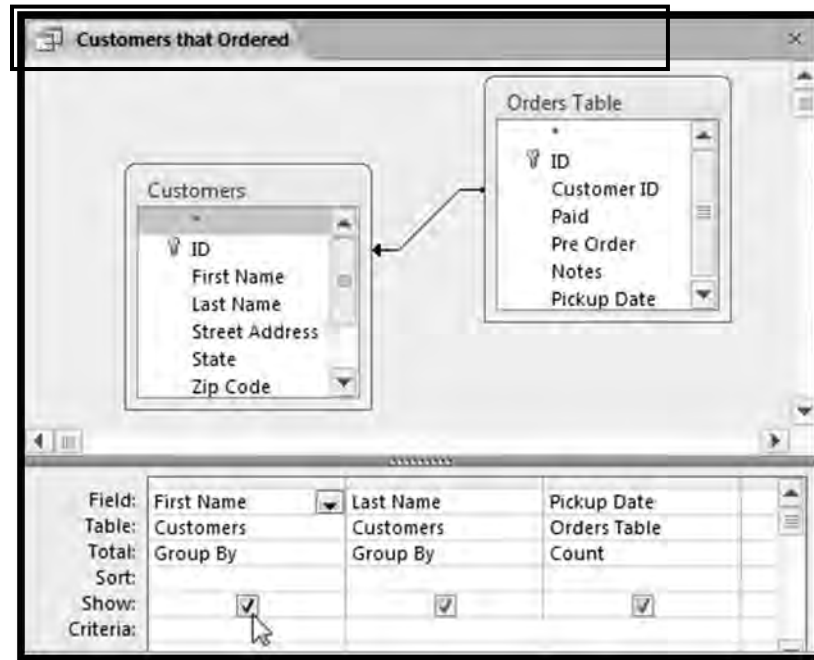
Likewise, a **record** is more than just a row; it is a unit of information. Every cell in a given row is part of that row's record.

All data is stored on tables and each of the objects that the database manages is linked so this would make it easy for user to make adjustments to their files. Tables are good for storing closely related information.



B. Queries

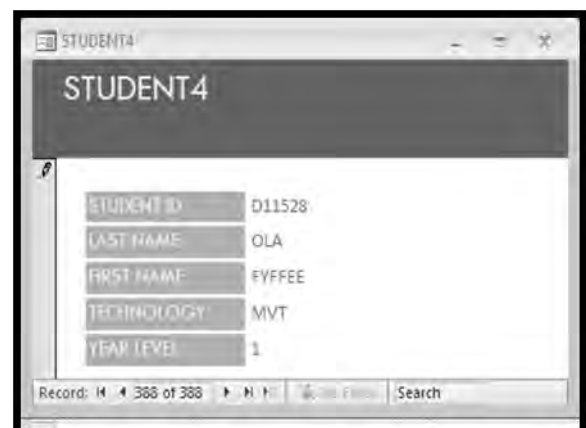
A query allows you to work with a specific set of records that meet the criteria you have specified from a table in the database. You can use queries to view, change and analyse data in different ways. When you run a query, the results will appear in the Datasheet view, shown like a table.



Queries are a way of searching for and compiling data from one or more tables. When you build a query in Access, you are defining specific search conditions to find exactly the data you want.

C. Forms

A form is a type of database object that is used to enter, change, delete and display data in a database. A form can contain lines, colour and images together with check boxes, button and other features called **controls**. Access can create six basic types of forms. The reason forms are used so often is that it is an easy way to guide people into entering data correctly. When you enter data information into a form in Access, the data goes exactly where the database designer wants it to go – into one or more related tables.



Forms make entering data easier. Using forms, it is possible to enter data into multiple tables at once, all in one place. Forms help keep data consistent and well-organised, which is essential for an accurate and powerful database.



D. Reports

Reports allow you to present, organise, summarise and print all or part of the data in a database. You can use the design tools to bring together data, charts, illustrations, audios and videos. Reports are useful because they allow you to present components of your database in an easy-to-read format. You can also customize and enhance your report with colours and use various fonts to make it visually appealing. Access offers you the ability to create a report from table or query.

Tables, queries, forms and reports are the framework for any database you create in Access. Understanding how each of these objects works will help you create a database that will be useful and help you retrieve the information you need. Even if you have a good idea of how each object can be used, it can initially be difficult to understand how they all work together. It helps to remember that they all work with the same data. Every piece of data that a query, form, or report uses are stored in one of your database table.



Student Activity 12.2.1.4

1. Define each object used in creating a database.

a. Table

b. Form

c. Query

d. Report



2. Name the following objects.

Product Type	Product Name	Quantity
Cakes	Cheesecake	17
Cakes	Buche de Noel (Christmas Cake) - Winter	12
Pies	Pecan	10
Pies	Pumpkin	9
Pies	French Silk	5
Pies	Chocolate Chess	5
Pies	Apple	5

a. _____

b. _____

Field:	FirstName	LastName	DOB	Gender	ParentsNames
Table:	Students	Students	Students	Students	Students
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:				Students' Gender]	
or:					

c. _____

d. _____



12.2.1.5 Planning a Database

The first step in creating database is creating a plan that serves both as a guide to be used when implementing database and as functional specification for the database after it has been implemented. A database can be relatively simple and designed for use by a single person, or it can be large and complex and designed, for example, to handle all the banking transactions for thousands of clients. In the first case, the database design may be slightly more than a few notes on some scratch paper. In the latter case, the design may be a formal document hundreds of pages long that contains every possible detail about the database. In this unit, we will only create simple database to be used by a single person.

In planning the database, regardless of its size and complexity, use the following basic steps:

1. Collect and organise data.

The data you will be collecting is what will make up the contents of the database. Without the data there will be no database.

Data can be collected either manually or electronically. Collecting data manually means that the data is collected from surveys, questionnaires and interviews. Collecting data electronically means that data is collected through the use of computers through surveys on the internet, questionnaires being emailed to you, or any other electronic databases, and so on.

When collecting data, make sure you get all the data that you think is needed for the database. Keep in mind that we want to keep record of information in a more organised layout. For example, you can get the class list at the administration office, or if you are doing inventory database for a shop, then you have to go around each item on the shelves, look at the prices, and write them down. That is how you collect data.

2. Organise and update data.

Once you have collected and gathered all your data, go ahead and arrange the data by grouping and classifying them according to any criteria. An example would be:

- Greece
- Brazil
- Rome
- Papua New Guinea

These are classified as **Countries**.

Examples of classifications would be according to:

- Age
- Grade Level



- Gender
- Height
- Nationality

After arranging you also need to check to see which ones you need, and which ones need updating and correcting e.g.: spelling of words, grammar, punctuation, and so on. Organise and prioritise them and get them ready for you to enter them into the computer.

3. Do a draft of the Form and Report.

Design how you want your Forms and Reports to look like on paper. This makes it easier for you to construct the Forms and Reports on the computer. You can design by sketching it out and you do not need to be an artist. Make sure that the sketch is clear and easy to follow and information displayed on each of the sketches is clearly written. Border lines also need to be included in the sketches.

Designing a Database

Before creating a database, make sure that your database is well designed and well planned to ensure that it can be used for a long time.

1. Define the purpose of your database. Consider the questions or queries you may want to answer about the stored data.
2. Determine the tables that you need in the database.
3. Determine the fields that you need in the database.
4. Identify unique field values that will allow Access to connect information stored in a separate table.
5. Determine the relationships between tables. A relationship works by matching data in the key fields which is usually a field with the same name in both tables.
6. Test the design by entering the sample data. Check that you can run a query on the database and get the information you want.

Characteristics of a Well-Designed Database

1. Modifying data is easy. Changes to the value of one field within the table should not affect the values of the fields in the table.
2. Retrieving information is easy. Extracting desired information from tables with well-defined relationships should make accessing and retrieving data a lot faster.



3. Developing and building user application is easy. Data manipulation would be the main focus of programming and not solving problems associated with a poorly designed database.
4. Maintaining the structure is easy. Changes made to any table or columns should not affect other tables or columns.
5. Adding and deleting data is easy.

Many database designers fall into the trap of designing a database based on the database program tools instead of designing it based on the needs of the organisation. The database may suffer from poor data integrity, insufficient structural design and inconsistent data. The database program is just a tool to achieve the objectives of the database.



Student Activity 12.2.1.5

Design a database. Apply the steps on how to plan a database from this lesson. Write your sample draft of your form on the space provided. You may choose one (1) from the following:

- A. Phone Directory of family members, friends and colleagues.
- B. Music Table (e.g. Rock, alternative, reggae).
- C. Pastries in a bakeshop or bakery.



Use this space below to write down your designed database.





12.2.1.6 Exiting Access

Exiting files in Access is simply the same approach you use for other Office Applications, such as Word, Excel, and PowerPoint. With Access, a single database has coverage of Tables, Forms, Queries, and Reports; therefore you must be careful when exiting Access. Always remember to save your work before closing.

Exiting Objects/ Files

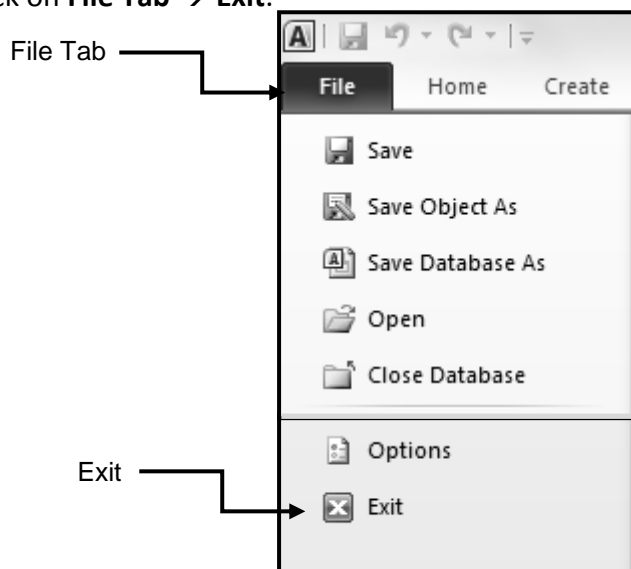
Exiting Objects or Files in the Access does not mean that you close the whole application but just a certain object in the database that populated your screen. It is better that you keep your screen organise by closing the objects (table or form) that you are not using at the moment. Follow the steps below on how to exit Objects.

1. Click on the **CLOSE**  button on the right-most of the Object window to close/ exit.
2. Alternatively, right-click on the Object Window Tab  (contains the name of the object) and select Close.

Exiting Access

The above steps exit the objects in Access but not the application itself. Like all other applications, the approach/ methods used to close/ exit is just similar.

1. Click on the **Close** Button, usually on the upper right-most corner of the window, to close Access.
2. **Or, click on File Tab → Exit.**



Student Activity 12.2.1.6

Answer the following.

1. List down the 2 ways in which you can exit MS Access.



- a. _____
- b. _____

2. Draw the button that allows you to close MS Access.


3. What is the importance of closing unused tables or forms while working on your database?



Summative Activity 12.2.1

Answer the following.

1. Put a check mark if the statement is correct and a cross mark if not.

- _____ a. One of the best features of any MS Office programs is the Help Menu.
- _____ b. Help is available in many ways in MS Access.
- _____ c. You can get Help from  button.
- _____ d. We cannot get Help from internet.
- _____ e. Backstage view also offers Help menu.
- _____ f. F12 is the function key for Help.

2. List three ways how you can get help in MS Access Program.

3. Identify the term being described by the following statement.

- _____ a. An Object that is useful because it allows you to present components of your database in an easy-to-read format.



_____ b. It contains grids of rows and columns that contain your data about specific topic.

_____ c. This object allows you to work with a specific set of records that meet the criteria you have specified from a table in a database.

_____ d. A type of database object that is used to enter, change, delete and display data in a database.

_____ e. Term used for vertical columns in a table.

_____ f. Term used for horizontal rows in a table.



Answers to Student Activity 12.2.1

Student Activity 12.2.1.1

1. Database is a collection of data and a means to manipulate data in a useful way. It provides proper storage for large amounts of data, easy and fast access and facilitates the processing of data.
2. Database software is a software application used by the user to manage and call the database.
3. Database software are the following:
 - DB2
 - Microsoft SQL Server
 - Oracle
 - Sybase
 - Interbase
 - Xbase
 - MySQL
 - dBaseIII
 - FoxPro
 - (Microsoft) Access



4. The function of Database in:

- Bank – customer data management, accounting, all banking transactions
 - Universities – Management of registration, alumni
 - Sales – Management of customer data, product, sales
 - Personnel – Management of employee data, payroll, tax
-

Student Activity 12.2.1.2

1.

- Document Tab Bar
- Record Navigation
- Navigation Pane
- Quick Access Toolbar
- Ribbon

2.

- Quick Access
 - Ribbon
 - Navigation Tabs Bar
 - Record Navigation
 - Preview
-

Student Activity 12.2.1.3

1. The Help menu in Access assists the user when they are unable to complete a specific task. It gives guidelines and strategies to maximize the use of Access.
 2. The roles and ways to use help menu are: (1) Helps to solve problem. Users can make use of the Help Menu if they encounter problems while using MS Access. (2) Simple and Relevant. MS Access Help menu is easy to use and provides appropriate assistance. (3) Ways to use help menu. MS Access offers different ways on how to acquire assistance.
-

**Student Activity 12.2.1.4**

1.

- a. Table – A table contains grids of rows and columns that contain your data about a specific topic, such as name of products or name of persons. Tables organise data into vertical columns which are called fields and horizontal rows which are called records.
- b. Form – A form can contain lines, colours and images together with check boxes, button and other features called controls.
- c. Query – A query allows you to work with a specific set of records that meet the criteria you have specified from a table in the database. You can use queries to view, change and analyse data in different ways.
- d. Report – Reports allow you to present, organise, summarise and print all or part of the data in a database.

2.

- a. Table
- b. Form


Student Activity 12.2.1.5

Your database may look like the sample below. Result may vary on the information you want to put on your database.


ITEM CODE	IMAGE	DESCRIPTION	UNIT PRICE	QUANTITY	VALUE
BULBS					
CL008PBDM		PINGPONG BULB DIMMABLE 3W	K 56.10		
CL009PBDM		PINGPONG BULB NON-DIMMABLE 3W	K 33.00		
CL008PBDM		PINGPONG BULB DIMMABLE 7W	K 97.90		
CL009PBDM		PINGPONG BULB NON-DIMMABLE 7W	K 44.00		



Student Activity 12.2.1.6

1.
 - a. Click on the **CLOSE** Button, usually on the upper right-most corner of the window, to close Access.
 - b. Click on **FILE TAB** → and choose **EXIT**.
2. 
3. The importance of closing unused tables or forms while working on your database is you can site up-to-date and prioritize needs, among other tasks. It makes your screen organize while doing your work.

**Answers to Summative Activity 12.2.1**

1.
 - a. Check mark
 - b. Check mark
 - c. Cross mark
 - d. Cross mark
 - e. Check mark
 - f. Cross mark
2. Answers can be similar to these ones below.
 - a. Press the function key F1
 - b. Click on the help icon 
 - c. You can also seek Help from the internet
3. Answers can be similar to these ones below.
 - a. Record
 - b. Table
 - c. Query
 - d. Form
 - e. Fields
 - f. Record



12.2.2 Working with Data, Table and Relationships

12.2.2.1 Managing Data

Database is a collection of related tables or information that can be organised in many ways. It is like keeping a set of file or record that contains any number of separate categories or entries which are called fields.

Database is about storing your data in a table about a particular subject such as employees or products. Each record and field of the table contains data about one instance or attribute.

Viewing an Object

You can view an object in many ways.

1. Right click on the object's tab and on the context menu, select the view you would like to use.
2. You can also use the View button to select the view that you would like to use.

Navigating Between Records

You can move around the table by clicking the mouse on a particular cell in the table or by pressing the following keys on the keyboard.

Key	Function
Enter, Tab, Right Arrow	Goes to the next field
Left Arrow, Shift + Tab	Goes to the previous field
End	Goes to the last field in the record
Home	Goes to the first field in the record
Up Arrow	Goes up one line in the record
Down Arrow	Goes down one line in the record
Page Up	Goes up one screen
Page Down	Goes down one screen

You can click the Record Selector arrows to view first, previous, next or last record.



Selecting Records and Fields

Before you can edit a data or record, you have to select the data first. You can go to a particular cell and highlight the data to select it. You can also select records and fields quickly by clicking the record selector and field selector. To select more than one field or record, hold down the Shift key while clicking the field or record.



Editing Records

You can edit and make changes to your table by using the navigation buttons for easier movement around the table. To go to a specific record number, type the number in the Record Number box. The Record Pointer indicates the current record that you are in. You can also use the Tab key or the mouse pointer to move to a cell.

Open the table or form, click the cell and you can readily modify or delete the data. If the data you will be editing is from other pages, you can select the page from the Record Selector.

There are many ways to delete a text.

1. Point the mouse pointer at the end of the text you want to be removed and press the **Backspace**.
2. Place the mouse pointer at the beginning of the text you want to be removed and press **Delete**.
3. Drag the mouse pointer in order to highlight the text you want to be removed and press **Backspace**.
4. Double click the text to highlight the word, then press **Delete** or **Backspace**.

Using the Undo and Redo Buttons

If you want to cancel or correct a recent mistake, use the **Undo** button to reverse the command or action. Use the redo button to restore a previous action.

Deleting a Record

You can delete an individual record or group of records. Once you have deleted a record, it is permanently removed. There are many ways to delete a record.

1. On the **Home** tab, click **Delete**.
2. Right click the gray box on the left side of the record.
3. On the context menu, select **Delete Record**.
4. A notification box will appear, stating that you are about to delete 1 record(s), then click **Yes**.

Changing Field Properties

As you are working on your database, you may find that you need to add or change field properties. The **Field** properties will allow you to further customise a field.

Name	Description
Field Size	It is the number of characters allowed in the field.
Format	Displays the numbers, dates, times and texts.
Input Mask	Allows you to control the data pattern or format. You can also specify



	characters that will be placed in the field automatically.
Caption	You can provide your own text to be used instead of the field names in the forms, tables, reports or queries.
Default Value	Allows you to set a field property that is common in most of the entries in your database.
Required	Specifies that you have to enter a value in a field. Access will alert you if you have not entered a value.
Decimal Places	You can specify the number of decimal places.

**Student Activity 12.2.2.1**

Answer the following questions.

- Write the key to press on your keyboard to perform the following commands. Write your answers on the space provided after each number.
 - Going up one line of the record. _____
 - You want to go to the next field of your database. _____
 - Going down one screen. _____
 - To go back to the previous field. _____
 - You want to go to the last field of the record. _____
- Name the field that is being described in each statement.
 - Displays the numbers, dates, times and texts. _____
 - You can specify the number of decimal places in this field. _____
 - This field allows you to set a field property that is common in most of the entries in your database. _____
 - It allows you to specify characters that will be placed in the field automatically. _____
 - It is the number of characters allowed in the field. _____



12.2.2.2 Controlling and Searching Records

Sorting Records

Sorting is arranging a list in a specific order. It is a powerful process when applied to a large number of records. You can sort alphabetically by ascending or descending order. You can sort by surname, first name, zip code or any field. Follow the steps below on how to sort records.

For this topic you can make use of the data below so you can follow the steps that will be discussed later. This will be the template for the activities that will follow. Before you continue with the lesson, you must first create a table using the template below. Name this table as **Customers**.

1. Open the table that you just created using the template provided above.

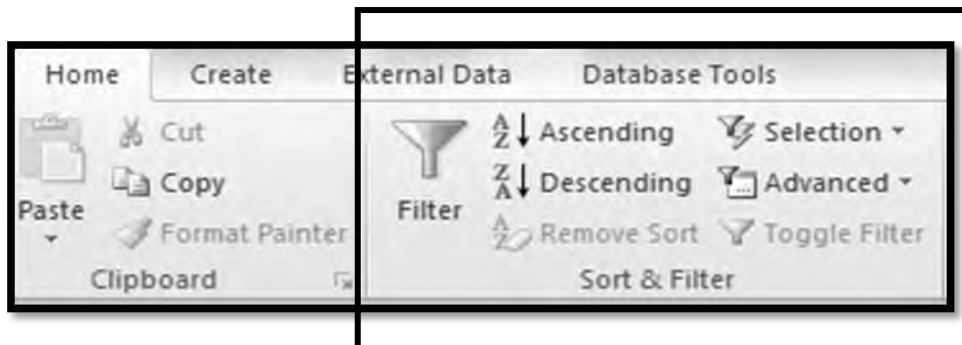
ID	First Name	Last Name	Street Address	City	State	Zip Code	Email
1	Tracey	Beckham	7 East Walker Dr.	Raleigh	NC	27612	beck@email.com
2	Lucinda	George	789 Brewer St.	Cary	NC	27513	lugeo@email.com
3	Jerrold	Smith	211 St. George Ave.	Raleigh	NC	27610	texj@email.com
4	Brett	Newkirk	47 Hillsborough St.	Raleigh	NC	27608	newkb@email.com
5	Chloe	Jones	23 Solo Ln.	Raleigh	NC	27609	lo@email.com
6	Quinton	Boyd	4 Cypress Cr.	Durham	NC	27714	denqui@email.com
7	Alex	Hinton	1011 Hodge Ln.	Cary	NC	27513	dhoda@email.com
8	Nisha	Hall	123 Huntington St.	Raleigh	NC	27612	hall@email.com
9	Hillary	Clayton	2516 Newman	Raleigh	NC	27606	mshill@email.com
10	Kiara	Williams	9014 Miller Ln.	Durham	NC	27714	rogki@email.com
11	Katy	Jones	456 Denver Rd.	Cary	NC	27513	yjonesk@email.com
12	Beatrix	Joslin	85 North West St.	Raleigh	NC	27606	jozbee@email.com
13	Mariah	Allen	12 Jupe	Raleigh	NC	27605	mallen@email.com
14	Jennifer	Hill	2100 Field Ave.	Raleigh	NC	27609	hillj@email.com
15	Jaleel	Smith	123 Hill Top Drive	Garner	NC	27610	jsmi@email.com
16	Cody	Hayes	65 North St.	Raleigh	NC	27609	richhi@email.com
17	Amaya	Gibson	5 West St.	Raleigh	NC	27612	alg@email.com
18	Cynthia	Love	7825 Venice Ct.	Raleigh	NC	27605	topvp@email.com
19	Cindy	Freeman	78-A Meadowview Ln.	Raleigh	NC	27609	cindyfree@email.com
20	Barbara	Jameson	29 North Luke Ct.	Raleigh	NC	27609	bjaes@email.com

2. Click the field that you would like to sort. For this example, click the **Last Name**.

First Name	Last Name	
1 Tracey	Beckham	71
2 Lucinda	George	78
3 Jerrod	Smith	21
4 Brett	Newkirk	47
5 Chloe	Jones	23
6 Quinton	Boyd	40
7 Alex	Hinton	10
8 Nisha	Hall	12
9 Hillary	Clayton	25
10 Kiara	Williams	90
11 Katy	Jones	45



3. On the **Home** tab on the Ribbon, and locate the **Sort & Filter** group.
4. **Sort** the field by selecting the **Ascending** or **Descending** command.
 - a. Select **Ascending** to sort text A to Z or to sort numbers from smallest to largest. We will select this in our example because we want the last names to be in A-to-Z order.
 - b. Select **Descending** to sort text Z to A or to sort numbers from largest to smallest.

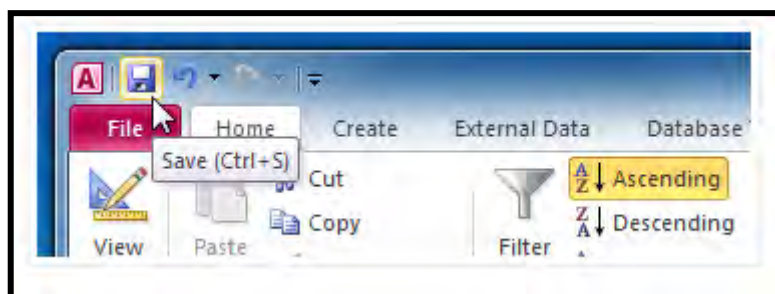


5. The table will now be sorted by the selected field.

	First Name	Last Name
102	Theodore	Achi
195	Kris	Ackerman
78	Michiko	Akiwana
188	Nathan	Albee
13	Mariah	Allen
37	Carol	Allenson
38	Zoey	Altman
163	Franz	Angelou
87	Robert	Armisen
47	Hakim	Auden

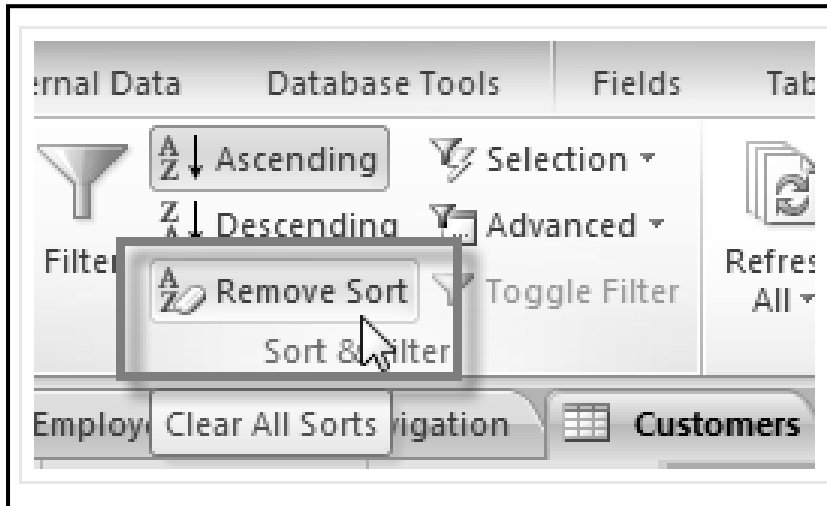
This is the result after applying Ascending Command.

6. To save the new sort, click the **Save** command on the Quick Access toolbar.





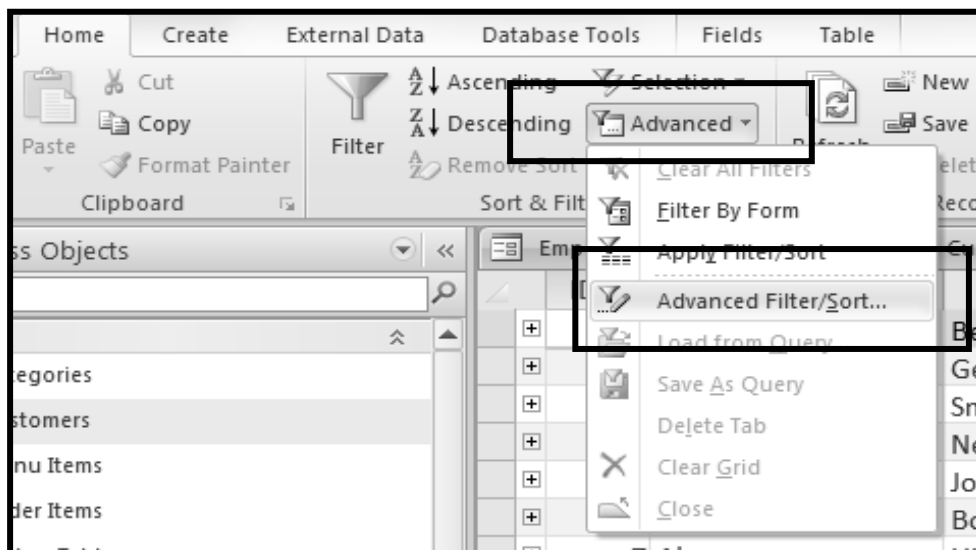
Note: After you save the sort, the records will stay sorted that way until you perform another sort or remove the current one. To remove sort, simply click the **Remove Sort** command.



Sorting Records by Multiple Fields

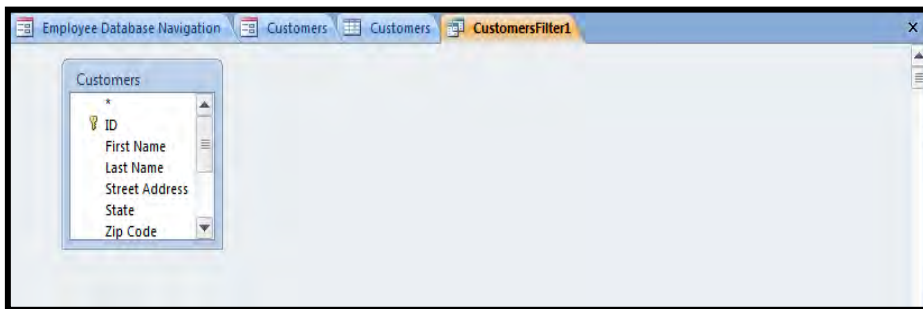
You can do a multifield sort where you will specify a secondary field in case of a tie in the primary sort field. Follow the steps below on how to sort records by multiple fields.

1. On the **Home** tab on the Ribbon, and locate the **Sort & Filter** group and click on **Advanced** and select **Advanced Filter/Sort**.



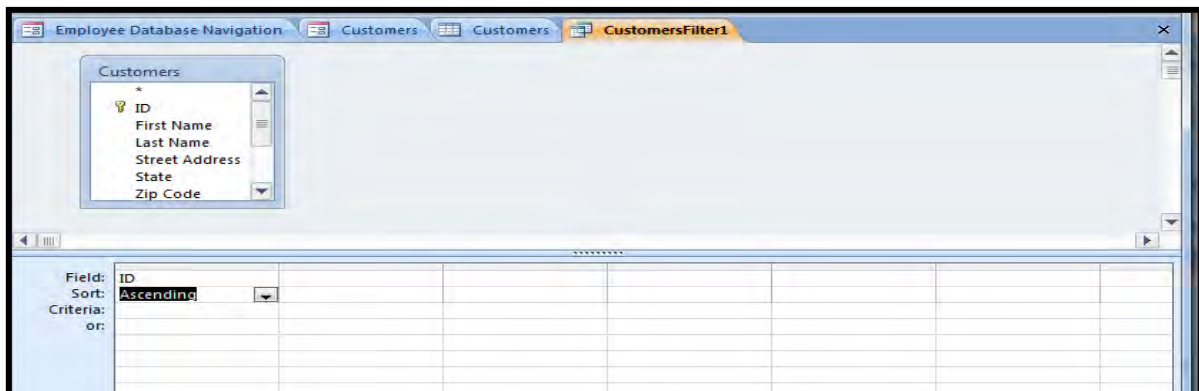


2. The **Query grid** will appear on the window.



3. Drag the fields you want to sort into the grid in the order you want to apply them.

4. For each field in the grid, click the arrow to choose between **Ascending** and **Descending**.

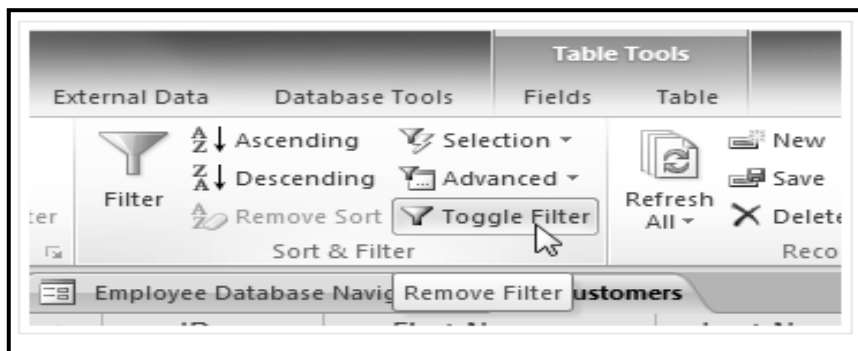


The image displays the Ascending command

5. On the **Sort & Filter** group, click **Toggle Filter**.



Note: Toggling your filter allows you to turn it in and off. To view records without the filter, simply click the Toggle Filter command. To restore the filter, click it again





Filtering Records

Filter can temporarily isolate and view a specific set of records to work with while you have a form or datasheet displayed.

Filter is a simple form of a query – they are used primarily to quickly view a subset of records when you are using a form or datasheet. A filter is a set of criteria applied in order to sort a data. A filter removes records that do not match the specified criteria. Filters can only be viewed and they cannot be saved.

Types of Filters

- Filter by form** allows you to enter values into a form to specify filter criteria. To select a record, you can encode criteria into a form.
- Filter by selection** retrieves data that match a selected example. You can highlight the value in the field as the criteria for the selection.
- Filter by excluding selection** excludes the value you highlight as the criteria or the selection.
- Advanced filter/sort** allows you to enter complex multiple criteria for filtering and to specify a sort order. This filter duplicates a query or creates a more complicated selection.

A. Create Simple Filter

Follow the steps below on how to create a simple filter.

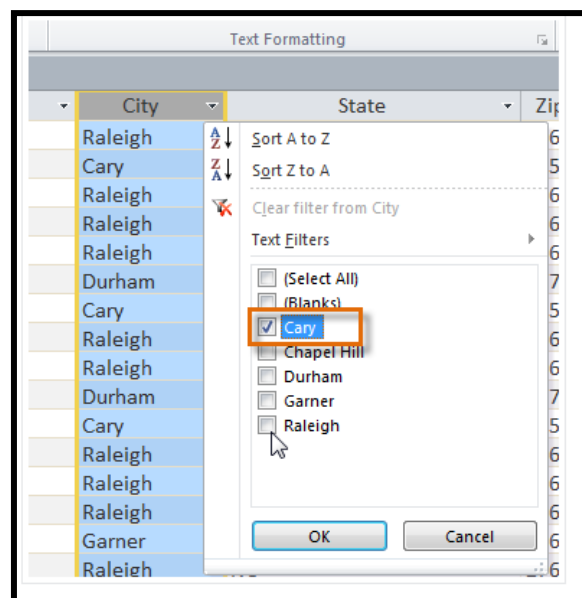
- Open the template Customers that you have created
- Click the **drop-down arrow** next to the field you want to filter by. You will filter by the city because we want to see a list of customers who live in a certain city

Last Name	Street Address	City	State
Beckham	7 East Walker Dr.	Raleigh	NC
George	789 Brewer St.	Cary	NC
Smith	211 St. George Ave.	Raleigh	NC
Newkirk	47 Hillsborough St.	Raleigh	NC
Jones	23 Solo Ln.	Raleigh	NC
Boyd	4 Cypress Cr.	Durham	NC
Hinton	1011 Hodge Ln.	Cary	NC
Hall	123 Huntington St.	Raleigh	NC
Clayton	2516 Newman	Raleigh	NC
Williams	9014 Miller Ln.	Durham	NC
Jones	456 Denver Rd.	Cary	NC
Joslin	85 North West St.	Raleigh	NC
Allen	12 Jupe	Raleigh	NC
Hill	2100 Field Ave.	Raleigh	NC
Smith	123 Hill Top Drive	Garner	NC
Hayes	65 North St.	Raleigh	NC
Gibson	5 West St.	Raleigh	NC
Love	7825 Venice Ct.	Raleigh	NC
Freeman	78-A Meadowview Ln.	Raleigh	NC
Jameson	29 North Luke Ct.	Raleigh	NC
Jones	63-C Chapel Ct	Durham	NC



3. A drop-down menu with a checklist will appear. Only the check items will be included in the filtered results. Use the following options to determine which items will be included in your filter:

- **Select** and **deselect** items one at a time by clicking their check boxes. Here, you will deselect all of the options except for **Cary**.
- Click **Select All** to include every item in the filter. Clicking **Select All** a second time will deselect at all times.
- Click **Blank** to set the filter to find only the records with no data in the selected field.



4. Click **OK**. The filter will be applied. Customers table now displays only customers who live in Cary.

Last Name	Street Address	City	State
George	789 Brewer St.	Cary	NC
Hinton	1011 Hodge Ln.	Cary	NC
Jones	456 Denver Rd.	Cary	NC
Kellerman	76 Murphy Ave.	Cary	NC
Hamm	1221 Coretta Scott Way	Cary	NC
James	4221 Basil Ct.	Cary	NC
Slobodowski	7 Greene St.	Cary	NC
White	911 Oregon Tr.	Cary	NC
Sigrudsdatter	55 Cameron Ct.	Cary	NC
Yuen	8 Marcus Ln.	Cary	NC
Hanlon	31 Crispus Ct. Apt B	Cary	NC



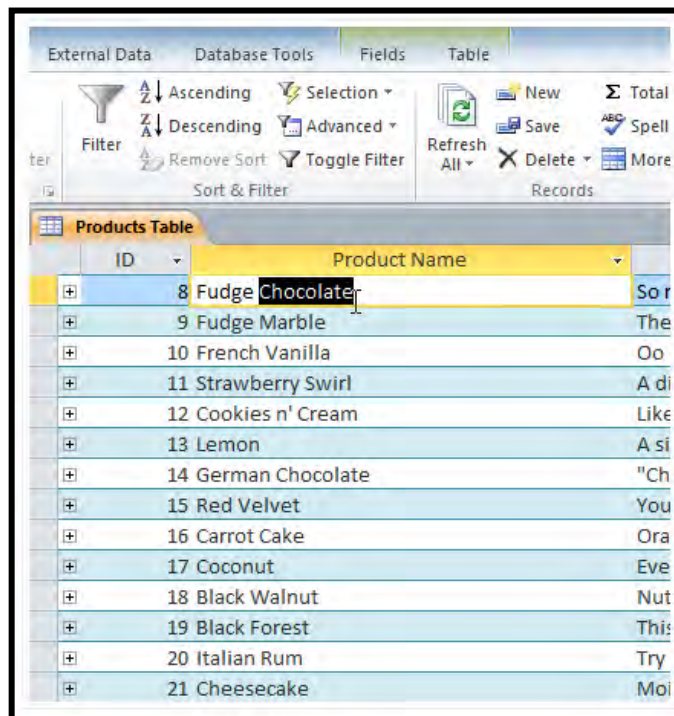
B. Create Filter from a Selection

Filtering by Selection allows you to select specific data from your table and find data that is similar or dissimilar to it. For instance, if you were working with a bakery's database and wanted to search for all products whose names contained the word **chocolate**, you could select that word in one product name and create a filter with that selection. Creating a filter with a selection can be more convenient than setting up a simple filter if the field you are working with contains many items.

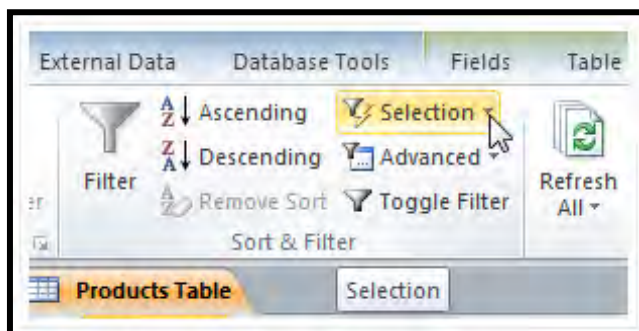
For this topic use the template below and save using the file name Pastries.

Product Typ	Products Table.Product Name	Sales Unit.Product Name	SumOfQuan
Cakes	Black Forest	Single	8
Cakes	Black Walnut	Single	5
Cakes	Buche de Noel (Christmas Cake)- Winter	Single	12
Cakes	Carrot Cake	Single	9
Cakes	Cheesecake	Single	18
Cakes	Coconut	Single	2
Cakes	Cookies n' Cream	Single	1
Cakes	French Vanilla	Single	2
Cakes	German Chocolate	Single	2
Cakes	Gingerbread - Winter	Single	4
Cakes	Italian Rum	Single	4
Cakes	Red Velvet	Single	1
Pies	Apple	Single	5
Pies	Apple Crumb	Single	3
Pies	Chocolate Chess	Single	5
Pies	Coconut Cream	Single	1
Pies	French Silk	Single	5
Pies	Key Lime	Single	6
Pies	Peanut Butter Chocolate	Single	3
Pies	Pecan	Single	10
Pies	Pumpkin	Single	9
Pies	Sweet Potato	Single	3

1. Open the template Pastries that you have just created.
2. Select the cell or data you want to create a filter with. You need to see a list of products that contain the word **chocolate** in their names, select the word **chocolate** in the **Product Name** field.



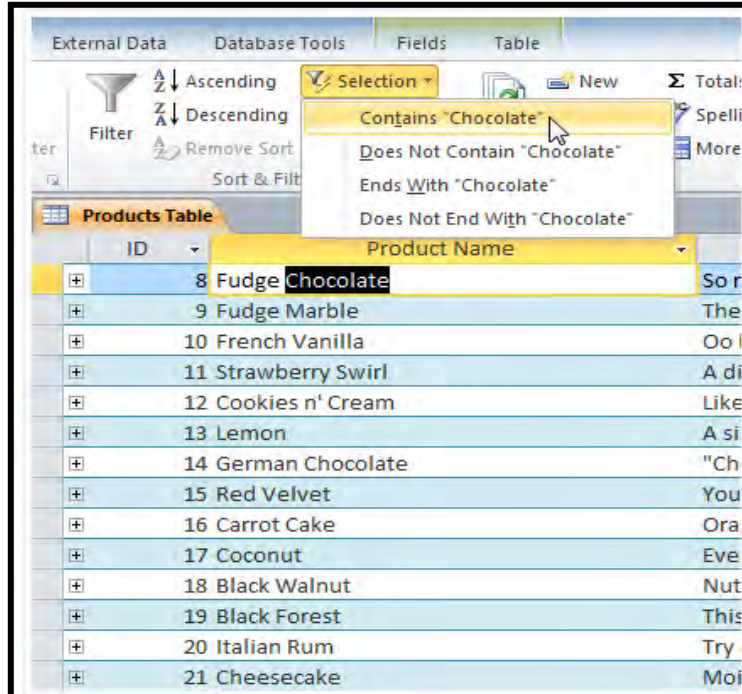
3. Select the **Home** tab on the Ribbon, and locate the **Sort & Filter** group.
4. Click the **Selection** drop-down arrow.



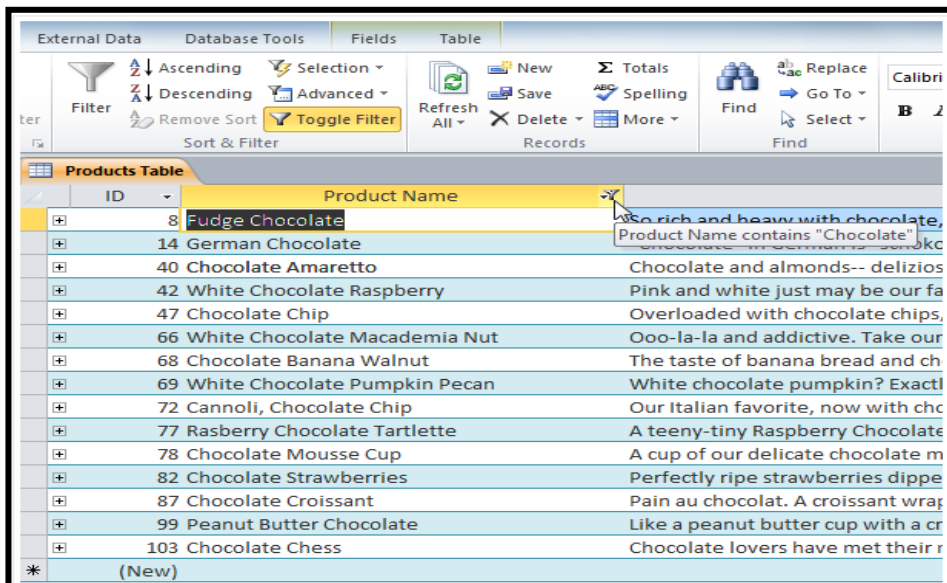
5. Select the type of filter you want to set up:
 - **Contains** includes only records with cells that contain the selected data. We will select this because we want to see records that contain the word **chocolate** anywhere in the title.
 - **Does Not Contain** includes all records except those with cells that contain the selected data.
 - **Ends with** includes only records whose data for the selected field ends with the search term.



- **Does Not End With** includes all records except those whose data for the selected field ends with the search term.



6. The filter will be applied. Your table should now display only the products with **chocolate** in their names.



C. Filtering numbers with a search term

The process for filtering numbers with a search term is similar to the process for filtering text. However, different filtering options are available to you when working with numbers. In addition to **Equals** and **Does not Equal**, you can choose:



- **Greater Than**, to include only records with numbers in that field that are greater than or equal to the number you enter.
- **Less Than**, to include only records with numbers in that field that are less than or equal to the number you enter.
- **Between**, to include records with numbers that falls within a certain range.

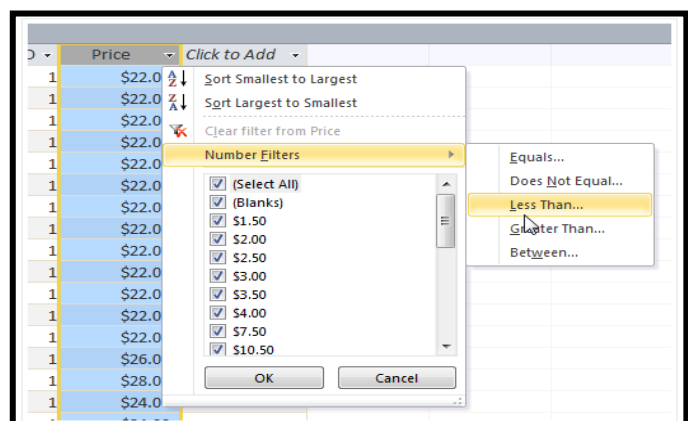
Follow the steps below on how to filter numbers with a search term.

1. Click the **drop-down arrow** next to the field you want to filter by. We want to filter the records in our menu items table by price, so you will click the arrow in the **Price** field.

The screenshot shows the Microsoft Access interface with the 'Menu Items' table open. The 'Price' column is highlighted, and a mouse cursor is clicking the drop-down arrow next to the first entry, '\$22.00'. The table contains the following data:

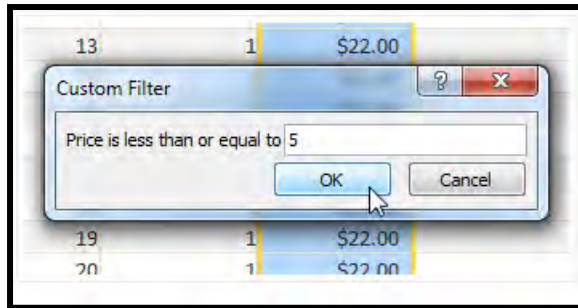
ID	Product ID	Sales Unit ID	Price
6	8	1	\$22.00
7	9	1	\$22.00
8	10	1	\$22.00
9	11	1	\$22.00
10	12	1	\$22.00
11	13	1	\$22.00
12	14	1	\$22.00
13	15	1	\$22.00
14	16	1	\$22.00
15	17	1	\$22.00
16	18	1	\$22.00
17	19	1	\$22.00
18	20	1	\$22.00
19	21	1	\$26.00
20	22	1	\$28.00
21	23	1	\$24.00
22	24	1	\$24.00

2. In the drop-down menu, hover your mouse over the words **Number Filter**. From the list, select the way you want the filter to match your search term. In this example, you will create a filter that will show inexpensive items only, select **Less Than**.

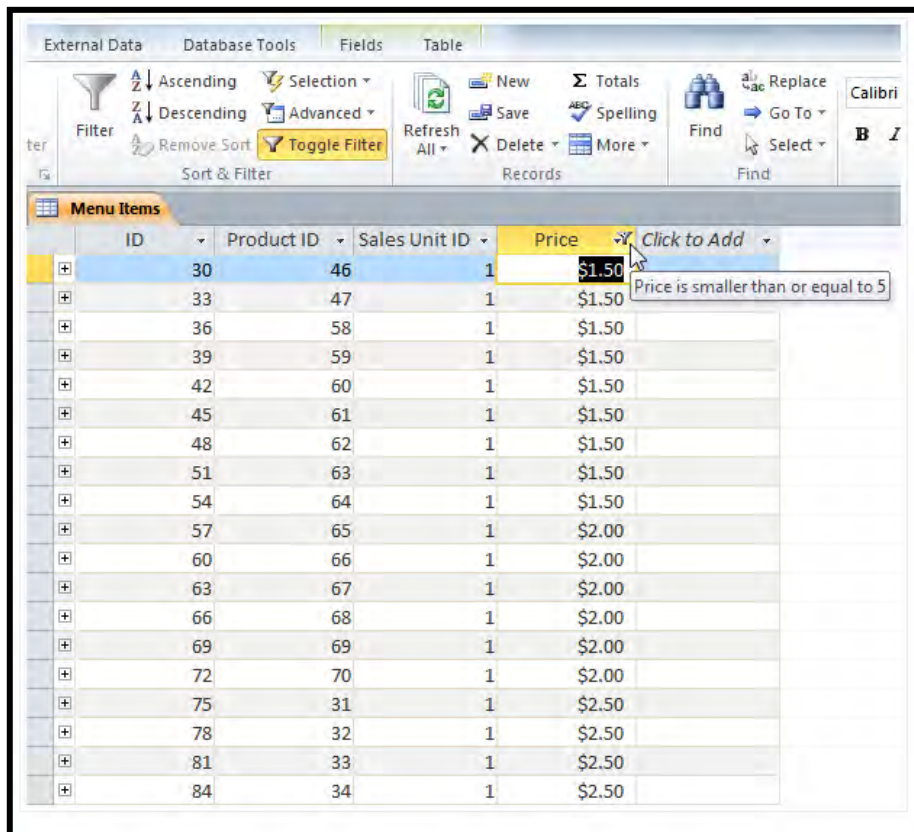




- 3. The **Custom Filter** dialog box will appear. Type the number or numbers you want to use in your filter. Type 5 so the filter will show only menu items that cost \$5 or less.



- 4. Click **OK**. The filter will be applied.





Student Practical Activity 12.2.2.2

Make use of the data provided and perform the following:

1. Open the template Customer.
2. Sort the Customer's Last Name in ascending order.
3. Filter the list of customers that lives in Durham.
4. Provide a snapshot or print screen image of the output.

12.2.2.3 Creating Tables

What is Database Table?

All database objects rely on the existence of a database table. A table contains grids of rows and columns that contain your data about a specific topic, such as name of products or name of persons. Tables organise data into columns (called fields) and rows (called records).

Each record contains data about one instance of the table subject, such as a particular employee. A record is also commonly called a row or an instance.

Each field contains data about one aspect of the table subject, such as first name or email address. A field is also commonly called a column or an attribute.

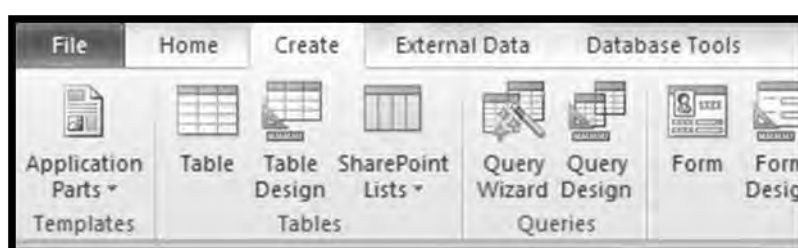
Designing a Table

Before entering data in each of the sections in the table, you must first know the data you need to enter in the fields.

- **Field Name** contains the person's name, address, phone and birthday.
- **Data Type** tells Access what kind of information can be stored in the field.
- **Description** explains the data in the field. It will only appear in the status bar but not in the table.

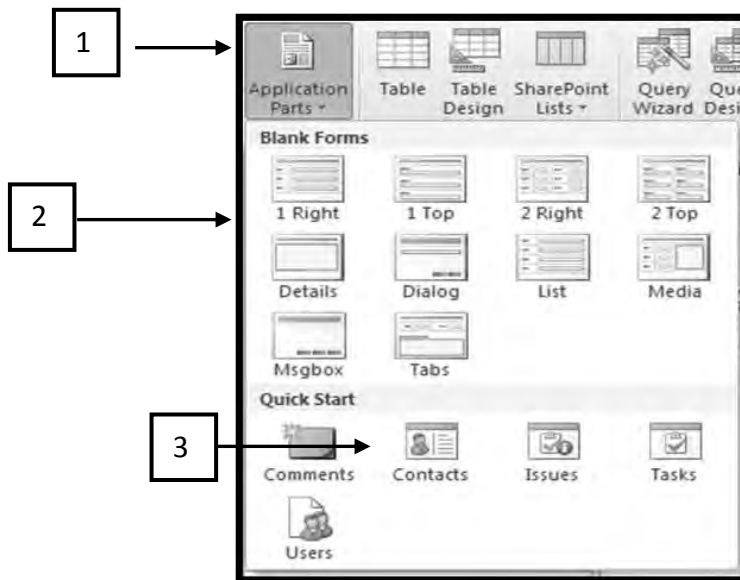
Creating a Table from the Application Parts

This is an easy way to create a table. Follow the steps below on how to create a table from the Application Parts.





1. Click **Application Parts** and a list of templates showing tables or combination of tables and reports will show.
2. Select the table that you would like to use.

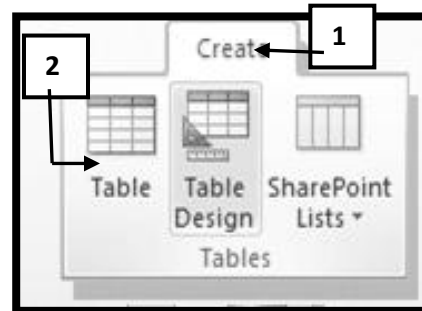


3. As an example, click **Contact** and the **Navigation Pane** will show Tables, Queries, Forms and Reports templates.

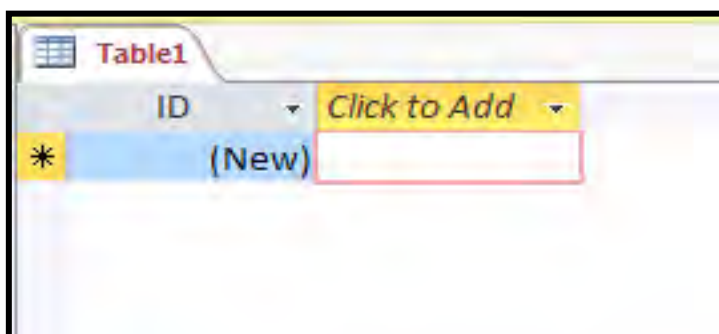
Creating a Table in Datasheet View

Datasheet view provides a visual way to create a table. You start by creating a new, blank database or by adding a new table to an existing database. Either method opens a new table in Datasheet view.

1. Click the **Create** tab.
2. In the Tables group, click **Table**.



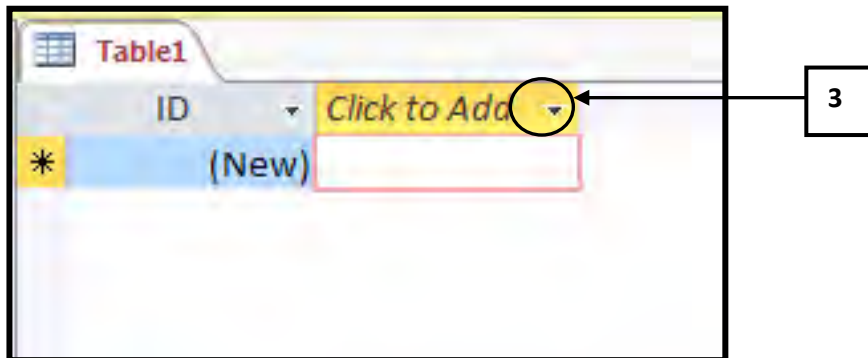
Once you clicked the Table in the Create Tab it will show you similar to the one below.





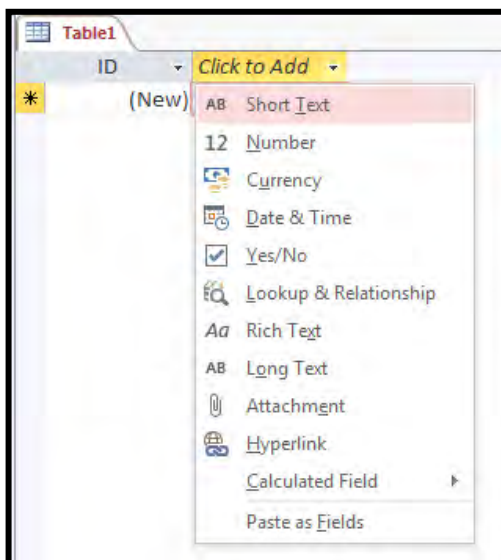
Notice that the new table contains a field called ID. That is your primary key, so you do not need to create one.

3. Click the down arrow at the right of the first blank field header and select a data type.

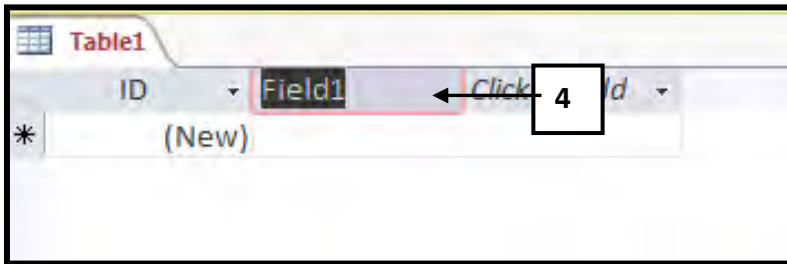


To add your fields, click the first blank field header – the words **Click to Add**. That starts a menu of data types, and you select a data type for the field. After that, the field header then becomes available for writing.

Below is the sample screen shot once you click on the arrow to select the data type.



4. Click the blank field header and enter a name for the field. You just type the field name and press **ENTER**. Doing that shifts the focus to the next field, where you repeat the process. As you work, remember that if your field names contain more than one word, do not use spaces between the words.



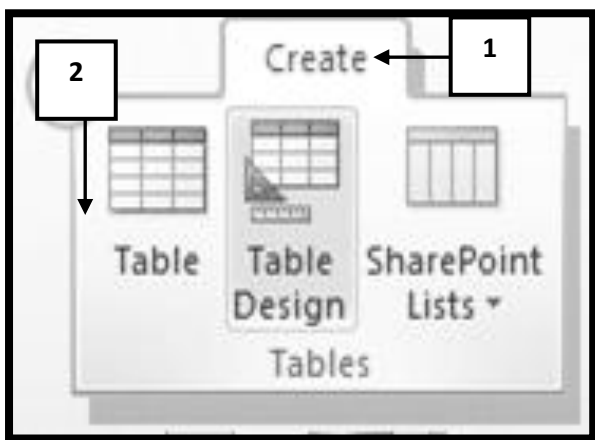
Note: It is a common practice to remove spaces entirely, or separate each word with an underscore. Also, at this point, do not add any foreign key fields or lookup fields. You will add one type of lookup field later in the upcoming lessons. You will add foreign keys when you create your table relationships. This can be found in the second table and refers to the primary key on the first table. Foreign key is a field in one table that uniquely identifies a row of another table. More of this will be discussed in the next lesson.

5. Repeat steps 3 and 4 until you have created all the fields for the table.
6. When you are done, press **CTRL+S** and give the table a name.

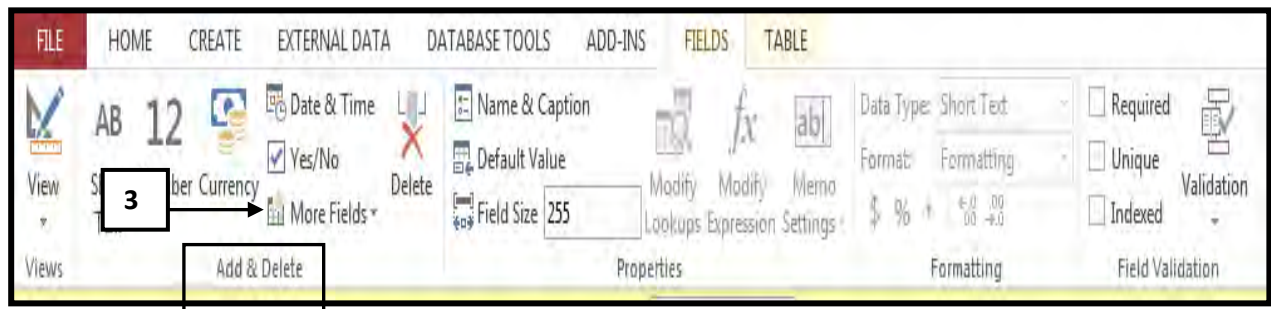
Creating a Table using Quick Start fields

Quick Start fields are a faster way to build parts of a new table. The fields capture data for common business needs, and all field names and data types are set for you. Access adds the fields for you, with field names data types already set. Follow the steps below on how to create a table using the Quick Start fields.

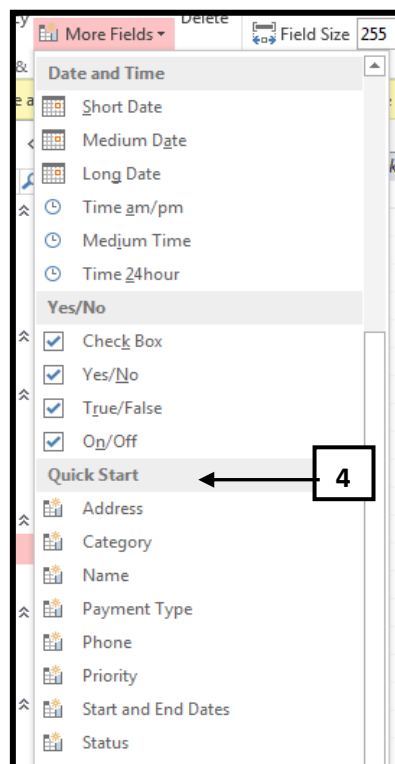
1. Click the **Create** tab.
2. In the **Tables** group, click **Table**.



3. Click on the **Fields** tab, in the **Add & Delete** group, click **More Fields**.



4. Scroll down the menu to the **Quick Start** section and select the type of field you want to add to your table, such as **Address**, **Name**, or **Start and End Dates**.



5. Use a combination of Quick Start fields and Datasheet view to finish creating your table.
6. When you are done, press **CTRL+S** and give the table a name.

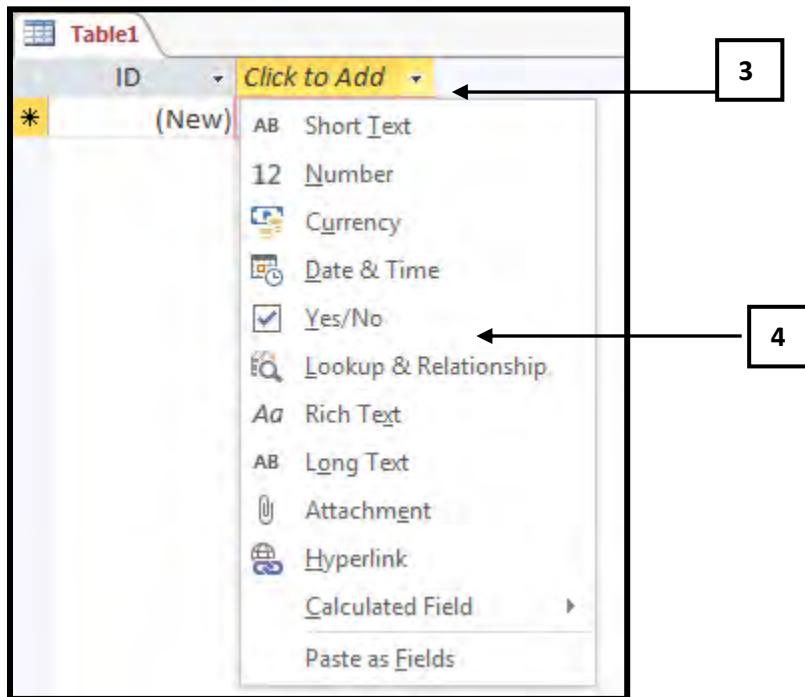
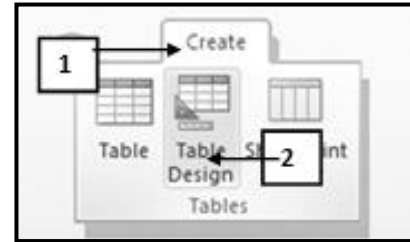
You can use the new fields right away — just start entering data — or you can rename them, and remove fields you don't need. Also, you may have noticed what seem to be spaces in the field names. Do not worry; you are not looking at the actual field names. Instead, you are looking at captions, user-friendly text associated with each field name.

Creating a Table in Design View

Design view allows you to build a table from scratch and set or change every available property for each field. You can also open existing tables in Design view and add, remove, or change fields. Follow the steps below on how to create a Table in the Design View.



1. Click the **Create** tab.
2. In the **Tables** group, click **Table Design**.
3. Click **Click to Add**, to add field.



4. Select data types for each field from the lists in the **Data Type** column.
5. Enter field names in the **Field Name** column.



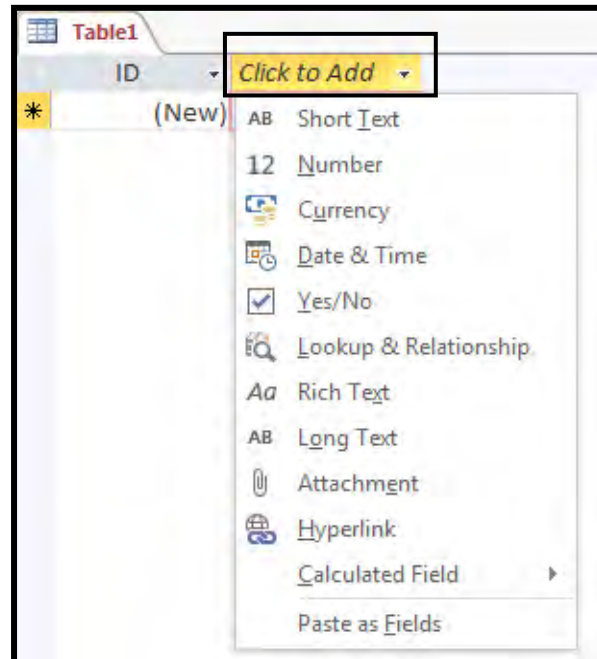
6. When finished, press CTRL+S and give the table a name.

Setting the Fields in a Table

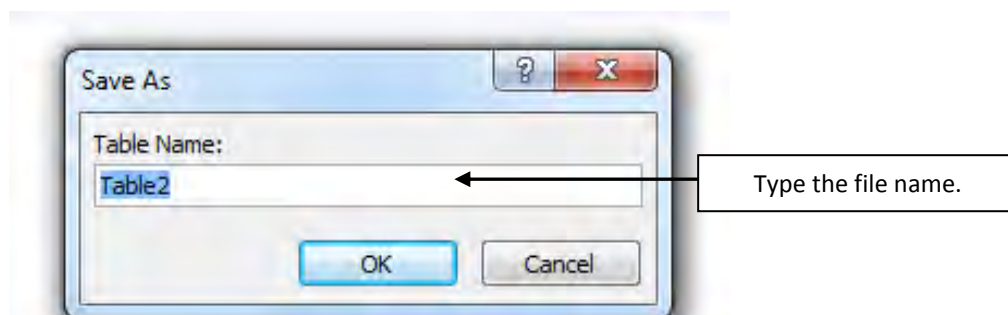
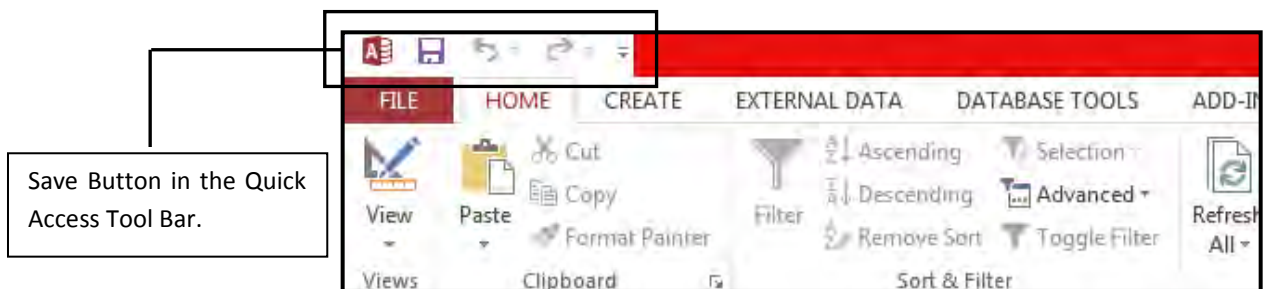
When adding a field in your table, the first step that you will go through is to **Click to Add** a field. On this step Access will now ask you what type of files are you trying to create. Follow the steps below.



1. Click the **Click to Add** tab. Access will display the different types of fields that you can use in creating a table.



2. Choose the data type for each field that you will use. Here choose the data type which depends on the data to be entered on each field. Select the **Data Type: Text** if you want text and numbers on your table. Select **Number** if you want data to be calculated. Select **Hyperlink** for an email field. Other types will be discussed further on this lesson.
3. To save the table, click the **Save** button from the **Quick Access Toolbar** and on the **Save dialog box** type your file name.



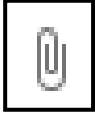
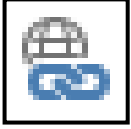


Field Types

The following below are the different field types and their functions.

Icon	Name	Function
	Short text	Allows you to add texts
	Number	Allows you to add numbers
	Currency	Allows you to add currency
	Date & Time	Allows you to add date and time
	Yes/No	Allows you to add more fields
	Lookup and Relationships	Allows you to create and view lookup and relationships
	Rich Text	Allows you to format text
	Long text	Allows you to add memo



	Attachment	Allows you to add attachment
	Hyperlink	Allows you to create hyperlink

Characters to avoid when creating a field name

You can use spaces in field names, but they make it difficult to write VBA code and expressions. However, you cannot use the following characters or symbols in field names or object names. In Access, objects are any of the components that make up your database. Tables, queries, forms and other components are all "objects."

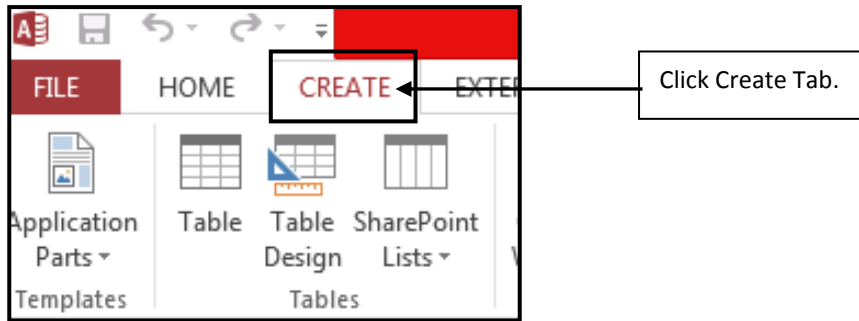
- a. Periods (.)
- b. Forward slashes (/)
- c. Asterisk (*)
- d. Semicolons (;)
- e. Colons (:)
- f. Exclamations points (!)
- g. Pound sign (#)
- h. Ampersand (&)
- i. Dashes (-)
- j. Question Marks (?)
- k. Double quotes (“
- l. Single quotes (‘)
- m. Dollar sign (\$)
- n. Percent sign (%)



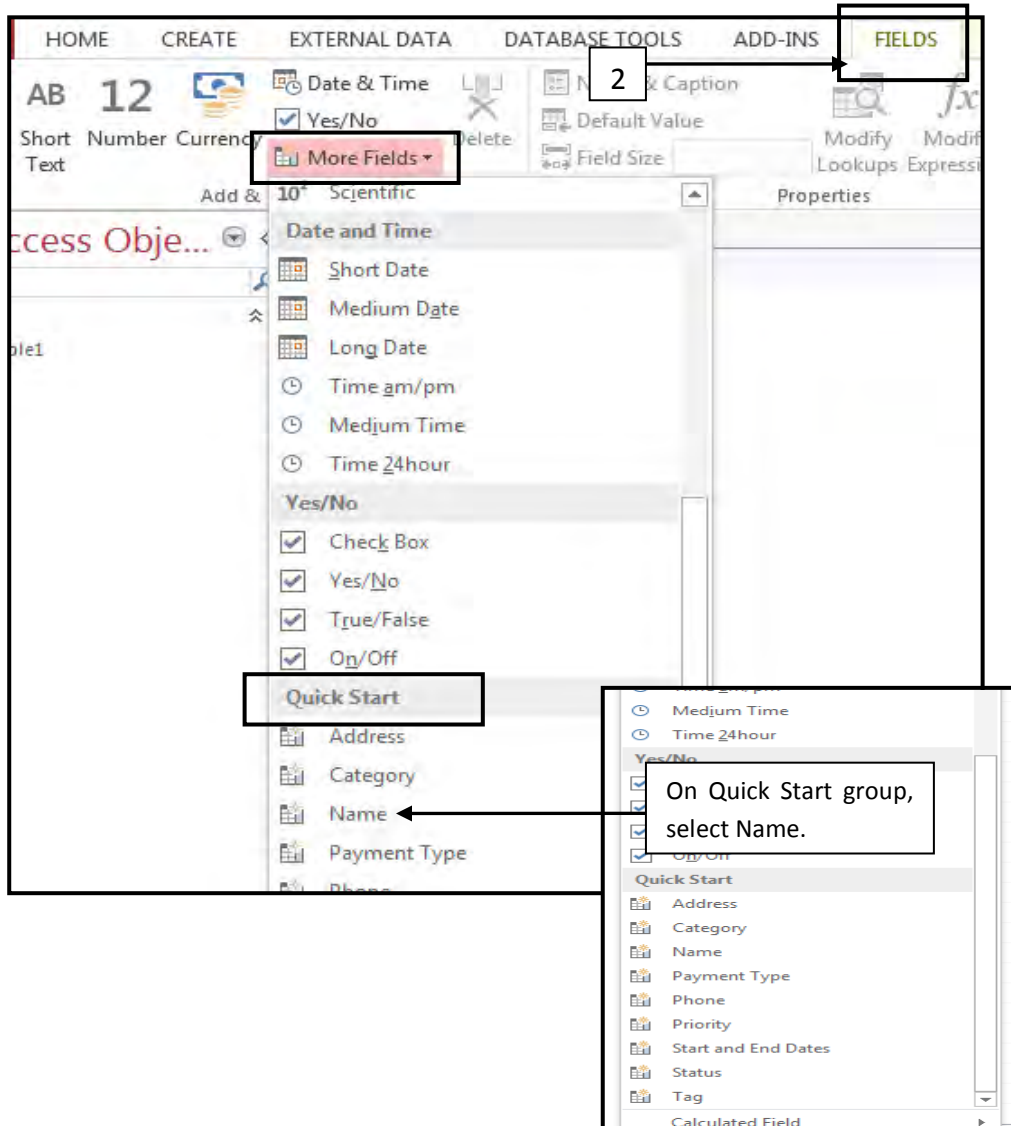
Creating a Table from the Layout View

This is the easiest way to construct a table. Follow the steps below on how to create a Table from the Layout View.

1. Click **Create tab**.



2. Click Table, click the **Fields tab**, and click **More Fields**.





3. On the list, you will see the **Quick Start** group, select **Name** and the window will display Last Name and First name fields.

Your table should look like the sample below.

ID	Last Name	First Name	Click to Add
*	(New)		

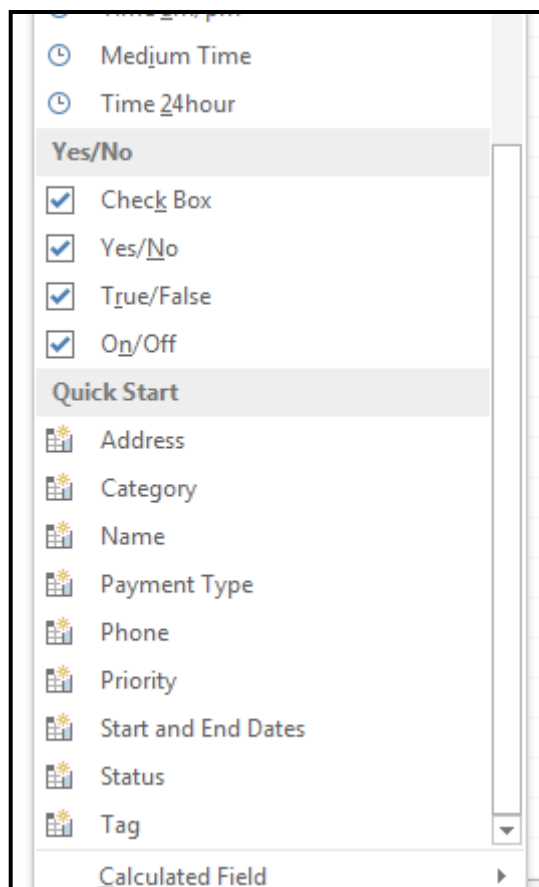
Table after adding Name from Quick Start group



Note: You can delete the fields that you will not use by right clicking the Field name and on the context menu, click Delete or on the Ribbon; click the Delete button.

4. Go back to the **More Fields** and select **Address** and the window will display the standard address fields such as City, State, Province and Country.

On Quick Start group, select Address.



Your table should look like the sample on the next page.



ID	Last Name	Address	City	State Province	ZIP Postal	Country Region	First Name	Click to Add
*	(New)							

Table after adding Address from Quick Start group

- To add additional fields manually, click the **Click to Add** arrow. On the list, select **Text** if you want your field to contain text or numbers. On the field name area, type the name for your new field.

City	State Province	ZIP Postal	Country Region	First Name	Click to Add

Click to add more fields.

- To save the table, click the **Save** button from the **Quick Access Toolbar** and on the **Save Dialog box** type your file name.

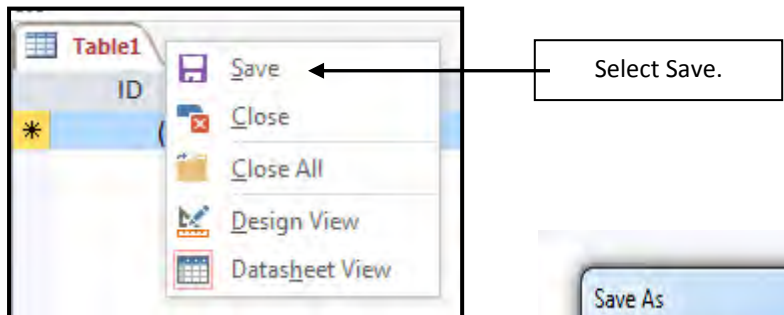
Saving the Table

You can save a table in many ways. Follow the steps below on how to save a Table.

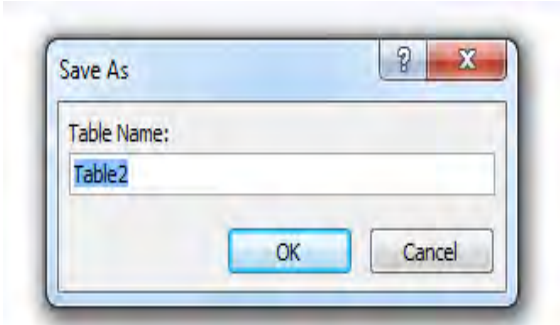
- On the **Quick Access Toolbar**, click the **Save** button.

OR

- Right click on the Table tab and on the context menu, select **Save**.



- On the **Save Dialog box**, type your table name.



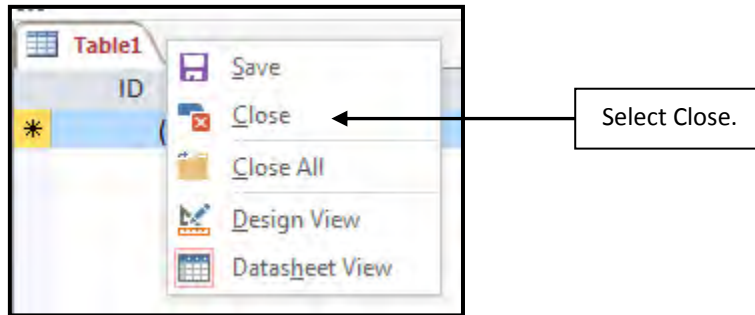
- Click **OK**.



Closing the Table

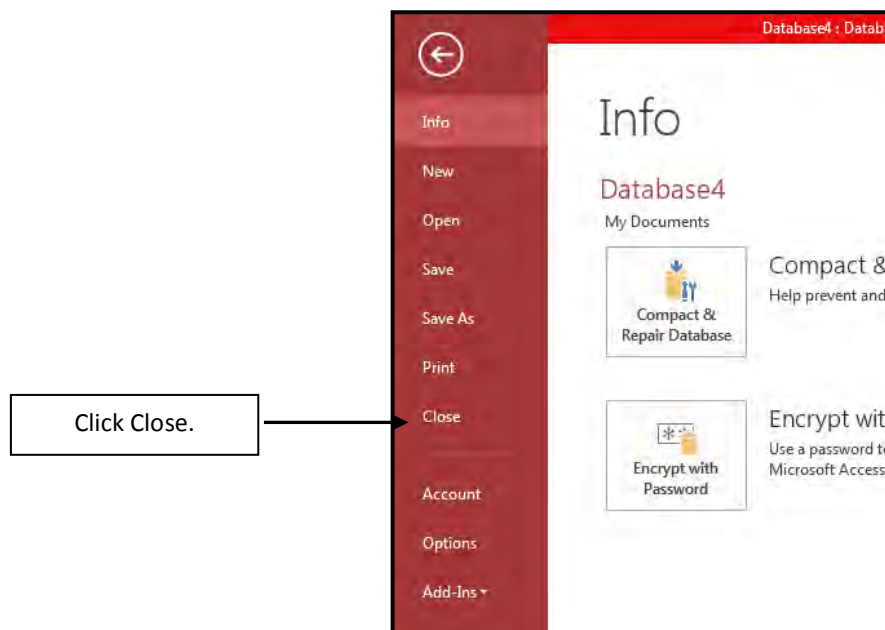
All the tables that you have opened will be displayed with their corresponding tabs. You have to close the table when there are many open tables or when you finished using the table. You also have to close a table before performing a specific task such as renaming a table. Follow the steps below on how to close a Table.

1. Right click on the table tab.



OR

2. On the **File** tab, select **Close**.



**Student Activity 12.2.2.3**

Answer the following.

1. True or False. Decide whether the statement is correct write True, otherwise write False if the statement is not true on the space provided.

a. There is only one way to create a table in Access 2010.

b. Field names can be deleted.

c. It is not possible to add more fields on your table.

d. You can rename your table.

e. If you want to create a table from scratch you start creating using Design view.

f. Datasheet view provides a visual way to create a table.

g. There are number of ways to save your table.

h. Each table has its corresponding table tabs.

i. Dollar sign (\$) should be avoided when creating a field name.

j. Data type Text allows you to add text and numbers on your table.



2. Create a Sales Representative Directory table that will contain the following. What data type should be used in each field name? Complete the table.

Field Name	Data Type	Description
ID Number		Sales Representative's ID Number
Full Name		Sales Representative's full name
Address		Sales Representative's address
Province		Sales Representative's province
Age		Sales Representative's age
Birthday		Sales Representative's date of birth
Mobile Number		Sales Representative's mobile number
Email address		Sales Representative's email address
Items Sold		Sales Representative's sold items
Item Price		Price of items



Student Practical Activity Open your MS Access and create a Sales Representative Table using the completed table above as your data to be used in the table.

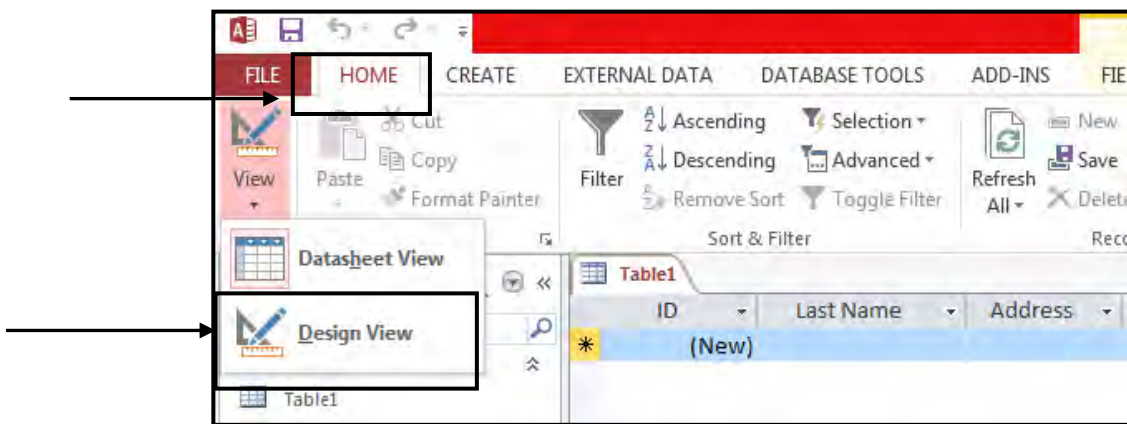



12.2.2.4 Customising Tables

Setting the Primary Key

A primary key is a field or value that will uniquely identify the record. For example, in a student’s table, the primary key could be the student number and not the last name because a student number is unique to each student. Follow the steps below on how to set the primary key. On this example you can use the table you created from the previous lesson. Otherwise, creating a new table will be still applicable.

1. On the **Home** tab, click **View** and select **Design View**.



 Note: Access will be asking you to save your table first before you can finally assign a Primary key.

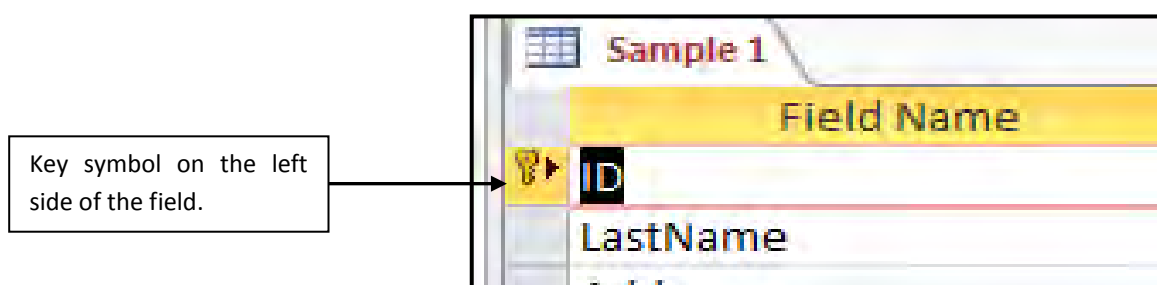
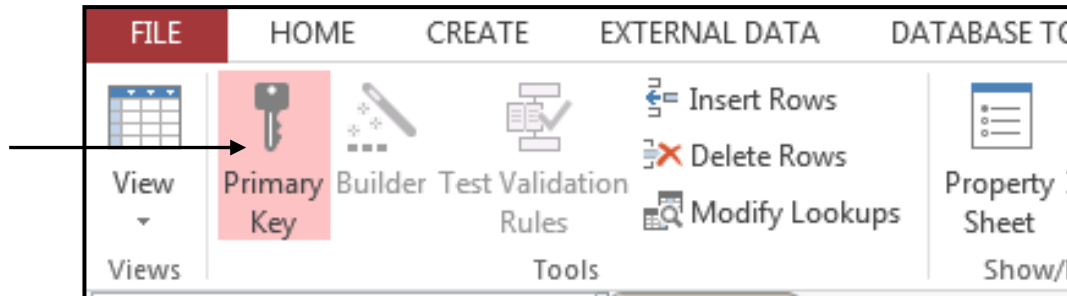
2. Click the row for the field that you want to set as the primary key.

Field Name	Data Type	Description (Optional)
ID	AutoNumber	
LastName	Short Text	
Address	Short Text	
City	Short Text	
StateProvince	Short Text	
ZIPPostal	Short Text	
CountryRegion	Short Text	
FirstName	Short Text	

Field Properties	
Field Size	Long Integer
New Values	Increment
Format	
Caption	
Indexed	Yes (No Duplicates)
Text Align	General



- On the Ribbon, click **Primary Key** and a key symbol will be displayed on the left side of the field.




Modifying Tables

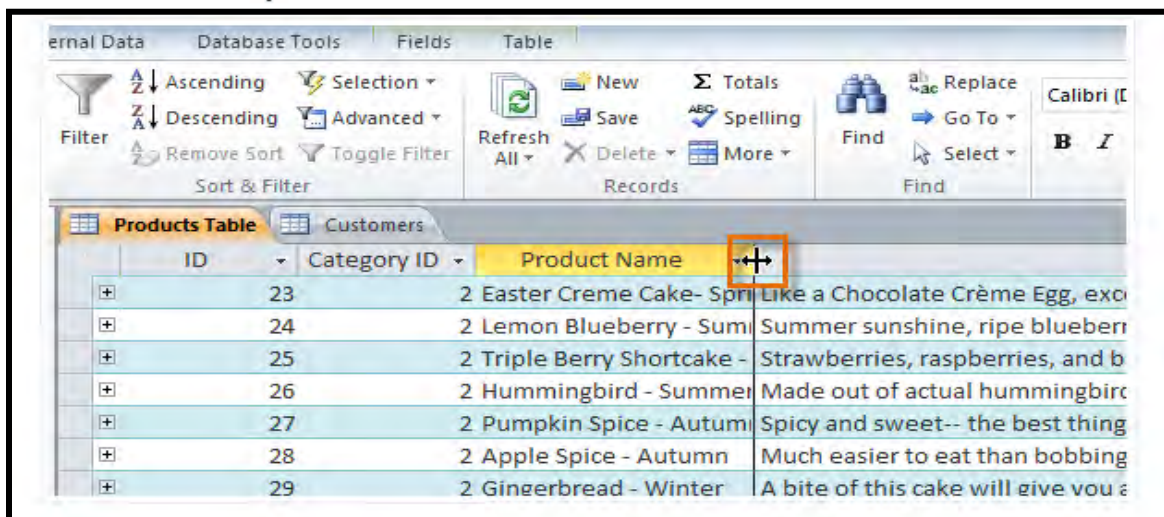
When you modify your table the changes you can make to your table will not only look your table nice but it can make the table easier to read too.

Resizing fields and rows

You can make use of the table you have created in the previous lessons for this topic. Images on this topic are just examples on how it will look like. Follow the steps below on how to resize fields and rows.

To resize a field

- Place your cursor over the **right** gridline in the **field title**. Your mouse will become a double arrow .



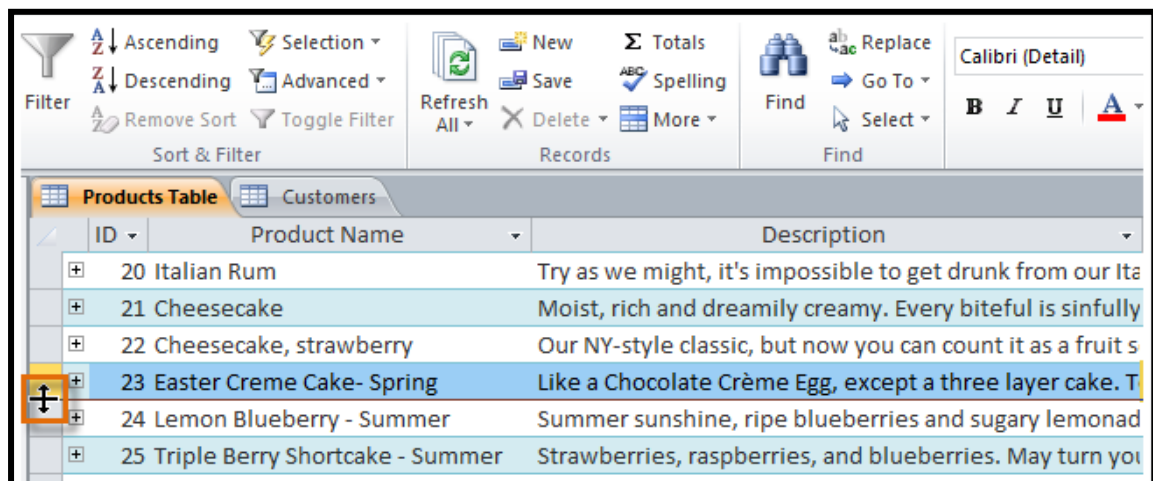


- Click and drag the gridline to the right to increase the field width or to the left to decrease the field width.
- Release the mouse. The field width will be changed.



To resize a row

- Place your cursor over the **bottom gridline** in the gray area to the left of the row. Your mouse will become a double arrow. ⇕



- Click and drag the gridline downward to increase the row height or upward to decrease the row height.
- Release the mouse. The row height will be changed.



The screenshot shows the Microsoft Access interface with the 'Products Table' open. The table has columns for ID, Product Name, and Description. The rows are color-coded in an alternating pattern: rows 20, 22, 24, and 25 are light blue, while rows 21, 23, and 25 are a darker blue. The text in the description column is truncated.

ID	Product Name	Description
20	Italian Rum	Try as we might, it's impossible to get drunk from our Italian Rum cake. So go ahead and eat the whole thing.
21	Cheesecake	Moist, rich and dreamily creamy. Every biteful is sinfully delicious.
22	Cheesecake, strawberry	Our NY-style classic, but now you can count it as a fruit serving.
23	Easter Creme Cake- Spring	Like a Chocolate Crème Egg, except a three layer cake. Topped with icing bunnies and marshmallow chicks.
24	Lemon Blueberry - Summer	Summer sunshine, ripe blueberries and sugary lemonade. Takes you back to the good ol' days.
25	Triple Berry Shortcake - Summer	Strawberries, raspberries, and blueberries. May turn your lips and teeth purple, but probably worth it.

Table Formatting Options

Alternating Row Color

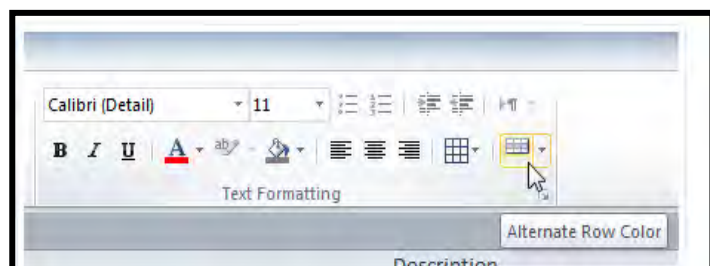
By default, the background of every other row in an Access table is a few shades darker than the background of the rest of the table. This darker alternate row color makes your table easier to read by offering a visual distinction between each record and the records directly above and below it. Below is a sample of an alternate row color. Follow the examples after the picture on how to change alternate row color.

The screenshot shows the Microsoft Access interface with the 'Products Table' open. The table has columns for ID, Category ID, Product Name, and Description. The rows are color-coded in an alternating pattern: rows 8, 10, 12, 14, 16 are light grey, while rows 9, 11, 13, 15 are a darker grey. The text in the description column is truncated.

ID	Category ID	Product Name	Description
8	2	Fudge Chocolate	So rich and heavy with chocolate, you'll need some
9	2	Fudge Marble	The cake that dares ask the question: what if marb
10	2	French Vanilla	Oo la la! Some people might say this cake has a cer
11	2	Strawberry Swirl	A dizzying swirl of strawberries and crème. Hold o
12	2	Cookies n' Cream	Like dipping oreos and milk, but a cake, and not at
13	2	Lemon	A simple classic-- sweet and sour.
14	2	German Chocolate	"Chocolate" in German is "schokolade." You don't l
15	2	Red Velvet	Your grandma's favorite cake, topped with rich but
16	2	Carrot Cake	Orange and spicy. Ask your doctor if you can count

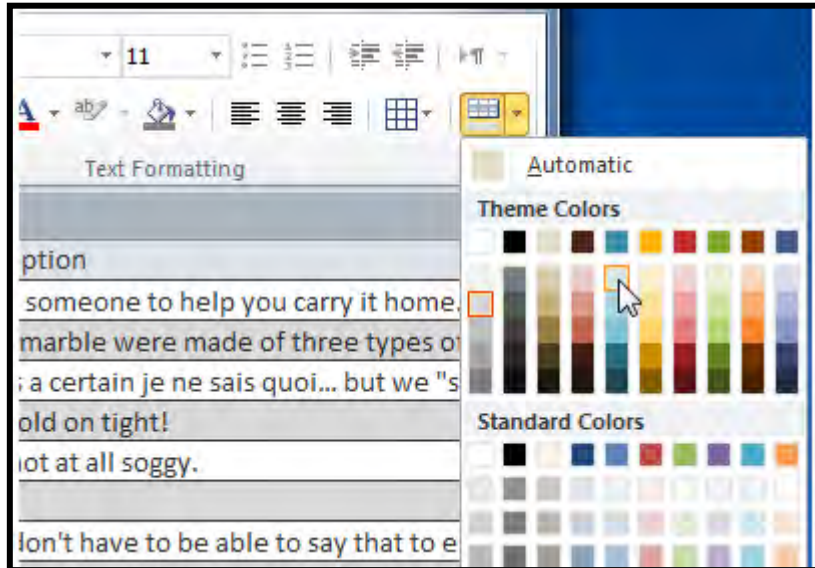
To change the alternate row color

1. Select the **Home** tab located the **Text Formatting** group.
2. Click the **Alternate Row Color** drop-down arrow.





3. Select a colour from the drop-down menu, or select **No Color** to remove the alternate row color.



4. Your alternate row color will be updated.

Modifying Gridlines

Another way Access makes your tables easier to read is by adding gridlines that mark the borders of each cell. **Gridlines** are the thin lines that appear between each cell, row, and column of your table. By default, gridlines are dark gray and appear on every side of a cell, but you can change their color or hide undesired gridlines. See the sample below.

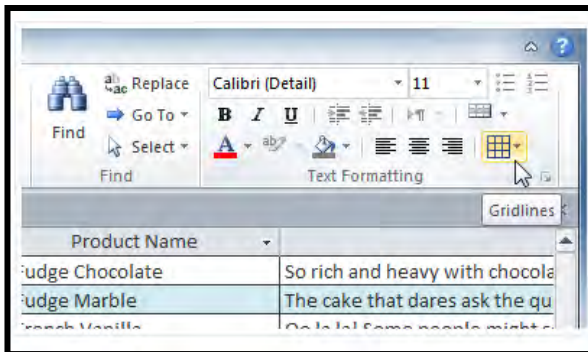
ID	Category ID	Product Name	Description
+	2	Fudge Chocolate	So rich and heavy with chocolate, you'll
+	2	Fudge Marble	The cake that dares ask the question: w
+	2	French Vanilla	Oo la la! Some people might say this cal
+	2	Strawberry Swirl	A dizzying swirl of strawberries and crè
+	2	Cookies n' Cream	Like dipping oreos and milk, but a cake,
+	2	Lemon	A simple classic-- sweet and sour.
+	2	German Chocolate	"Chocolate" in German is "schokolade."
+	2	Red Velvet	Your grandma's favorite cake, topped w

Follow the steps below on how to customize which gridlines appear.

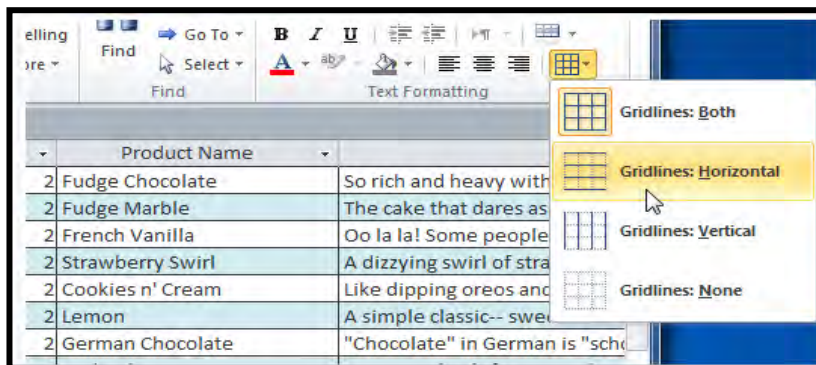
1. Select the **Home** tab, and locate the **Text Formatting** group.



2. Click the **Gridlines** drop-down arrow.



3. Select the gridlines you want to appear. You can choose to have **horizontal** gridlines between the rows, **vertical** gridlines between the columns, both types of gridlines, or none at all.



4. The gridlines on your table will be changed.

Category ID	Product Name
8	2 Fudge Chocolate
9	2 Fudge Marble
10	2 French Vanilla
11	2 Strawberry Swirl
12	2 Cookies n' Cream
13	2 Lemon
14	2 German Chocolate
15	2 Red Velvet



Student Practical Activity 12.2.2.4

Follow the instructions below.

- A. Apply the methods you learned from this lesson. Customise the Sales Representative and Customers' table you have made from the previous lesson. Follow the instructions below.
 - a. Open the Sales Representative's table you created from the previous lesson.



- b. Apply Table Design and colour on your table.
- c. Change the font style and size according to your desired output.
- B. Create a Customers Directory table that will contain the following. What data type should be used in each field name? Complete the table.

Field Name	Data Type	Description
Customer Number		Customer's ID Number
Full Name		Customer's full name
Address		Customer's address
Mobile Number		Customer's mobile number
Email address		Customer's email address
Sales Representative		Customer's Sales Rep

In this activity you will:

- Set the Customer Number as the primary key.
- Save the table using the Quick Access toolbar.
- Name the table as My Customers.
- Close the table using the context menu.



12.2.2.5 Getting External Information

External Data

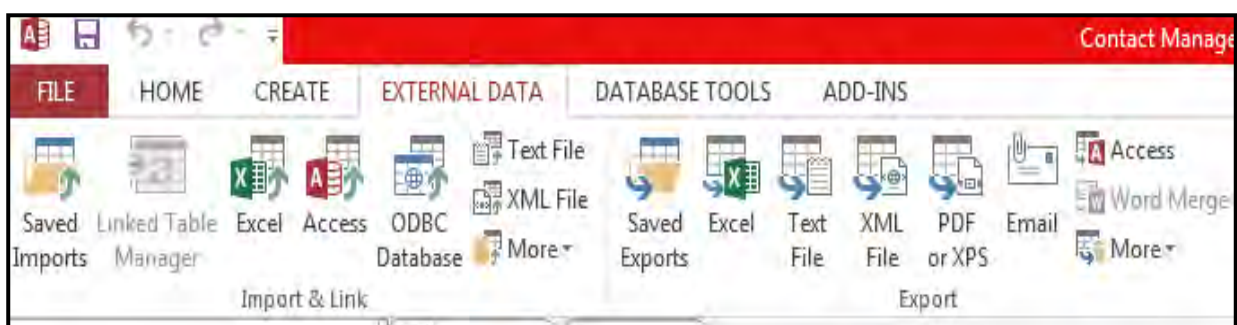
An External Data are data that can be found outside the database that you are working on. External data source is a connection to an external database. It usually contains data that does not change very much or data that is too large to bring. You can link to a variety of external data sources, such as other database, text files, and Excel workbooks. When you link to external data, Access can use the link as if it were a table. Depending on the external data source and the way you create the link, you can edit the data in the linked table, and can create relationships that involve the linked table. However, you cannot change the design of the external data by using the link.

One of the most useful features of Access is its ability to interface with data from many other programs. Here are few ways in which you might use the data-exchange feature of Access.

- To combine data that was created in other programs.
- To transfer data between two other programs.
- To accumulate and store data over the long term, occasionally exporting data to other programs such as Excel for analysis.

Types of data that can import or link to

In making database in Access you can either import or export data. Import is to bring data into your working database from an external data source. Export on the other hand, is to bring out data from your database back to its external data source. To be able to learn about the data formats that Access can import or export, click on the External Data tab on the ribbon.



Import & Link displays icons for the data formats that Access can export data to. Export displays icons for all the formats that Access can export data to.



Note: You can click on **More** to see more formats that Access can work with.



Import or link to data in another format

Follow the steps on how to import or link data in another format.

1. Open the database that you want to import or link data to.
2. On the **External Data Tab**, under **Import and Link** group, click the type of data that you want to import or link to. For example, if your source data is in a Microsoft Excel workbook, click Excel.



Click Excel.

3. External data Wizard will open.

External Data Wizard

In most cases, Access starts with External Data Wizard. You may be asked for some or all of the information in the following list:

- Specify the source of the data (its location on disk).
- Choose whether to import or link to the data.
- If importing, choose whether to append the data to an existing table, or to create a new table.
- Specify exactly which data in the document you want to import or link.
- Indicate whether the first row contains column headings, or whether it should be treated as data.
- Specify the data type in each column.
- Choose whether to import the structure only, or the structure and the data together.
- If importing, specify whether you want Access to add a new primary key to the new table, or use an existing key.



- Specify a name for the new table.

4. The last step is saving the details of the import or link operation. If you still need to perform the same operation, select the Save import steps check box, fill the information, and then click **Close**.

After completing the wizard, Access will notify you of any problem that might have occurred during the import process. In some cases, Access might create a new table called **ImportErrors**, which contains data that was not imported successfully. You can use this to examine and check why data was not imported correctly.

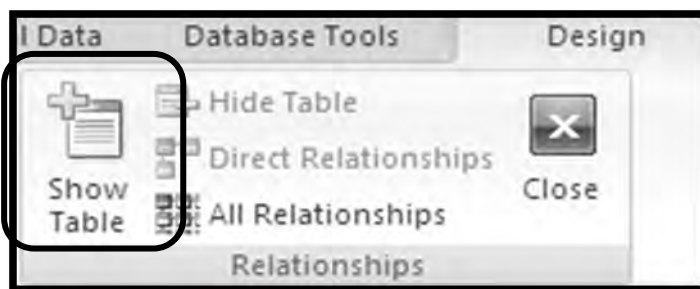
Student Activity 12.2.2.5

Follow the steps below. In this activity we will use the tables that you have created from the previous lesson.

1. Close all open tables.
2. On the Database Tools tab, click Relationships.



3. On the Relationship Tools Design tab, click the Show Table button.



4. On the Show Table dialog box, double click each of the tables. In this activity we will use the Customers Table and the Sales Representative Table.
5. On the Customers Table you will see Sales Representative field which gets information from the Sales Representative table.
6. Click Primary key on the Sales Representative table which is the ID, click and drag it to the Sales Representative field in the Customers Table.



7. On the Edit Relationship dialog box, check the Enforce Referential Integrity, Cascade Update Related Fields and Cascade delete Related Records.



Checking these boxes means that whatever update you make in the Employee ID field will reflect on the other table that uses the field. **Enforce Referential Integrity** ensures consistency & validates corresponding entries. **Cascade Delete Related Records** ensures removal of all related data from one table related to the table being deleted.

8. You will also notice the One to Many Relationship which means that one Sales representative can have many Customers.



9. Create.

10. You will notice that on the “One” side, each record contains a unique entry for the joined field.

11. On the “Many” side, multiple records can have the same value for the joined field.



12.2.2.6 Managing Relationships

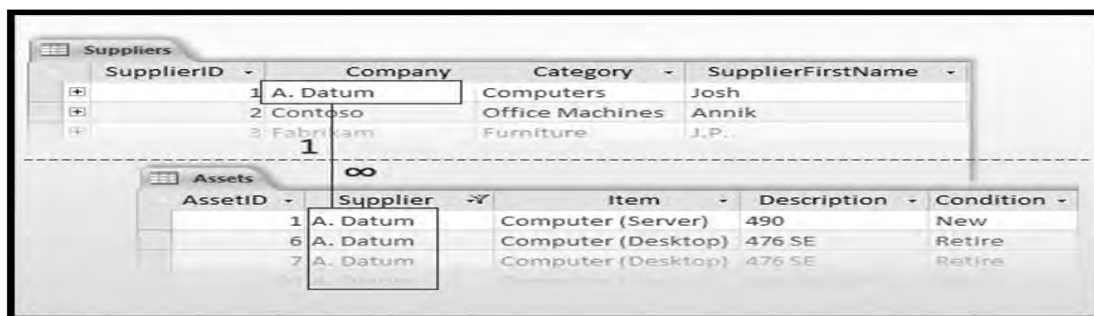
In a database, relationships are critical because they are how your tables "talk" to each other. If your tables do not talk, you cannot get answers from your data, and you will see how that works in this lesson. You create relationships by using a field from one table as a field in a related table.

One of the advantages of Relational Database Management System such as Access 2010 is to easily setup tables and relationships with constraints to make them more tightly followed. One of the features is the ability to create and maintain relationships between tables. MS Access is a relational database where data are split into tables that are connected. Relationships exist when two or more tables have a connection or association.

After setting up different tables for each subject in your database, Access can bring that information back together again. You can connect tables by creating relationships between them based on a common field that they share. First, you have to define the relationships between your tables. Then, you can create queries, forms and reports to display information from several tables at once.

The fields in the tables must be coordinated so that they show information about the customer. This coordination is accomplished by using table relationships. A table relationship works matching data in key fields. A key field is a field with the same name in both tables. In most cases, these matching fields are the primary key from one table and a foreign key in the other table. As discussed from the previous lesson, primary key provides a unique identifier for each record. On the other hand, a foreign key is used to link a table to another table. For example, customers can be associated with the orders by creating a table relationship between the Customer Table and Order Table.

Relationships have "sides"



At this point, it helps to think of relationships has having "sides." For example, one supplier can provide many assets, so the Supplier's table resides on the "one" side of the relationship, while the Assets table sits on the "many" side.

There are three types of table relationships.

A. One-to-One relationship is when a single record in one table is related to a single record in another table, and vice versa. This type of relationship is not common because, most



often, the information related in this way is stored in the same table. You might use a one-to-one relationship to divide a table with many fields, to isolate part of table for security reasons, or to store information that applies only to a subset of the main table. When you do identify such a relationship, both tables must share a common field.

B. One-to-Many relationship is when one record in a table is related to many records in another table. For example, consider an order tracking database that includes a Customers table and an Orders table. A customer can place any number of orders. It follows that for any customer represented in the Customers table, there can be many orders represented in the Orders table. The relationship between the Customers table and Orders table is, therefore, a one-to-many relationship.

To represent a one-to-many relationship in your database design, take the primary key on the “one” side of the relationship and add it as an additional field or fields to the table on the “many” side of the relationship. In this case, for example, Access will use the Customer Number in the Orders table to locate the correct customer for each order.

Next, remember this rule: To create a one-to-many relationship, you use the primary key from the table on the "one" side as a foreign key in the table on the "many" side. The same rule applies to one-to-one and many-to-many relationships, but not in quite the same way. We will further discuss this lesson later.

C. Many-to-Many relationship is when several records in one table are related to several records in another table. Consider the relationship between Products Table and Order Table. A single order can include more than one product. On the other hand, a single product can appear on many orders. Therefore, for each record in the orders table, there can be many records in the products table. In addition, for each record in the Products table, there can be many records in the Orders table. That is why it is called many-to-many relationship because, for any product there can be many orders and, for any order, there can be many products.



Note: To detect existing many-to-many relationships between your tables, it is important that you consider both sides of the relationship.

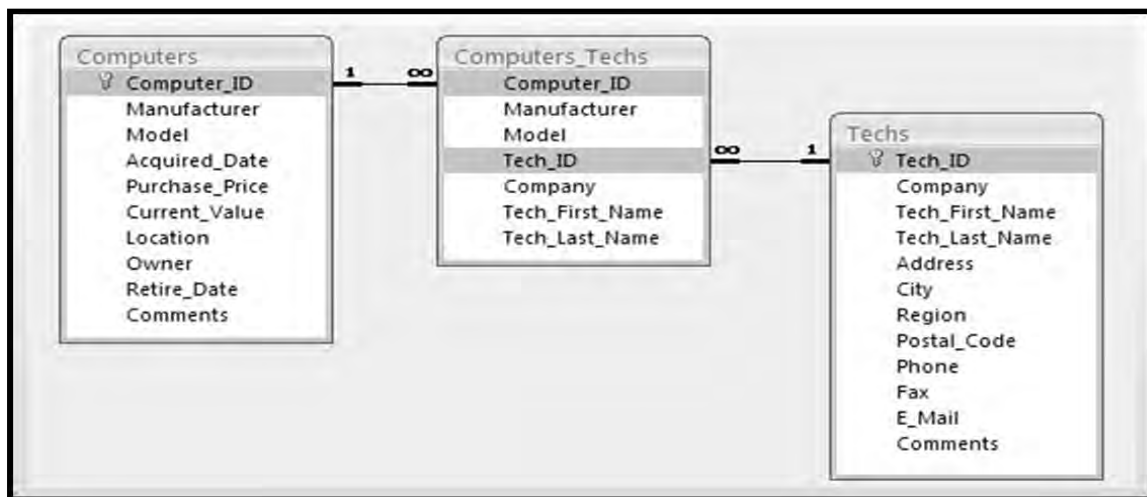
A table relationship is represented by a relationship line drawn between tables in the Relationships window. A relationship that does not enforce referential integrity appears as a thin line between the common fields supporting a relationship. When you select the relationship by clicking its line, the line thickens to indicate it is selected. If you enforce referential integrity for this relationship, the line appears thicker at each end. In addition **1** appears over the thick portion of the line on one side of the relationship, and the infinity symbol (∞) appears over the thick portion of the line on the other side.



SupplierID	Company	Category	SupplierFirstName
1	A. Datum	Computers	Josh
2	Contoso	Office Machines	Annik
3	Fabrikam	Furniture	J.P.

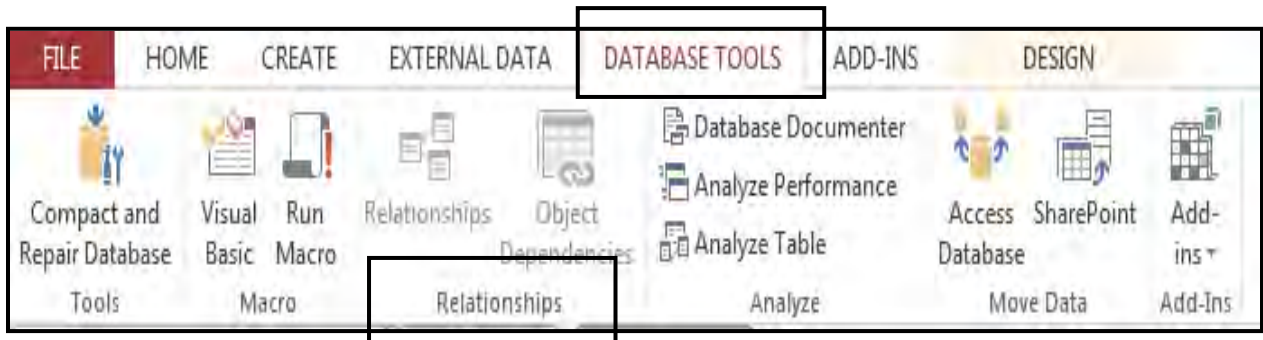
AssetID	Supplier	Item	Description	Condition
1	A. Datum	Computer (Server)	490	New
6	A. Datum	Computer (Desktop)	476 SE	Retire
7	A. Datum	Computer (Desktop)	476 SE	Retire

Relationship that do not enforce referential integrity

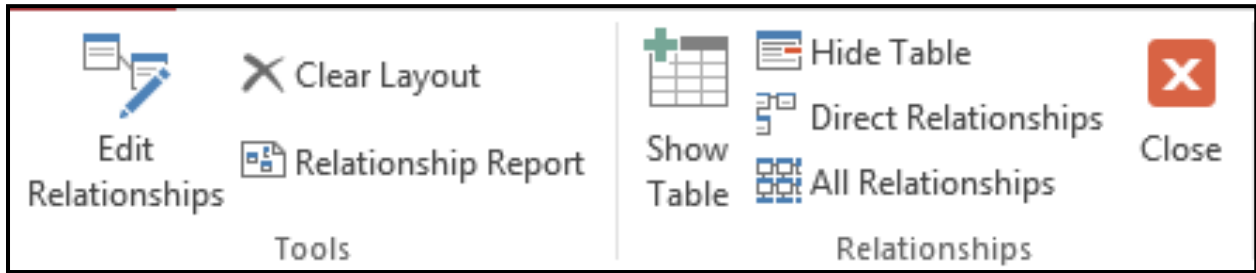


Relationship that enforce referential integrity

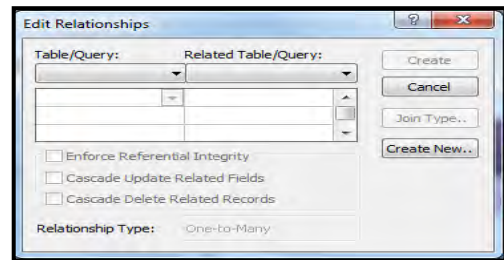
Relationship menu can be found in the Database Tools tab.



Once the Relationships menu is open, on the **Design** tab you can find the following tools:



- a. **Edit Relationships** – opens the Edit Relationships dialog box. When you select a relationship line, you can click Edit relations to change the table relationship. You can also double-click the relationship line.



- b. **Clear Layout** – removes all tables and relationships from display in the Relationships window. This command only hides the tables and relationships and it does not delete them.
- c. **Relationships Tools** – creates a report that displays the tables and relationships in your database. The report shows only the tables and relationships that are not hidden in the Relationship window.

On the **Design** tab, in the **Relationships** group:

- a. **Show Table** – opens the **Show Table** dialog box so you can select tables and queries for viewing in the Relationships window.
- b. **Hide Table** – hides the selected table in the Relationships window.
- c. **Direct Relationships** – displays all relationships and related tables for the selected table in the Relationships window, if they are not already displayed.
- d. **All Relationships** – Displays all of the relationships and related tables in your database in the Relationships window.



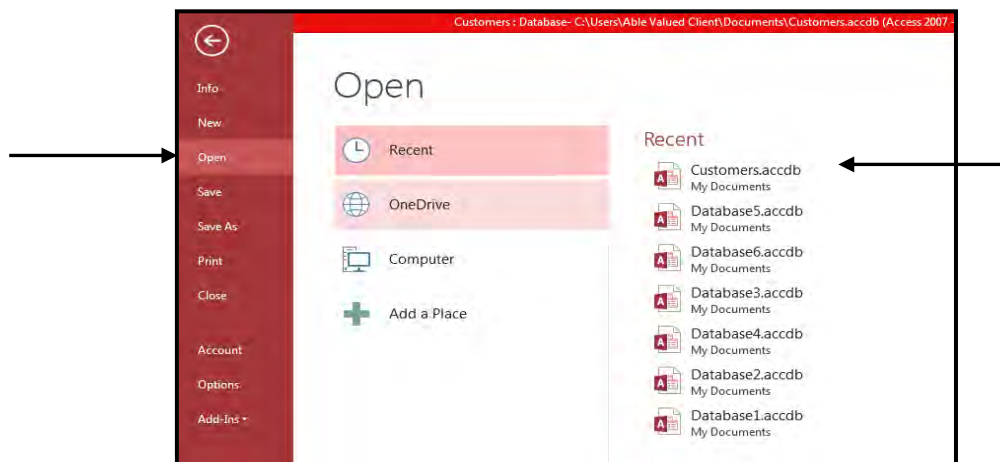
Note: Hidden tables (tables for which the Hidden check box in the table's Properties dialog box is selected) and their relationships will not be shown unless Show Hidden object is selected in the navigation Options dialog box.

- e. **Close** – Closes the Relationships window. If you made any changes to the layout of the Relationships window, you are asked whether to save those changes.



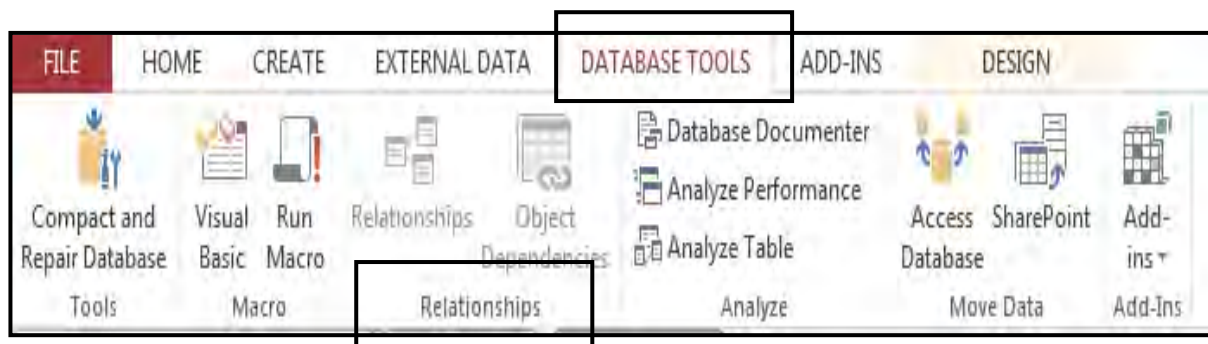
Creating a Table relationship by using the Relationships Window

1. On the **File** tab, click **Open**.
2. In the **Open dialog box**, select and open the database. For this, you can open the **Customer's Table** you have created from the previous lesson.

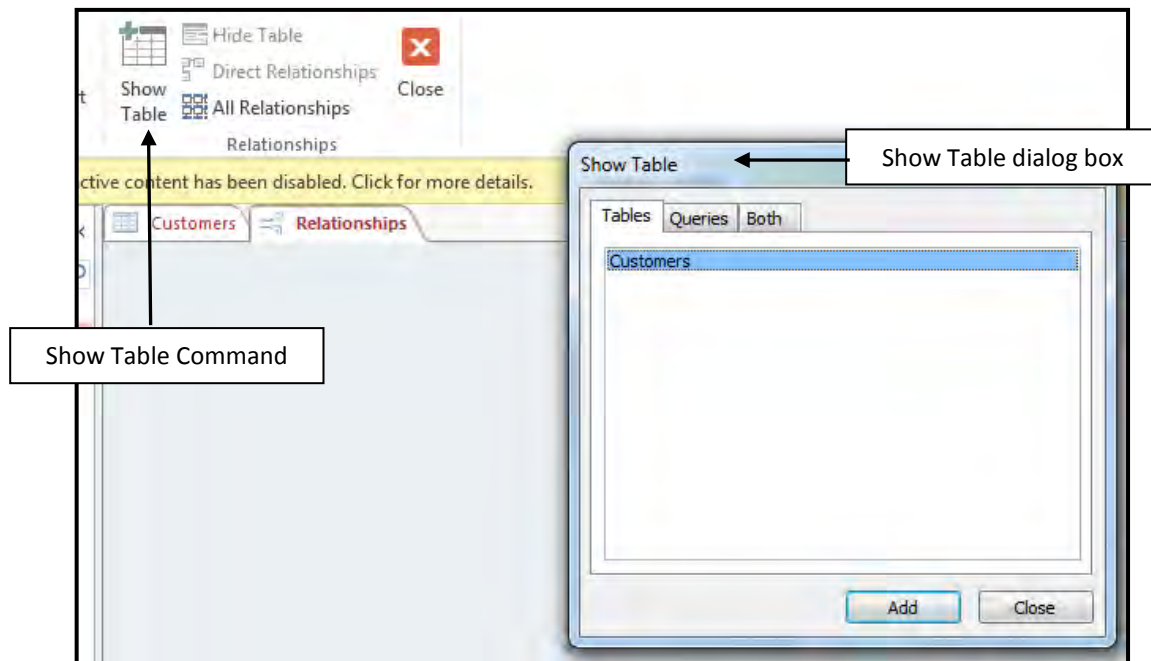


Open Dialog Box

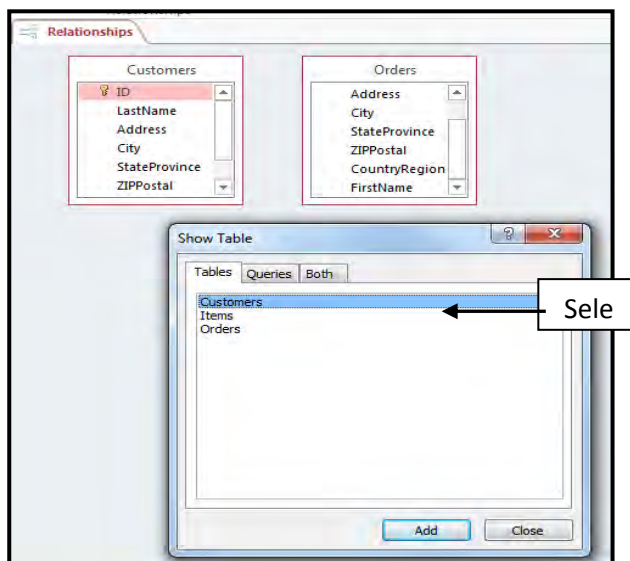
3. On the **Database Tools** tab, in the **Relationships** group, click **Relationships**.



4. If you have not yet defined any relationships, the **Show Table** dialog box automatically appears. If it does not appear, on the **Design** tab, in the Relationships group, click **Show Table**.



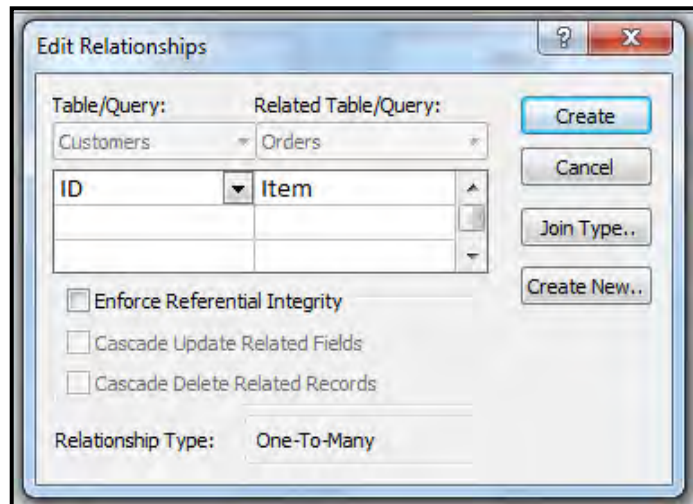
5. The **Show Table** dialog box displays all the tables and queries in the database. To see only tables, click **Tables**. To see only queries, click **Queries**. To see both tables and queries, click **Both**. For this lesson we will only select **Tables**, queries will be discussed later in the upcoming lessons.
6. Select one or more tables or queries and then click **Add**. When you have finished adding tables and queries to the Relationships window, click **Close**.
7. Drag a field (most commonly is the primary key) from one table to the common field (the foreign key) in the other table. To drag multiple fields, press **CTRL** key, click each field, and then drag them.



Open Tables to establish Relationships

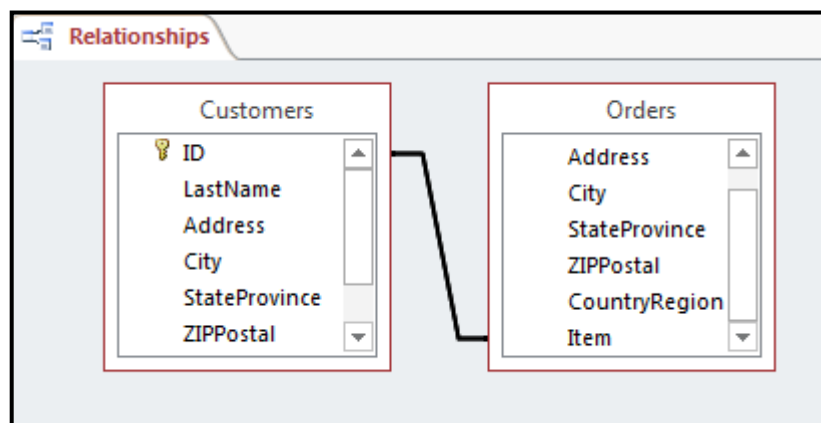


8. The **Edit Relationships** dialog box appears. Verify that the field names shown are the common fields for the relationship. If a field name is incorrect, click the field name and select a new field from the list. To enforce referential integrity for this relationship, select the **Enforce Referential Integrity** check box.



Note: Referential Integrity is a property of data which, when satisfied, requires every value of one attribute (column) of a relation (table) to exist as a value of another attribute in a different (or the same) relation (table).

9. **Click Create.** The relationship line is drawn between the two tables. If you selected the **Enforce referential Integrity** check box, the line appears thicker at each end. Your output maybe similar to the one illustrated.



Relationship established between Customers and Orders Tables

To create One-to-One Relationship

Both of the common fields (usually the primary key and foreign key fields) must have a unique index. This means the Indexed property for these fields should be set to **Yes (No duplicates)**. If both fields have unique index, Access creates a one-to-one relationship.

You may not use one-to-one relationships very often, but you should know how to create them. You start by creating a one-to-many relationship, and then you change the **indexing**.



Access uses indexing in the same way that you use an index in a book — to find information quickly. When you create a primary key, Access automatically indexes that field, and that makes searches faster.

To create One-to-Many Relationship

In a one-to-many relationship, the primary key has indexing turned on, but the foreign key field has indexing turned off. In a one-to-one relationship, both key fields have indexing turned on, and neither field allows duplicate values.

Creating Many-to-Many Relationship

To represent a many-to-many relationship, you must create a third table, often called a junction table that breaks down the many-to-many relationship into one-to-many relationships. You insert the primary key from each of the two tables into the third table. As a result, the third table records each occurrence, or instance, of the relationship. For example, the Orders table and the Products table have a many-to-many relationship that is defined by creating two one-to-many relationships to the Order Table. One order can have many products, and each product can appear on many orders.

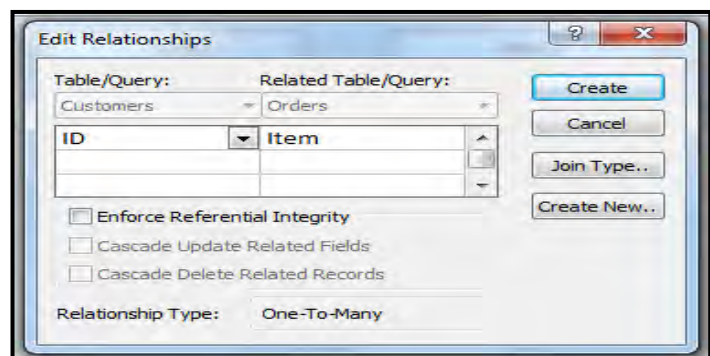
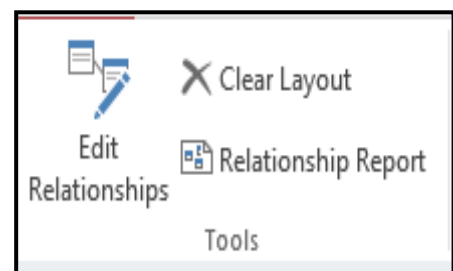
Common Field

For a relationship to exist between two tables, they must have a common field. For example, the Inventory table has an item ID field, and a Customer's Order table has also an Item ID field, the two tables can be joined or related by that field. The field type must be the same in both tables for a relationship to exist.

Editing a Relationship

You can change the relationship even after you have created it. You can change the referential integrity options or the join type option.

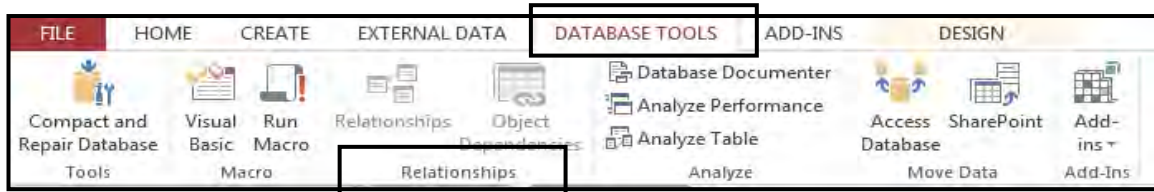
1. Close any tables that are open because you cannot modify relationships between open tables.
2. In the Relationship window, double click the connector between the two tables or click **Edit Relationships** button from the **Design tab**.
3. On the **Edit Relationship dialog box**, click the **Deselect** the **Enforce Referential Integrity** check box, **Cascade Update Related Fields** check box, or **Cascade Delete Related Records** check box.
4. Click **OK**.



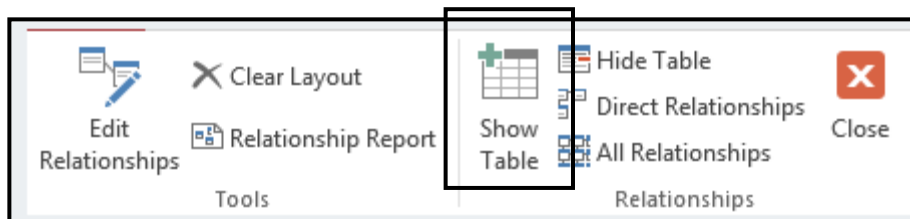
**Student Practical Activity:**

Follow the steps below. In this activity, we will use the Customers and Sales Representative tables that you have created from the previous lesson.

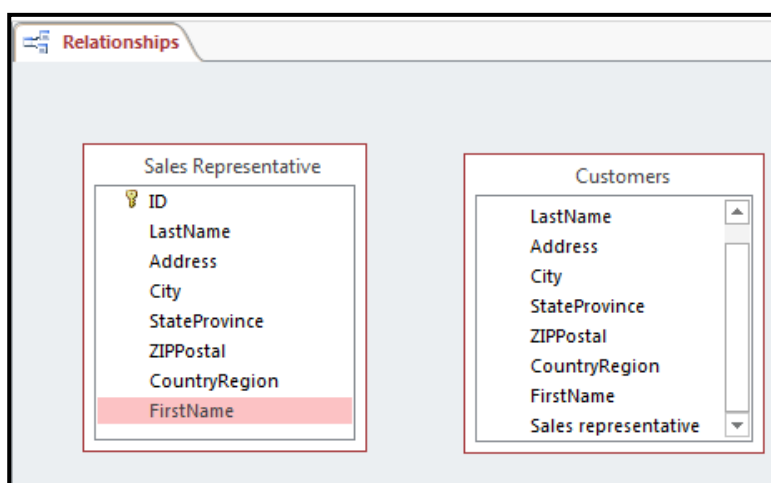
1. Close all open tables.
2. On the **Database Tools tab**, click **Relationships**.



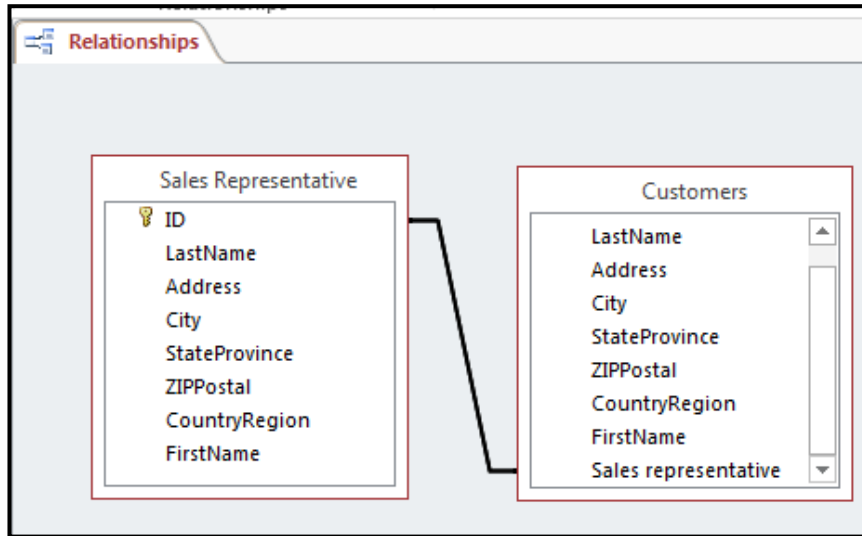
3. On the **Relationship Tools Design tab**, click the **Show Table** button.



4. On the **Show Table dialog box**, double click each of the tables. In this activity we will use the Customers Table and the Sales Representative Table.



5. On the Customers Table you will see Sales Representative field which gets information from the Sales Representative table.
6. Click Primary key on the Sales Representative table which is the ID, click and drag it to the Sales Representative field in the Customers Table.



Checking these boxes means that whatever update you make in the Employee ID field will reflect on the other table that uses the field. **Enforce Referential Integrity** ensures consistency & validates corresponding entries. **Cascade Delete Related Records** ensures removal of all related data from one table related to the table being deleted.

7. You will also notice the **One to Many Relationship** which means that one Sales Representative can have many Customers.
8. Click **Create**.
9. You will notice that on the **“One”** side, each record contains a unique entry for the joined field.
10. On the **“Many”** side, multiple records can have the same value for the joined field.



Student Activity 12.2.2.6

Answer the following.

1. What is the importance of establishing relationships between tables?



2. List the three types of relationships. In your own words, define each type of relationship.

1.

2.

3.



Summative Activity 12.2.2

Answer the following.

A. How can you create one-to-one relationship?

B. What happens when you check Enforce Referential Integrity and Cascade Delete Related Records in Edit Relationship dialog box?



C. Perform the following

1. Create a Student and an Instructor table.
2. Establish a relationship between two tables.



Answers to Student Activities

Student Activity 12.2.2.1

A. Write the key to press on your keyboard to perform the following commands. Write your answers on the space provided after each number.

1. UP Arrow
2. Enter, Tab or Right arrow
3. Page Up
4. Left Arrow, Shift + Tab
5. End

B. Name the field that is being described in each statement.

1. Format
2. Decimal Places
3. Default Value



4. Input Mask
 5. Field Size
-

Student Activity 12.2.2.2

Follow the steps to perform this activity

1. Click the Last Name Field.
 2. On the Home tab, on the ribbon, click the Sort & Filter group.
 3. Click the Ascending icon.
-

Student Activity 12.2.2.3

A.


1. False
2. True
3. False
4. True
5. True
6. True
7. True
8. True
9. True
10. True

B. In this activity, follow the steps below:

1. Create the table.
 2. Create ten field names. Data types are the following.
-



Field Name	Data Type
ID Number	Text
Full Name	Text
Address	Text
Province	Text
Age	Text
Birthday	Date
Mobile Number	Text
Email address	Text
Items Sold	Text
Item Price	Number

3. Click on the ID Number and click the Primary Key icon.
4. Name your table as Sales Rep.
5. Click 

Student Activity 12.2.2.4

A. In this activity, follow the steps below:

1. Open the Sale's Representative's table.
2. On the Create tab, click the table Design button.
3. The Ribbon will display the Table Tools Design tab which contains tools that will allow you to design your table.
4. To change the design of the table, on the Create tab, click the Table button.
5. The Ribbon will display the Fields tab and the Table tab which contains tools that will allow you to design your table.
6. On the Home tab, click the Alternative Row colour button.
7. On the colour palette, select the colour that you want to use.




8. To change the font size, on the Home tab, click the Font name or Font size arrow.
9. On the list, select the font name or size that you would like to use.
10. To change the font style, on the Home tab, click Bold B, Italic I or Underline

B. In this activity, follow the steps below:

1. Create the table.
2. Create ten field names. Data types are the following.

Field Name	Data Type
Customer Number	Text
Full Name	Text
Address	Text
Mobile Number	Text
Email address	Text
Sales Representative	Text

3. Click on the Customer Number and click the Primary Key icon.
4. Name your table as Sales Rep.
5. Click 

Student Activity 12.2.2.5

1. Close all open tables.
2. On the **Database Tools tab**, click **Relationships**.
3. On the **Relationship Tools Design tab**, click the **Show Table button**.
4. On the **Show Table dialog box**, double click each of the tables. In this activity we will use the Customers Table and the Sales Representative Table.
5. On the Customers Table you will see Sales Representative field which gets information from the Sales Representative table.
6. Click Primary key on the Sales Representative table which is the ID, click and drag it to the Sales Representative field in the Customers Table.



7. On the **Edit Relationship** dialog box, check the **Enforce Referential Integrity, Cascade Update Related Fields** and **Cascade delete Related Records**.

Student Activity 12.2.2.6

Answers may be similar to these ones below.

1. Relationships are critical because it is how the table communicate and connect to each other. If these tables created do not communicate to each other answers will not be possible from every data.
2. **One-to-One relationship** is when a single record in one table is related to a single record in another table, and vice versa. For example, one specialized file server may have just one repair technician.

One-to-Many relationship is when one record in a table is related to many records in another table. For example, one employee can use many assets, such as a computer, chair, and desk.

Many-to-Many relationship is when several records in one table are related to several records in another table.



Answers to Summative Activity 12.2.2

Answers may be similar to the one below.

1. To create one-to-one relationship, the steps are as follows:
 - a. Close all open tables. You cannot create or change relationships between open tables.
 - b. In the Navigation Pane, right-click the table that contains the foreign key field, then click Design View.
 - c. In the designer, click the foreign key field.
 - d. Under Field Properties, on the General tab, click the list next to Indexed and select Yes (No Duplicates).
 - e. Save your changes.
2. To make sure that you data stay synchronized, you can enforce referential integrity between tables. Referential integrity relationships help makes sure that information in one table matches information in another.



12.2.3 Creating and Customising Queries

12.2.3.1 Understanding Queries Using Query Wizard

Queries are far more powerful than the simple searches or filters you might use to find data within a table. This is because queries can draw their information from multiple tables. For example, while you could use a search in the customers table to find the name of one customer at your business or a filter on the orders table to view only orders placed within the past week, neither would let you view both customers and orders at once. However, you could easily run a query to find the name and phone number of every customer who has made a purchase within the past week. A well-designed query can give information you might not be able to find out simply by examining the data in your tables.

A Query allows you to work a specific set of records that meet the criteria you have specified from a table in the database. You can use queries to view, change and analyse data in different ways.

Query is a request to perform an action on the data. Using Queries is like using the Find command with complex criteria. For example, if you want to find a product that has a value of more than K300, you will have to use a special operation called query to search based on your given criteria.

To create a query, you must provide three (3) information:

1. The fields you want to search.
2. The Search Criteria or the item that you are searching for.
3. The fields that you want to display with the results.

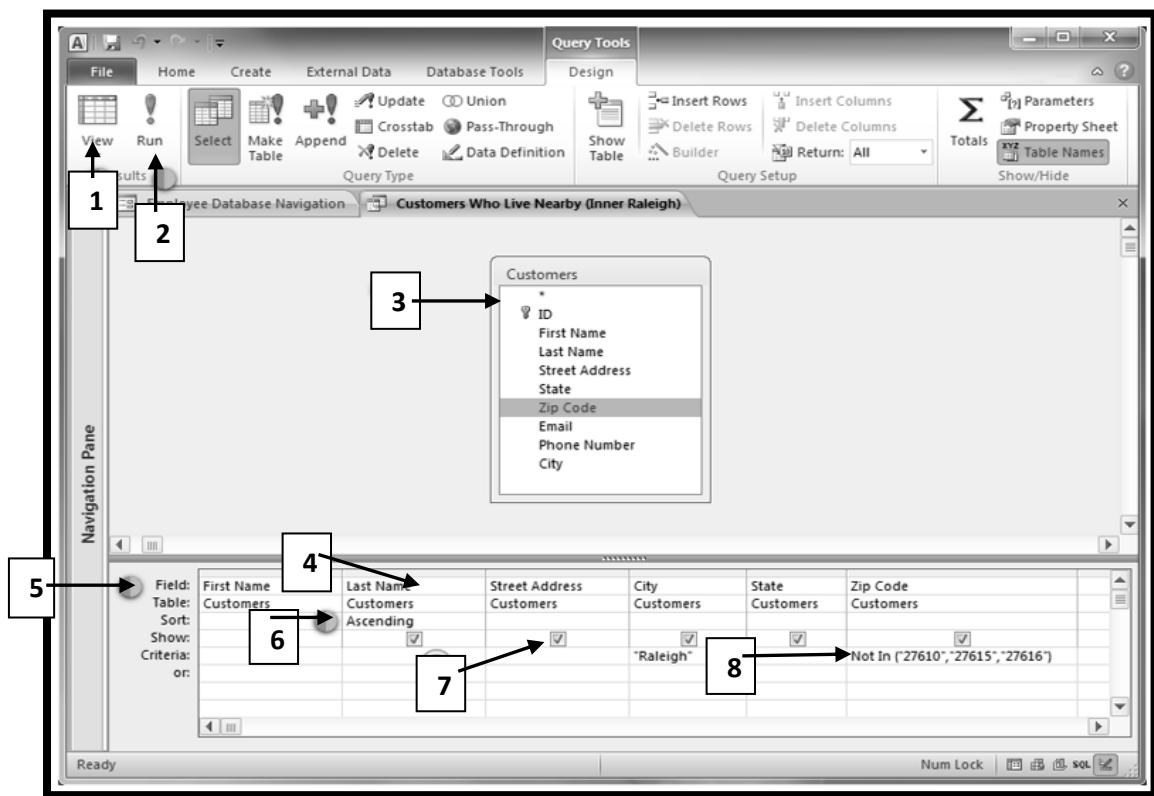
When you run a query, the results are presented to you in a table, but when you design one you use a different view. This is called **Query Design View**, and it lets you see how your query is put together.

1. **Query Views** can be seen by clicking the View drop-down arrow to switch to another view of your query. The two main views are Datasheet View and Design View.
2. **Run Query** is the command to view the results of the query in a table.
3. The **Object Relationship** Pane is a small window that will display all the tables you choose to include in your query. It contains a list of every available field within the table.
4. **Design Grid** can be seen in the bottom part of the Query Design View. It contains a table that lists all the fields included in the query. Here you can set criteria to specify which information the query should retrieve.





5. **Field and Table Names** are fields included in the query are located in the first row of the Design Grid. Beneath each field name is the name of the table that field belongs to.
6. **Sorting** is available once data is retrieved by a query. Once the Sort row of the field is being clicked you can now either choose between Ascending or Descending. By default, query results are not sorted.
7. **Showing or Hiding Fields** is used every time you design your query and it is necessary that you include the field, but it can be hidden in the query result. To do that, simply uncheck the checkbox in the Show row of the field.
8. **Query Criteria** lets you specify exactly what type of information you want your query to retrieve.



Using Queries with the Simple Query Wizard

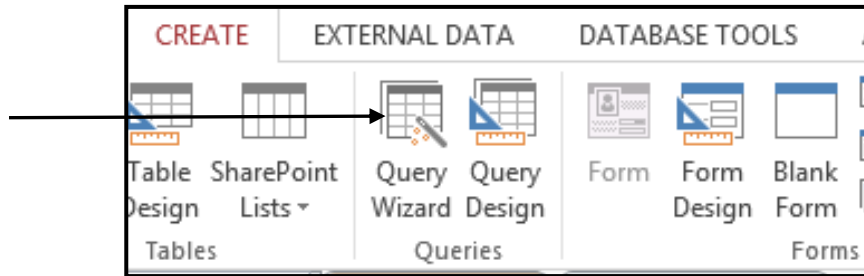
One way to create a simple query is to use the Query Wizard. This wizard is an attempt by Microsoft to once again make creating Access queries easy. This wizard does steps through the query design process in a logical way and it is a great place to start when learning about creating your first Access query.

When you use the wizard, you have less control over the details of the query design, but the query is usually created faster than if you did not use the wizard. Moreover, the wizard can catch some simple design mistakes and prompt you to perform a different action.

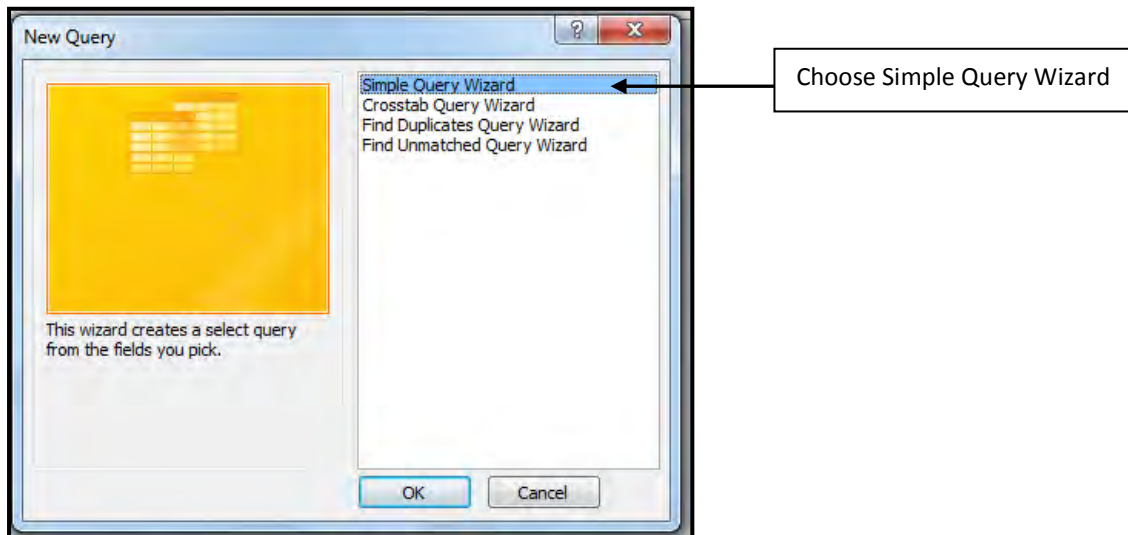


The following are the steps on how to create query using Query Wizard.

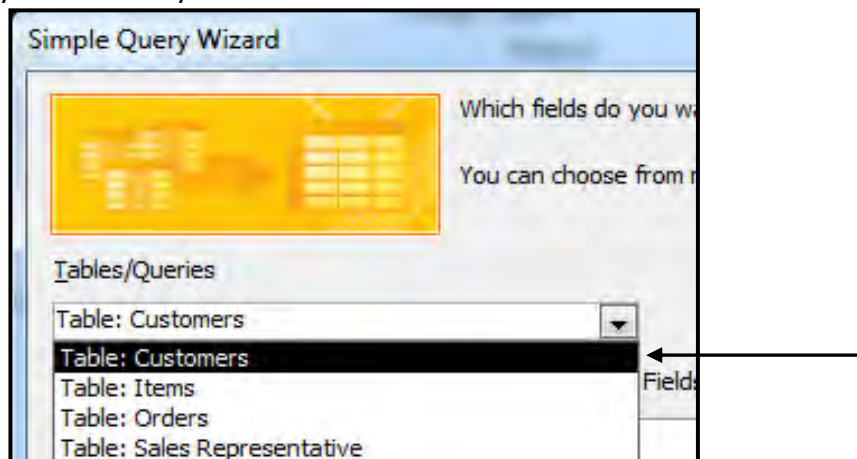
1. Open the Customers table you have created from the previous lesson.
2. On the **Create** tab, click the **Query Wizard**.



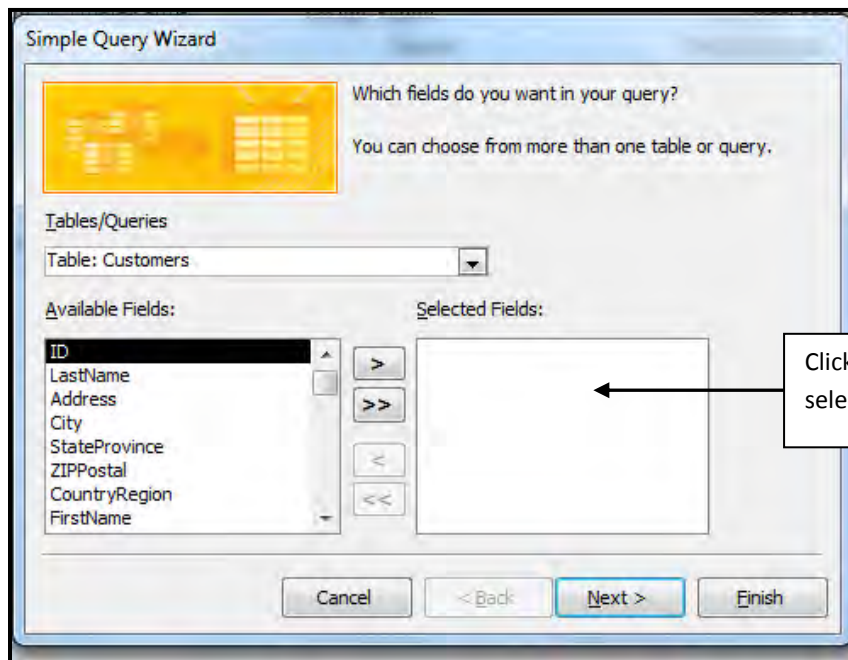
3. On the **New Query** dialog box, click the **Simple Query Wizard** and click **OK**.



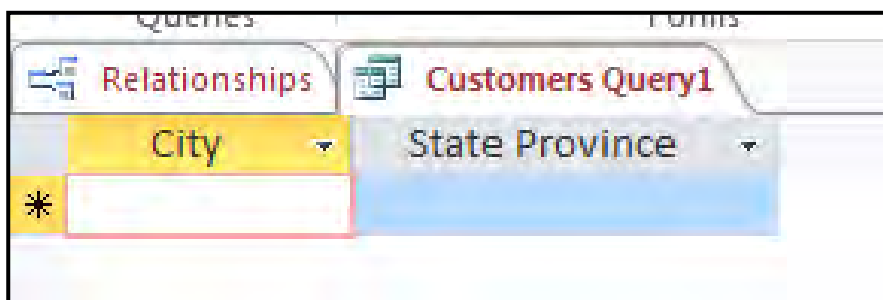
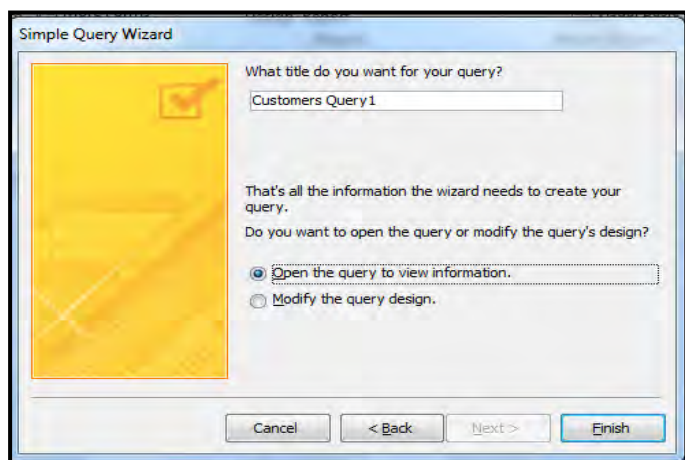
4. When the Simple Query Wizard opens, click the down arrow to select the table or other query from which you want to select fields.

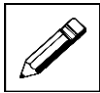


5. Click a field and click the right arrow to move the field to the selected Fields list. You can click the double arrow to move all the fields at once.



6. You can pull as many fields as you want.
7. Click **Next**.
8. Type a name for the query and click **Finish**.
9. The query results will now appear in the datasheet.





Student Activity 12.2.3.1

Answer the following questions.

1. Define Query in your own words.

2. Enumerate the three (3) information you need to provide in creating query.

3. Explain one way of creating a simple query.



Student Practical Activity:

Practice creating Query using the Simple Query Wizard. Open the Sales Representative Table you created from the previous lesson and create a Query using the Simple Query Wizard.



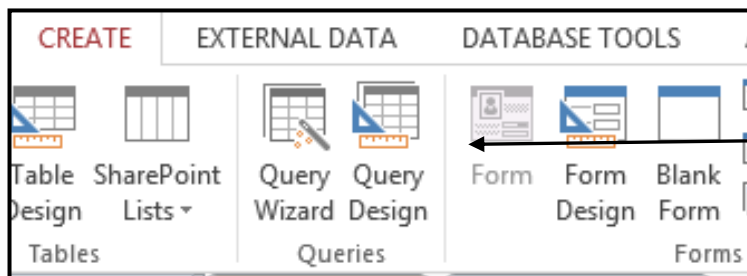
12.2.3.2 Creating Queries Using the Query Design View

The Query Design View will allow you to create a query that has full range of capabilities including filtering.

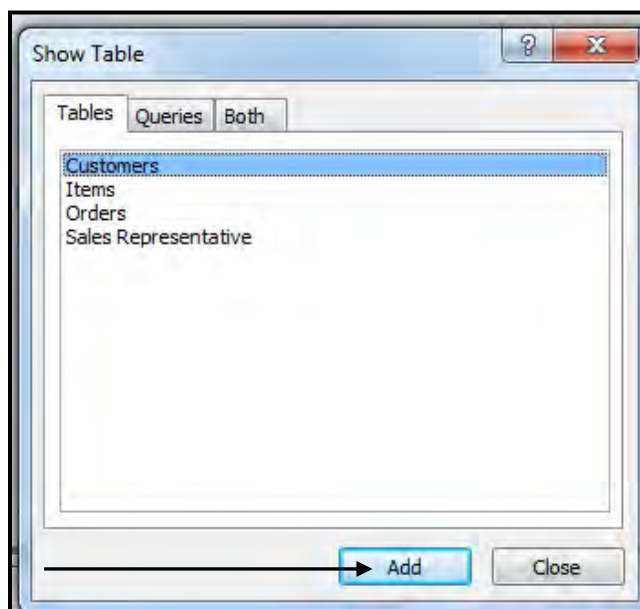
A query can be based on tables or on other queries. To create a query, you open the table on which you are going to base your query in Query Design View, and then use the options in Design view to create our query.

Follow the steps below on how to create a query using the Query Design View.

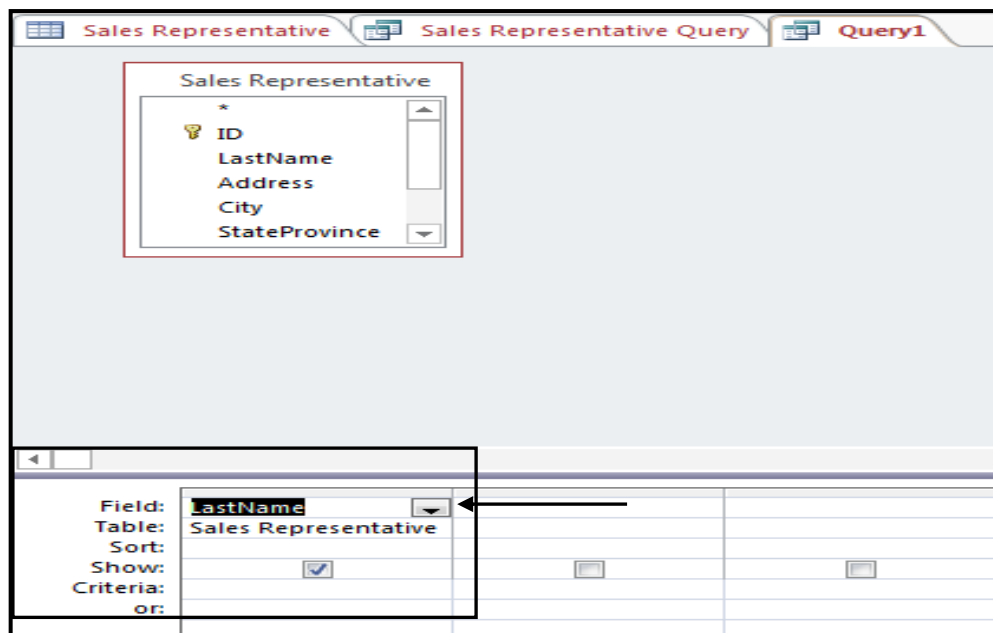
1. Click the **Create** tab, and in the **Queries** group, click **Query Design**.



2. In the **Show Table** dialog box, click the table you want to use, click **Add**, and then click **Close** to close the dialog box.

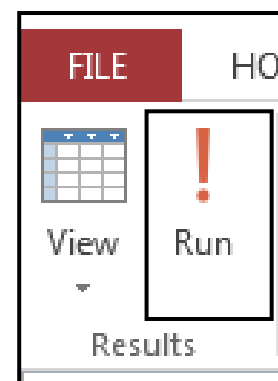


3. In the table, double-click the fields you want to use in the query. Notice that the fields appear in the grid at the bottom of the designer. You can also drag fields from the table to an empty column in the grid.



On the **Design** tab, in the **Results** group, click **Run**.

4. The query loads the data into a datasheet.
5. Press CTRL+S to save the query, and in the **Save As** dialog box, enter a name.



In Query Design view, each table has an option that allows you to display all the fields and all of the records in a table. This option appears on the field line on the drop-down menu as the table name followed by a period and an asterisk (tablename.*) When you run a select query, Access displays the results in a datasheet. The result is called a record set, and you can work with it in the same way that you work with a datasheet. For example, you can add or change data, and Access will write your changes to the tables that serve as the record sources for your query. You can also use your record sets to provide data for forms, reports, and even other queries. For example, if you want a report on the computers that you need to replace, you can create a query that returns that data, and then quickly build your report.

The image shows how a query yields a data to create a report. Report will be discussed on the upcoming lesson of this module. The query returns only those records where an asset has been marked for retirement.



Remember that unlike tables, record sets do not physically exist in your database. Instead, Access stores the query, and it only displays a record set when you run the query.

Remember

that unlike tables, record sets do not physically exist in your database. Instead, Access stores the query, and it only displays a record set when you run the query.



Student Activity 12.2.3.2

A. Answer the following questions.

- 1. What is the function of Query command?

- 2. Differentiate the two ways of creating a simple query.



Student Practical Activity:

Practice creating Query using the Query Design view. Open the Customers and Sales Representative Table you created from the previous lesson and create a Query using Query design View.



12.2.3.3 Understanding Criteria

Criteria are conditions that will determine which record will be included. The criteria will filter the query results. The criteria may be numeric or text. It is better to specify a range of values than one specific value. A query criterion is an expression that Access compares to query field values to determine whether to include the record that contains each value.

Below are the 20 most commonly used criteria in Access Queries.

1. Simple Criteria for all Data Types.

Criteria Name	Write it like...	Function
Equals	"x"	Searches for values equal to <i>x</i>
Does Not Equal	Not in ("x")	Searches for all values except those equal to <i>x</i>
Null	Is Null	Searches for empty fields
Not Null	Is Not Null	Searches for non-empty fields

2. Simple Criteria for Text.

Criteria Name	Write it like...	Function
Contains	Like ("*x*")	Searches for all values that contain <i>x</i>
Does Not Contain	Not like ("*x*")	Searches for all values that do not contain <i>x</i>
Begins With	Like ("x*")	Searches for all values beginning with <i>x</i>
Ends With	Like ("*x")	Searches for all values ending with <i>x</i>
Comes After	>= "x"	Searches for all values that come before <i>x</i> in alphabetical order
Comes Before	<= "x"	Searches for all values that come after <i>x</i> in alphabetical order

3. Simple Criteria for Numbers.

Criteria Name	Write it like...	Function
Between	Between "x" and "y"	Searches for all values in the range between <i>x</i> and <i>y</i>
Less Than	< x	Searches for all values smaller than <i>x</i>
Less Than or Equal To	<=x	Searches for all values smaller than or equal to <i>x</i>
Greater Than	> x	Searches for all values larger than <i>x</i>
Greater Than or Equal To	>=x	Searches for all values larger than or equal to <i>x</i>



4. Simple Criteria for Date.

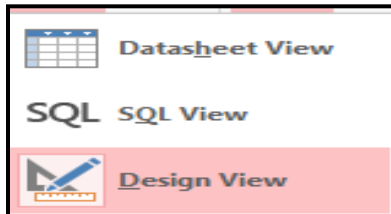
Criteria Name	Write it like...	Function
Between	Between "#mm/dd/yyyy#" and "#mm/dd/yyyy#"	Searches for dates that fall between the specified dates
Before	< "#mm/dd/yyyy#"	Searches for dates before a certain date
After	> "#mm/dd/yyyy#"	Searches for dates after a certain date
Today	=Date()	Searches for all records containing today's date
x Days Before Today	<=Date()-x	Searches for all records containing dates x or more days in the past



Note: When entering the criteria, write them exactly as they are written in the second column, replacing x with your search term, or in the case of dates, replacing mm/dd/yyyy with the desired date.

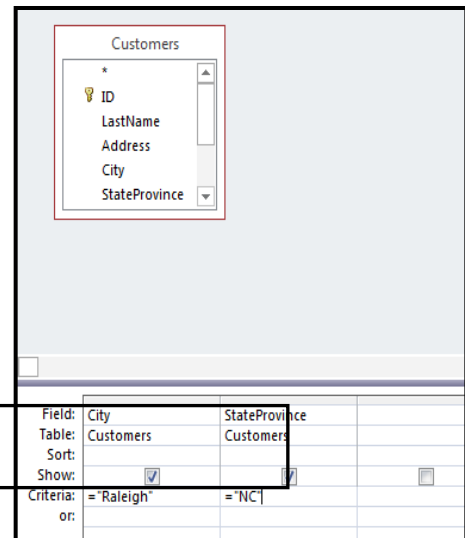
Adding Criteria to a Query

1. Open the Customers Query in Design View. Click on View and choose Design View.



2. Identify the field for which you want to specify criteria. If a field that you want to specify a criterion for is not already in the design grid, you can add it by dragging it from the query design window to the design grid.
3. When the field that you want is in the design grid, you enter the criterion in the Criteria row for that field.

For example, you might specify the criterion = "Raleigh" for the City field. Only records where the value of the city field is Raleigh will satisfy this criterion.





Before you proceed, open the table Pastries.

Product Typ ▾	Products Table.Product Name ▾	Sales Unit.Product Name ▾	SumOfQuan ▾
Cakes	Black Forest	Single	8
Cakes	Black Walnut	Single	5
Cakes	Buche de Noel (Christmas Cake)- Winter	Single	12
Cakes	Carrot Cake	Single	9
Cakes	Cheesecake	Single	18
Cakes	Coconut	Single	2
Cakes	Cookies n' Cream	Single	1
Cakes	French Vanilla	Single	2
Cakes	German Chocolate	Single	2
Cakes	Gingerbread - Winter	Single	4
Cakes	Italian Rum	Single	4
Cakes	Red Velvet	Single	1
Pies	Apple	Single	5
Pies	Apple Crumb	Single	3
Pies	Chocolate Chess	Single	5
Pies	Coconut Cream	Single	1
Pies	French Silk	Single	5
Pies	Key Lime	Single	6
Pies	Peanut Butter Chocolate	Single	3
Pies	Pecan	Single	10
Pies	Pumpkin	Single	9
Pies	Sweet Potato	Single	3

Let us make use of the guidelines on how to specify a criterion using the data given.

1. Display only records where the value of the Product Type is Cakes.

Criteria = "Cakes"

On this example it will only display records of: Black Forest, Black walnut, Buche de Noel, Carrot cake, Cheesecake, Coconut, Cookies n' Cream, French Vanilla, German Chocolate, Gingerbread, Italian Rum and Red Velvet.

2. Display only records where the value of the product Type is Pies.

Criteria = "Pies"

On this example it will only display records of: Apple, Apple Crumb, Chocolate Cheese, Coconut cream, French Silk, key Lime, Peanut Butter Chocolate, Pecan, Pumpkin, Sweet Potato.



Student Activity 12.2.3.3

Answer the following questions.

1. Define criteria in your own words.

2. Enumerate at least five (5) criteria values.

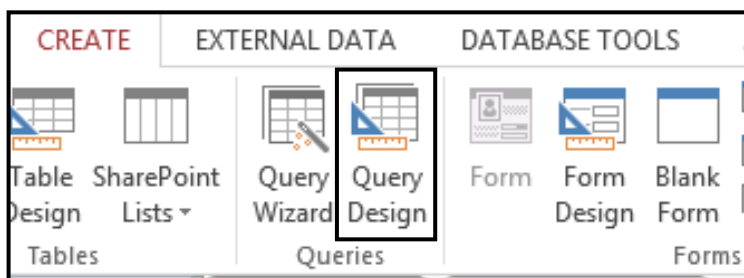


12.2.3.4 Editing Query

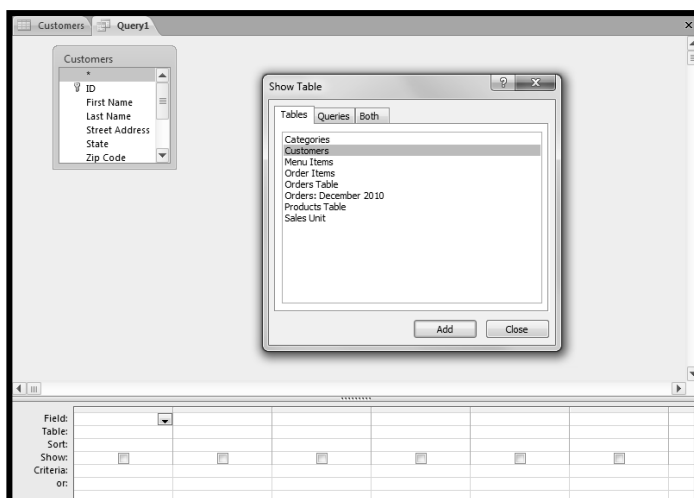
In creating Query you may come across on the instances of having some changes. You can insert, arrange and remove query fields. Follow the steps below on how to insert, remove and move a field.

To insert a field

1. On the **Create tab**, click **Query Design**.



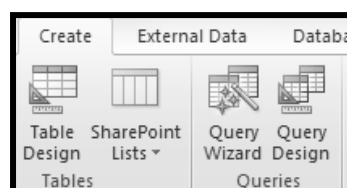
2. On the **Query grid**, click at the top of a field's column to select it.



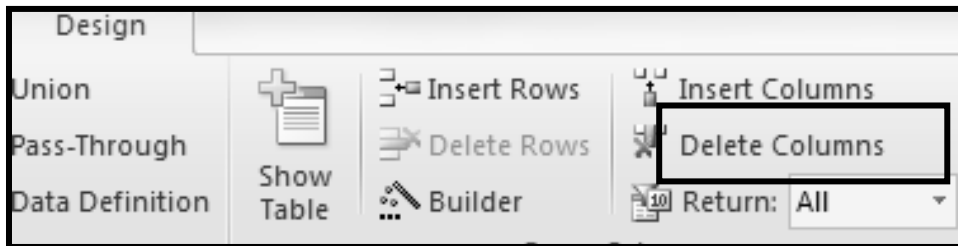
3. On the **Design tab**, click **Insert Columns**.
4. When a new blank column appears, drag the new field into the blank column.

To remove a field

1. On the **Create tab**, click **Query Design**.



2. On the **Query grid**, click at the top of a field's column to select it.
3. On the **Design tab**, click **Delete Columns**.



To move a field

1. On the **Query Design view**, click at the top of the field's column to select it.
2. Drag the left or right bar above the field to remove it.
3. A black line will appear to show where the field is being moved.

Filtering a Query

Follow the steps below on how to filter a query.

1. On the **Create tab**, click **Query Design**.
2. On the **Criteria row**, type the value that you want to filter.
3. If the value is a data, enclose it with hash marks: #06/03/14#.
4. If you want to use a text string, enclose it with quotation marks: "PNG*"
5. If you want to specify a range of values, use greater than >, less than <, greater than or equal to >=, less than or equal to <= or equals =.
6. If you want to use ranges that are in between, type **Between** and add a space or type **And** then add a space.
7. You can also use **Or** and add space and type the next value.
8. Click **View** to check your work.

Through simple logical operators in Query criteria you can set criteria by using simple AND/OR operators, which enables you to confine the results of a query based upon the query criteria to check which table field data is to be included.

**Student Activity 12.2.3.4**

Arrange the following steps.

1. To remove a field in a query. Use numbers 1 to 3.

- _____ On the Query grid, click at the top of a field's column to select it.
- _____ On the Create tab, click Query Design.
- _____ On the Design tab, click Delete Columns.

2. To insert a field in a query. Use numbers 1 to 4.

- _____ On the Design tab, click Insert Columns.
- _____ On the Create tab, click Query Design.
- _____ When a new blank column appears, drag the new field into the blank column.
- _____ On the Query grid, click at the top of a field's column to select it.

3. To move a field in a query. Use numbers 1 to 3.

- _____ Drag the bar above the field left or right to remove it.
- _____ A black line will appear to show where the field is being moved.
- _____ On the Query Design View, click at the top of the field's column to select it.



12.2.3.5 Creating Advanced Query

The type of query that you created in the previous section can return a lot of data. A common way to limit what the query returns is to use a parameter. A simple parameter makes the query ask for input before it runs. For example, if you only want to see records between certain dates, you can add parameters that make the query ask you for starting and ending dates and the query will give you just the records that fall between those dates.

Creating a Query Asking an Input

In other words, parameters are a type of filter that you build in to your query. Follow the steps below on how to create a query asking an input.

1. Open the query in Design view, and in the **Criteria** row of the field you want to filter, enter your parameter. For example, you can use the criteria such as: Between [Start Date] And [End Date].
2. When you run the query, the criteria asks you for a start date, then an end date, and it returns only the records that fall within the dates you specify.

Creating a Query using Multiple Tables

Finally, you can use multiple tables, or other queries, as the record source for a new query. In fact, you will query multiple record sources far more than you will single sources. Multi-source queries are how you answer questions such as; which assets came from which suppliers.

The Query Wizard is the easiest way to get started building multi-source queries, especially if you are new to Access. You can refer to the previous lesson in creating query using Query Wizard. Follow the steps below on how to create a query using multiple tables.



Remember that any tables in the record source must participate in a relationship. For example, you cannot extract the names of your employees from one source and the assets that they use from another unless those tables are related. If the tables in your record source are not related, the query returns all the data from each table, and that kind of result has extremely limited uses.

1. Click the **Create** tab, and in the **Queries** group, click **Query Wizard**.
2. On the first page of the wizard, make sure **Simple Query Wizard** is selected, and then click **OK**.
3. Open the **Tables/Queries** list and click the first table you want to use.
4. In the **Available Fields** pane, click the first field you want to use in the query, and then click the right-arrow button to move the field to the **Selected Fields** pane.
5. Repeat step 4 to add any other fields from that table.
6. Open the **Tables/Queries** list and select the second table you want to use.



7. Repeat step 4 to add fields from the second table to the query, and then click **Next**.
8. In the **What title do you want for your query** text box, enter a name for the query, then click **Finish**.

Creating a Query using Formula

Another common way to alter the selection criteria in a query is to add a function. For example, if you want to know how much your company spent on office furniture last year, you can add an aggregate function to the query and the sum will appear in your results. Follow the steps below on how create a query using a formula.

1. Open your query in Design view.
2. On the **Design** tab, in the **Show/Hide** group, click **Totals**. The **Total** row appears in the designer.
3. In the field where you want to use the function, click the **Total** row and select a function from the list.
4. When you run your query, the results include your calculation.

Adding a Calculated Field in a Query

Follow the steps below on how to add a calculated field in a query.

1. Open the query in Design view.
2. In the design grid, go to the first blank column, click the Field row, and enter your formula or expression. For example: **Retire_Date: DateAdd('yyyy',5,[Acquired_Date])**.
3. Press CTRL+S to save your changes.
4. On the **Design** tab, in the **Results** group, click **Run**.



Student Activity 12.2.3.5

Answer the following questions.

1. What is the importance of using a parameter in a query?



12.2.3.6 Running Queries

A query is a set of instructions that you can use for working with data. You run a query to perform these instructions. In addition to returning results – which can be sorted, grouped or filtered – a query can also create, copy, delete, or changed data.

You cannot run action queries if a database is operating in Disabled mode – a reduced functionality mode that Access uses to help protect your data in certain circumstances.

Run a select or a crosstab query

You use select queries and crosstab queries to retrieve and present data, and to supply forms and reports with data. Follow the steps below on how to run a select or crosstab query.

1. Locate the query in the Navigation Pane.
2. Do one of the following:
 - Double click the query you want to run.
 - Click the query you want to run, and then press **ENTER**.



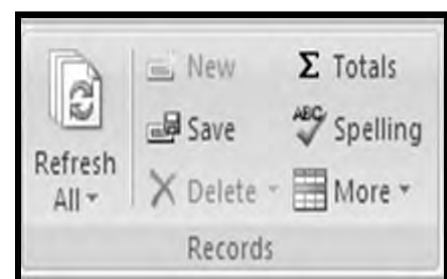
If the query you want to run is currently open in Design view, you can also run it by clicking **RUN** in the Results group on the Design tab on the Ribbon.

Run an action query

There are four types of action queries: append queries, delete queries, update queries, and make-table queries. Except for make-table queries (which create new table), action queries make changes to the data in tables they are based on. These changes cannot easily be undone, for example, by pressing **CRTL + Z**. If you make changes using an action query that you later decide you did not want to make, usually you will have to restore the data from a backup copy. For this reason, you should always make sure you have a fresh backup of the underlying data before running an action query.

You can lessen the risk of running an action query by first previewing the data that will be acted upon. There are two ways to do this;

- View the action query in Datasheet view before you run it. To do this, open the query in Design View, click **View** on the Access status bar, and then click **Datasheet View** on the shortcut menu.
- Change the query to a select query, and then run it.



Run an action query as a select query

Follow the steps below on how to run an action query as a select query.

1. Open the action query in **Design View**.



2. On the **Design** tab, in the **Query Type** group, click **Select**.
3. On the **Design** tab, in the **Results** group, click **Run**.

Using the Total Row in a Query

A Totals row helps you see, at a quick glance, what the totals are for columns on a datasheet. For example, in a table of purchase information, we can show the sum of the price or units purchased, or a total count of the items by adding a Totals row to the datasheet.

To show the Sum value for a column, the column's data type has to be set to Number, Decimal or Currency. For non-numeric columns, you can only select the Count total type.

Add a Totals row

Follow the steps below on how to add a Totals row.

1. Double click the query from the **Navigation Pane** to open it in **Datasheet View**.
2. On the **Home** tab, click **Totals**.
3. For each cell in the Total row where you want a total to appear, click in the cell and select the kind of total you want.

Once you are done with these steps, you will notice that a **Total** row has been added at the end of your datasheet.

Selecting the total type

After adding the **Total** row, you select what type of totals value is displayed for each column. For example, aggregates like sums can be displayed when the data type is set to Number, Decimal, or Currency. A count of values is possible when the data type is a text value.



Though the Total row cannot be deleted or cut, it can be hidden by clicking Totals on the Home tab.



Student Activity 12.2.3.6

Answer the following questions.

1. What are the four types of an action query?



2. How queries are presented when you run an action query?

3. How to add Totals row in a query?



Summative Activity 12.2.3

Answer the following questions.

1. Identify what is being described in each of the statements below.

a. A small window that will display all the tables you choose to include in your query. It contains a list of every available field within the table.

b. This is the command to view the results of the query in the table.

c. It allows you to specify exactly what type of information you want your query to retrieve.

d. These are fields in the query that are located in the first row of the Design grid.

e. This part can be seen in the bottom part of the Query Design view.

2. Write True if the statement is correct otherwise write False if the statement is not true on the space provided.



- a. You can use queries to view, change and analyse data in different ways.

- b. Query is a request to add an action on the data.

- c. When you run a query, the results are presented to you in a form.

- d. One way to create a simple query is to use the Query Wizard.

- e. The Query Design View will allow you to create a query that has full range of capabilities including filtering.

- f. Criteria are conditions that will determine which record will be included.

- g. You cannot set criteria for a query that can control how field information in selected fields appears in a completed query.

- h. The Query Design View allows you to remove the table fields you want in your query.

- i. You can insert, arrange and remove query fields.

- j. The Query Wizard is the easiest way to get started building multi-source queries, especially if you are new to Access.



Answers to Student Activity 12.2.3

Answers may be similar to the ones below.

Student Activity 12.2.3.1

1. Query is a simple search or filter that draws information from multiple tables. It allows us to work in specific set of records that meet the criteria specified from a table in the database.

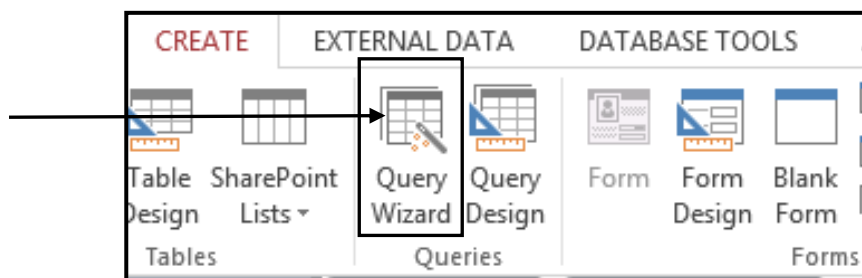


2. In creating a simple query you need to provide: Fields need to be searched; search criteria or item that you are searching for; fields that you want to display with the results.
3. You can use Query Wizard to create a simple query. Using this wizard will help the user to go through the process in a logical way. Using this wizard also helps new users to create their own simple query.

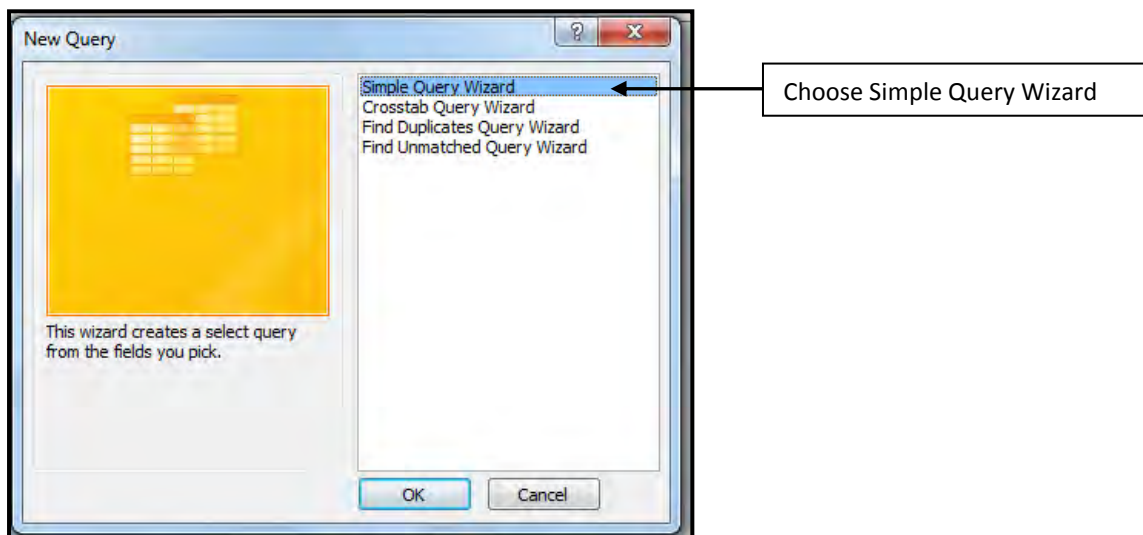
Practical Activity

The following are the steps on how to create query using Query Wizard.

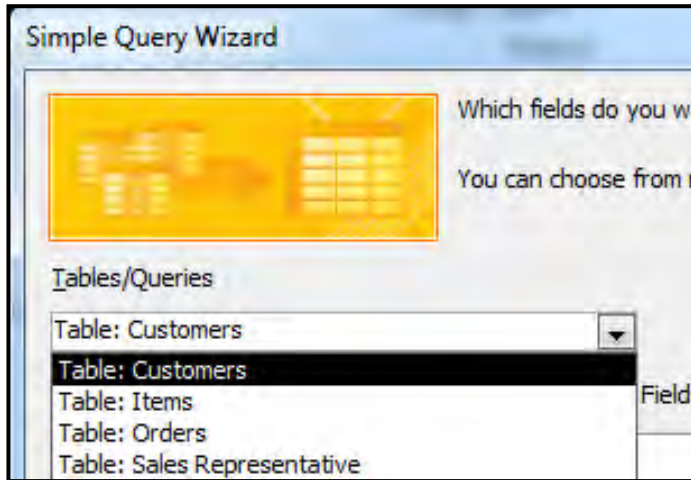
1. Open the Sales Representative table you have created from the previous lesson.
2. On the **Create** tab, click the **Query Wizard**.



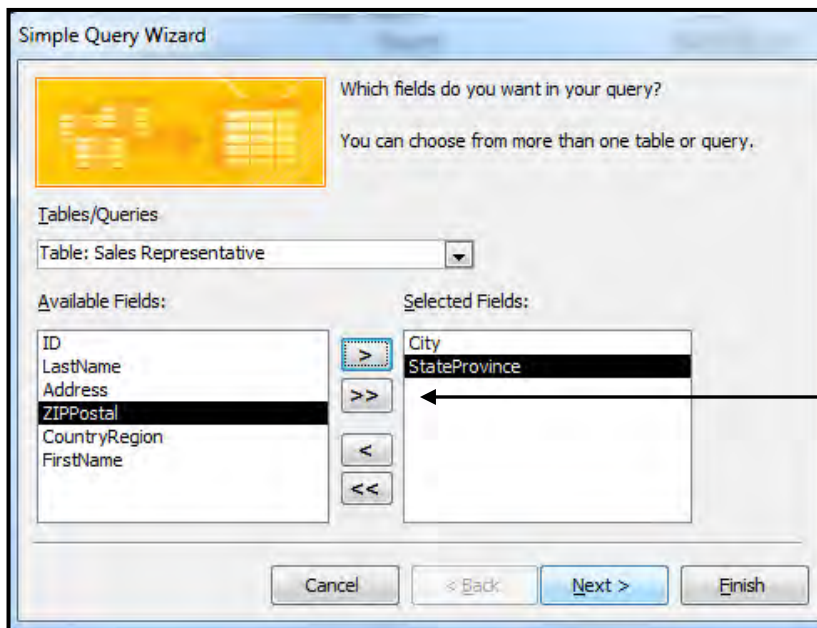
3. On the **New Query** dialog box, click the **Simple Query Wizard** and click **OK**.



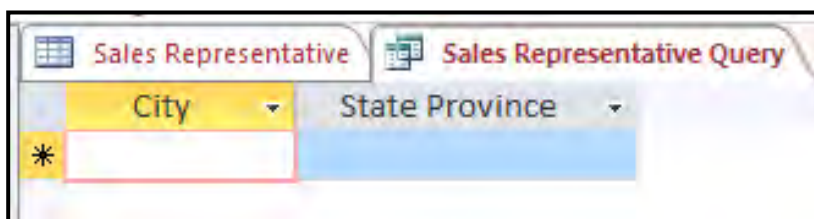
4. When the Simple Query Wizard opens, click the down arrow to select the table or other query from which you want to select fields.



- 5. Click a field and click the right arrow to move the field to the selected Fields list. You can click the double arrow to move all the fields at once.



- 6. You can pull as many fields as you want.
- 7. Click **Next**.
- 8. Type a name for the query and click **Finish**. The query results will now appear in the datasheet. Your output may be similar to the one below.





Student Activity 12.2.3.2

1. a. The function of Query command is to draw information from multiple tables. Queries allow the user to work on a specific set of records that meet the criteria which are specified on the table.
 - b. We can create a simple query by using Query Wizard. This wizard does steps through the query design process in a logical way. This is the best way for starters. On the other hand you can also create a query using Query Design view. This will allow you to create a query that has full range of capabilities including filtering.
 2. A. For this activity, follow the steps below:
 - a. Open the Students table.
 - b. On the Create tab, click the Query Wizard.
 - c. On the New Query dialog box, click the Simple Query Wizard and click OK.
 - d. When the Simple Query Wizard opens, click the down arrow to select the table or other query from which you want to select fields.
 - e. Click a field and click the right arrow to move the field to the selected Fields list. You can click the double arrow to move all the fields at once.
 - f. You can pull as many fields as you want.
 - g. Click Next.
 - h. Type a name for the query and click Finish.
 - i. The query results will now appear in the datasheet.
 - B. For this activity, follow the steps below:
 - a. Open the Customer's table.
 - b. Click the Create tab, and in the Queries group, click Query Design.
 - c. In the Show Table dialog box, click the table you want to use, click Add, and then click Close to close the dialog box.
 - d. In the table, double-click the fields you want to use in the query. Notice that the fields appear in the grid at the bottom of the designer. You can also drag fields from the table to an empty column in the grid.
 - e. On the Design tab, in the Results group, click Run.
 - f. The query loads the data into a datasheet.
-



- g. Press CTRL+S to save the query, and in the Save As dialog box, enter a name.
-

Student Activity 12.2.3.3

Arrange the following steps:

I. To remove a field in a query. Use numbers 1 to 3

2

1

3

II. To insert a field in a query. Use numbers 1 to 4

3

1

4

2

III. To move a field in a query. Use numbers 1 to 3

2

3

1

Student Activity 12.2.3.4

A.

1. The function of Query command is to draw information from multiple tables. Queries allow the user to work on a specific set of records that meet the criteria which are specified on the table.
 2. We can create a simple query by using Query Wizard. This wizard does steps through the query design process in a logical way. This is the best way for starters. On the other hand you can also create a query using Query Design view. This will allow you to create a query that has full range of capabilities including filtering.
-



B.

1. For this activity, follow the steps below:

- a. Open the Students table.
- b. On the Create tab, click the Query Wizard.
- c. On the New Query dialog box, click the Simple Query Wizard and click OK.
- d. When the Simple Query Wizard opens, click the down arrow to select the table or other query from which you want to select fields.
- e. Click a field and click the right arrow to move the field to the selected Fields list. You can click the double arrow to move all the fields at once.
- f. You can pull as many fields as you want.
- g. Click Next.
- h. Type a name for the query and click Finish.
- i. The query results will now appear in the datasheet.

2. For this activity, follow the steps below:

- a. Open the Customer's table.
- b. Click the Create tab, and in the Queries group, click Query Design.
- c. In the Show Table dialog box, click the table you want to use, click Add, and then click Close to close the dialog box.
- d. In the table, double-click the fields you want to use in the query. Notice that the fields appear in the grid at the bottom of the designer. You can also drag fields from the table to an empty column in the grid.
- e. On the Design tab, in the Results group, click Run.
- f. The query loads the data into a datasheet.
- g. Press CTRL+S to save the query, and in the Save As dialog box, enter a name.



Student Activity 12.2.3.5

1. Parameters in a query will limit the data that will return to the user. It makes the query to ask input before it runs. Parameters will provide simplicity and straight to the point data to user.
2. The steps in creating a query asking for an input are as follows:

Open the query in Design view, and in the **Criteria** row of the field that you want to filter, enter your parameter. For example, you can use the criteria such as: Between [Start Date] And [End Date].

When you run the query, that criteria asks you for a start date, then an end date, and it returns only the records that fall within the dates you specify.

Student Activity 12.2.3.6

1. The four types of action queries are delete queries, append queries, update queries and make-table queries
2. After a query has been designed, as you click on the Run Query command, result will be displayed in a table.
3. To add totals in a row: double click the query from the Navigation Pane to open it in Datasheet view. On the Home tab, click totals. For each cell in the Total row where you want a total to appear, click in the cell and select the kind of total you want.



Answers to Summative Activity 12.2.3

1.
 - a. Object Relationship Pane
 - b. Run Query
 - c. Query Criteria
 - d. Field and Table Names
 - e. Design Grid
 2.
 - a. True
 - b. False
 - c. False
 - d. True
-



- e. True
- f. True
- g. False
- h. False
- i. True
- j. True

12.2.4 Creating and Customising Forms and Reports

12.2.4.1 Creating Forms Effectively

Access forms are much like paper forms: you can use them to enter, edit, or display data. They are based on tables. When using a form, you can choose the format, the arrangement, and which fields you want to display.

A form is a type of database object that is used to enter, change, delete and display in a database. A form can contain line, colour and images together with check boxes, button and other features called controls. When you create a form, there are a couple of key purpose that you should keep in mind. Your form is good at its job if it achieves clarity and control.

Forms help people focus on just what they need when they enter or view data. You should design a form so that it is easy to read and understand. Access can automatically create several types of forms. For example, when you click the Form button on the Create Tab, Access places all fields in the selected table on a form. If the table has a one-to-many relationship with one other table or query, Access creates a stacked form (the records are displayed in a column) for the primary table and a datasheet for the related table. If there are several tables with a one-to-many relationship, Access does not create the datasheet.

Why are Forms important?

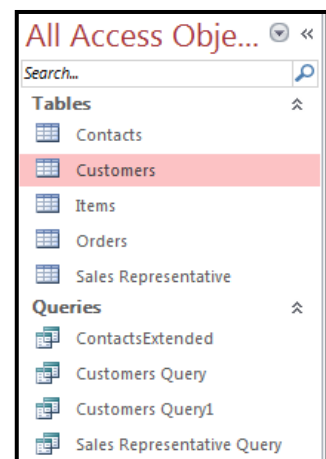
Forms allow you to display data in a more presentable form than a datasheet can. It also allows you to see all the fields at once, or just some of the fields. It can also allow you to generate other data from the existing data, like showing calculation from figures on the form. Forms allow more functionality by having controls such as buttons. It can link into queries and can set up subforms to present data in relationships.

Creating a Form using an Auto Form

Auto Forms are the forms that come with the Office while installing it. There will be some pre-created forms that will come with Microsoft Access by default. You can quickly build forms by using the AutoForm feature. The AutoForm feature gives you absolutely no control over how a form appears, but it provides you with an instantaneous means of data entry.

Creating a form using the AutoForm feature is amazingly easy. Here is how it works:

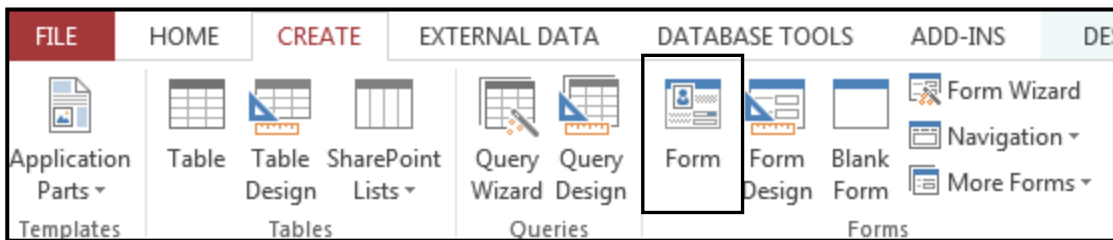
- 1. Select the table or query on which you want to base the new





form.

2. Select Form in the **Form** group on the **Create** tab of the Ribbon. Access creates a form based on the selected table or query.

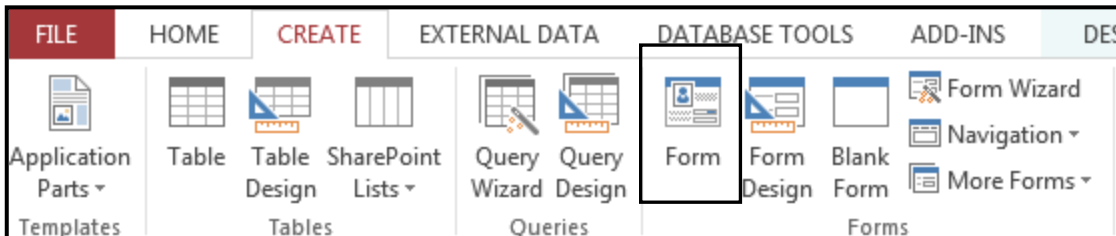


Creating a Basic Form

You can create forms either from the Form Wizard from the Design View. You can also create three types of forms – plain form, split form that shows both datasheet and form at the same time; multiple-item form that shows multiple records at the same time.

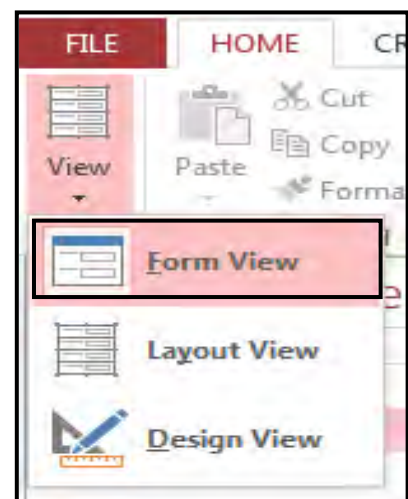
Follow the steps below on how to create a basic form.

1. On the **Objects** list, click the table or query you want to use. Open Customers table.
2. On the **Create** tab, click **Form**.



Access creates the form and displays it in Layout view. In Layout view, you can make design changes to the form while it is displaying data. For example you can adjust the size of the text boxes to fit the data.

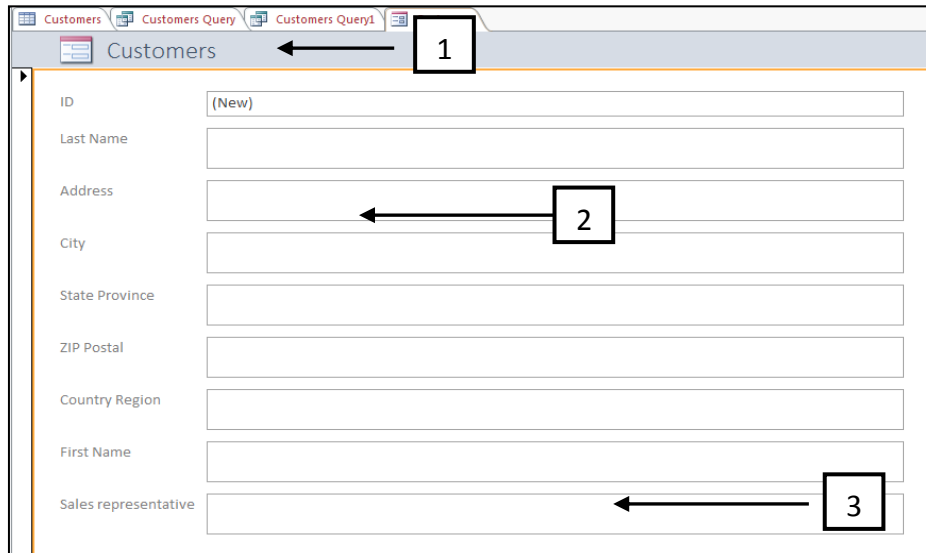
3. To begin working with the form, switch to form view.





Form Sections

The following are the sections of a Form:



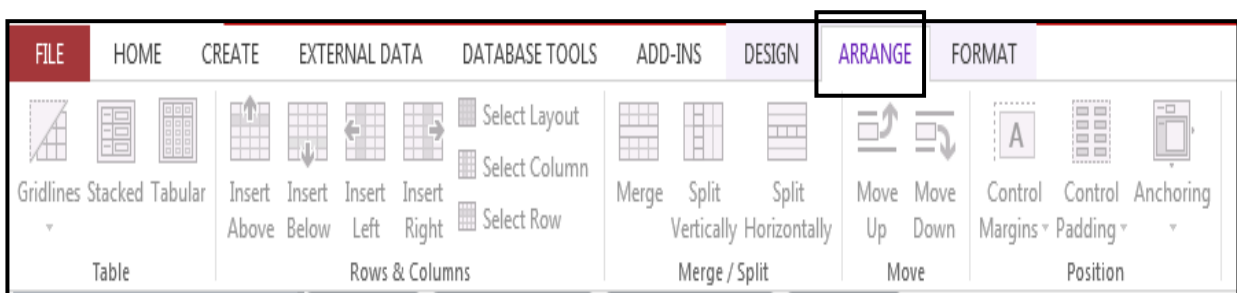
1. Form Header displays information that remains the same on each record (for example, the title of the form).
2. Detail displays the record.
3. Form Footer displays information that remains the same on each record (for example, the instructions on how to use the form.)

After you have created a form, the following tabs will appear:

1. From the Layout Tools Design.

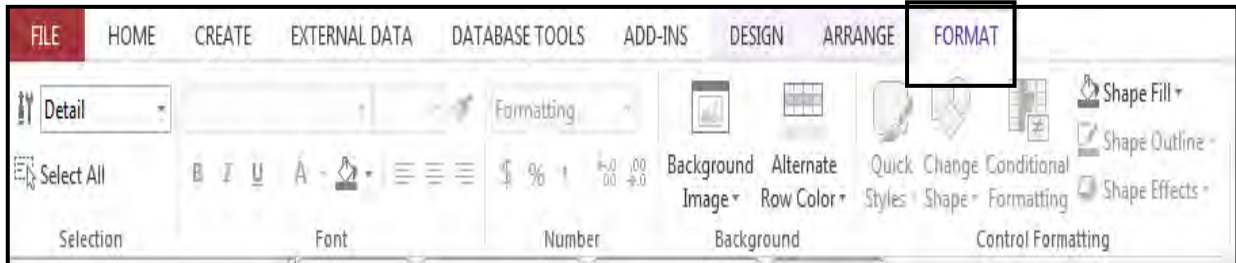


2. From the Layout Tools Arrange.





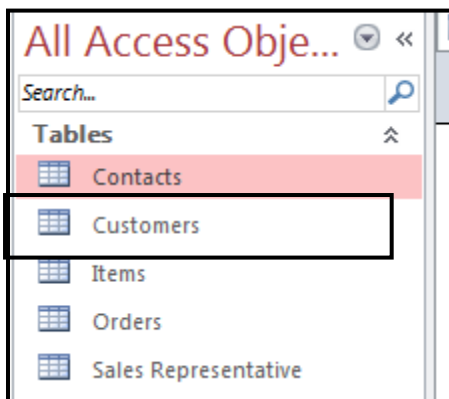
3. From the Layout Tools Format.



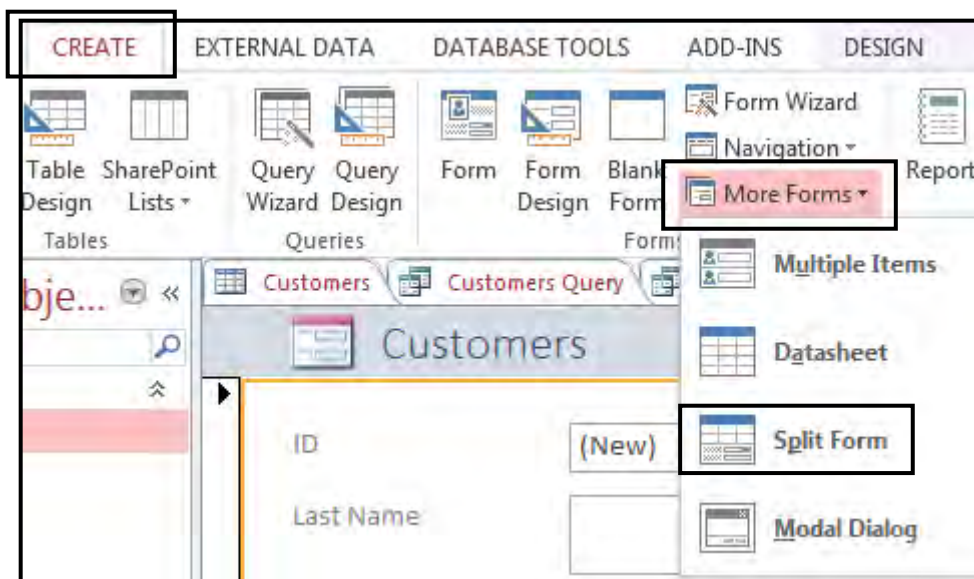
Creating a Split Form

Follow the steps below on how to create a Split Form:

1. On the **Objects Pane**, click the table or query that you want to use. Let us use the table which you have created named **Customers**.



2. On the **Create** tab, click **More Forms**.



3. Click the arrow down and choose **Split Form**.



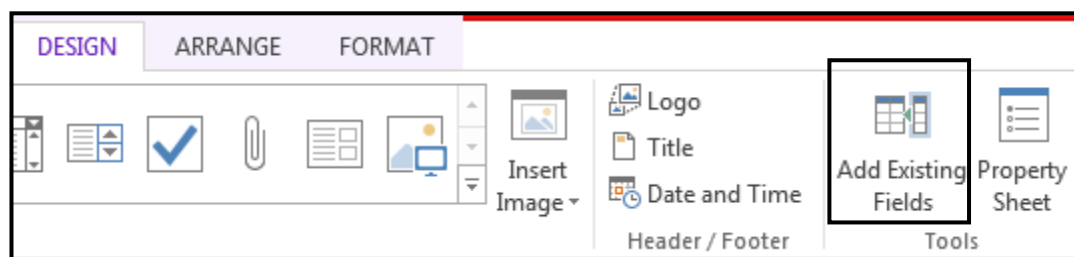
4. The form is displayed on the upper part of the screen and the datasheet is on the lower part. If Access finds a table that has a one-to-many relationship with the table or query that you used to create the form, Access adds a subdatasheet to the form that is based on the related table or query.

Adding Fields to a Form

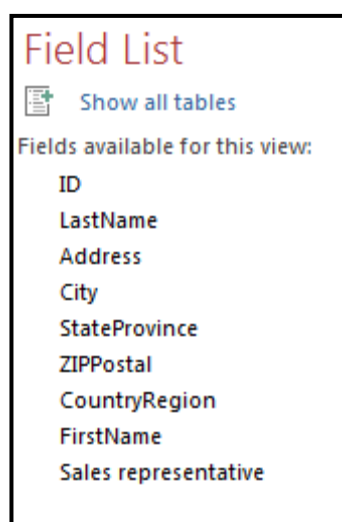
When you use the Form command on an existing table, all of the fields from that table are included in that form. However, if you later add additional fields to that table, those fields will not automatically show up in existing forms. In situation like this, you can add additional fields to a form.

Follow the steps below on how to add fields to a Form. You can use any of the table you have created in the previous lessons.

1. Select the **Form Layout Tool Design** tab, and then locate the **Tools** group on the right side of the ribbon.



2. Click the **Add existing Fields** command.
3. The **Field List** pane will appear. Select the field or fields to add to your form.





Saving Forms

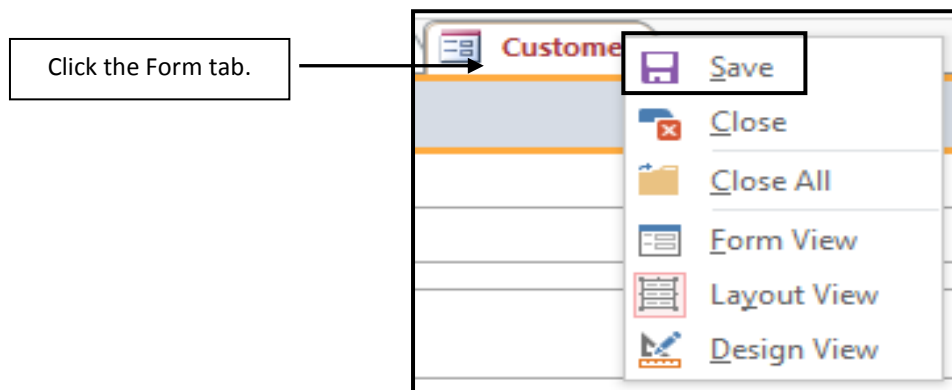
Although Access automatically saves all the data changes that you make to a form, it is up to you to save all the design changes that you make to the form. As you work with the design of a form, you should periodically click **Save** tool on the Quick Access toolbar to save changes. When you close the form, Access prompts you to once again save your changes. Follow the steps below on how to save Forms.

1. On the **Quick Access Toolbar**, click the **Save** button.



OR

1. You can also right click on the form tab and select **Save** on the context menu.



3. When the **Save As dialog box** appears, type your file name.



Student Activity 12.2.4.1

Follow the instructions below.

A. Briefly answer the following questions.

1. What is a form?



2. How do you create a Split Form?

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

3. List the six basic types of forms.

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____



B. Create an Animals table that contains the following: Name of animal, type, food and shelter. With this table create a form using AutoForm.



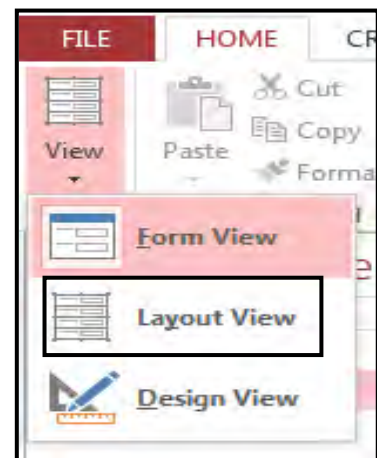
12.2.4.2 Customising Forms

When working with forms you will probably need to customise the form to improve the look function. You can use Access Design View to add additional efficiency to your forms.

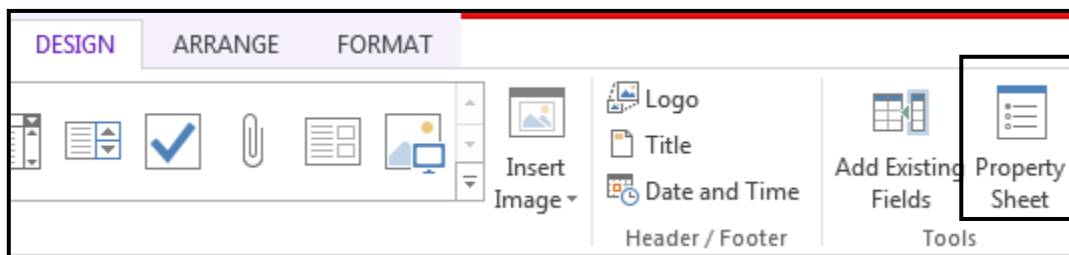
You can add, delete and make changes in the form you have created. You can also change the font, size and style of text in the text box.

These setting adjustments take place via the handy Property Sheet. To make adjustments, you need to access the Property Sheet. To do this, follow the steps below:

1. Open any Table or Query you created from the previous lesson.
2. Click on the **View** in the toolbar at the top left of the program window.
3. Once in **Layout View**, click on the **Design** tab.



4. On the right-hand side you should see the **Property Sheet Option** in the **Tools** section.



5. Click on it to display the **Property Sheet** and all of its settings.



Property Sheet				
Selection type: Text Box				
ID				
Format	Data	Event	Other	All
Name	ID			
Control Source	ID			
Format				
Decimal Places	Auto			
Visible	Yes			
Text Format	Plain Text			
Datasheet Caption				
Show Date Picker	For dates			
Width	17.328 cm			
Height	0.635 cm			
Top	0.608 cm			
Left	4.365 cm			
Back Style	Normal			
Back Color	Background 1			
Border Style	Solid			
Border Width	Hairline			
Border Color	Background 1			
Special Effect	Flat			
Scroll Bars	None			
Font Name	Calibri (Detail)			
Font Size	11			
Text Align	Left			
Font Weight	Normal			
Font Underline	No			
Font Italic	No			
Fore Color	Text 1, Lighter			
Line Spacing	0 cm			
Is Hyperlink	No			

Within the Property Sheet are multiple tabs that you can go to in order to adjust different settings. These tabs include Format, Data, Event, Other, and All. As for the settings in these tabs, they are displayed with the property name in the left column of each row and the property value in the right column.

Adjusting each property can be done in one of the two ways. Some of the properties will ask you to enter a desired value, while others will have convenient drop-down menus with a list of pre-defined values for you to choose from.

Now that you know how to access the Property Sheet and all the adjustable properties and settings it contains. Let us start making adjustments. For our sample form, we are going to begin by hiding the first field in the form, the ID field. Open the form you have just created from previous exercises and follow the steps below.

1. Select **ID** field in the form by clicking on it.
2. Go over the **Property Sheet** and click on the **Format tab**. Look down for the Format property labeled Visible.

Property Sheet				
Selection type: Text Box				
ID				
Format	Data	Event	Other	All
Format				
Decimal Places	Auto			
Visible	Yes			
Show Date Picker	Yes			
Width	No			
Height	0.635 cm			
Top	0.608 cm			
Left	4.365 cm			
Back Style	Normal			
Back Color	Background 1			
Border Style	Solid			
Border Width	Hairline			
Border Color	Background 1			
Special Effect	Flat			



3. The default value of this property is **Yes**. We do not want it to be visible, however, so click on it to display the drop-down menu, and click **No**.
4. To see the result of the changes we just made, click on View at the top left of the program window and select Form View. Looking at the form, you should see that ID is no longer visible.

You can make this property visible again by going to the Visible Property in the Format tab of the property Sheet and selecting the Yes option.

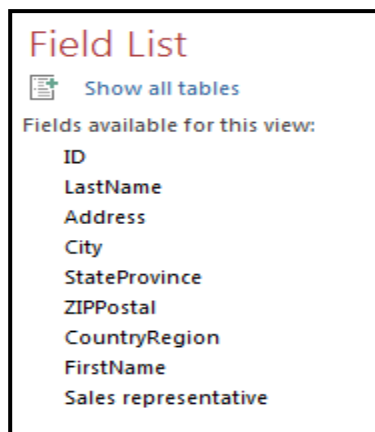
Adding additional fields to a Form

When you use the **Form** command on an existing table, all of the fields from that table are included in that form. However, if you later add additional fields to that table, those fields will **not** automatically show up in existing forms. In situations like this, you can **add** additional fields to a form.

1. Select the **Form Layout Tools Design** tab, and then locate the **Tools** group on the right side of the Ribbon.
2. Click the **Add Existing Fields** command.



3. The **Field List** pane will appear. Select the field or fields to add to your form.
 - If you want to add a field from the **same** table you used to build the form, simply **double-click** the name of the desired field.





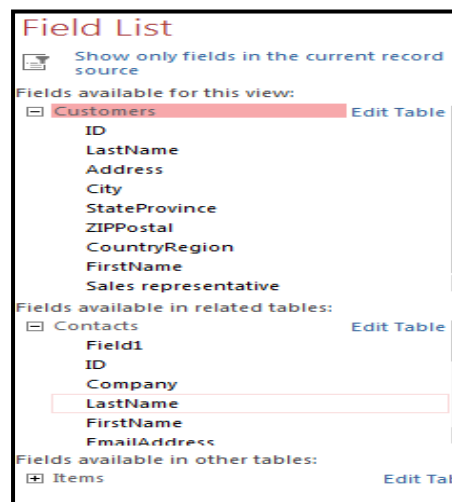
- To add a field from a **different** table:

1. Click **Show All Tables**.



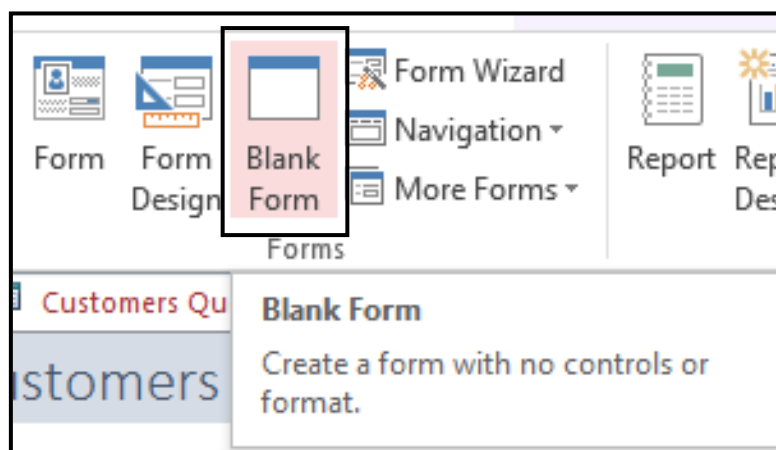
2. Click the plus sign + next to the table containing the field you wish to add.

3. Double-click the desired field.



4. The new field will be added.

You can also use the above procedure to add fields to a totally blank form. Simply **create a form** by clicking the **Blank Form** command on the **Create** tab, and then follow the above steps to add the desired fields.





Student Practical Activity 12.2.4.2

1. Create a Form using the Animal Table you have previously created.

2. Add the following fields to your Form:

- a. Scientific Name,
- b. Type of animal
- c. Country where to find the animal.

3. Insert the new fields in the Form.

After creating a form, you might want to modify its appearance. Formatting your form can help make your database look consistent and professional. Some formatting changes can even make your forms easier to use.

Access offers many options that allows you make your forms look exactly the way you want. While some of these options, like command buttons, are unique to forms, others may be familiar to you.

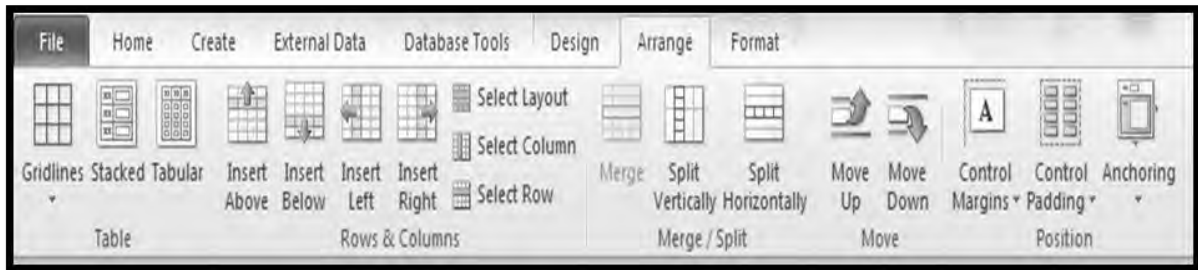
Designing Forms

You can set and change the Theme, Theme colour and Theme fonts. You can also add text boxes, check boxes, list boxes and other objects in your form with the use of the tools available in the Form Layout Tools Design tab.



Arranging Forms

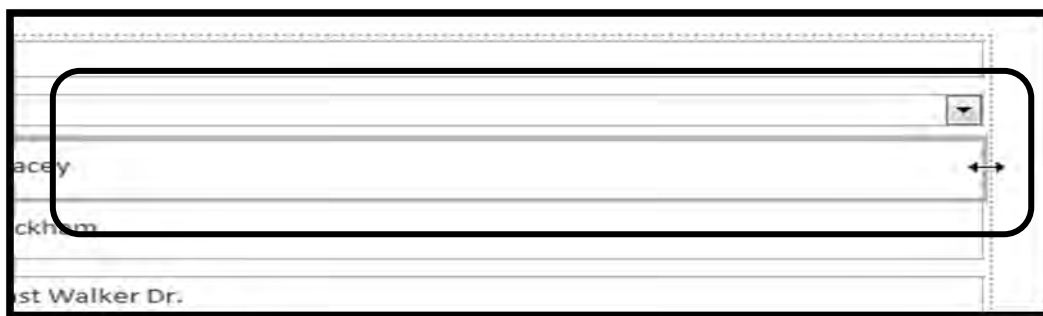
To resize and rearrange our fields the way we want, we need to modify the form layout. For instance, since the default layout for our form contains only two columns – one for the field labels and the other for the fields – we would have to create a new column to put two fields side by side. We can do this by using the command on the Arrange tab, which contains all of the tools you need to customise your form's layout.



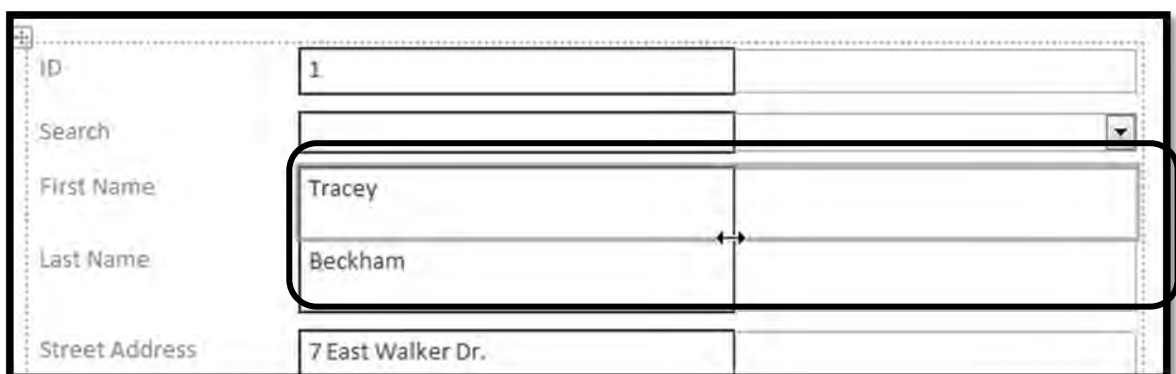
To resize Form components

Follow the steps below to resize Form components:

1. Switch to **Layout** view.
2. Select the field or button you would like to resize, and hover your mouse over the edge. Your cursor will become a double-sided arrow.



3. Click and drag the edge to resize, and release when the field or button of the desired size.
4. The field or button, as well as every other item in line with it, will be resized.

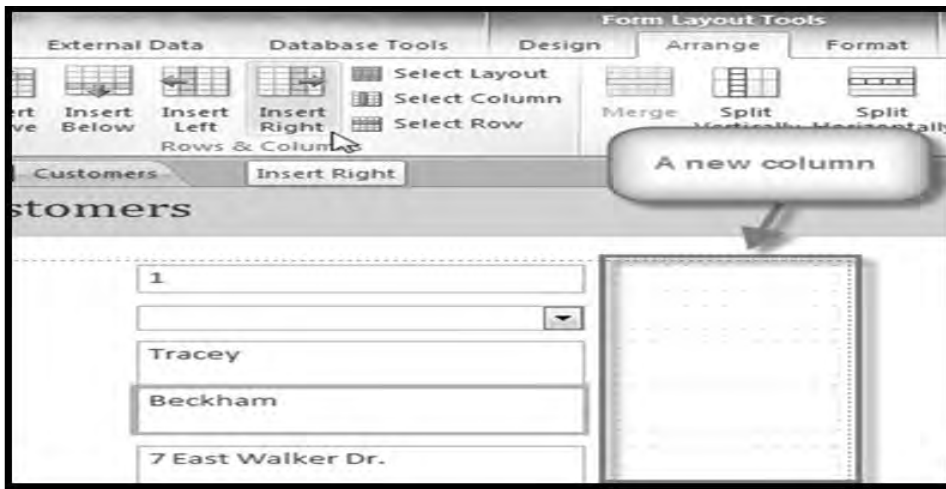




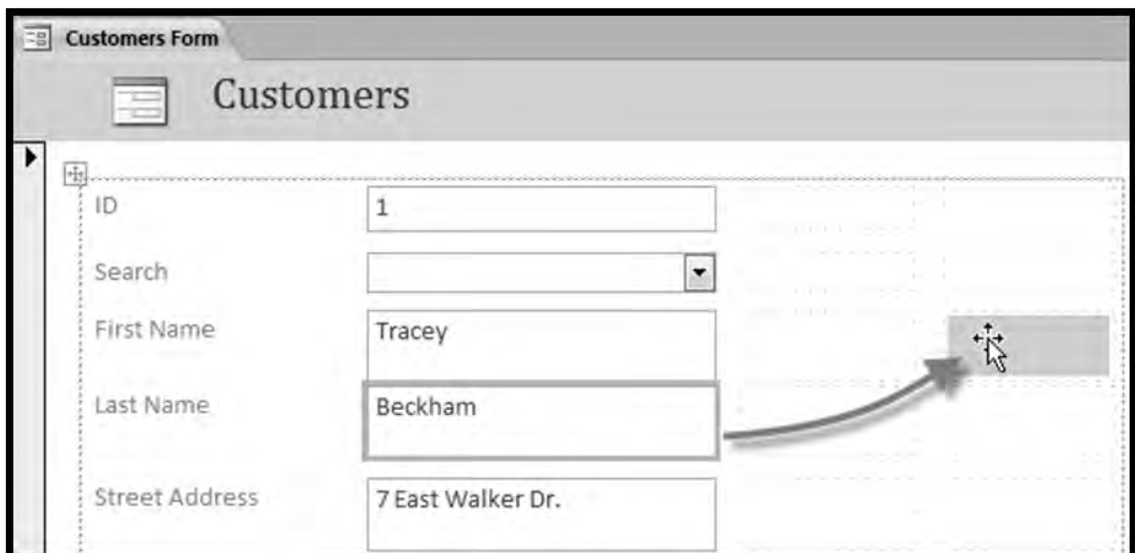
Moving Form Components

Follow the steps below to move Form components:

1. If necessary, **add columns or rows** to make room for the field or button you wish to move by using the **Insert** commands in the **Rows & Columns** group. In our example, we want to move the **Last Name** field to the right of the **First Name** field, so we will have to create two new columns to the right: one for the field label, and the other for the field itself. To do this, we will click the **Insert Right** command twice.



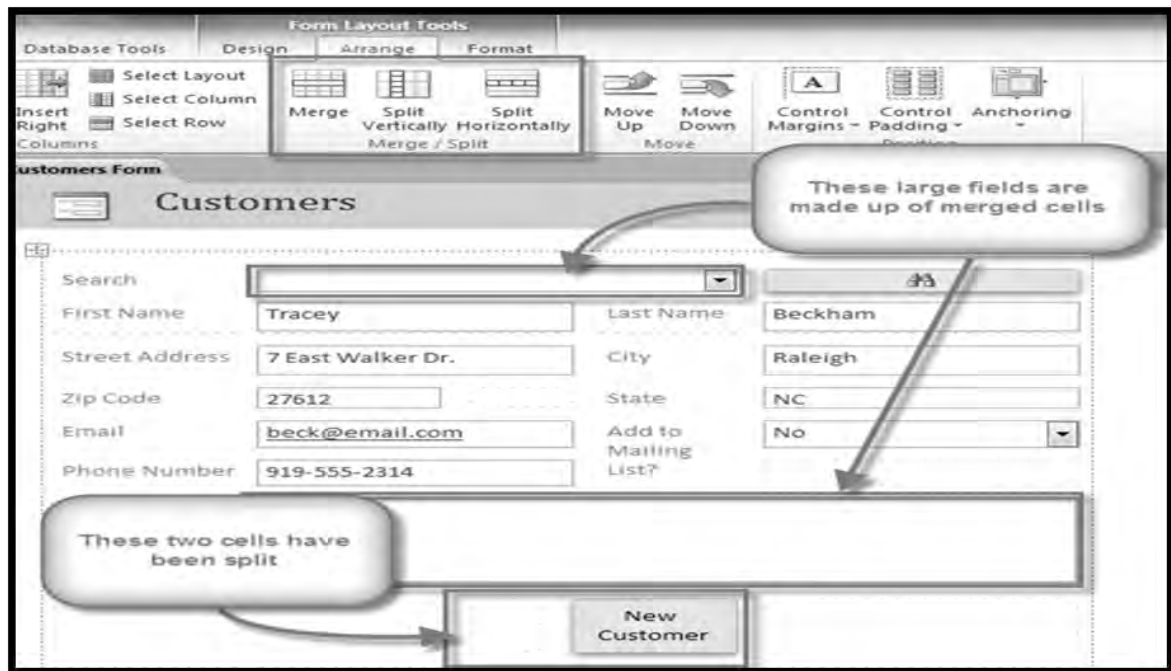
2. **Click and drag** the field or button to its new location. If you are moving a field, make sure to move the **field label** as well.



3. **Repeat** steps **one** and **two** with any other fields or buttons you wish to move.



If you would like to make a field take up more or less space than one column, you can make use of the **Merge and Split command**. The Merge command combines two or more cells, while the Split commands divides a cell.



Formatting Forms

You can set and change the Font type, size, colour, alignment and attributes of fonts in your form with the use of the tools available in the Form Layout tools Format tab.



Adding a Graphic to a Form

You can add graphic images to a form such as logos, clip art or pictures. Follow the steps below on how to add graphic to a Form:

1. After creating your form, click the **Format tab**.
2. Click the **Background Image** button.
3. Click **Browse** and from the **Insert Picture dialog box**, select the file where your picture is saved.





4. Click **Open**.



Student Practical Activity 12.2.4.2

Using the Animal Table and with the form you have just created, perform the following:

1. Design your form, rearrange some of the fields, and add graphics to your form.
2. You may apply the knowledge you have learned from the previous lesson. You are free to design and format your own form.



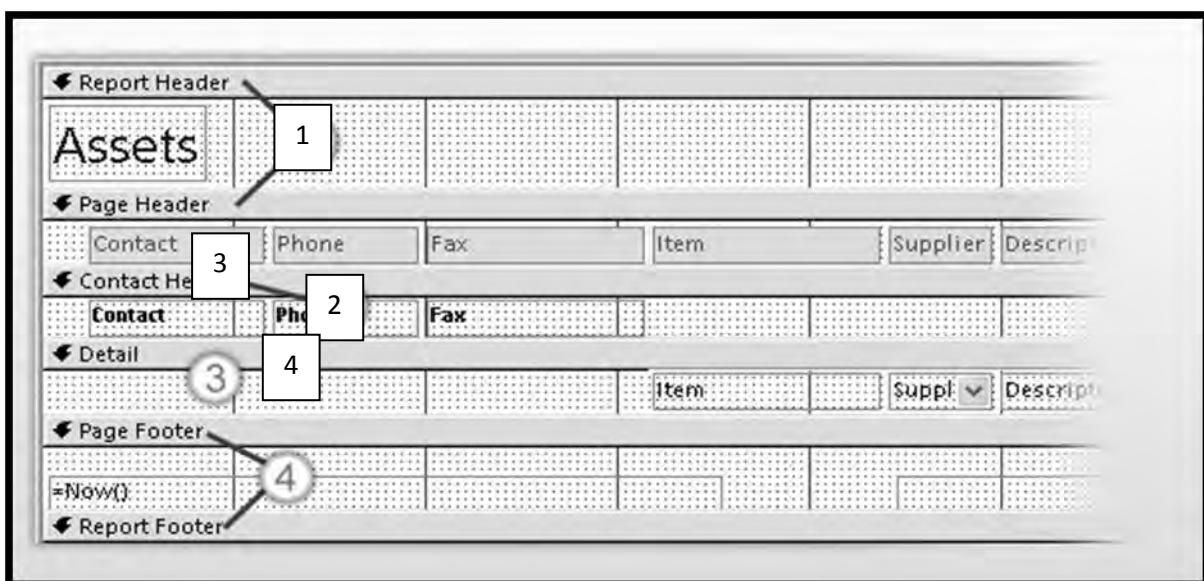
12.2.4.3 Using Auto Report and Report Wizard

Reports allow you to present, organise, summarise and print all or part of the data in a database. You can create report from the Datasheet view, from the Report Database Object or from the Report Wizard. You can use the design tools to bring together data, charts, illustrations, audios and videos. You can also enhance your report with color and within different fonts.

Reports are the end product of your database. They combine the raw facts in your database with enough information to give those facts meaning, and they present the results visually. For example, if you need to use charts or graphs, you use a report. Reports are also the best way to format and print your data, and they are a good way to summarise data. For example, you can group your assets by supplier and calculate a subtotal for each group, as well as a grand total for all groups.

In Access, a report is made up of the following sections.

1. Header sections can appear at the top of a report, or in the case of Page Header sections, at the top of each page in the report. Report headers usually contain titles, and images such as company logos. Page headers usually contain column headings.
2. If you want to group the data in a report, you will see a Group Header. The section will list the fields on which you group your data. For example, if you need to see who repairs a given computer, you can group your data by repair technician.
3. The Detail section is the body of your report, the data your users need to see. All reports must have a detail section.



4. Footer sections can appear in several places. For example, you can create group footers that display sums, counts, or averages for a group of data. You can also create page



footers that appear at the bottom of each report page and display elements such as page numbers.

The header and footer sections are optional. For example, if you do not want to group your data, you do not need group headers or footers. However, make sure your reports contain enough information to make them meaningful and easy to understand.

Designing your Report

So how do you make your reports meaningful and easy to understand with a design? Start by deciding on the data you need to include in the report, and then on the sections you want in the report. For example, all reports need a detail section, but do you need a header? How about grouping? From there, you decide on a layout. Access provides two basic layouts – tabular and stacked – but you can arrange your data in almost any way you want.

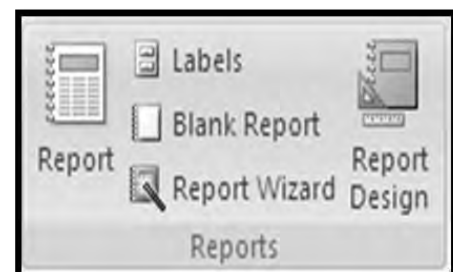
1. **Tabular layouts** resemble spreadsheets. Use them when you need to present your data in a simple list format.
2. **Stacked layouts** resemble the forms you fill out at a bank or when you buy something online. Use a stacked layout if your report contains too many fields to display in tabular form.
3. **Mixed layouts** use elements from tabular and stacked layouts. For example, you can place some of the fields in a record on the same row, and stack other fields from the same record. In Access 2010, you create mixed layouts manually, using either Layout view or Design view.

After you finish your design, you have several options for creating the report. We will start with the Report tool.

Creating a Simple Report

You can generate a report quickly, save it or just re-create it the next time you want to use it. Follow the steps below on how to create a simple report:

1. Click the table or query that you want to create a report.
2. On the **Create** tab, click **Report** and the report appears in the **Layout** view. This view gives you a chance to change it. For example, you can resize a field by clicking and dragging a single control, or you can switch to a stacked layout
3. Click the save button and type your file name to save the report.





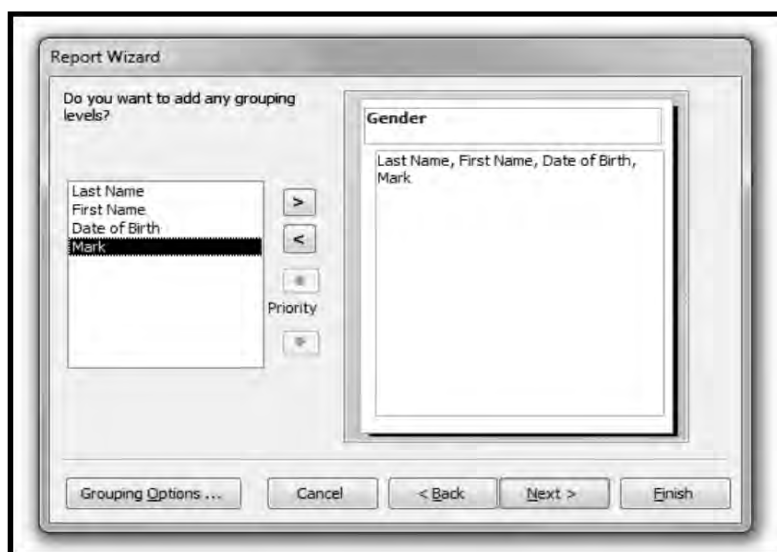
Creating Reports from the Report Wizard

You can use the Report Wizard to easily create and format your report. Using Report Wizard helps you to be more selective about what fields appear on your report. You can also specify how the data is grouped or sorted, and you can use fields from more than one table or query, provided you have specified the relationships between the tables and queries beforehand. Follow the steps on how to create a Form using the Report Wizard:

1. On the **Create** Tab, in the **Reports** group, click **Report Wizard**.
2. On the **Report Wizard Dialog box**, click the down arrow to select a table or query where the report will be based.



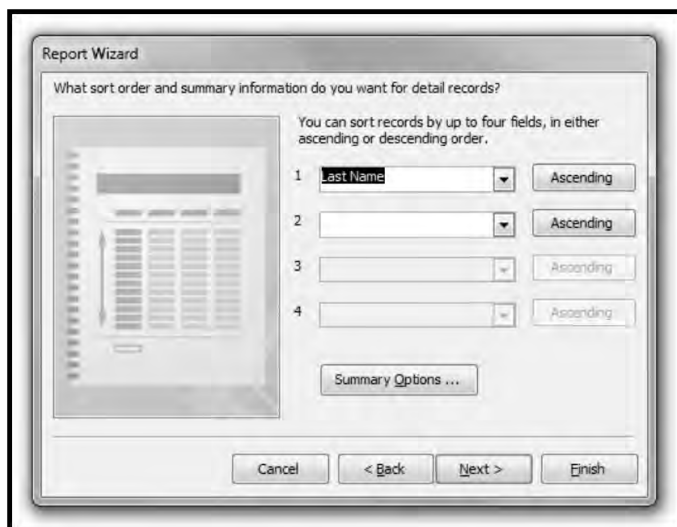
3. Select a field and click the right arrow to move the selected field to the Selected Field lists. Repeat this step if you want more fields to be included in the Selected Fields list. Use the double right arrow to select all fields. Use the left arrow to deselect the field.
4. Click **Next**.



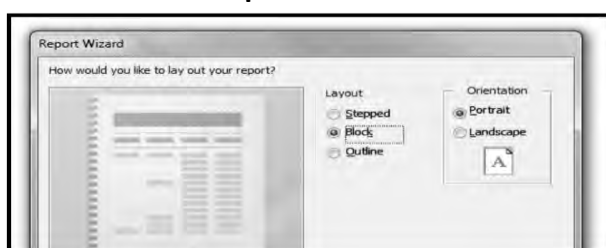
5. Click a field by which you want to group.



6. Grouping a report allows you to break it into parts based on the contents of a field. You can group the report by category. Select the field you want grouped. You use more than one field, but you must prioritise and determine what category you want first, second and so on.
7. Click the right arrow to group the chosen field.
8. Click **Next**.
9. Click the down arrow to choose a field by which you want to sort.
10. Sorting goes side by side with grouping. You can specify the field by which the report will be sorted. You can also sort by multiple fields. You can group a report by category and it will be listed alphabetically in ascending or descending order.
11. Select between **Ascending** and **Descending** sort level.



12. Click **Next**.
13. Click the radio button of the layout you want to use. The layout option allows you to choose the data arrangement on the page. You can choose from **Stepped**, **Block** or **Outline**.
14. Click the radio button of the page orientation you want to set. You can choose between **Portrait** or **Landscape**.





15. Click **Next**.
16. Click the name for your report. You can use the generic name or change it to another name.
17. Click the radio button if you want **to Preview the Report** (view will be Print Preview) or **Modify the Report Design** (view will be Design view).
18. Click **Finish**.



If you want to include fields from multiple tables and queries in your report, do not click **Next** or **Finish**, after you have selected the fields from the first table or query on the first page of the Report Wizard. Instead, repeat the steps to select a table or query, and click any additional fields that you want in the report.



Student Practical Activity 12.2.4.3

Open the Customers table you have created from the previous activity. Create a Report using Report Wizard.



12.2.4.4 Creating Report in Layout or Design View

The report can be designed in Layout view or Design view. Layout view works best when you need to change the look and feel of a report. For example, you can rearrange fields, change their sizes, or apply a pre-made style.

You can start with the Layout view and switch to design view. Follow the steps below on how to create a Report:

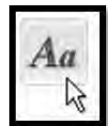
1. On the **Create** tab, click **Blank Report**.
2. On the Blank Report window in the Layout view, click the **Show all tables** from the Field list.
3. Click the plus sign + to expand the field list.
4. Drag the field onto the report.

As done for a form, in the Design View of a report, you can add, position, format, configure and manipulate the necessary controls. The Design View is equipped with one or more sections. Design view gives you control over every facet of your report. For example, you can add text boxes that display the date and time that you ran a report.

As mentioned when studying Form or Report design, when a report is in Design View, the Ribbon is equipped with Control section in its Design tab. You can use these controls to populate your report. You can also select objects from the Field List and add them to the report.

Subtotals and percentages usually have more meaning if you label them. You can do that job in Layout view or Design view. These steps use Design view, but remember you cannot use Design view if you are working on a web database. Follow the steps below on how to add a label:

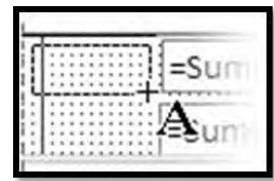
1. In the Navigation pane, right-click the report and click **Design View**. If the report is already open, right-click the document tab for the report and click **Design View**.
2. Locate the control to which you want to add a label, go to the **Design** tab, in the **Controls** group, and click **Label**.



How the cursor changes to a plus sign and a capital A. You use the plus sign as your reference mark when you draw your label.



3. Click the area where you want to add the label, and drag to draw the label. Make the label wider than shown in the picture — give yourself room to type.
4. When you finish dragging, the label becomes available for writing. Enter your text, then click anywhere outside the label to commit your changes.
5. Save your changes.



Modifying a Report

The report can be modified using Design view, where the structure of the report can be seen. Follow the steps below on how to modify a Report:

1. Select the report you want to modify.
2. On the **Design** tab, click **View** and select **Design View**.
3. The Ribbon will show four tabs: **Design**, **Arrange**, **Format** and **Page Setup**. These tabs contain tools that will allow you to modify and design your report.

Modifying the Layout

You can select the report layout – tabular which looks like a table or stacked which shows each record in a separate section. Follow the steps on how to modify the layout:

1. Go to the **Arrange** tab.
2. Click **Tabular** or **Stacked** button.

Modifying the Font

You can change the font type, size, colour and attributes. Follow the steps below on how to modify the font.

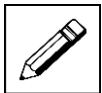
1. On the **Design** tab, click **View** and select **Layout View**.
2. Click the label or field that you want to format.
3. On the **Format** tab, click the **Font** down arrow and select from the list of available fonts.
4. Click the **Size** down arrow and select from the list of available sizes or type your own size.
5. Click the **Font Colour** down arrow and select from the gallery of colours.
6. Click **Bold**, **Italics** or **Underline** buttons to change the attributes.



Adjusting the Alignment of Report Fields

You can adjust the alignment and size of the fields or labels in the report. Follow the steps on how to adjust the alignment of Report Fields:

1. On the **Design tab**, click **View** and select **Layout view**.
2. Point your mouse over the right edge of the cell and when a double-sided arrow appears, drag the mouse to resize.
3. On the **Design tab**, click **View** and select **Design View**.
4. On the **Arrange tab**, click **Align** and select **To Grid, Left, Right, Top or Bottom**.



Student Activity 12.2.4.4

Answer the following questions.

1. What are the two views Reports can be designed in?

2. Enumerate the things you can do a report when working in Design view.

3. What view can you modify your report? Explain further your answer.



12.2.4.5 Working with Controls

Controls are objects that display data, perform actions, and let you view and work with information that enhances the user interface, such as labels and images. Access supports three types of controls: bound, unbound, and calculated.

- **Bound control** - a control whose source of data is a field in a table or query is a bound control. You use bound controls to display values from fields in your database. The values can be text, dates, and numbers, Yes/No values, pictures, or graphs. A text box is the most common type of bound control. For example, a text box that displays an employee's last name might get this information from the Last Name field in the Employees table.
- **Unbound control** - a control that does not have a source of data (a field or expression) is an unbound control. You use unbound controls to display information, lines, rectangles, and pictures. For example, a label that displays the title of a report is an unbound control.
- **Calculated control** - a control whose source of data is an expression rather than a field is a calculated control. You specify the value that you want in the control by defining an *expression* as the source of data for the control. An expression is a combination of operators (such as = and +), control names, field names, functions that return a single value, and constant values. For example, the following expression calculates the price of an item with a 25 percent discount by multiplying the value in the Unit Price field by a constant value (0.75).

An expression can use data from a field in the report's underlying table or query, or from a control in the report.

When you create a report, it is probably most efficient to add and arrange all the bound controls first, especially if they make up the majority of the controls on the report. You can then add the unbound and calculated controls that complete the design by using the tools in the **Controls** group on the **Design** tab.

You bind a control to a field by identifying the field from which the control gets its data. You can create a control that is bound to the selected field by dragging the field from the **Field List** pane to the report. The **Field List** pane displays the fields of the report's underlying table or query. To display the **Field List** pane, on the **Design** tab, in the **Controls** group, click **Add Existing Field**.

Alternatively, you can bind a field to a control by typing the field name in the control itself or in the box for the **ControlSource** value in the control's property sheet. The property sheet defines the characteristics of the control, such as its name, the source of its data, and its format.



Using the **Field List** pane is the best way to create a control for two reasons:

- A bound control has an attached label, and the label takes the name of the field (or the caption defined for that field in the underlying table or query) as its caption by default, so you do not have to type the caption yourself.
- A bound control inherits many of the same settings as the field in the underlying table or query (such as for the **Format**, **DecimalPlaces**, and **InputMask** properties). Therefore, you can be sure that these properties for the field remain the same whenever you create a control that is bound to that field.

If you already created an unbound control and want to bind it to a field, set the control's **ControlSource** property to the name of the field.

Adding Controls to the Report


Some controls are created automatically, such as the bound text box control that is created when you add a field from the **Field List** pane to your report. Many other controls can be created in Layout view or Design view by using the tools in the **Controls** group on the **Design** tab.



You can determine the name of each tool by placing the mouse pointer over the tool and then reading the tooltip that appears.

Creating Control using tools in the Control group

Follow the steps below on how to create Control using tools in the Control group:

1. Click the tool for the type of control that you want to add.
2. Click on the report where you want the control to be located.
3. If you do not position the control perfectly on the first attempt, you can move it by using the following procedures:
 - a. Click the control to select it.
 - b. Position the mouse pointer over the edge of the control until the pointer turns into a four-headed arrow .
 - c. Drag the control to the location that you want.

This procedure creates an "unbound" control. If the control is the type that can display data (for example, a text box or check box), you need to enter a field name or expression in the **ControlSource** property for the control before it will display any data.



Group and Sort Data

One of the more powerful things you can do in a report is to group and sort your data. For example, if you want to know which supplier provided a given set of computers, then grouping your assets by supplier can give you that information quickly and easily.

You can group tabular or stacked reports. Follow the steps below on how to group tabular or stacked reports:

1. Open your report in Layout view, and on the **Design** tab, in the **Grouping & Totals** group, click **Group & Sort**. The **Group, Sort, and Total** pane appears below your report.
2. In the pane, click **Add a group**, and then select the field by which you want to group your data. Access groups your data to reflect your choice.
3. If you want to sort your data, click **Add a sort**, select a field, and again Layout view displays the changes made.

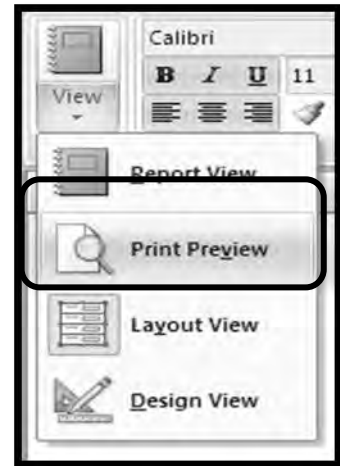
You can add ten grouping levels to a report, and you can sort each level, if you want to.



12.2.4.6 Placing Calculation to your Report

In addition to grouping and sorting, you can add subtotals, grand totals, and other calculations to your reports. For example, you can calculate how much you spent on a given model of desk or office chair. Follow the steps below on how to place a calculation to your Report:

1. With your report still open in Layout view, start the **Group, Sort, and Total** pane.
2. Click a grouping level, and then click **More**.
3. Locate the “totalled” field and click the arrow next to it.
4. Use the **Totals** dialog box to select the field you want to calculate, the type of calculation you want to use, such as a sum or average, and to set options such as subtotals and grand totals.



When you finish, your report displays the calculations.

Printing a Report

You can print a report from the Print Preview. Follow the steps below on how to print a Report:

1. On the **Print Preview** tab, click **Print**.
2. On the **Print dialog** box, adjust the printing settings such as **Printer**, **Print Range**, **Number of Copies** and other settings you want to make.



Student Activity 12.2.4.6

Answer the following questions.

1. What are controls?

2. Differentiate the three (3) types of Controls in your own words.



Summative Activity 12.2.4

Answer the following.

1. True or False. Write True if the statement is correct otherwise write False if the statement is not correct.
 - a. You can use table to view, change and analyse data in different ways. _____
 - b. Form is a request to add an action on the data. _____
 - c. When you run a form, the result are presented to you in a form. _____
 - d. One way to create a simple form is to use the Form Wizard. _____
 - e. The Form Design View will allow you to create a form that has full range of capabilities including filtering. _____
 - f. Criteria are conditions that will determine which record will be included. _____
 - g. You cannot set criteria for a form that can control how field information in selected fields appears in a completed form. _____
 - h. The Form Design View allows you to remove the table fields you want in your form. _____
 - i. You can insert, arrange and remove form fields. _____
 - j. The Form Wizard is the easiest way to get started building multi-source queries, especially if you are new to Access. _____
2. Identify what is being described in each statement below.
 - a. These are fields in the form that are located in the first row of the Design grid. _____
 - b. A small window that will display all the tables you choose to include in your form. It contains a list of every available field within the table. _____
 - c. This is the command to view the results of the form in the table. _____



d. It lets you specify exactly what type of information you want your form to retrieve.

e. This part can be seen in the bottom part of the Form Design view.



Answers to Student Activity 12.2.4

Answers may be similar to the ones below.

Student Activity 12.2.4.1

1. Query is a simple search or filter that draws information from multiple tables. It allows us to work in specific set of records that meet the criteria specified from a table in the database.
2. In creating a simple query you need to provide: Fields need to be searched; search criteria or item that you are searching for; fields that you want to display with the results.
3. You can use Query Wizard to create a simple query. Using this wizard it will help the user to go through the process in a logical way. Using this wizard also helps new user to create their own simple query.

Student Activity 12.2.4.2

1.
 - a. The function of Query command is to draw information from multiple tables. Queries allow the user to work on a specific set of records that meet the criteria which are specified on the table.
 - b. We can create a simple query by using Query Wizard. This wizard does steps through the query design process in a logical way. This is the best way for starters. On the other hand, you can also create a query using Query Design view. This will allow you to create a query that has full range of capabilities including filtering.
 2. A. For this activity follow the steps below:
 - a. Open the Students table.
 - b. On the Create tab, click the Query Wizard.
 - c. On the New Query dialog box, click the Simple Query Wizard and click OK.
-

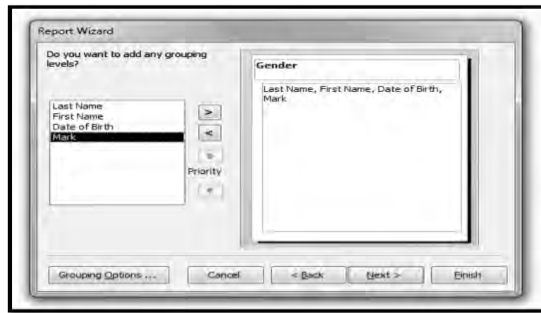


- d. When the Simple Query Wizard opens, click the down arrow to select the table or other query from which you want to select fields.
 - e. Click a field and click the right arrow to move the field to the selected Fields list. You can click the double arrow to move all the fields at once.
 - f. You can pull as many fields as you want.
 - g. Click Next.
 - h. Type a name for the query and click Finish.
 - i. The query results will now appear in the datasheet.
- B. For this activity, follow the steps below:
- a. Open the Customer's table.
 - b. Click the Create tab, and in the Queries group, click Query Design.
 - c. In the Show Table dialog box, click the table you want to use, click Add, and then click Close to close the dialog box.
 - d. In the table, double-click the fields you want to use in the query. Notice that the fields appear in the grid at the bottom of the designer. You can also drag fields from the table to an empty column in the grid.
 - e. On the Design tab, in the Results group, click Run.
 - f. The query loads the data into a datasheet.
 - g. Press CTRL+S to save the query, and in the Save As dialog box, enter a name.

Student Activity 12.2.4.3

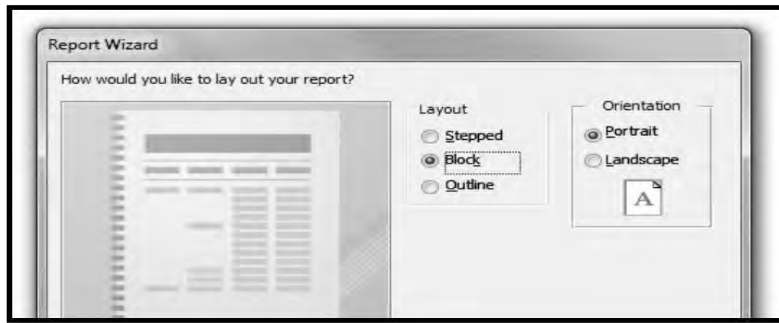
1. On the **Create** Tab, in the **Reports** group, click **Report Wizard**.
2. On the **Report Wizard Dialog box**, click the down arrow to select a table or query where the report will be based.
3. Select a field and click the right arrow to move the selected field to the Selected Field lists. Repeat this step if you want more fields to be included in the Selected Fields list. Use the double right arrow to select all fields. Use the left arrow to deselect the field.





4. Click **Next**.
5. Click a field by which you want to group.
6. Grouping a report allows you to break it into parts based on the contents of a field. You can group the report by category. Select the field you want grouped. You use more than one field, but you must prioritize and determine what category you want first, second and so on.
7. Click the right arrow to group the chosen field.
8. Click **Next**.
9. Click the down arrow to choose a field by which you want to sort.
10. Sorting goes side by side with grouping. You can specify the field by which the report will be sorted. You can also sort by multiple fields. You can group a report by category and it will be listed alphabetically in ascending or descending order.
11. Select between **Ascending** and **Descending** sort level.
12. Click **Next**.
13. Click the radio button of the layout you want to use. The layout option allows you to choose the data arrangement on the page. You can choose from **Stepped**, **Block** or **Outline**.
14. Click the radio button of the page orientation you want to set. You can choose between **Portrait** or **Landscape**.





15. Click **Next**.
16. Click the name for your report. You can use the generic name or change it to another name.
17. Click the radio button if you want to **Preview the Report** (view will be Print Preview) or **Modify the Report Design** (view will be Design view).
18. Click **Finish**.

Student Activity 12.2.4.4

A.

1. The function of Query command is to draw information from multiple tables. Queries allow the user to work on a specific set of records that meet the criteria which are specified on the table.
2. We can create a simple query by using Query Wizard. This wizard does steps through the query design process in a logical way. This is the best way for starters. On the other hand you can also create a query using Query Design view. This will allow you to create a query that has full range of capabilities including filtering.

B.

1. For this activity, follow the steps below:
 - a. Open the Students table.
 - b. On the Create tab, click the Query Wizard.
 - c. On the New Query dialog box, click the Simple Query Wizard and click OK.
 - d. When the Simple Query Wizard opens, click the down arrow to select the table or other query from which you want to select fields.



- e. Click a field and click the right arrow to move the field to the selected Fields list. You can click the double arrow to move all the fields at once.
 - f. You can pull as many fields as you want.
 - g. Click Next.
 - h. Type a name for the query and click Finish.
 - i. The query results will now appear in the datasheet.
2. For this activity, follow the steps below:
- a. Open the Customer's table
 - b. Click the Create tab, and in the Queries group, click Query Design.
 - c. In the Show Table dialog box, click the table you want to use, click Add, and then click Close to close the dialog box.
 - d. In the table, double-click the fields you want to use in the query. Notice that the fields appear in the grid at the bottom of the designer. You can also drag fields from the table to an empty column in the grid.
 - e. On the Design tab, in the Results group, click Run.
 - f. The query loads the data into a datasheet.
 - g. Press CTRL+S to save the query, and in the Save As dialog box, enter a name.
-

Student Activity 12.2.4.5

1. Parameters in a query will limit the data that will return to the user. It makes the query to ask input before it runs. Parameters will provide simplicity and straight to the point data to user.
2. The steps in creating a query asking for an input are as follows:

Open the query in Design view, and in the **Criteria** row of the field you want to filter, enter your parameter. For example, you can use the criteria such as: Between [Start Date] And [End Date].

When you run the query, that criteria asks you for a start date, then an end date, and it returns only the records that fall within the dates you specify.



Student Activity 12.2.4.6

1. The four types of action queries are delete queries, append queries, update queries and make-table queries
2. After a query has been designed, as you click on the Run Query command, result will be displayed in a table.
3. To add totals in a row: double click the query from the Navigation Pane to open it in Datasheet view. On the Home tab, click totals. For each cell in the Total row where you want a total to appear, click in the cell and select the kind of total you want.



Answers to Summative Activity 12.2.4

1.
 - a. True
 - b. False
 - c. False
 - d. True
 - e. True
 - f. True
 - g. False
 - h. False
 - i. True
 - j. True
2.
 - a. Object Relationship Pane
 - b. Form
 - c. Form Criteria
 - d. Field and Table Names
 - e. Design Grid



Summary

Microsoft Access is a computer application used to create and manage computer-based databases on desktop computers and/or on connected computers (a network). Microsoft Access can be used for personal information management (PIM), in a small business to organize and manage data, or in an enterprise to communicate with servers.

This module had presented the simple and essential content and skills in creating database using Access. It provides adequate topics on how to build an Access database. The concepts that have been covered in this module apply in general to all computer-based databases from the simplest form to advance queries and reports. From planning to definition and setting up the database, telling the system what fields you need in each record.

This module presented how Access is flexible and relatively offers a simple way to create databases to store, manage and enter data. It even exceeds the capabilities of Excel.

Upon completing this module, which provides detailed discussion on creating database Tables and Queries and obtaining its results through Forms and Reports it will provide an achievement of the following:

- learned how to manage and control data within records
- create and customise tables and queries in various ways
- create and customise forms and reports in various views and ways
- create and run advance queries
- identify further uses of database with external data from other MS Office programs.



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Photo Credits:

Print Screen Microsoft Access 2010



GLOSSARY

A

Access workspace. A workspace that uses the Access database engine to access a data source. The data source can be an Access database file, an ODBC database, such as a Paradox or Microsoft SQL Server database, or an ISAM database.

Application background. The background area of an application window.

Autoformat. A collection of formats that determines the appearance of the controls and sections in a form or report.

AutoNumber data type. In an Access database, a field data type that automatically stores a unique number for each record as it is added to a table. Three kinds of numbers can be generated: sequential, random, and Replication ID.

C

Calculated control. A control that is used on a form, report, or data access page to display the result of an expression. The result is recalculated each time there is a change in any of the values on which the expression is based.

Calculated field. A field, defined in a query, that displays the result of an expression rather than displaying stored data. The value is recalculated each time a value in the expression changes.

Column. A location within a database table that stores a particular type of data. It is also the visual representation of a field in a datasheet and, in an Access database, the query design grid or the filter design grid.

Column area. The part of PivotTable view that contains column fields.

Column field. A field in the column area of PivotTable view. Items in column fields are listed across the top of a PivotTable list. Inner column fields are closest to the detail area; outer column fields are displayed above the inner column fields.

Column selector. The horizontal bar at the top of a column. You can click a column selector to select an entire column in the query design grid or the filter design grid.

Combo box. A control used on a form that provides the combined functionality of a list box and a text box. You can type a value in a combo box, or you can click the control to display a list and then select an item from that list.



Command button. A control that runs a macro, calls a Visual Basic function, or runs an event procedure. A command button is sometimes called a push button in other programs.

Current record. The record in a recordset from which you can modify or retrieve data. There can be only one current record in a recordset at any given time, but a recordset may have no current record — for example, after a record has been deleted from a dynaset-type recordset.

D

Data collection. A method of gathering information from users by sending and receiving HTML forms or InfoPath 2007 forms from Access 2007. In Access, you create a data collection request and send it to users in a form contained in an e-mail message. Users then complete a form and return it to you.

Database application. A set of objects that can include tables, queries, forms, reports, macros, and code modules that are designed to work together to make a database easier to use. A database application is typically deployed to a group of users.

Database objects. An Access database contains objects such as tables, queries, forms, reports, pages, macros, and modules. An Access project contains objects such as forms, reports, pages, macros, and modules.

DB2. Is a database product from IBM. It is a relational Database Management Systems. DB2 is designed to store, analyse and retrieve that data efficiently. DB2 product is extended with the support of the Object-Oriented features and non-relational structures with XML.

dBaseIII. Is a database software, which means it manipulates data stored in a database. It contains a large number of commands, operators, and functions that can perform the actions necessary to perform the work you want to do.

F

Field data types. A characteristic of a field that determines what kind of data it can store. For example, a field whose data type is Text can store data consisting of either text or numeric characters, but a Number field can store only numerical data.

Field List pane. A pane that lists all the fields in the underlying record source or database object.

Field selector. A small box or bar that you click to select an entire column in a datasheet.

Fill. A report magnification that fills the Report Snapshot window by fitting either the width or the height of a page, depending on whether the report is in portrait or landscape orientation.



Filter. A set of criteria applied to data in order to display a subset of the data or to sort the data. In Access, you can use filtering techniques, such as Filter By Selection and Filter By Form, to filter data.

Filter area. The part of a PivotTable view or PivotChart view that contains filter fields.

Filter By Form. A technique for filtering data that uses a version of the current form or datasheet with empty fields in which you can type the values that you want the filtered records to contain.

Filter By Selection. A technique for filtering records in a form or datasheet in which you retrieve only records that contain the selected value.

Filter Excluding Selection. A technique in which you filter records in a form or datasheet to retrieve only those records that don't contain the selected value.

Form. An Access database object on which you place controls for taking actions or for entering, displaying, and editing data in fields.

Form footer. Used to display instructions for using a form, command buttons, or unbound controls to accept input. Appears at the bottom of the form in Form view and at the end of a printout.

Form header. Used to display a title for a form, instructions for using the form, or command buttons that open related forms or carry out other tasks. The form header appears at the top of the form in Form view and at the beginning of a printout.

Form object tab. An object tab in which you work with forms in Design view, Form view, Datasheet view, or Print Preview.

Form properties. Attributes of a form that affect its appearance or behavior. For example, the **DefaultView** property is a form property that determines whether a form will automatically open in Form view or Datasheet view.

Form selector. The box where the rulers meet, in the upper-left corner of a form in Design view. Use the box to perform form-level operations, such as selecting the form.

Form view. A view that displays a form that you use to show or accept data. Form view is the primary means of adding and modifying data in tables. You can also change the design of a form in this view.

Format. Specifies how data is displayed and printed. An Access database provides standard formats for specific data types, as does an Access project for the equivalent SQL data types. You can also create custom formats.



FoxPro. Is a relational database procedural programming language. It was originally developed by Fox Software and later merge with Microsoft in 1992.

G

Grid (Datasheet view).Vertical and horizontal lines that visually divide rows and columns of data into cells in a table, query, form, view, or stored procedure. You can show and hide these grid lines.

Grid (Design view).An arrangement of vertical and horizontal dotted and solid lines that help you position controls precisely when you design a form or report.

I

Interbase. Is a relational database management system currently developed and marketed by Embarcadero Technologies. Interbase is distinguished from other RDBMS by its small footprint, close to zero administration requirements, and multigenerational architecture.

L - N

Label. A control that displays descriptive text, such as a title, a caption, or instructions, on a form or report. Labels may or may not be attached to another control.

Many-to-many relationship. An association between two tables in which one record in either table can relate to many records in the other table. To establish a many-to-many relationship, create a third table and add the primary key fields from the other two tables to this table.

Microsoft Access data file. An Access database or Access project file. An Access 2007 database stores database objects and data in an .accdb file, and earlier versions of Access use the .mdb format. A project file does not contain data, and is used to connect to a Microsoft SQL Server database.

Microsoft Access database. A collection of data and objects (such as tables, queries, or forms) that is related to a particular topic or purpose.

Microsoft Access object. An object, defined by Access, that relates to Access, its interface, or an application's forms and reports. In addition, you can use a Microsoft Access object to program the elements of the interface used for entering and displaying data.

Microsoft Access project. An Access file that connects to a Microsoft SQL Server database and is used to create client/server applications. A project file doesn't contain any data or data-definition-based objects, such as tables and views.

Microsoft SQL Server. Is a relational database management system developed by Microsoft.



MySQL. Is an open source relational database management system. It is based on the structure query language (SQL), which is used for adding, removing, and modifying information in the database.

Navigation buttons. The buttons that you use to move through records. These buttons are located in the lower left corner of the Datasheet view and Form view. The buttons are also available in Print Preview so that you can move through the pages of your document.

Navigation Pane. The pane that appears when you open an Access database or an Access project. The Navigation Pane displays the objects in the database, and can be customized to sort and group objects in different ways.

Null. A value you can enter in a field or use in expressions or queries to indicate missing or unknown data. In Visual Basic, the **Null** keyword indicates a Null value. Some fields, such as primary key fields, can't contain a Null value.

Null field. A field containing a Null value. A null field is not the same as a field that contains a zero-length string (" ") or a field with a value of 0.

Number data type. In an Access database, a field data type designed for numerical data that will be used in mathematical calculations. Use the Currency data type, however, to display or calculate currency values.

Numeric data type. In an Access project, an exact numeric data type that holds values from $-10^{38} - 1$ through $10^{38} - 1$. You can specify the scale (maximum total number of digits) and precision (maximum number of digits to the right of the decimal point).

O - R

Object data type. A fundamental data type representing any object that can be recognized by Visual Basic. Although you can declare any object variable as type Object, it is best to declare object variables according to their specific types.

Object type. A type of object exposed by a program through Automation; for example, Application, File, Range, and Sheet. Use the Object Browser in the Visual Basic Editor or refer to the program's documentation for a complete listing of available objects.

Object variable. A variable that contains a reference to an object.

One-to-many relationship. An association between two tables in which the primary key value of each record in the primary table corresponds to the value in the matching field or fields of many records in the related table.



One-to-one relationship. An association between two tables in which the primary key value of each record in the primary table corresponds to the value in the matching field or fields of one, and only one, record in the related table.

Option button. A control, also called a radio button, that is typically used as part of an option group to present alternatives on a form or report. A user cannot select more than one option.

Oracle (Oak Ridge Automatic Computer and Logical Engine). Is a powerful relational database management system that offers a large feature set. It is widely regarded as one of the two most popular full-featured database systems on the market.

Page footer. Used to display page summaries, dates, or page numbers at the bottom of every page in a form or report. In a form, the page footer appears only when you print the form.

Page header. Used to display a title, column headings, dates, or page numbers at the top of every page in a form or report. In a form, the page header appears only when you print the form.

Primary key. One or more fields (columns) whose values uniquely identify each record in a table. A primary key cannot allow Null values and must always have a unique index. A primary key is used to relate a table to foreign keys in other tables.

Query. A question about the data stored in your tables, or a request to perform an action on the data. A query can bring together data from multiple tables to serve as the source of data for a form or report.

Query window. A window in which you work with queries in Design view, Datasheet view, SQL view, or Print Preview.

Record navigation control. A control used on a data access page to display a record navigation toolbar. In a grouped page, you can add a navigation toolbar to each group level. You can customize the record navigation control by changing its properties.

Record number box. A small box that displays the current record number in the lower-left corner in Datasheet view and Form view. To move to a specific record, you can type the record number in the box, and press ENTER.

Record selector. A small box or bar to the left of a record that you can click to select the entire record in Datasheet view and Form view.

Relationship. An association that is established between common fields (columns) in two tables. A relationship can be one-to-one, one-to-many, or many-to-many.

Relationships object tab. An object tab in which you view, create, and modify relationships between tables and queries.



Report. An Access database object that that you can print containing information that is formatted and organized according to your specifications. Examples of reports are sales summaries, phone lists, and mailing labels.

Report footer. A report section that is used to place information that normally appears at the bottom of the page, such as page numbers, dates, and sums.

Report header. A report section that is used to place information (such as a title, date, or report introduction) at the beginning of a report.

Report module. A module that includes Visual Basic for Applications (VBA) code for all event procedures triggered by events occurring on a specific report or its controls.

Report object tab. An object tab in which you work with reports in Design view, Layout Preview, or Print Preview.

Report selector. The box where the rulers meet in the upper-left corner of a report in Design view. Use the box to perform report-level operations, such as selecting the report.

Row selector. A small box or bar that, when clicked, selects an entire row in table or macro Design view or when you sort and group records in report Design view.

S - T

Section. A part of a form or report, such as a header, footer, or detail section.

Section header. The horizontal bar above a form or report section in Design view. The section bar displays the type and name of the section. Use it to access the section's property sheet.

Section selector. The box on the left side of a section bar when an object is open in Design view. Use the box to perform section-level operations, such as selecting the section.

Sybase. Is a computer software company that develops and sells database management system.

Tab control. A control that you can use to construct a single form or dialog box that contains several pages, each with a tab, and each containing similar controls, such as text boxes or option buttons. When a user clicks a tab, that page becomes active.

Table. A database object that stores data in records (rows) and fields (columns). The data is usually about a particular category of things, such as employees or orders.

Table data type. In an Access project, a special data type that is used to store a result set in a local variable or return value of a user-defined function for later processing. It can be used in place of a temporary table stored in the tempdb database.



Table object tab. In an Access database, an object tab in which you work with tables in Design view or Datasheet view.

Table properties. In an Access database, attributes of a table that affect the appearance or behavior of the table as a whole. Table properties are set in table Design view, as are field properties.

Text box. A control, also called an edit field, that is used on a form or report to display text or accept data entry. A text box can have a label attached to it.

Text data type. In an Access project, a variable-length data type that can hold a maximum of $2^{31} - 1$ (2,147,483,647) characters; default length is 16.

Text data type. In an Access database, this is a field data type. Text fields can contain up to 255 characters or the number of characters specified by the **FieldSize** property, whichever is less.

Toolbox. A set of tools that is available in Design view for adding controls to a form or report.

ToolTips. Brief descriptions of the names of commands and buttons on the Ribbon. A ToolTip is displayed when the mouse pointer rests on these commands and buttons.

X

Xbase. Is the generic term for all programming languages that derive from the original dBase programming language and database formats. These are sometimes informally known as dBase “clones.”



FODE SUBJECTS AND COURSE PROGRAMMES

GRADE LEVELS	SUBJECTS/COURSES
Grades 7 and 8	1. English
	2. Mathematics
	3. Personal Development
	4. Social Science
	5. Science
	6. Making a Living
Grades 9 and 10	1. English
	2. Mathematics
	3. Personal Development
	4. Science
	5. Social Science
	6. Business Studies
	7. Design and Technology- Computing
Grades 11 and 12	1. English – Applied English/Language& Literature
	2. Mathematics - Mathematics A / Mathematics B
	3. Science – Biology/Chemistry/Physics
	4. Social Science – History/Geography/Economics
	5. Personal Development
	6. Business Studies
	7. Information & Communication Technology

REMEMBER:

- For Grades 7 and 8, you are required to do all six (6) subjects.
- For Grades 9 and 10, you must complete five (5) subjects and one (1) optional to be certified. Business Studies and Design & Technology – Computing are optional.
- For Grades 11 and 12, you are required to complete seven (7) out of thirteen (13) subjects to be certified. Your Provincial Coordinator or Supervisor will give you more information regarding each subject and course.

GRADES 11 & 12 COURSE PROGRAMMES

No	Science	Humanities	Business
1	Applied English	Language & Literature	Language & Literature/Applied English
2	Mathematics A/B	Mathematics A/B	Mathematics A/B
3	Personal Development	Personal Development	Personal Development
4	Biology	Biology/Physics/Chemistry	Biology/Physics/Chemistry
5	Chemistry/ Physics	Geography	Economics/Geography/History
6	Geography/History/Economics	History / Economics	Business Studies
7	ICT	ICT	ICT

Notes: You must seek advice from your Provincial Coordinator regarding the recommended courses in each stream. Options should be discussed carefully before choosing the stream when enrolling into Grade 11. FODE will certify for the successful completion of seven subjects in Grade 12.

CERTIFICATE IN MATRICULATION STUDIES

No	Compulsory Courses	Optional Courses
1	English 1	Science Stream: Biology, Chemistry, Physics
2	English 2	Social Science Stream: Geography, Intro to Economics and Asia and the Modern World
3	Mathematics 1	
4	Mathematics 2	
5	History of Science & Technology	

REMEMBER: You must successfully complete 8 courses: 5 compulsory and 3 optional.

FODE PROVINCIAL CENTRES CONTACTS

PC NO.	FODE PROVINCIAL CENTRE	ADDRESS	PHONE/FAX	CUG PHONES	CONTACT PERSON		CUG PHONE
1	DARU	P. O. Box 68, Daru	6459033	72228146	The Coordinator	Senior Clerk	72229047
2	KEREMA	P. O. Box 86, Kerema	6481303	72228124	The Coordinator	Senior Clerk	72229049
3	CENTRAL	C/- FODE HQ	3419228	72228110	The Coordinator	Senior Clerk	72229050
4	ALOTAU	P. O. Box 822, Alotau	6411343 / 6419195	72228130	The Coordinator	Senior Clerk	72229051
5	POPONDETTA	P. O. Box 71, Popondetta	6297160 / 6297678	72228138	The Coordinator	Senior Clerk	72229052
6	MENDI	P. O. Box 237, Mendi	5491264 / 72895095	72228142	The Coordinator	Senior Clerk	72229053
7	GOROKA	P. O. Box 990, Goroka	5322085 / 5322321	72228116	The Coordinator	Senior Clerk	72229054
8	KUNDIAWA	P. O. Box 95, Kundiawa	5351612	72228144	The Coordinator	Senior Clerk	72229056
9	MT HAGEN	P. O. Box 418, Mt. Hagen	5421194 / 5423332	72228148	The Coordinator	Senior Clerk	72229057
10	VANIMO	P. O. Box 38, Vanimo	4571175 / 4571438	72228140	The Coordinator	Senior Clerk	72229060
11	WEWAK	P. O. Box 583, Wewak	4562231/ 4561114	72228122	The Coordinator	Senior Clerk	72229062
12	MADANG	P. O. Box 2071, Madang	4222418	72228126	The Coordinator	Senior Clerk	72229063
13	LAE	P. O. Box 4969, Lae	4725508 / 4721162	72228132	The Coordinator	Senior Clerk	72229064
14	KIMBE	P. O. Box 328, Kimbe	9835110	72228150	The Coordinator	Senior Clerk	72229065
15	RABAU	P. O. Box 83, Kokopo	9400314	72228118	The Coordinator	Senior Clerk	72229067
16	KAVIENG	P. O. Box 284, Kavieng	9842183	72228136	The Coordinator	Senior Clerk	72229069
17	BUKA	P. O. Box 154, Buka	9739838	72228108	The Coordinator	Senior Clerk	72229073
18	MANUS	P. O. Box 41, Lorengau	9709251	72228128	The Coordinator	Senior Clerk	72229080
19	NCD	C/- FODE HQ	3230299 Ext 26	72228134	The Coordinator	Senior Clerk	72229081
20	WABAG	P. O. Box 259, Wabag	5471114	72228120	The Coordinator	Senior Clerk	72229082
21	HELA	P. O. Box 63, Tari	73197115	72228141	The Coordinator	Senior Clerk	72229083
22	JIWAKA	c/- FODE Hagen		72228143	The Coordinator	Senior Clerk	72229085