Web Development and Database Administration Level II
Based on March, 2022 Version-I

MODULE TITLE: Operating Database Application

MODULE CODE: EIS WDDBA2 M06 0322

NOMINAL DURATION: 48 Hours

Prepared by: - **Ministry of Labor and Skill**

September, 2022
Addis Abeba, Ethiopia

Table of Contents

Acronym and abbreviations

TTLM	Teaching, Training and Learning Materials
DB	Database
EIS	Economic Infrastructure
M06	module 06
TVET	Technical and Vocational Education and Training
WDDBA2	web development and database application level 2

Acknowledgment

Ministry of Labor and Skills wish to extend thanks and appreciation to the many representatives of TVET instructors and respective industry experts who donated their time and expertise to the development of this Teaching, Training and Learning Materials (TTLM).

Introduction of module

A database can best be described as a way of storing large amounts of information. The data can be retrieved and we can even ask questions of the data and get answers. For example: You may want to know how many Students enrolled in every occupational level. MS Access is a database management tool that enables one to store relevant data. This also has the capabilities to retrieve, sort, summarize and report results immediately and effectively. It can combine data from various files (tables) through creating relationships, and can make data entry more efficient and accurate through the use of forms. Generating stored files from the database using selecting query and preparing report based on selection criteria.

To use the above function of the database the user must use Microsoft office access 2010 and above.

This module is designed to meet the industry requirement under the **Web Development and Database Administration** occupational standard, particularly for the unit of competency: **operating database application**

This module covers the units:

- Create database objects
- Customize basic settings
- Create reports
- Create forms
- Retrieve information

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to: -

- Create database objects
- Adding and modify data in a table
- Customize database layout, format and viewing
- Design report
- Modify the report and distribute to other person
- Create form and rearranging objects within the form
- Retrieve information using different types of query language
- Retrieve information using multiple criteria

Unit one: Create database objects

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Introduction to database object
- Creating database object
- Modifying database object
- Creating relationship

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Define database object
- Create database object
- Modify database object
- Create relationship

1.1. Introduction to database object

Database objects are components that save and query information. A database contains objects that are used to store and display large, relational data.

- **Important Terms and Basic Objects**

Now in this Microsoft Access tutorial, we will learn about some important terms and basic objects in MS Access:

- **Database File:**

It is a file which stores the entire database. The database file is saved to your hard drive or other storage devices.

- **Datatypes:**

Datatypes are the properties of each field. Every field has one datatype like text, number, date, etc.

- **Table: -** A Table is an object which stores data in Row & Column format to store data.
    - A Table is usually related to other tables in the database file.
    - Each column must have Unique name
    - We can also define Primary Key in a table.
- **Query: -** Queries answer a question by selecting and sorting and filtering data based on search criteria.
    - Queries show a selection of data based on criteria (limitations) you provide.
    - Queries can pull from one or more related Tables and other Queries.
    - Types of Query can be SELECT, INSERT, UPDATE, DELETE.
- **Form: -** A form is a database object that you can use to create a user interface for a database application.
    - Forms help you to display live data from the table. It mainly used to ease the process of data entry or editing.
- **Report: -**A report is an object in desktop databases primarily used for formatting, calculating, printing, and summarizing selected data.
    - You can even customize the report's look and feel.
- **Macros: -** Macros are simply shortcuts. If you've ever used macros in MS Word or Excel, then you are already familiar with what they do. You can create a macro to execute a task that you would otherwise execute with your keyboard or mouse.

1.2. Creating database object

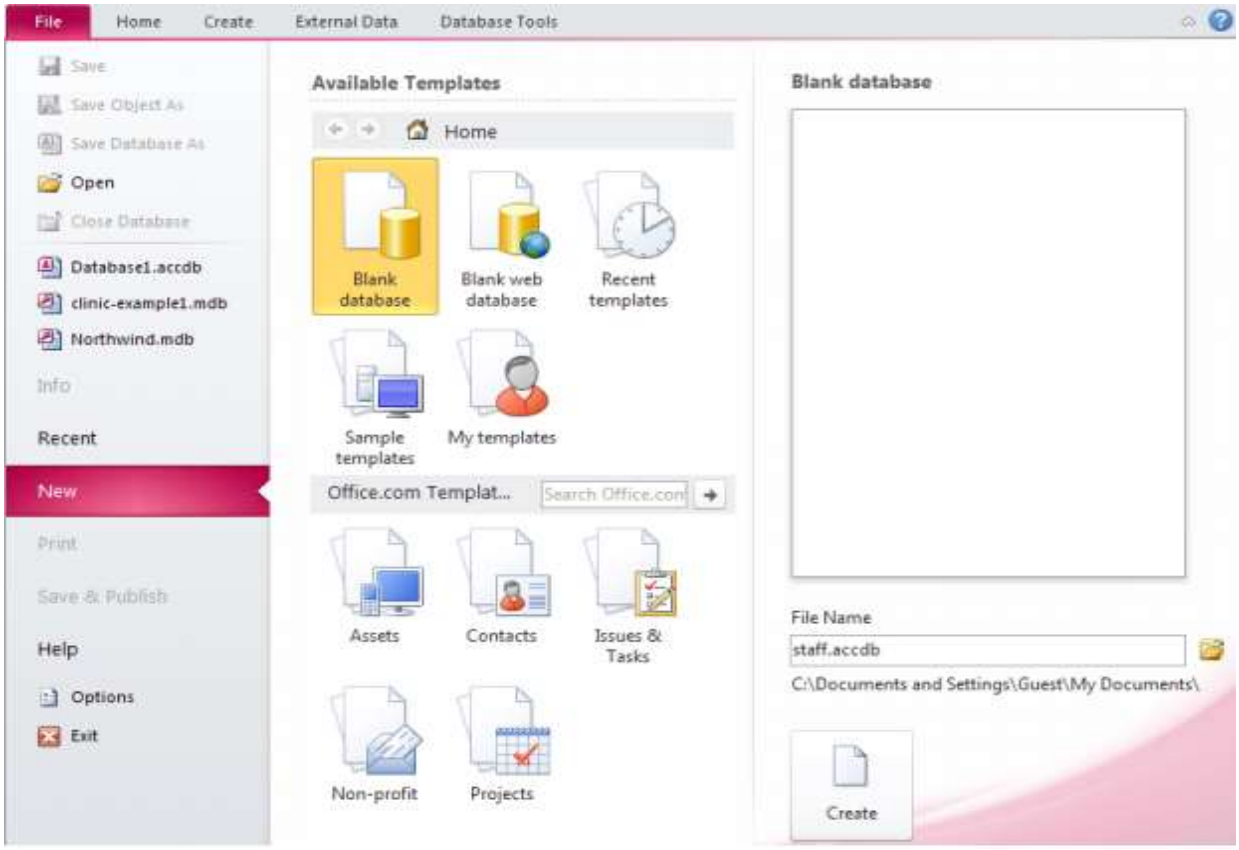
- **Create database object**

Before you can create objects such as tables and forms, you must first create the database file in which they will be stored.

1. On the File tab select New.
2. Click on Blank database.
3. In the File Name box, type a name for your database.
4. Click on the browse button to the right of the File name box to browse for a location for your database.
5. Click on Create.

A new database will be created with a new default Table.

6. Click on Design View to start working with this Table.



- **Create table object**

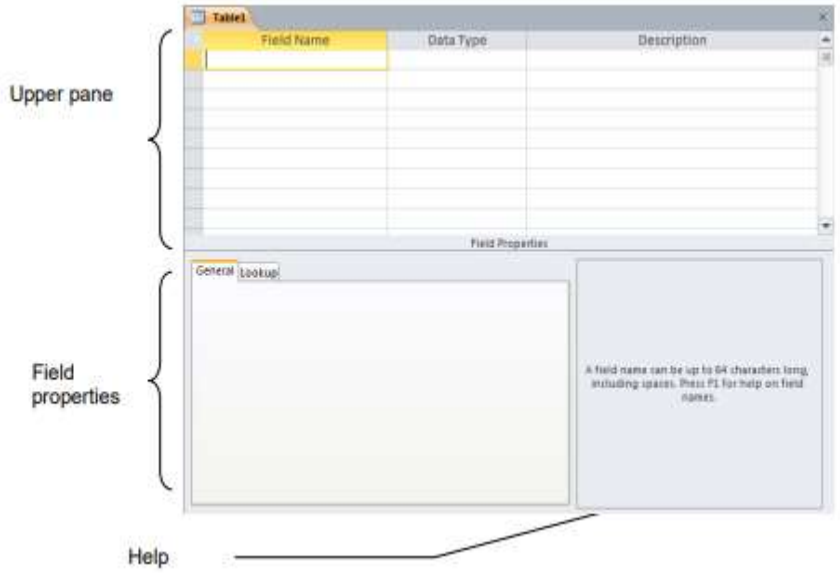
Tables are the fundamental objects in a database. Without any tables, no data can be stored. To create a table, you need to follow these steps:

1. Create the table object
2. Define the fields in the table including their name, data type and description
3. Set the properties for each field
4. Create appropriate indexes
5. Set the primary key
6. Save the table

- **Create a table in design view**

On the Create tab, click on Table Design. A new table will appear in design view.

There are three main parts to the design view window.



Upper pane

For defining fields by name, data type and description (optional).

Field properties (bottom left)

For defining specific properties for a field.

Help (bottom right)

As you move around the design view window, context specific help is provided here.

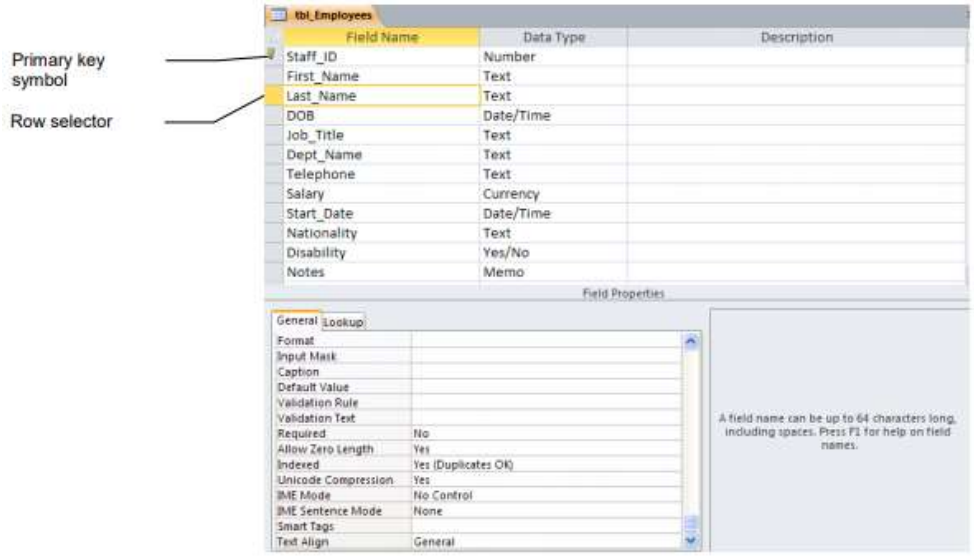
Defining fields before creating the fields in a table, the following information about naming, data types and descriptions should be considered:

Field naming rules and conventions

The following conventions should be observed when naming fields:

- Field names are mandatory. They may contain up to 64 characters.
- Names may include embedded (but not leading) spaces and punctuation except full stops,
- exclamation marks and square brackets.
- You cannot assign the same field name to more than one field in the same table and it is good
- practice to use a unique field name for each field in the entire database.
- It is not good practice to include spaces in field names. Instead, use an underscore (_) for spaces to improve the readability of field names.
- Minimizing the length of field names conserves resources and saves typing when you refer to the field name in macros, etc.

- Avoid specifying a name for a field that could cause a conflict with a built-in Access function or property names (e.g. ‘name’, ‘date’, etc.).



1.3. Modifying database object

It is possible to modify the design of your table and fields at any time by going to design view and making the required changes. However, any changes made after data has been added to the table may cause loss of data. Changes to field names, data types and properties may also impact on other objects which are linked to or based on the table.

- **Adding and removing fields**

You can modify the structure of your table by adding and removing fields in design view. Note, however, that using the cut, paste or delete functions will remove the field and any data in that field.

- **Selecting fields**

To select a field, click on the row selector to the left of the field name. To select multiple fields, click on the row selector and drag the mouse down the selector symbols to select additional fields. The screen capture below shows a table with two fields selected.

- **Deleting fields**

1. Select the field or fields to be deleted using the row selector.
2. Press the Delete key on the keyboard, select Delete Rows from the Design tab or right-click on the row selector and choose Delete Rows.

- **Inserting fields**

1. Click in the field above which you wish to insert a new row.

To insert multiple rows, select the required number of rows using the row selector.

2. Select Insert Rows from the Design tab or right click and choose Insert Rows.

- **Moving fields**

1. Select the field or fields to be moved.

2. Click on the selected field(s) and drag the mouse to the new location for the field(s). As you drag, a bold black line will appear indicating where the fields will be moved to if you release the mouse button.

3. Release the mouse button in the appropriate location.

Helpful hint: Don't use cut and paste to move fields if you have data in the table as this will delete the data.

- **Changing data type**

1. If your table contains data, make a backup copy of the table before you change data types or field sizes.

2. Open the table in design view.

3. Click the data type column of the field you want to change, click the drop down arrow, and select the new data type.

4. Click the Save button on the Quick Access toolbar.

Helpful hint: If the data type conversion would result in lost values, Access displays a message telling you that errors occurred during conversion before it actually saves the changes. Click Cancel to cancel the changes. Click OK to continue and save the changes anyway.

In large tables, changing a Data Types might take a long time. If you want to cancel the conversion process at any point while it is running, press Ctrl+Break, and then click OK.

- **Changing field size**

If you convert a large field size setting to a smaller one in a field that already contains data, you might lose data in the field. For example, if you change the field size setting for a text data type field from 255 to 50, data beyond the 50 characters will be discarded.

If the data in a number data type field doesn't fit in a new field size setting, fractional numbers may be rounded or you might get a null value. For example, if you change from single to integer data type, fractional values will be rounded to the nearest whole number and values greater than 32,767 or less than -32,768 will result in null fields.

1.4. Create relationship

A relationship in Access helps you combine data from two different tables. Each relationship consists of fields in two tables with corresponding data.

- **Primary key**

A primary key is a single field or combination of fields in a table that uniquely identifies each record in that table. No two records can have the same value in the primary key field or combination of fields.

It is advisable to create the primary key before entering data in a table because Access will prevent duplicate values being created in the designated field. It is particularly important to set a primary key when creating relationships between tables as Access uses it to link tables together.

Helpful hint: Records are displayed in primary key order by default.

- **Setting a primary key**

1. Click on the appropriate field name and click the Primary key button on the Design tab.
2. The primary key symbol will appear on the button in the row selector box on the appropriate row (see the screen capture on previous page).

- **Setting a multiple field primary key**

With a multiple-field primary Key, the combination of the contents of all fields included in the key must be unique. For example, for a primary key based on the CourseID and CourseDate fields, the same CourseID and CourseDate combination cannot appear in more than one record.

- **A foreign key**

A foreign key is a field (or fields) in one table that references the primary key in another table. The data in the fields from both tables is exactly the same, and the table with the primary key record (the primary table) must have existing records before the table with the foreign key record (the foreign table) has the matching or related records. Like primary keys, you can define foreign keys in the table declaration by using the **CONSTRAINT** clause.

There are essentially three types of relationships:

- **One-to-one**: - For every record in the primary table, there is one and only one record in the foreign table.
- **One-to-many: -** For every record in the primary table, there are one or more related records in the foreign table.
- **Many-to-many**: For every record in the primary table, there are many related records in the foreign table, and for every record in the foreign table, there are many related records in the primary table.

- **Referential integrity**

Referential integrity is a system of rules that Access uses to make sure that relationships between records in related tables are valid, and that you do not accidentally delete or change related data. You can set referential integrity when all the following conditions are true:

- The matching field from the primary table is a primary key or has a unique index.
- The related fields have the same data type. There are two exceptions. An **AutoNumber** field can be related to a **Number** field that has a FieldSize property setting of Long Integer, and an **AutoNumber** field that has a FieldSize property setting of Replication ID can be related to a **Number** field that has a FieldSize property setting of Replication ID.
- Both tables belong to the same Access database. If the tables are linked tables, they must be tables in Access format, and you must open the database in which they are stored to set referential integrity. Referential integrity cannot be enforced for linked tables from databases in other formats.

Self-check 1

Part I: - Select the best answer from the given alternative

_____**1.** which object is stores data in Row & Column format to store data.

A. Form
B. Table
C. Report
D. All

_____**2.** database object that you can use to create a user interface for a database application.

A. Macros
B. Form
C. Report
D. All

_____**3.** Which one is a single field or combination of fields in a table that uniquely identifies each record in that table

A. Primary key
B. Foreign key
C. Super key
D. All

_____**4.** Which one is a field (or fields) in one table that references the primary key in another table

A. Foreign key
B. Referential integrity
C. Primary key
D. Super key

_____**5.** Which one of the following is used in access helps you combine data from two different tables?

A. Foreign key
B. Referential integrity
C. Primary key
D. Relationship

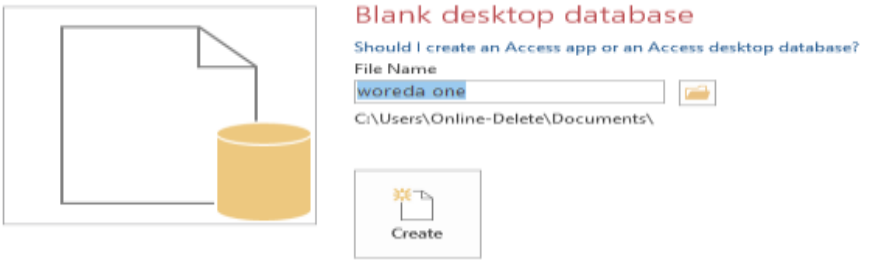
Operation sheet 1.1: - Modifying database object

- **Operation Title:** creating database and table
- **Purpose:** - create and modify table filed
- **Instruction:** Using the figure below and given equipment. You have given 20 minute for the task and you are expected to complete tasks.
- **Tools and requirement:**
  - Computes
  - MS office access 2016
  - Use the following information

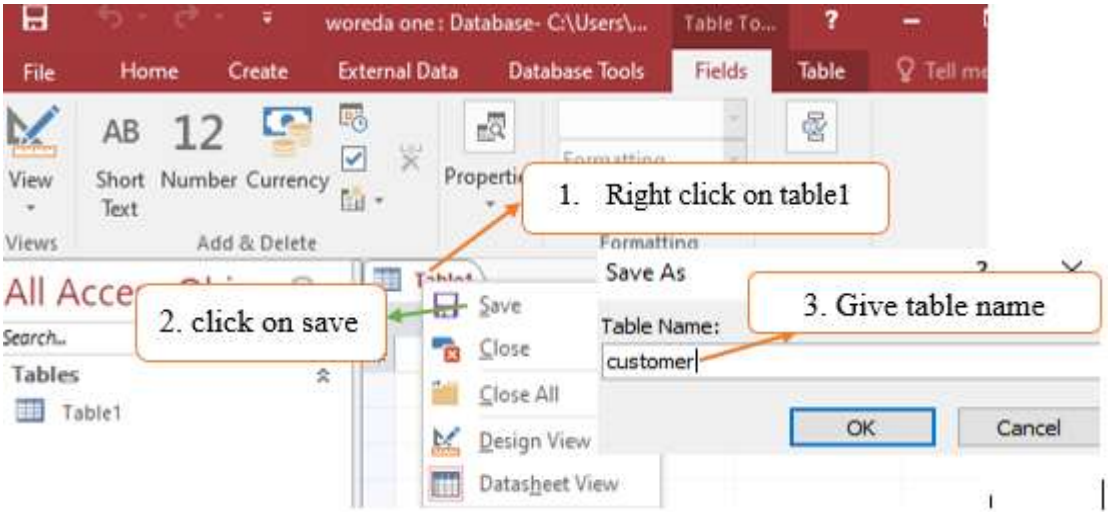
Database name	**Woreda one**	
Table name	**Customer**	
Filed name	**Data type**	**size**
Student name	Short Text	**50**
Gender	Short Text	8
Age	Number	Long Integer
Level	Short Text	3
Grade	Short Text	5
Registration Date	Date	

- **Steps in doing the task**

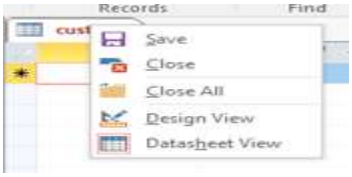
Step 1: - create database and table (open access 2016 and click on black desktop database)
Step 2:- Give database name and click on create



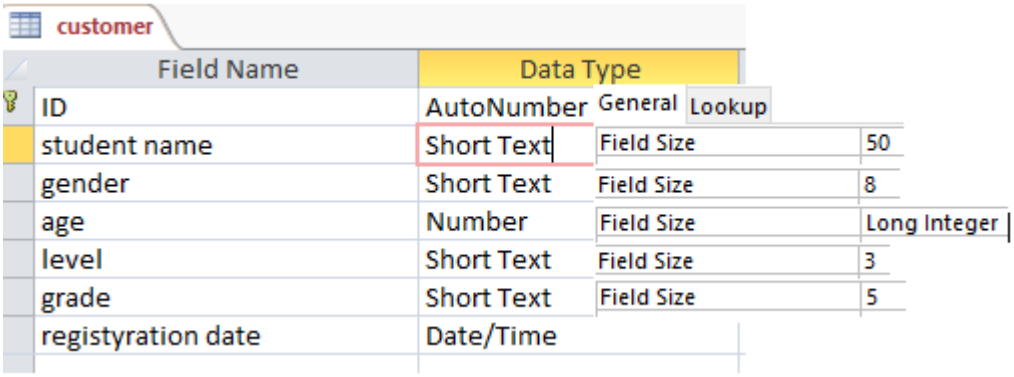
Step 3: - Right click on Table 1 and click on "**save**"
Step 4: Give table name and click on "**ok**"



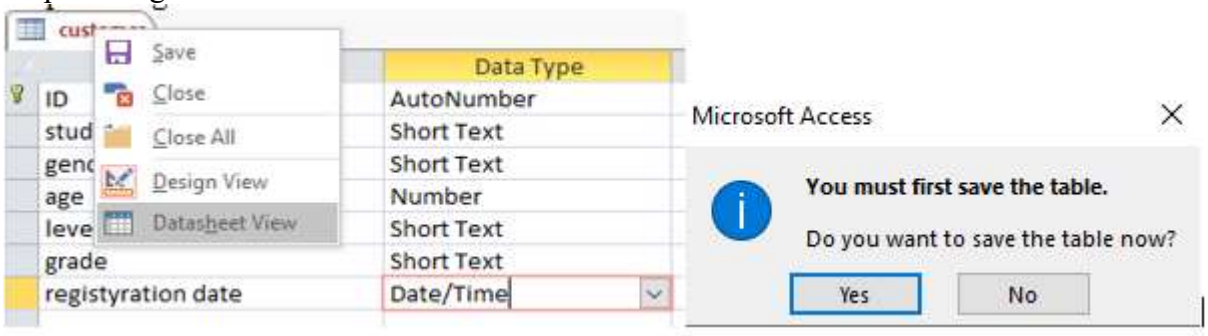
Step 5:- Right click on table name **customer** and select **design view**



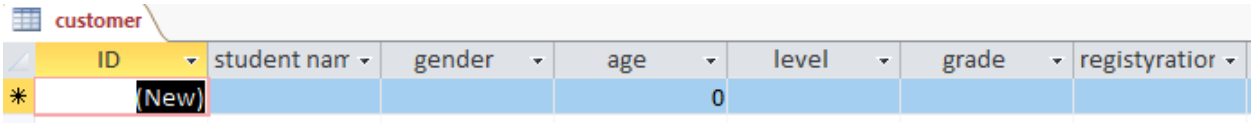
Step 6: - Insert the filed name in to table with datatype and size



Step 7: - Right click on table name and select datasheet view and click on “Yes”



The last out but is like this



Quality criteria: - create modified datasheet view

Lap test 1

Based on the below information perform the following task

Database name	**College**	
Table name	**Employee**	
Filed name	**Data type**	**Size**
Employee name	Short Text	**50**
Gender	Short Text	8
Age	Number	Long Integer
Level	Short Text	3
Salary	Short Text	Format (General Number)
Department	Short Text	30

Task 1: - create database, table and save in desktop

Task 2:- Insert filed name with appropriate datatype and size or format

Task3:- Display the table in datasheet view

Unit Two : Customize basic setting

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Adjusting page layout
- Opening and viewing different toolbars
- Formatting font as appropriate

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Adjust page layout of access
- Open and view toolbars
- Format fonts

2.1 Introduction to customizing Access

You can set database options that can be used to modify the design of Access desktop database objects by clicking **File**, **Options**, and then **Object Designers**. You can set design options for table, form, report, and query designs from this centralized Access Options location, although most of the settings are ignored in the table Datasheet and Layout views. You can also customize the selected error checking settings from this category.

The Ribbon the strip across the top of the program window that contains groups of commands — is a component of the Microsoft Office Fluent user interface. The Office Fluent user interface provides a single home for commands in Access.

As you begin to build more advanced applications with Access, you might decide that you want to customize the Office Fluent Ribbon in order to make an application easier to use. For example, you can hide some or all of the default tabs so that users cannot use certain commands, and you can create new, custom tabs that contain only the commands that you want to be available.

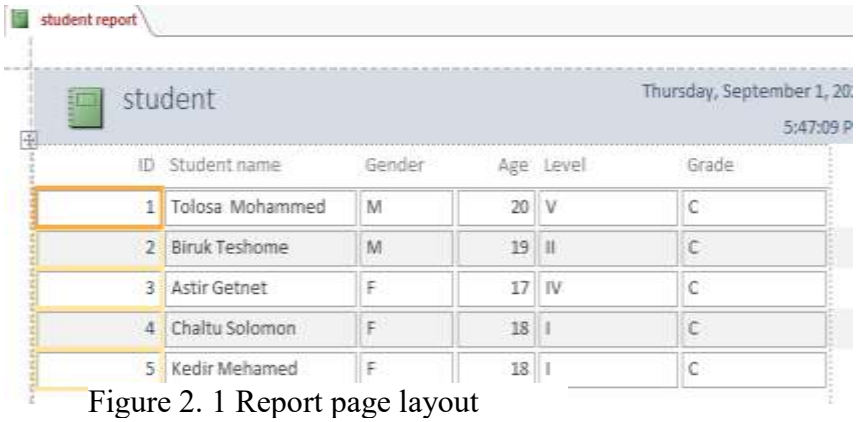
The three main components of the Access user interface are:

- **The ribbon** is the strip of tabs across the top of the program window that contains groups of commands.
- **The Backstage view** is the collection of commands that you see on the **File** tab on the ribbon.
- **The Navigation Pane** is the pane on the left side of the Access program window that lets you work with database objects.

2.2 Adjusting page layout

- **Layout view**

Layout view is the most intuitive view to use for report modification, and can be used for nearly all the changes you would want to make to a report in Access. In Layout view, the report is actually running, so you can see your data much as it will appear when printed. However, you can also make changes to the report design in this view. Because you can see the data while you are modifying the report, it's a very useful view for setting column widths, add grouping levels, or performing almost any other task that affects the appearance and readability of the report. The following illustration shows a student report in Layout view.



ID	Student name	Gender	Age	Level	Grade
1	Tolosa Mohammed	M	20	V	C
2	Biruk Teshome	M	19	II	C
3	Astir Getnet	F	17	IV	C
4	Chaltu Solomon	F	18	I	C
5	Kedir Mehamed	F	18	I	C

Figure 2. 1 Report page layout

- **Design view**

Design view gives you a more detailed view of the structure of your report. You can see the header and footer bands for the report, page, and groups. The report is not actually running in Design view, so you cannot see the underlying data while working; however, there are certain tasks you can perform more easily in Design view than in Layout view. You can:

- Add a wider variety of controls to your report, such as labels, images, lines, and rectangles.
- Edit text box control sources in the text boxes themselves, without using the property sheet.
- Change certain properties that are not available in Layout view.

The following illustration shows a student file report in Design view.

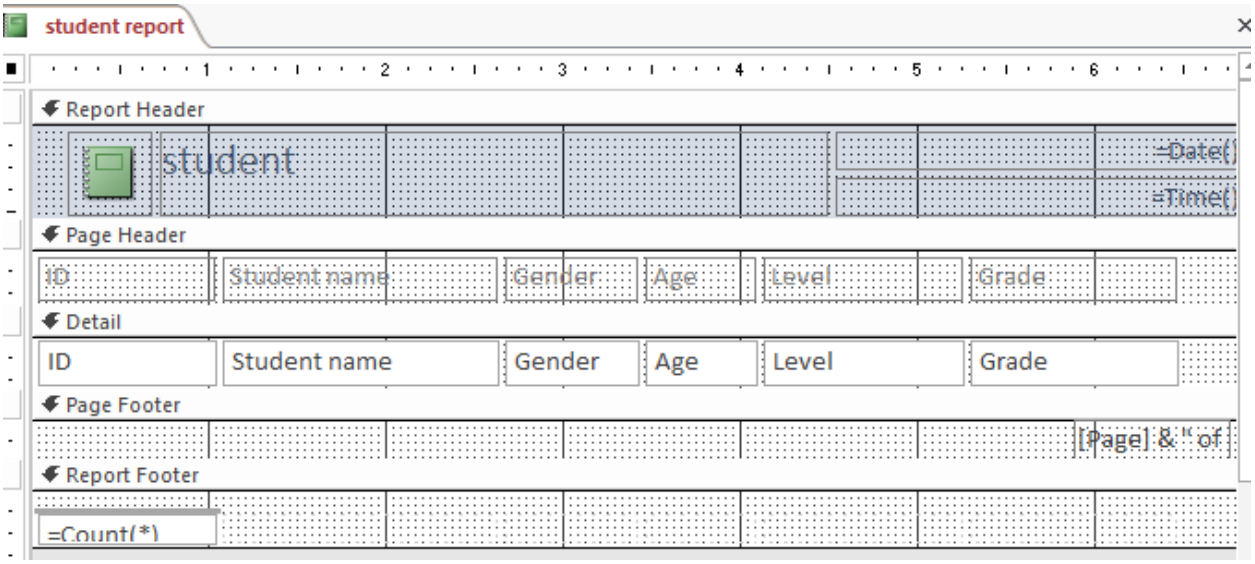


Figure 2. 2 Design view of report

2.3. Opening and viewing different toolbars

In this lesson, you will familiarize yourself with the Access environment, including the **Ribbon**, **Backstage view**, **Navigation pane**, **Document Tabs bar**, and more. You will also learn how to navigate with a **navigation form**, if your database includes one.

Access 2016 uses the **Ribbon** to organize commands, just like in Access 2013 and 2010. If you've used these versions before, Access 2016 will feel familiar. But if you are new to Access or have more experience with older versions, you should first take some time to become familiar with the **Access 2016 interface**.

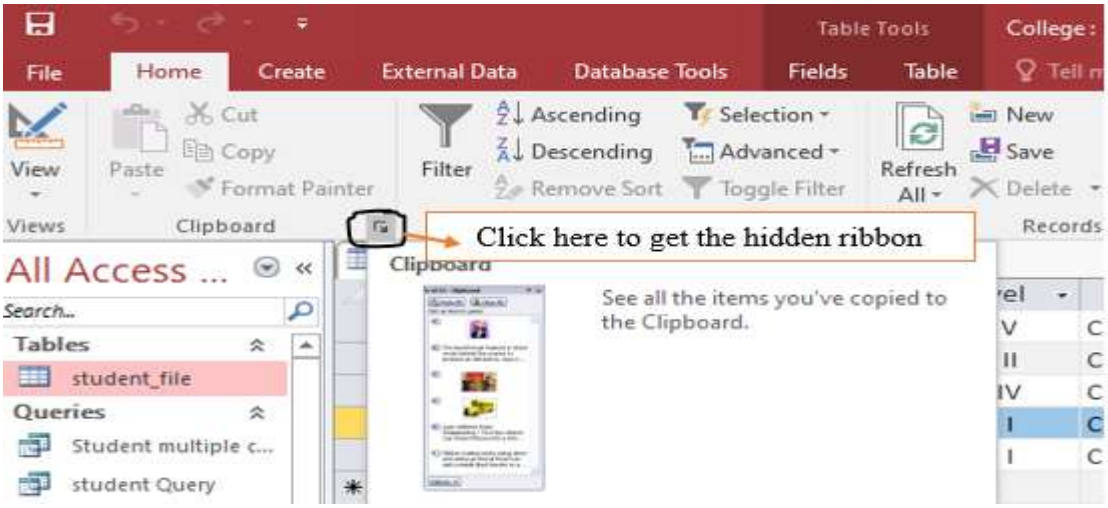
Note: - Click the buttons in the interactive below to become familiar with the Access interface.

- **Ribbon**

Access uses a tabbed Ribbon system instead of traditional menus. The Ribbon contains multiple tabs, each with several groups of commands. For example, the Clipboard group on the Home tab contains commands such as Cut, Copy, and Paste.

Figure 2. 3Access ribbon

Some groups also have a small arrow in the bottom-right corner that you can click for even more options.



The **Quick Access Toolbar**, located above the Ribbon, lets you access common commands no matter which tab you are on. By default, it shows the **Save**, **Undo**, and **Redo** commands. If you'd like, you can **customize** it by **adding additional commands**.

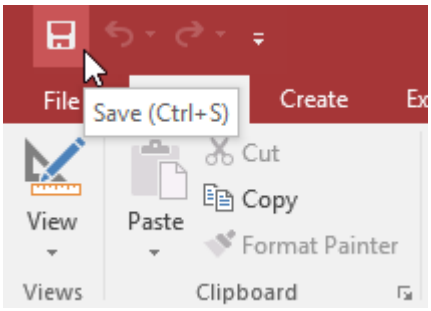


Figure 2. 4 Quick Access Toolbar

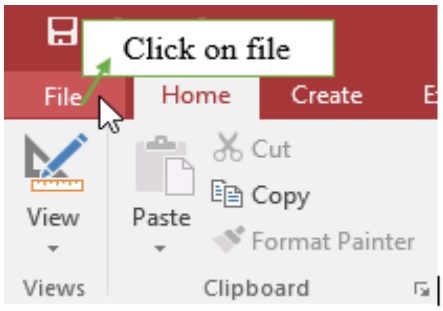
Note that the **Save** command only saves the current open object. In addition, the **Undo** command will not undo certain actions, like adding a record. Pay close attention to your information when using the **Undo** command to make sure it has the desired effect.

- **Backstage view**

Backstage view gives you various options for saving, opening, and printing your database.

✓ To access Backstage view:

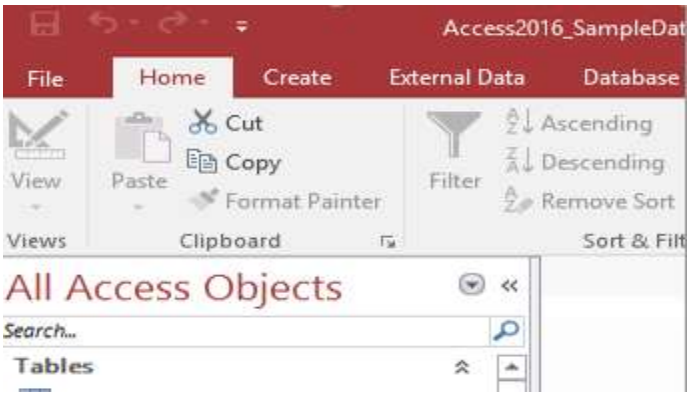
1. Click the **File** tab on the **Ribbon**.



2. **Backstage view** will appear

Figure 2. 5 Backstage view

- **Navigation pane**

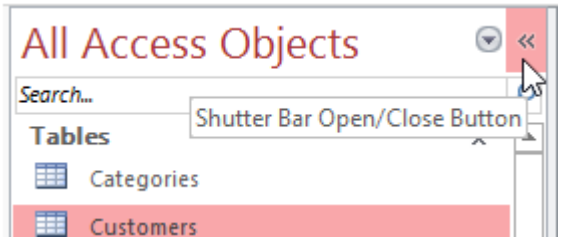


The **Navigation pane** is a list containing every object in your database. For easier viewing, the objects are organized into groups by type. You can **open**, **rename**, and **delete** objects using the Navigation pane.

To minimize and maximize the Navigation pane:

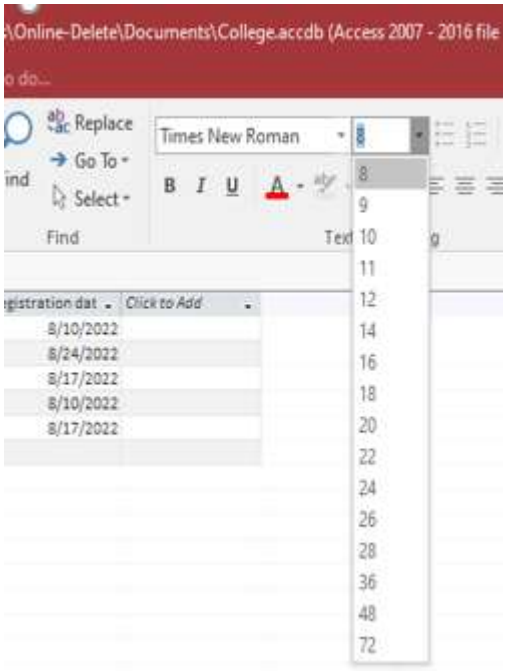
The Navigation pane is designed to help you manage all of your objects; however, if you feel that it takes up too much of your screen space, you can **minimize** it.

1. To minimize the Navigation pane, click the **double arrow** in the upper-right corner.



2. The Navigation pane will be minimized. Click the **double arrow** again to maximize it.

2.4 Formatting font as appropriate



Remarks. The FontSize property uses the following settings. (Default for all reports and controls except command buttons) The text is **8-point type**.

The Short Text and Long Text (also called Memo) data types do not have predefined formats. The Short Text data type has only custom formats. The Long Text data type has both custom and Rich Text formatting. If you don't specify a format, Access left aligns all text in datasheets.

Typically, you apply custom formats to Short Text and Long Text data types to make the table data easier to read. For example, if you use a form to collect credit card numbers, and you store those numbers without spaces, you can use a custom format to add the appropriate spaces to make the credit card numbers easier to read.

Custom formats for Text fields can have up to two sections. Each section contains the format specification for different data in a field.

Setting	Description
8	(Default for all reports and controls except command buttons) The text is 8-point type.
10	(Default for command buttons) The text is 10-point type.
Other sizes	The text is the indicated size.

Table 2. 1 Default value of text and buttons

Self-check 2

Part I: - Select the best answer from the given alternative

___1. Which one of the following in the maximize size of text data?
A. 256
B. 1010
C. 255
D. 1000

___2. Which one is a strip across the top of the program window that contains groups of commands
A. Ribbon
B. Toolbar
C. Folder
D. File

___3. ____ is the pane on the left side of the Access program window that lets you work with database objects.
A. Navigation Pane
B. Ribbon
C. Backstage view
D. All

___4. Which one is the most intuitive view to use for report modification
A. Layout view
B. Design view
C. Datasheet view
D. All

___5. Which one data type has both custom and Rich Text formatting.
A. Long Text
B. Short Text
C. Number
D. All

Part II: - Give short answer for the following questions

1. List and explain types access environment?
2. Discuses types of datatype used in access 2016?
3. What is the main advantage of Quick Access toolbar?

Unit Three: Create reports

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Introduction to report
- Design reports in a logical sequence or manner
- Modifying reports
- Distributing reports to appropriate person in approved format

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Design reports to present data in a logical sequence or manner.
- Modify reports to include/exclude additional requirements.
- Distribute reports to appropriate person in an approved format.

3.1. Introduction to report

The good news is reports in Access are just like any other reports you would create. Reports organize and present information from your database in an attractive and easy-to-read format. You can print or display these reports for yourself or to share with others. You can create single or multiple column reports.

Reports are very similar to forms, but they are more static. You can think of a report as something that would be a preview of a printout. Creating reports is similar to creating forms. A report can be based on a table or query and we can have sub reports, just like with forms. In the sections that follow, we will look at some examples of reports.

Different Views of report:

- **Print Preview**: -allows you see what the report would look like on a printed piece of paper
- **Report View**:-allows you to see the data without having to display it in Print Preview
- **Layout View**: - allows you make design changes while browsing your data
- **Design View**: - gives you a more detailed view of the structure of your report

3.2. Designing reports in a logical sequence or manner

A report can be created by selecting Create → Report on the ribbon. The table or query that is selected in the object browser when we press Create →Report will become the record source of the report. As with forms, reports can be created in other ways (as blank reports or with the help of a wizard). In this section we will just look at the simplest type which is a report based on one table. We can select the table Student in the object browser and press Create→ Report on the ribbon. The new report will look like this:

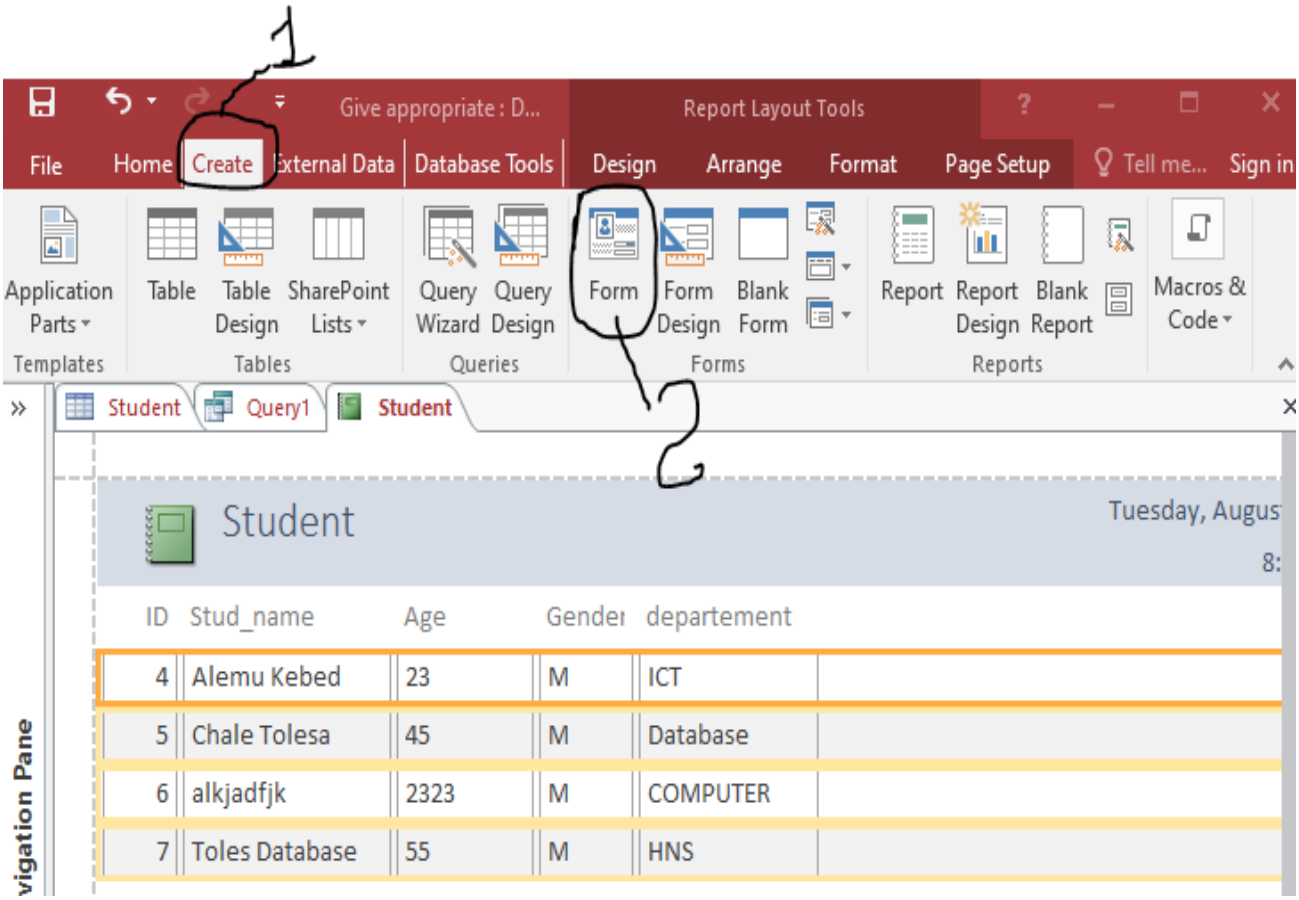


Figure 3. 1 Simple report View

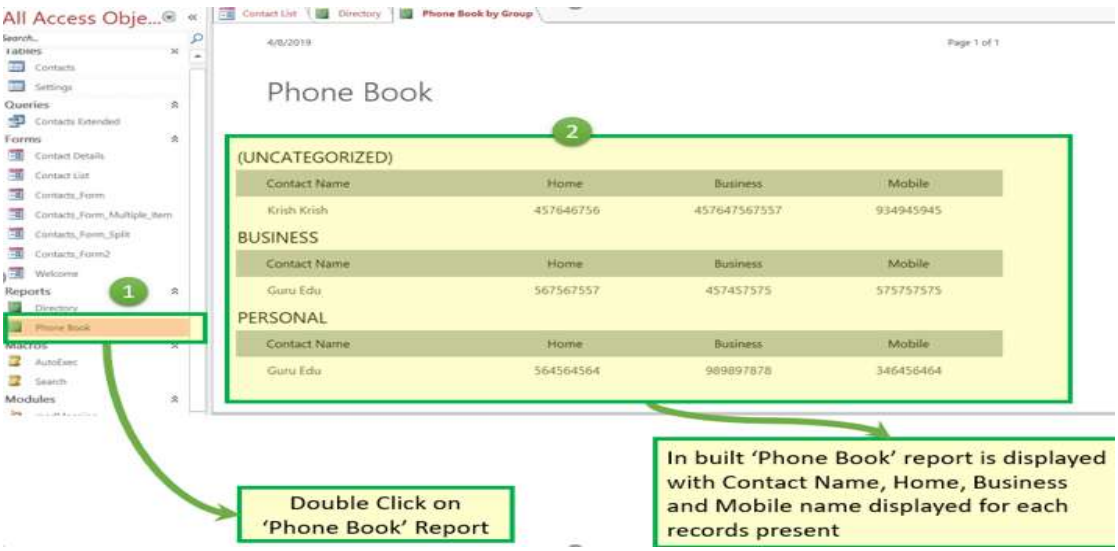
3.4. Modifying reports

A report is an object in MS Access that is designed for formatting, calculating and printing selected data in an organized way. It contains information from tables and also information that are there in the report design. Reports are helpful as they allow you to present all information of your database in an easy-to-read format.

Formatting reports is one of the strengths of reports is that you can modify their appearance to make them look how you want. You can add **headers** and **footers**, apply new **colors**, and even add a **logo**. All of these things can help you create visually appealing reports.

Let's take an MS Access databases example of **'Contact'** DB default report – 'Phone Book.'

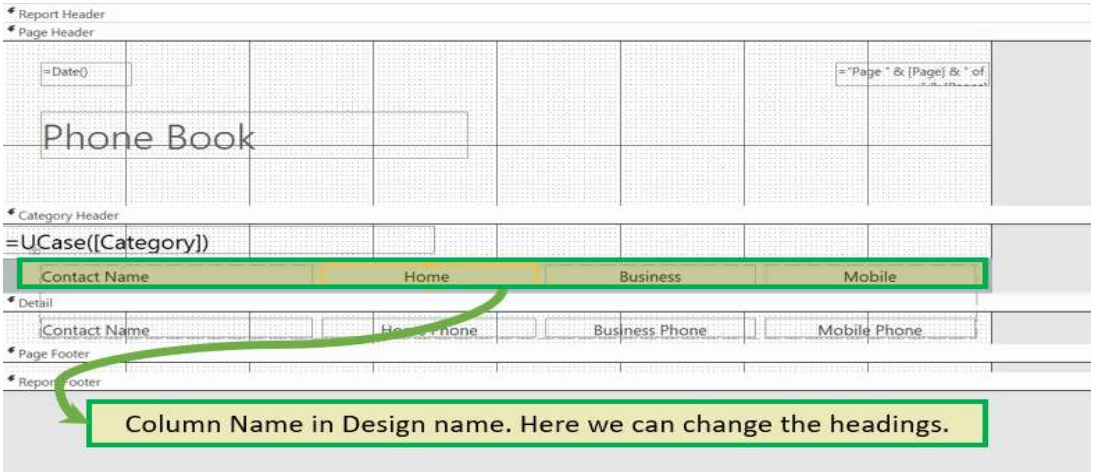
Step 1) Click on 'Phone Book' under 'Report' section. The system will open the inbuilt 'Phone Book' report. It will display Contact Name, Home, Business and Mobile name displayed for each record present.



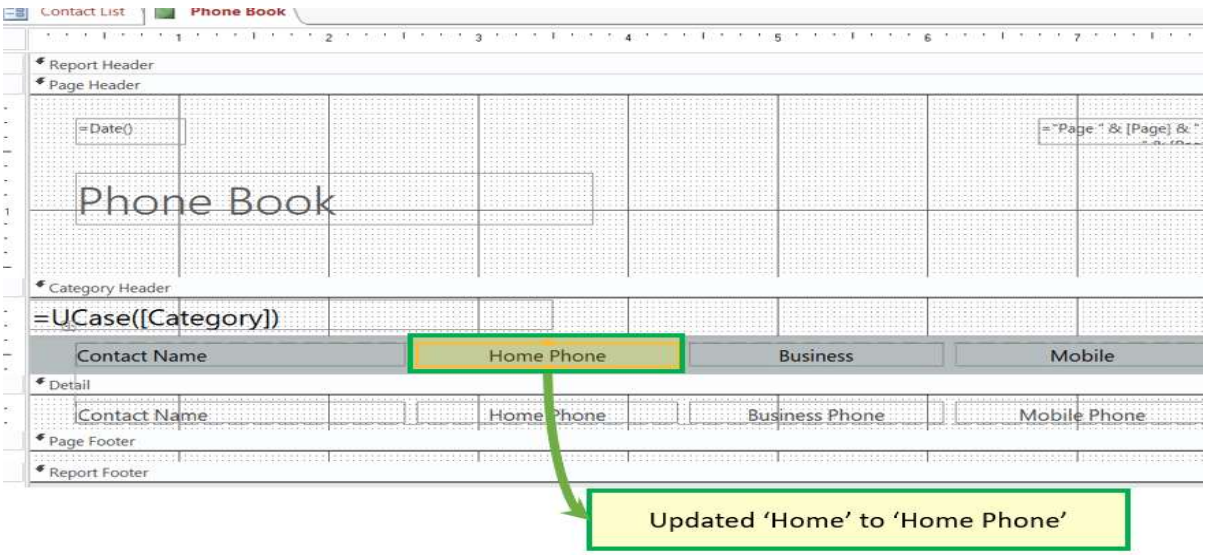
Step 2) Now suppose that we want to edit the report Heading from 'Home' to 'Home Number.' Right click and click on 'Design View.'

Figure 3. 2 Design view of report

The system will open the Report in Design view.

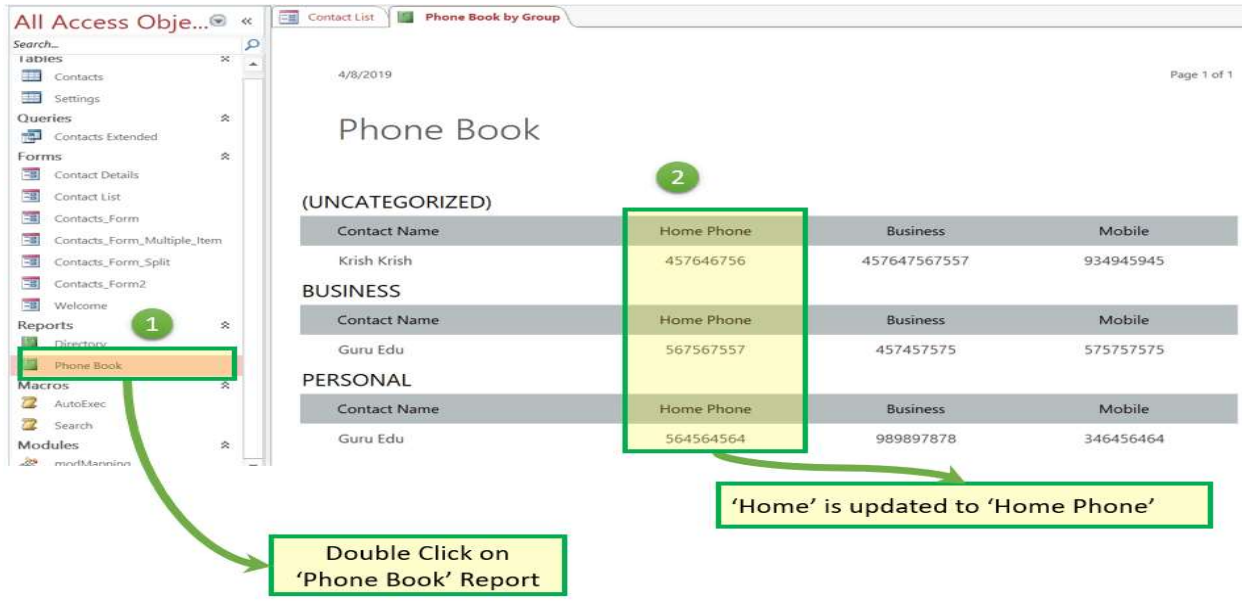


Step 3) Edit the name you want to update and Press ‘Ctrl+S’.



Step 4) Double click ‘Phone book’ under reports

Result: Label is updated from ‘Home’ to ‘Home Phone.’



- **Report Wizard**

This tool makes it easier to create reports from multiple tables and multiple queries.

In the Create tab→ Reports group→ Report Wizard :

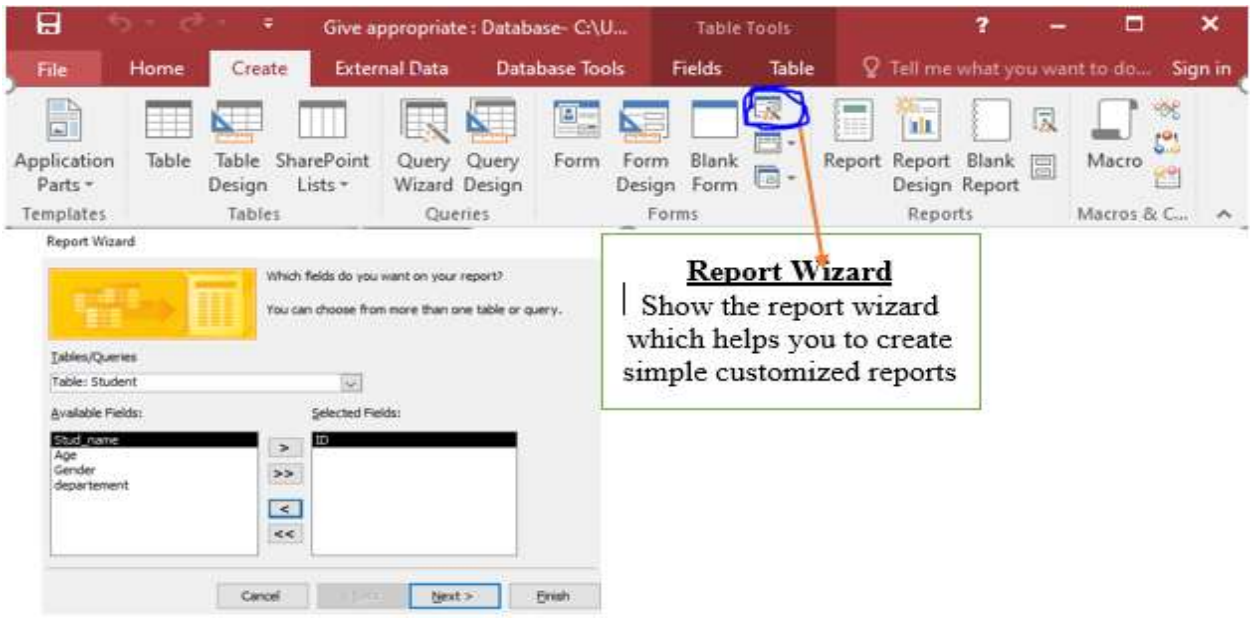
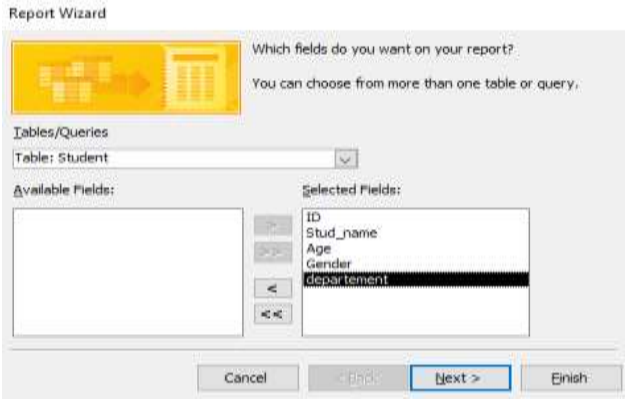
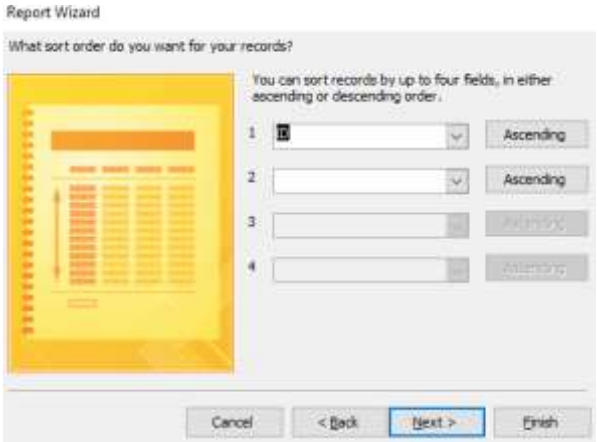


Figure 3. 3 Report Wizard

Select the field you want to appear in the report → click the right arrow → click Next :

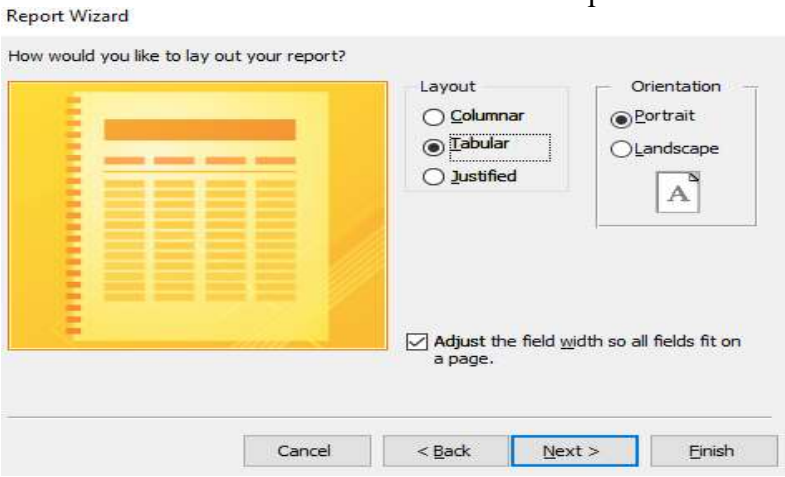


- Sort data in reports: - Click the arrow as shown, select the name of the first field you want to sort, then select the Ascending or Descending sort on the right.
- You can arrange up to 4 fields, the sort will be applied one by one from top to bottom, the first sort will be main. When satisfied with the layout you created, click Next.



- **Choose layout and report title**

- Click on the layout option to see what they look like, choose the one that's suitable for use.
- Select vertical or horizontal rotation for the report.



- When satisfied with the layout of your report, click Next, enter a title for the report, select whether you want to preview or modify its design, and then click Finish.

3.5. Distributing reports to appropriate person in approved format

3.5.1. Distribute a report

Liberate your Access reports and distribute them far and wide. For example, email them to one or more users, export them to SharePoint document libraries, and archive them on network folders. When you distribute an Access report, you create a static report of data at a certain moment in time, such as daily, weekly, or monthly. By doing so, you have a single point of truth that information workers can use to make good business decisions, answer questions, find alternatives, determine best plans, evaluate risks, and improve quality.

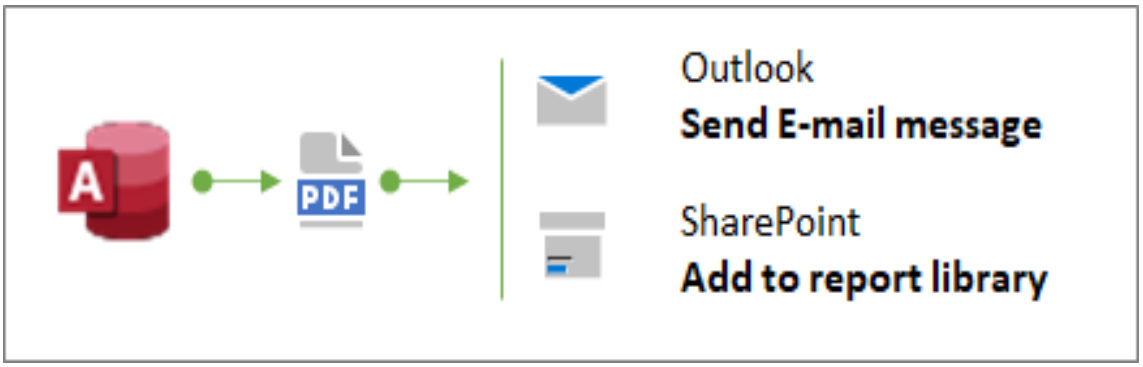


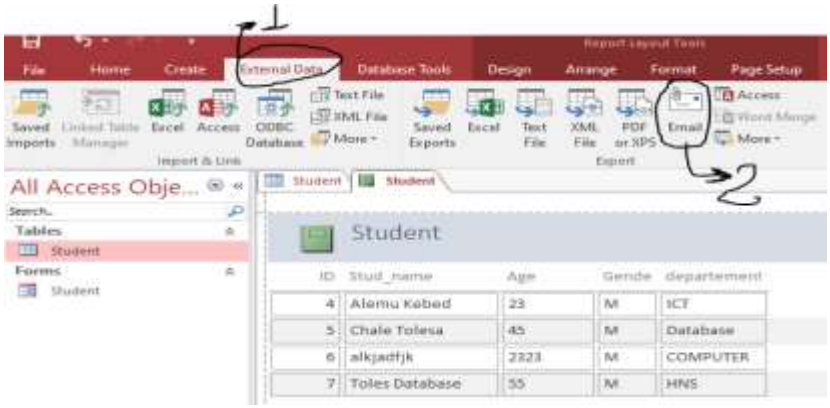
Figure 3. 4 Distribute a report

Note :- When you create the report, add a publication date. This helps users confirm the correct time the report was created.

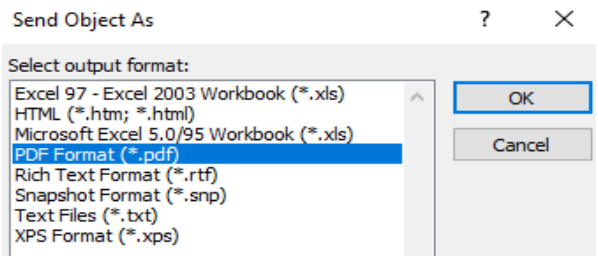
Steps to Send a report by using the Email command

One of the fastest ways to distribute a report is by using the Email command. With just a few mouse clicks, Access exports the report, and then creates a new e-mail message with the file attached to it.

1. In the Navigation Pane, select the report that you want to send.
2. Select **External Data →Email**.



3. In the **Send Object as** dialog box, select the output format that you want to use, such as **PDF**, and then click **OK**.



Note:- Although there are a variety of formats you can select, consider using Portable Document Format (PDF) which has become a defacto standard, preserves the layout and format of the original Access report, and has built-in ways to customize the pages for viewing and printing.

4. Access opens a new e-mail message in Outlook with the file attached.
5. Type the recipients' e-mail addresses in the **To** and **Cc** boxes, a description in the **Subject** box, and a message in the message area.

Tip By default, the file that you send by using this method is not saved on your computer. If you want to save a copy of the file on your computer, right-click the attachment in the **Attached** box, and then select **Save As**.

6. Select **Send**.

Self-check 3

Part I: - Select the best answer from the given alternative

1. ____ is an object in desktop databases primarily used for formatting, calculating, printing, and summarizing selected data.
   A. Form
   B. Report
   C. Query
   D. All
2. Which one of the fastest ways to distribute a report to other person?
   A. Email command
   B. Outlook
   C. Gmail
   D. All
3. Which one of the following is the advantage of design report?
   A. Add header on the report
   B. Change the field of the report
   C. Easily to read and view
   D. All
4. ___is one of the strengths of reports is that you can modify their appearance to make them look how you want.
   A. Formatting reports
   B. Report view
   C. Display view
   D. All
5. How many fields are used for sorting access database data report
   A. 5 Fields
   B. 4 Fields
   C. 3 Fileds
   D. 1 filed

7. Which one of the following is the advantage of design report?
   A. Add header on the report
   B. Change the field of the report
   C. Easily to read and view
   D. All

Part II: - Give short answer for the following question

1. What is the advantage of report in access database?
2. What is the main purpose to use modification of report design in access?

Operation sheet 3

Operation sheet 3.1 Produces access database report

- **Operation Title:** create database report
- **Purpose:** To produce student report
- **Instruction:** Using the figure below and given equipment. You have given 30Minut for the task and you are expected to complete tasks.
- **Tools and requirement:**
  - Computes
  - MS office access 2016
  - Use the following data

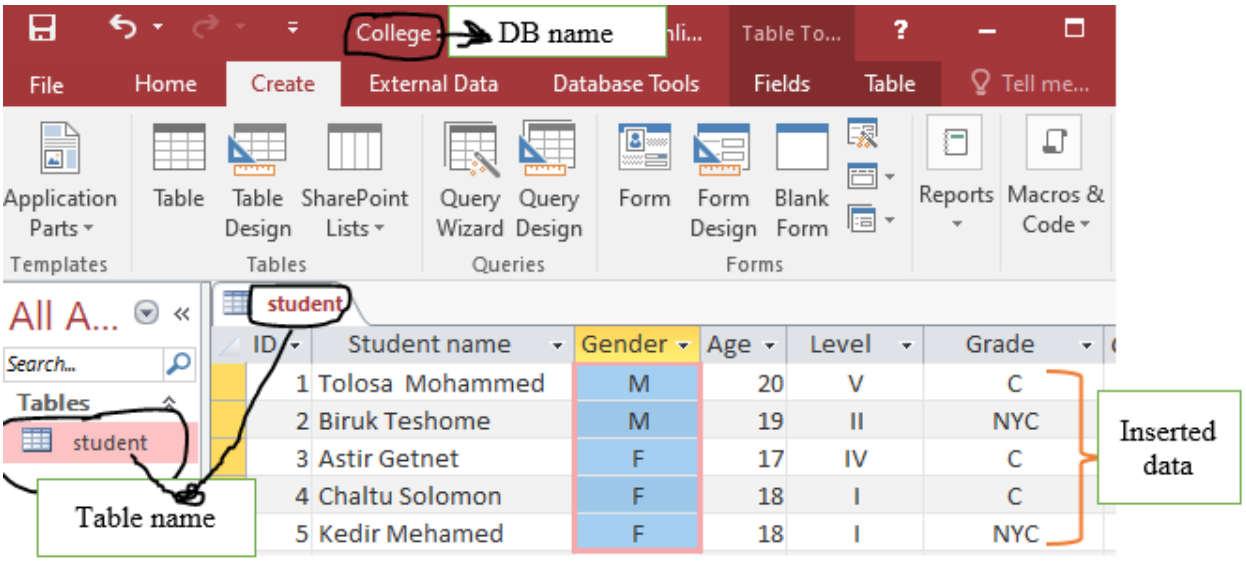
Student name	Gender	Age	Level	Grade
Tolosa Mohammed	M	20	V	C
Biruk Teshome	M	19	II	NYC
Astir Getnet	F	17	IV	C
Chaltu Solomon	F	18	I	C
Kedir Mehamed	F	18	I	NYC

Note :- Give appropriate data type for the above field

- **Steps in doing the task**

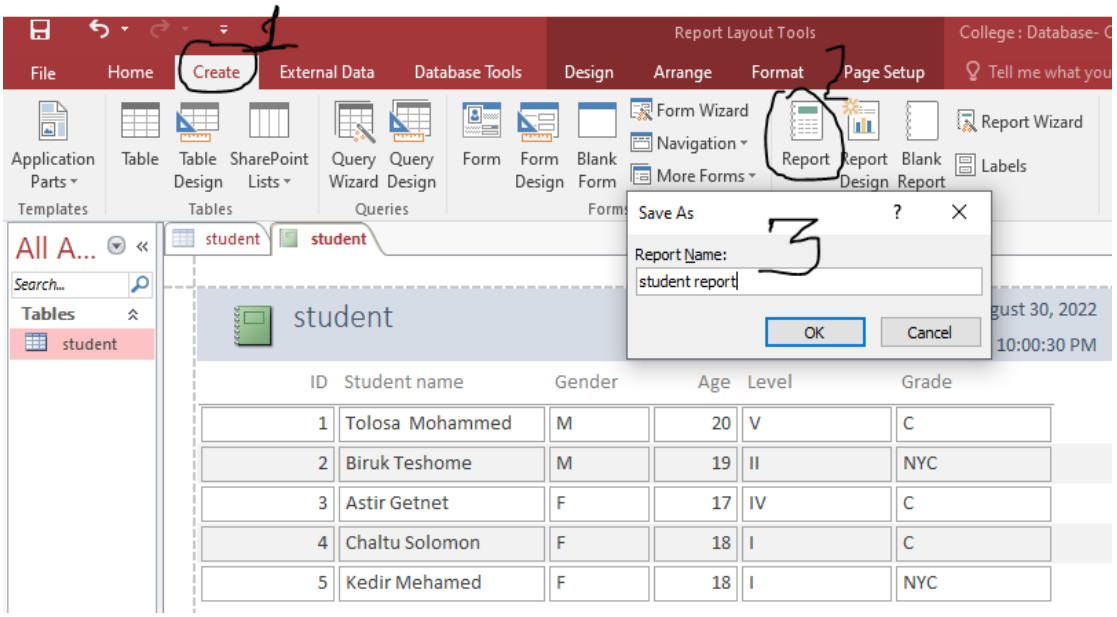
Step 1: - Create database called **college** and table **student**

Step 2: - Insert the above given data

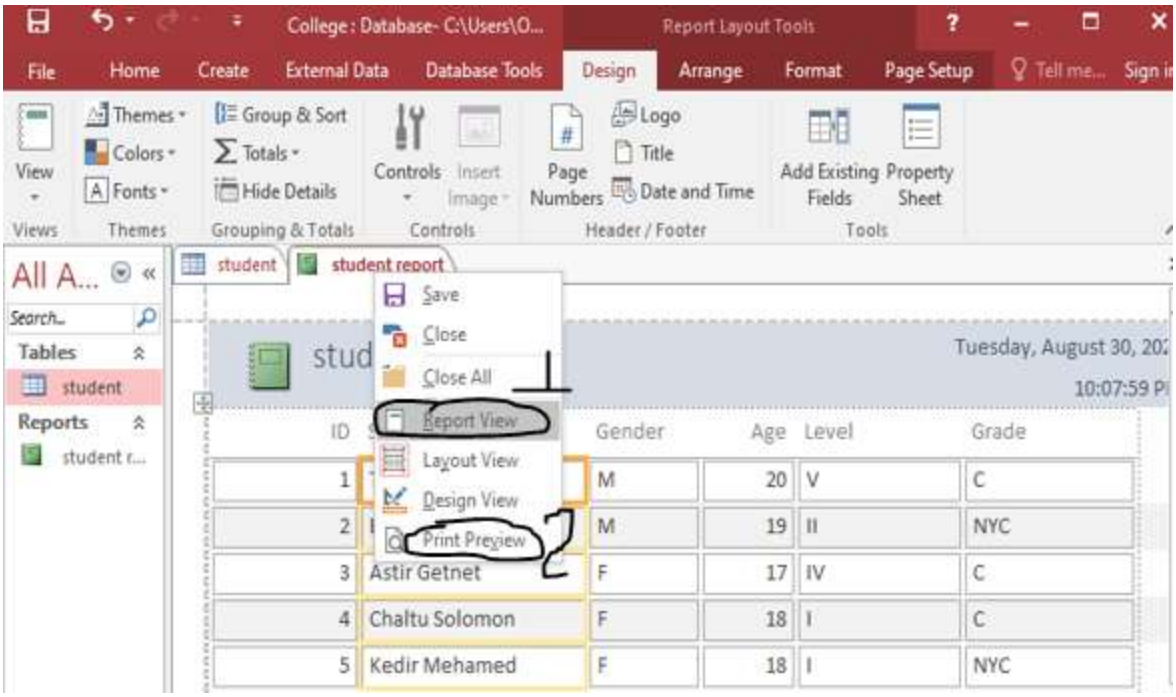


Step 3: - Click on create then click on Report

Step 4:- Press “CTRL + S” to save the report and give name “student report”.



Step 5:- Right click on report table name and select **Report view** then **print preview**



- **Quality Criteria: - produce student report**

Operation sheet 3.2 Produces selected filed data report

- **Operation Title:** create data report
- **Purpose:** To produce a report using some filed of the table
- **Instruction:** Using the figure below and given equipment. You have given 20Minut for the task and you are expected to complete tasks.
- **Tools and requirement:**
  - Computes
  - MS office access 2016
  - Use the following data

Student name	Gender	Age	Level	Grade
Tolosa Mohammed	M	20	V	C
Biruk Teshome	M	19	II	NYC
Astir Getnet	F	17	IV	C
Chaltu Solomon	F	18	I	C
Kedir Mehamed	F	18	I	NYC

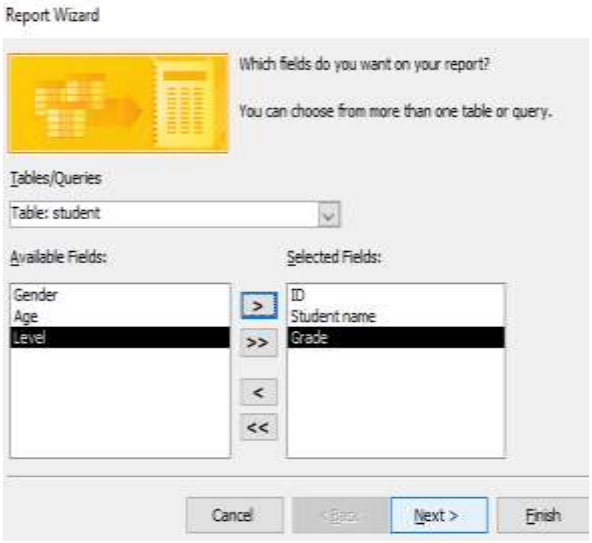
Note :- Give appropriate data type for the above field

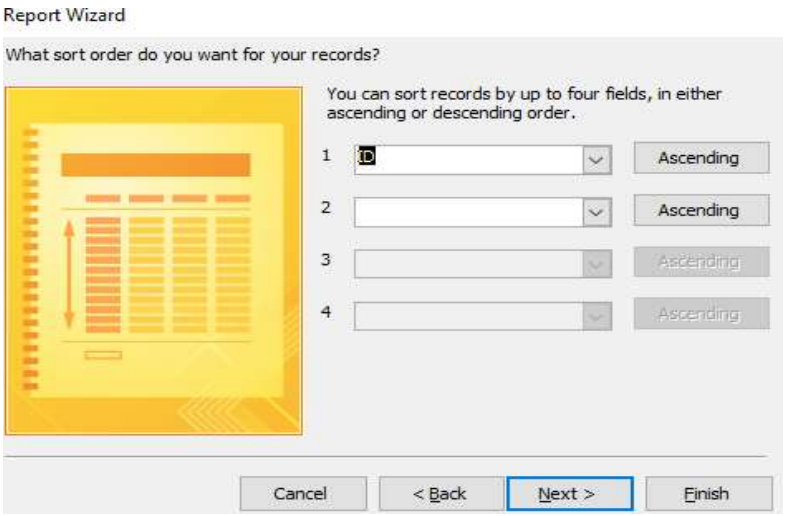
- **Steps in doing the task**

Step 1:- Use the above operation sheet of 4.1 steps 1 and 2

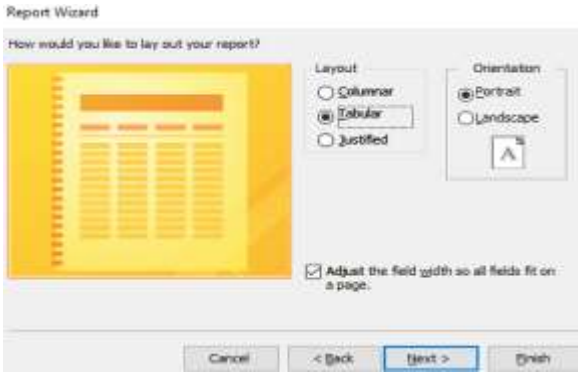
Step 2:- Select the table name and click on create →Report wizard

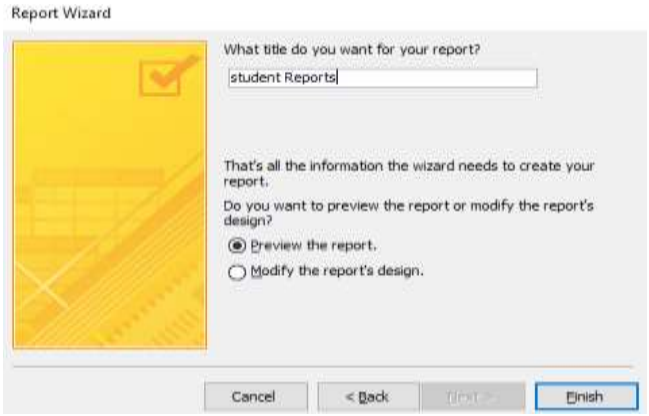
Step 3: - select and move the field and click on Next→ Next →Next → sort by "**ID**"



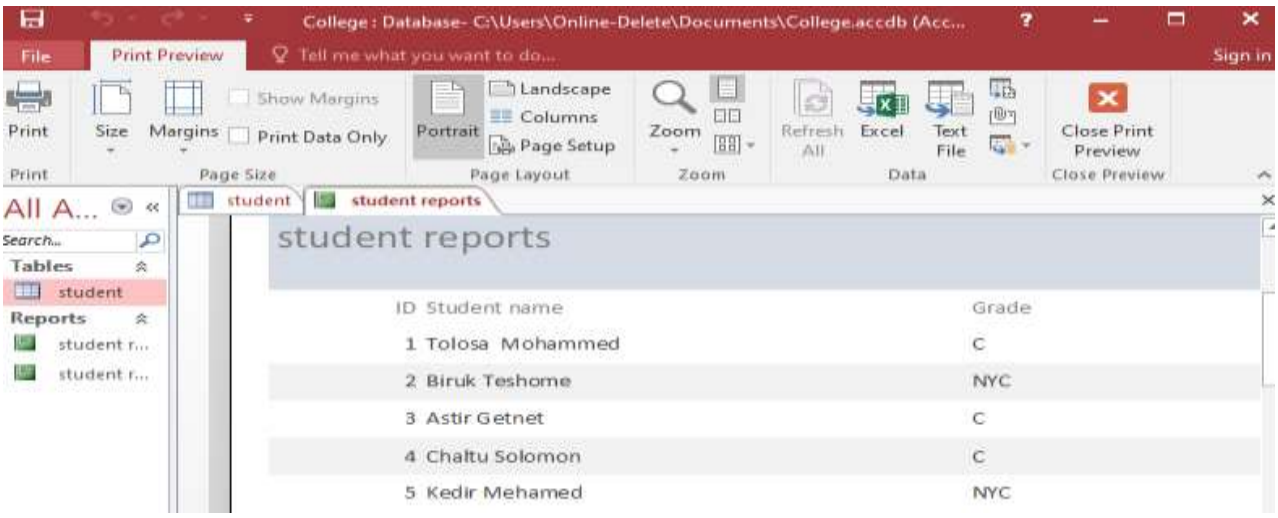


Step 4:- Select the Layout "columnar, Tabular, Justified ' and orientation " portrait or landscape "





Step 5: - Give report name and click on "**Finish**".



Note :- This is the last output of the student using report wizard and using specific filed of the table

- **Quality Criteria:- Create student report using Report wizard**

Lap Test 3

Based on the below information prepare employee report

Database name	
Table name	**Employee**
Filed name	**Data type**
Id No	Number
Employee name	Short Text
Gender	Short Text
Age	Number
Level	Short Text
Salary	Short Text
Department	Short Text
Phone number	Number

Id_No	**Employee name**	**Gender**	**Age**	**Level**	**Salary**	**Department**	**Phone number**
Ep_01	Tale Ayemew	M	34	B	8078	Auto	0912312231
Ep_02	Ayenalem Baye	F	35	A	10231	ICT	0924535142
Ep_03	Dawit Slemon	M	43	A	8012	GMF	0923234342

Task 1: - Create the above database and table and save on desktop

Task 2: - Insert the above data into your data

Task 3: - Using report wizard and use any three filed of the table prepare employee report

Unit four : Create Database Forms

This unit to provide you the necessary information regarding the following content coverage and topics:

- Creating a form
- Modify database forms
- Rearrange object with form

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Use wizard to create a simple form
- Open and record existing database through a simple form modified
- Rearrange objects within the form to accommodate information requirements

4.1. Introduction to forms

Forms can be used both for adding and editing data, as well as for browsing and presenting data. In Access 2016, a **form** is an object that generally serves three purposes:

1. To allow users to perform data entry. Data can be inserted, updated, or deleted from a table using a Form object.
2. To allow users to enter custom information, and based on that information perform a task. For example, you may want to ask a user for parameters before running a report.
3. To allow users a method of navigating through the system. For example, you may create a form where a user can select a form to load, a report to run, etc.

- **Plus, to that of the above purposes a form is: -**
  - ✓ A form is a database object that you can use to create a user interface for a database application.
  - ✓ It mainly used to ease the process of data entry or editing.
  - ✓ Data in a form can be selected from one or more tables.
  - ✓ Forms can also be used to control access to data, like which fields or rows of data are visible to which users.
  - ✓ Forms have a Form View.
  - ✓ Help you to display live data with easy creation of new data.

To create access 2016 database form you must select the **create tab** in the toolbar at the top of the screen. Then click on the form design button in the **forms group**. To view the form property of Access 2010 database, select the **design tab** in the toolbar at the top of the screen. Then click on the property sheet button in the **tools group**. When the Property Sheet appears, select Form from the drop down if it is not already selected. You should now see the properties for the Form object. It is also primarily being used to enter or display data in a database. You can also use a form as a switchboard that opens other forms and reports in the database, or as a custom dialog box that accepts user input and carries out an action based on the input.

- A data-entry form
- A switchboard form
- A custom dialog box

4.2. Create a simple form

There are four primary ways to create the form as mentioned below:

1. **Form Wizard**
2. **Default Form**
3. **Multiple Item**
4. **Split Form**

Let's have a look at each option to create the form, one by one:

1. Create using Form Wizard

The wizard lets you make decisions about certain aspects of a form's design and produces a form based on your instructions. The form wizard gives you more control over your results than one-click forms do. The wizard lets you make decisions about certain aspects of a form's design and produces a form based on your instructions. To create a form based on a single table using the Form Wizard, follow these nine steps.

Note: -This feature works the same in all modern versions of Microsoft Access: 2010, 2013, and 2016.

This option allows the user to create the form with the wizard and select the column from the available list of column form in legacy Select window format.

Step 1) Click on **'Form Wizard.'**

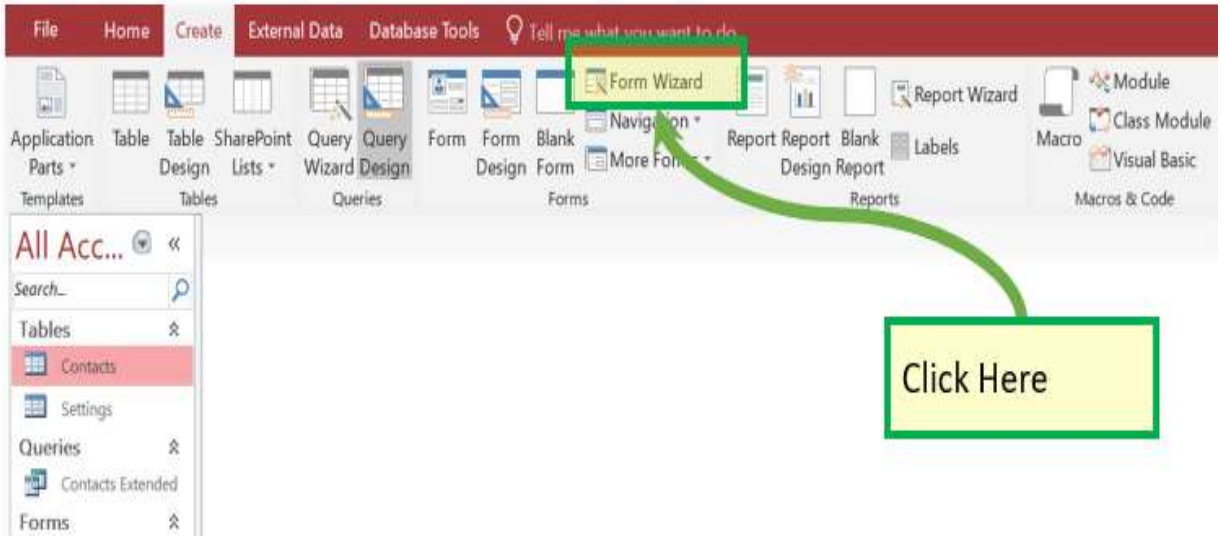
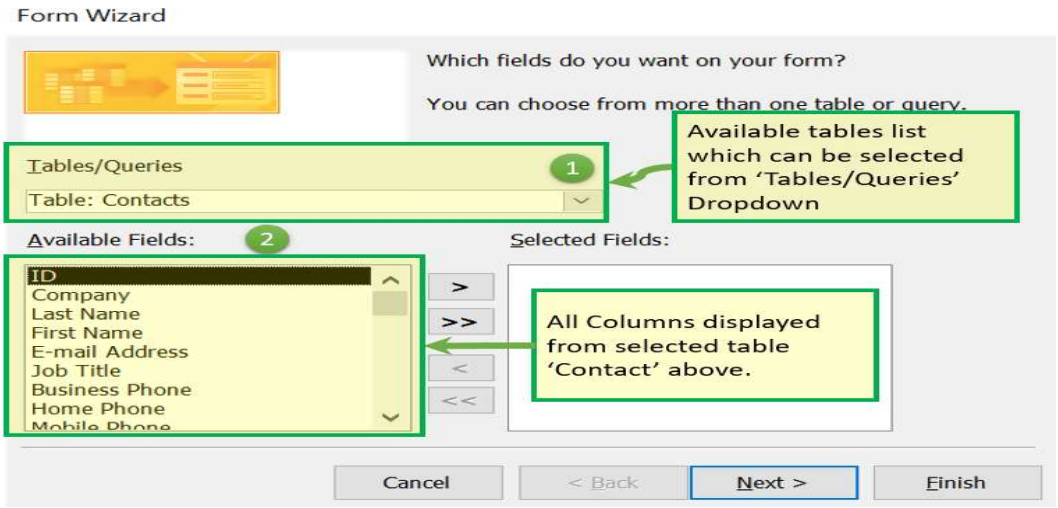
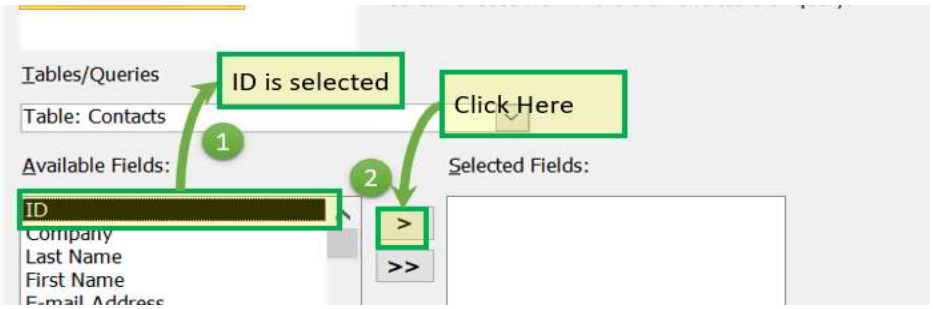


Figure 4. 1 Form Wizard

Step 2) System will display below the screen.

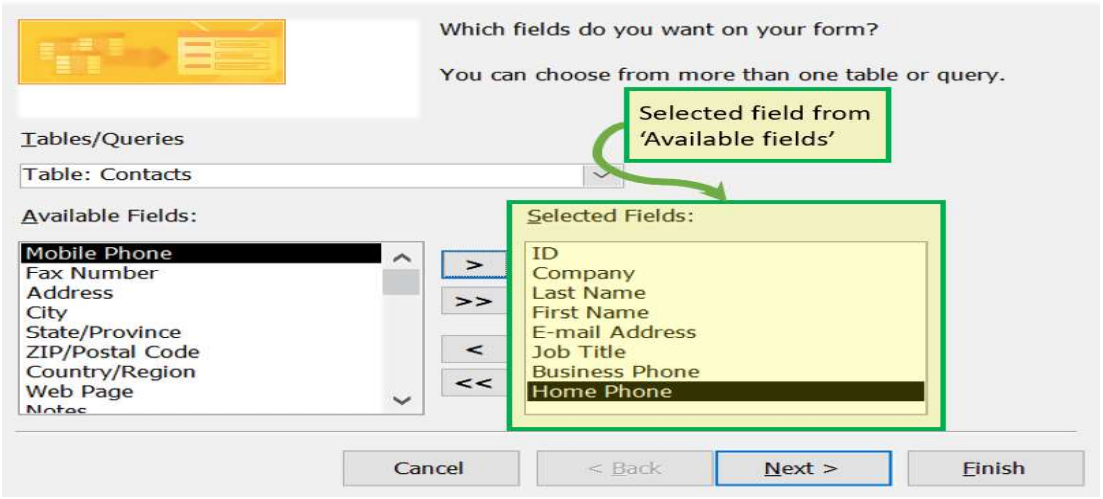


Step 3) Select the columns which you want to be there in final form.

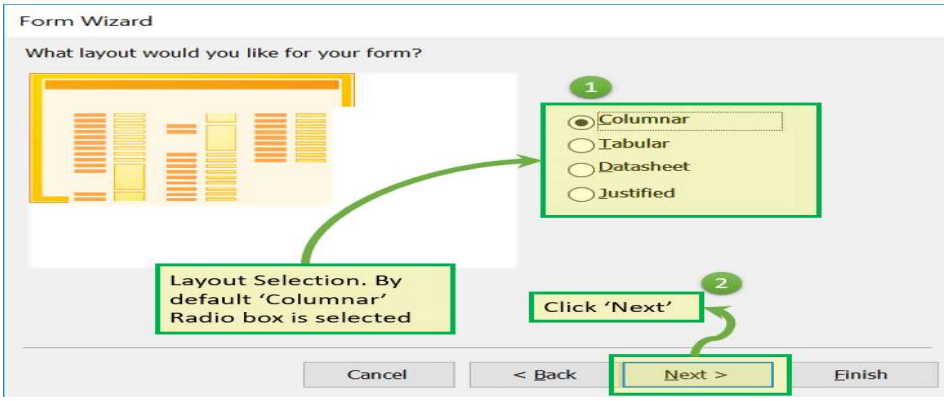


Result: ID is selected

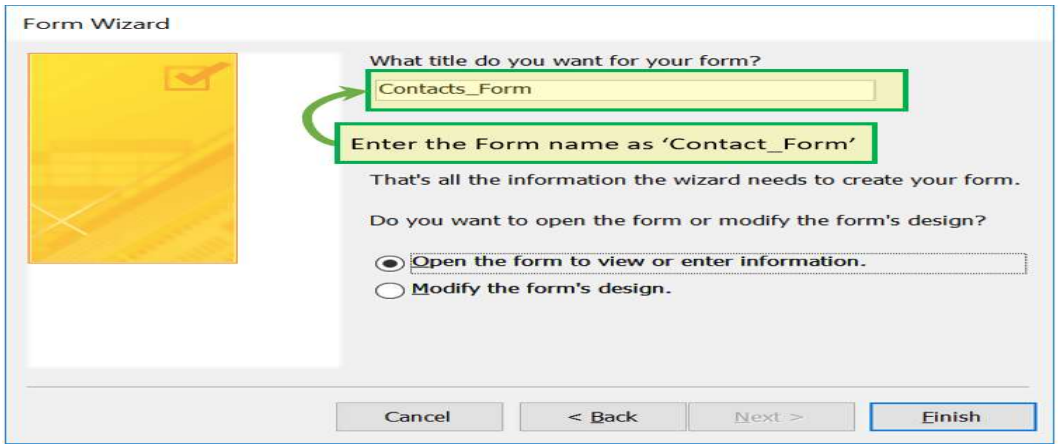
Step 4) Keep selecting all required column as explained in Step 3 above and then click 'Next.'



Step 5) Layout selection box will appear which allows the user to select the different type of form layout. Click 'NEXT'



Step 6) Enter the name of the form as "Contact_Form" and click 'Finish.'



Result: Contact_Form now exist with all column displayed which are there in step 4 in the Selected column list.

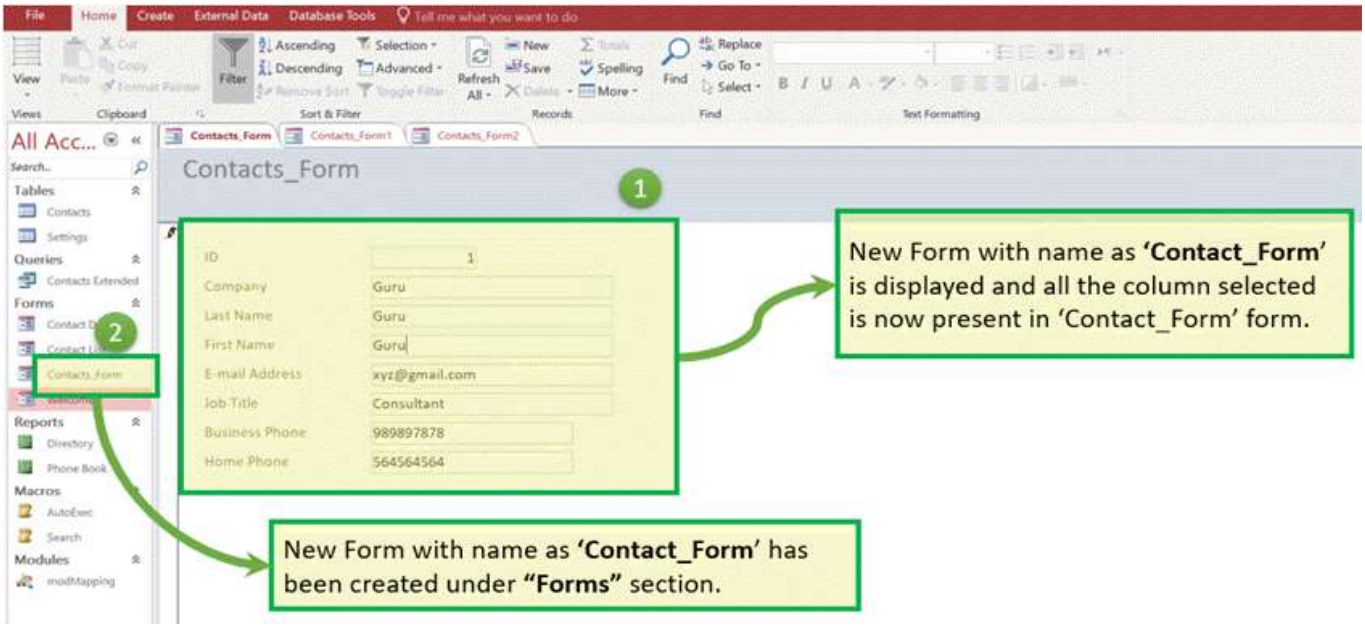


Figure 4. 2 finale data insert form

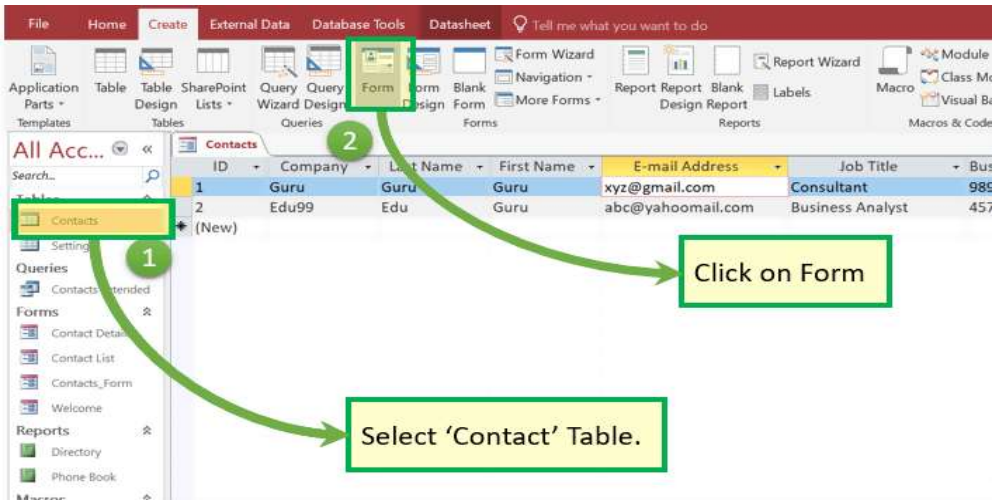
To navigate and input records

2. Create using Form

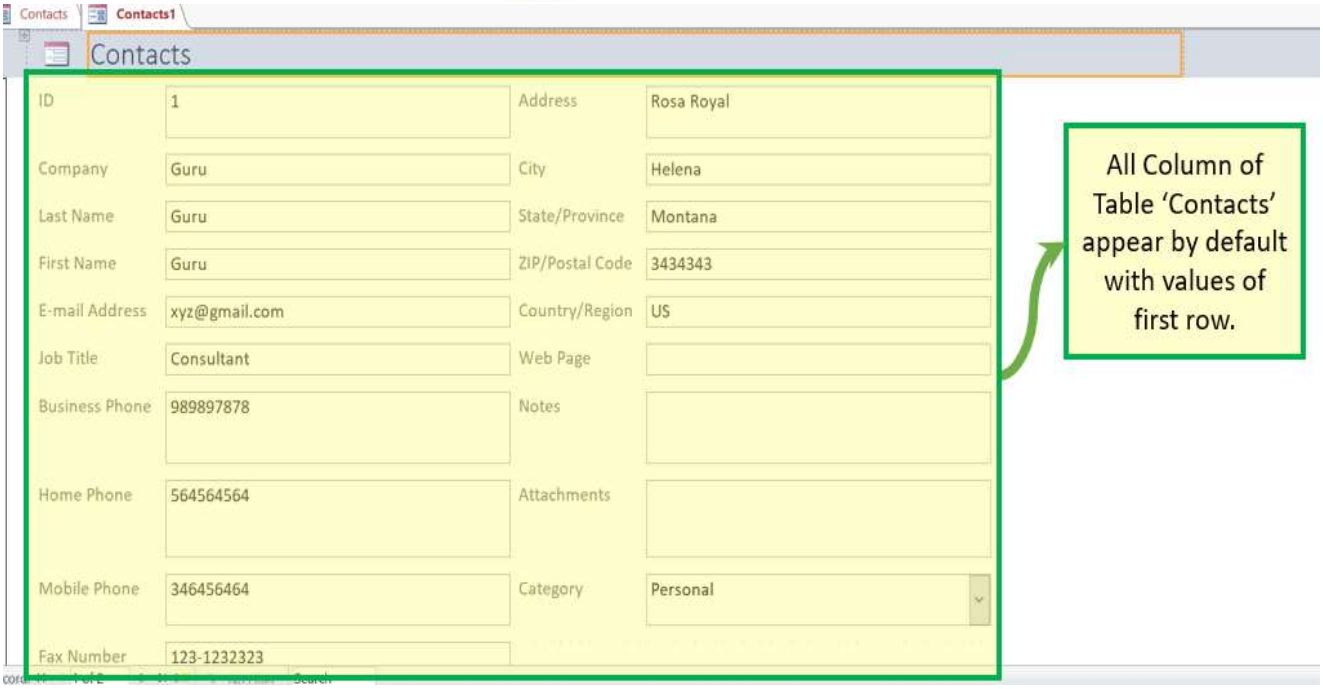
It is the simplest way to create the form which will:

- By default, populate all the column from the selected table in 'form view,'
- The user can delete non-required column manually

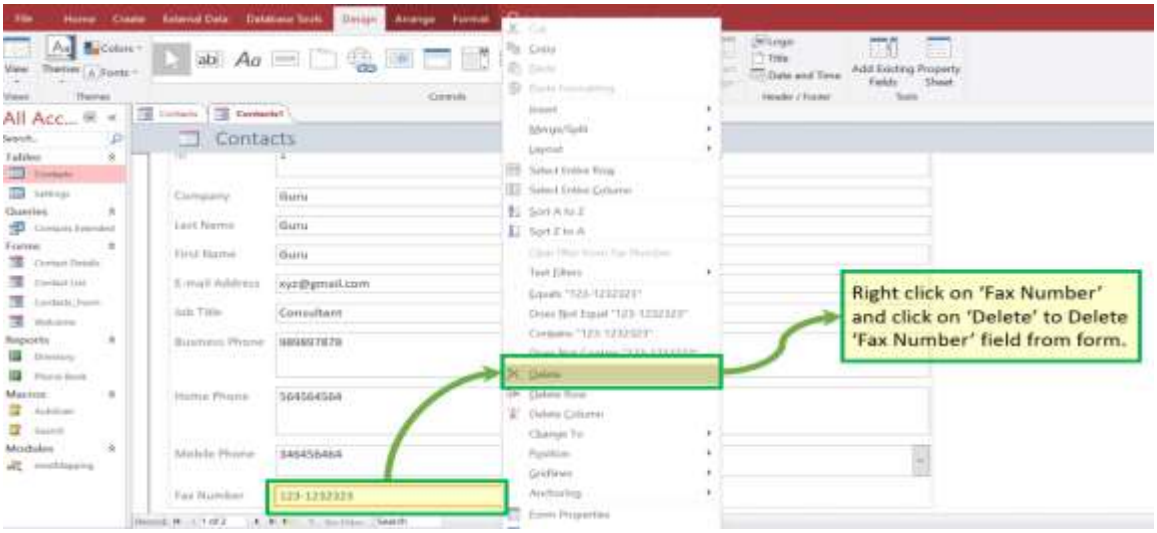
Step 1) Select the table for which we want to create the form and click on 'Form.'



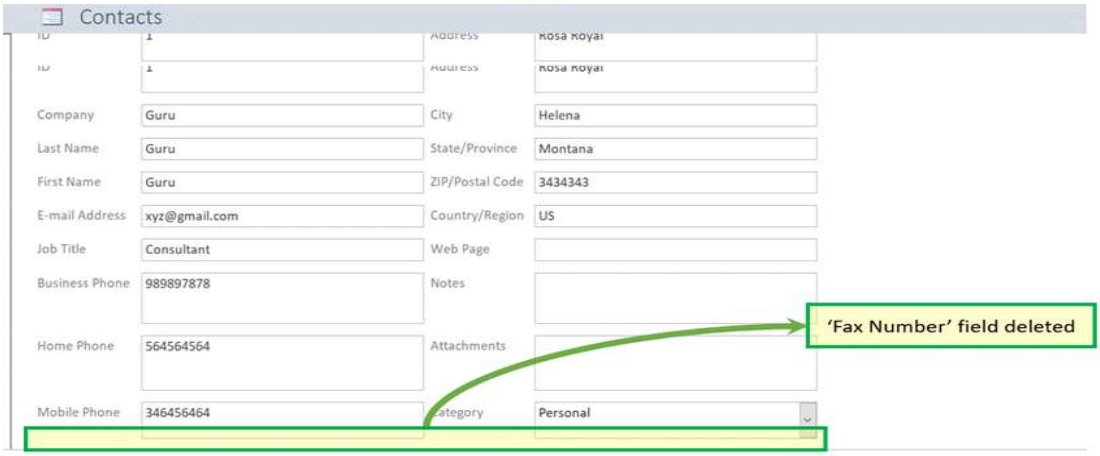
Step 2) Below window will appear.



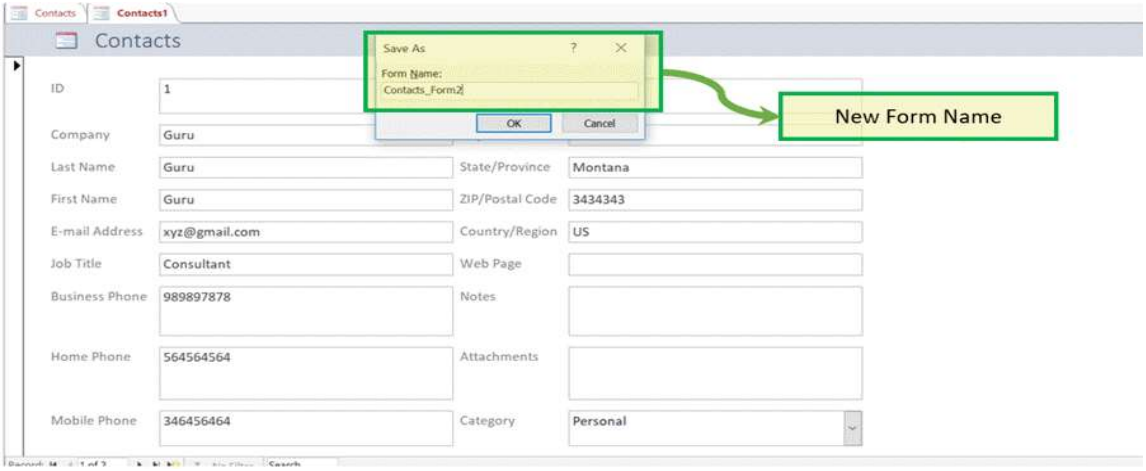
Step 3) Right-click on any cell which we don't want to be part of final forms and click on 'Delete.'



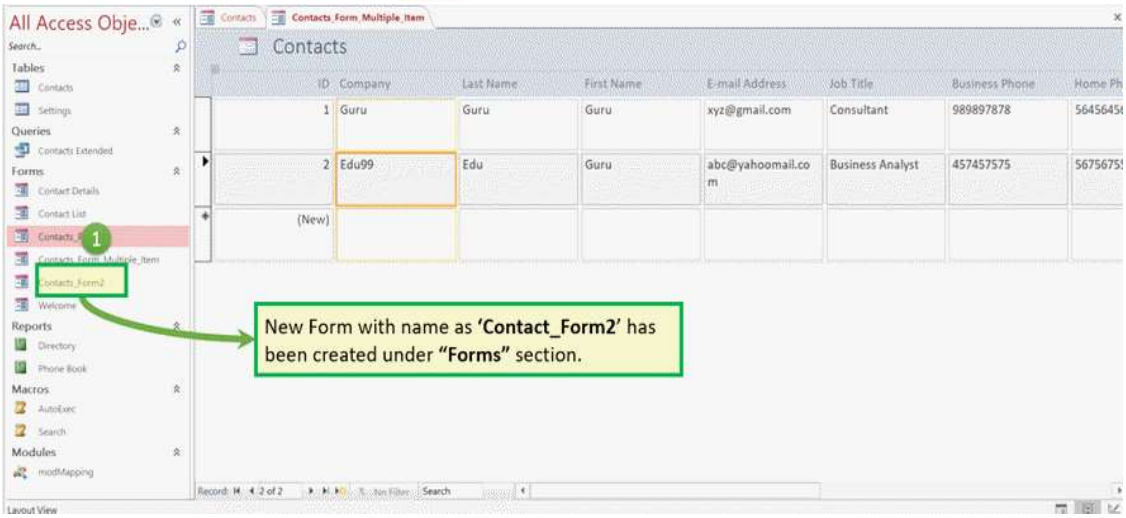
Result: 'Fax Number **'field does not exist now.**



Step 4) Press 'Ctrl+S' and enter new Form Name as 'Contact_Form2'. Click 'OK'.



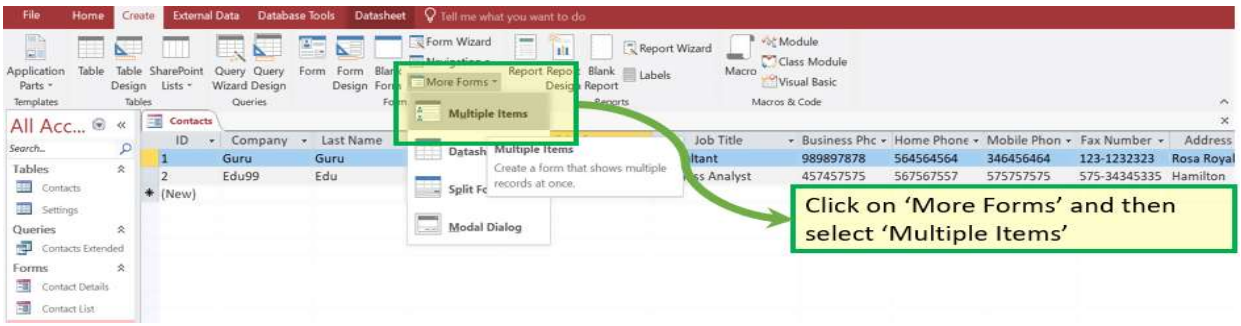
Result: New form with the name as **'Contact_Form2'** exists under the "Forms" section.



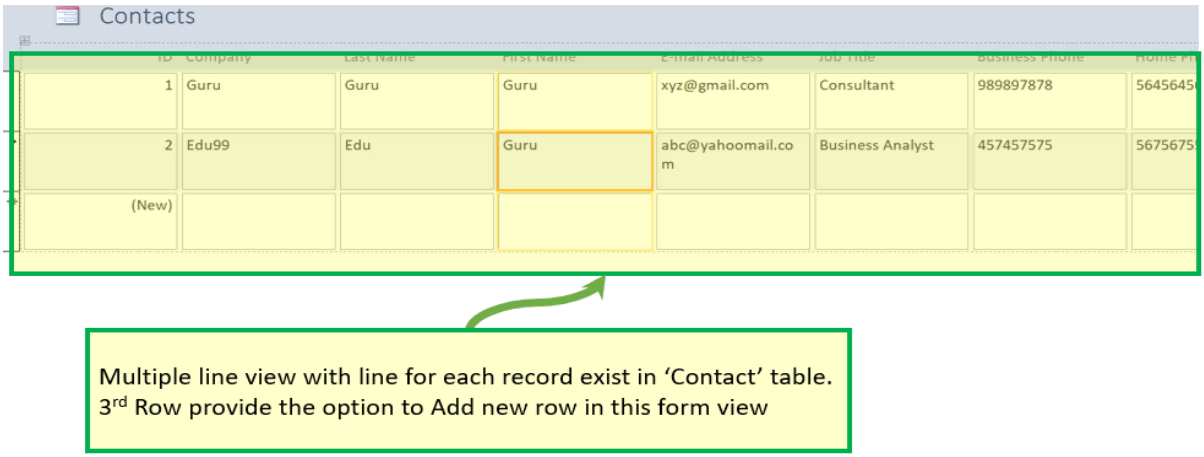
3. Create form by 'Multiple Item.'

It is another type where in a ll the records already created will be displayed in Form with an option to Add new record.

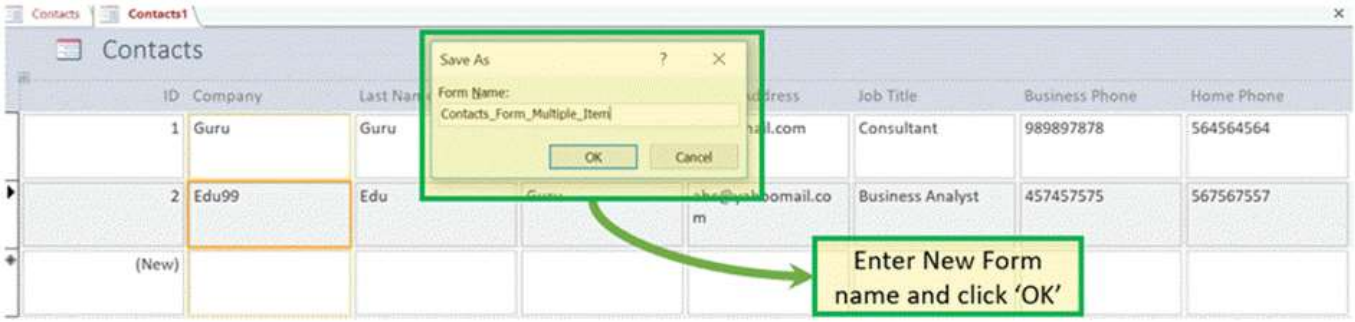
Step 1) From the 'Create' tab. Click on 'More forms' and select 'Multiple Items.'



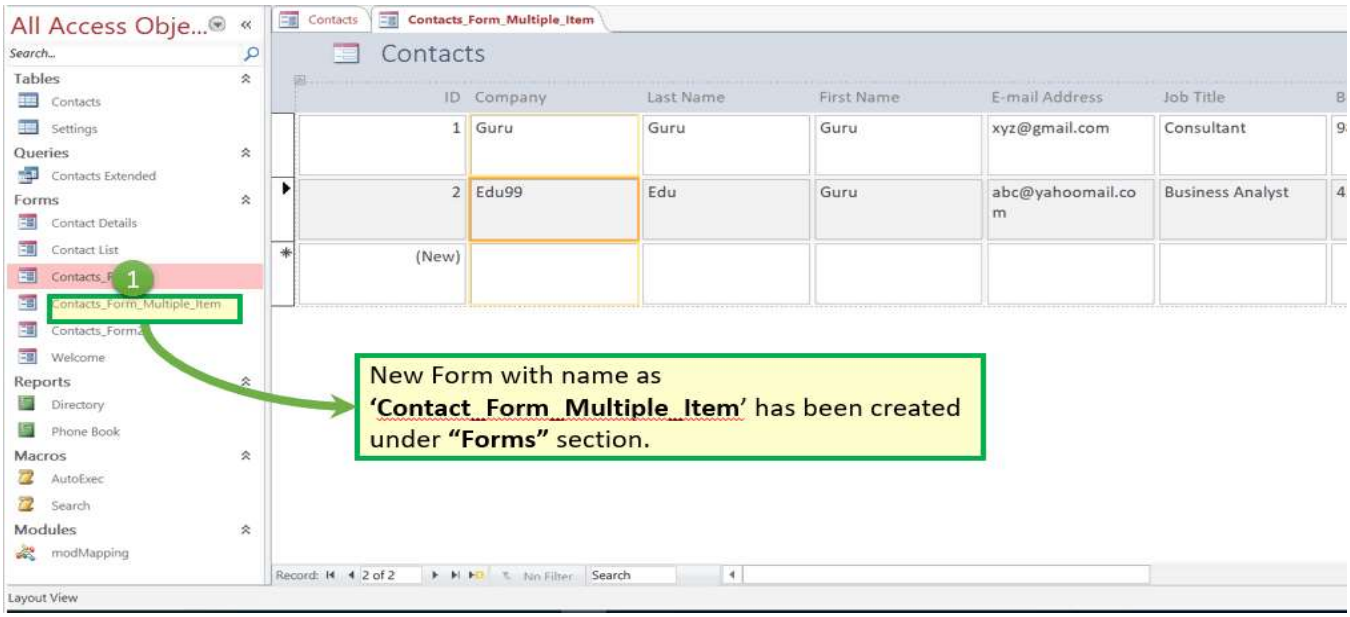
Result: Below Multiple lines, the window will appear



Step 2) Press ‘Ctrl+S’. Enter the new form name and click ‘OK.’



Result: New Form with the name as ‘Contact_Form_Multiple_Item’ exists under the “Forms” section.



4. Create form by ‘Split from’.

It is a mix of simple form and split form in a way that this form provides the view of **Form and datasheet** in a split window.

Whatever the user enters in Form is visible directly in Datasheet view immediately and vice versa.

Step 1) From the ‘Create’ tab, click on ‘More forms’ and select ‘Split Form.’

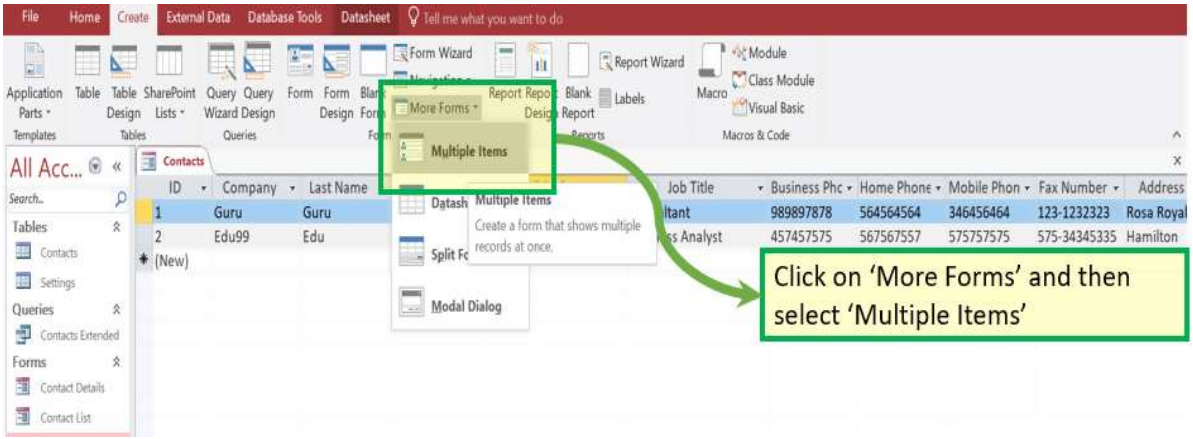
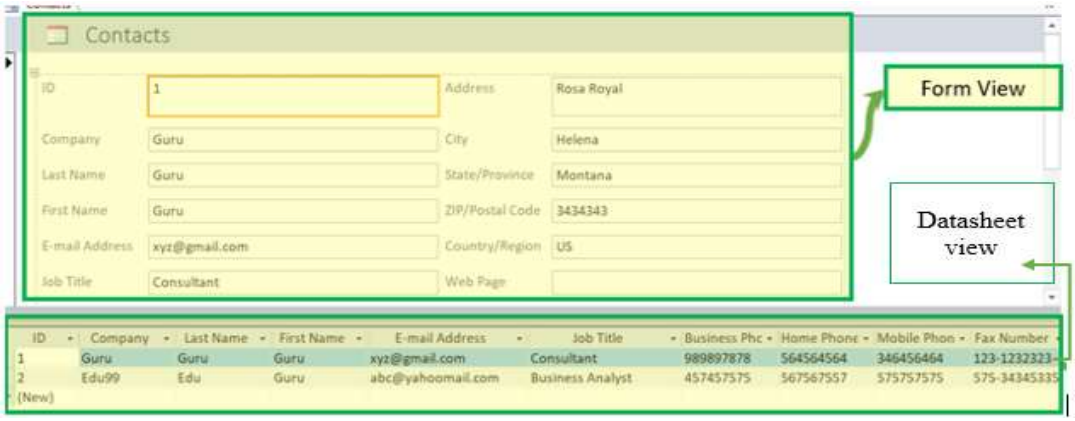
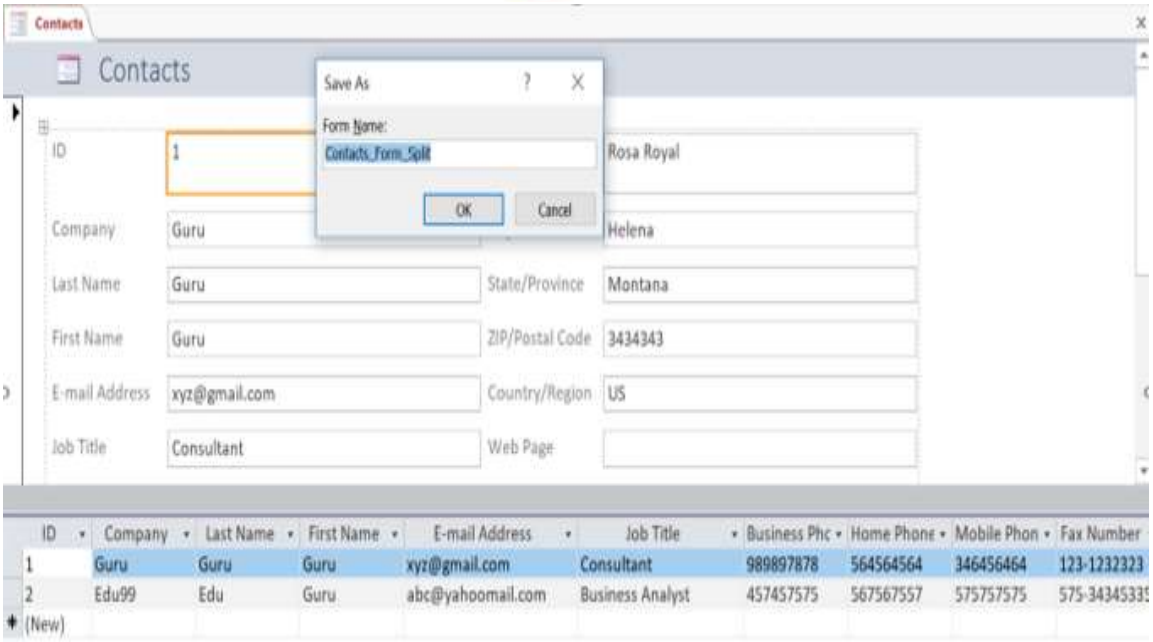


Figure 4. 3 Create form by Split from

Result: Below window will appear with the Form and data sheet together.



Step 2) Press 'Ctrl+S' and enter the new form name. Click 'OK.'



Result: New Form with the name as 'Contact_Form_Split' exists under the "Forms" section.

4.3. Open existing database and modify records using a simple modified form

4.3.1 Opening existing database

Different Views of form:

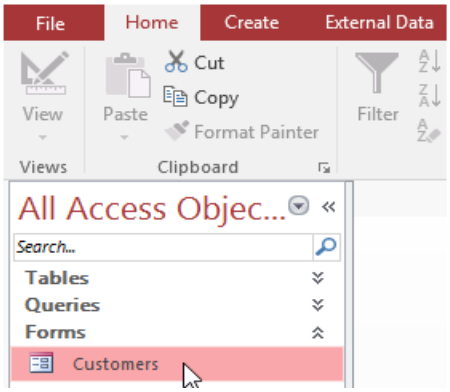
Form View: - this view allows you to view, create and edit records.

Layout View: - this view is similar to Design View but is more visually-oriented in that each control displays real data. As a result, this is a very useful view for setting the size of controls, or performing many other tasks that affect the visual appearance and usability of the form.

Design View: - this view gives you a more detailed view of the structure of the form. You can see the header, detail, and footer sections for the form. You cannot see the underlying data while you are making design changes.

To open an existing form:

1. Open your database and locate the **Navigation pane**.
2. In the Navigation pane, locate the form you want to open.
3. Double-click the desired form.
4. It will open and appear as a **tab** in the **Document Tabs bar**.

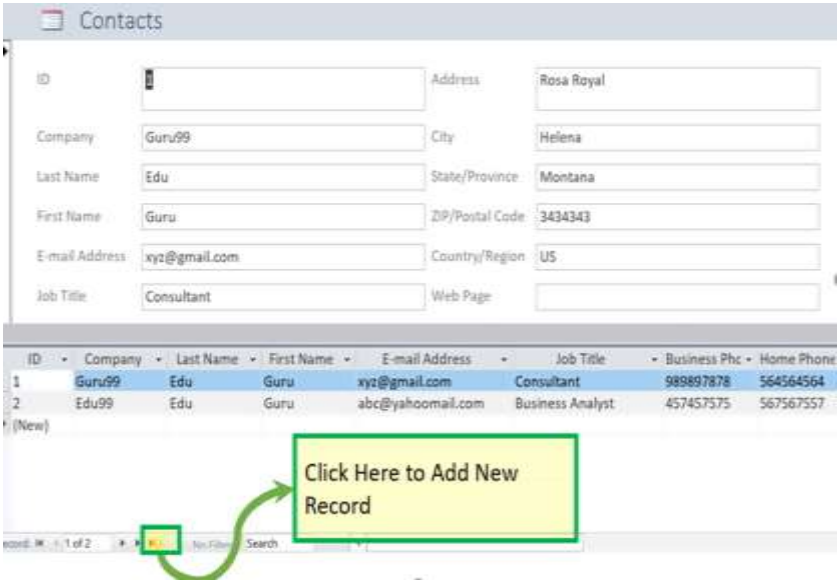


4.3.2 Add a record to a Form.

- Forms also give the flexibility to Add records.
- Again, this is a user-friendly and appealing way of adding records as compared to adding records in a row form.
- Here, we will take the Microsoft Access databases example of Split from 'Contact_Form_Split' created above.

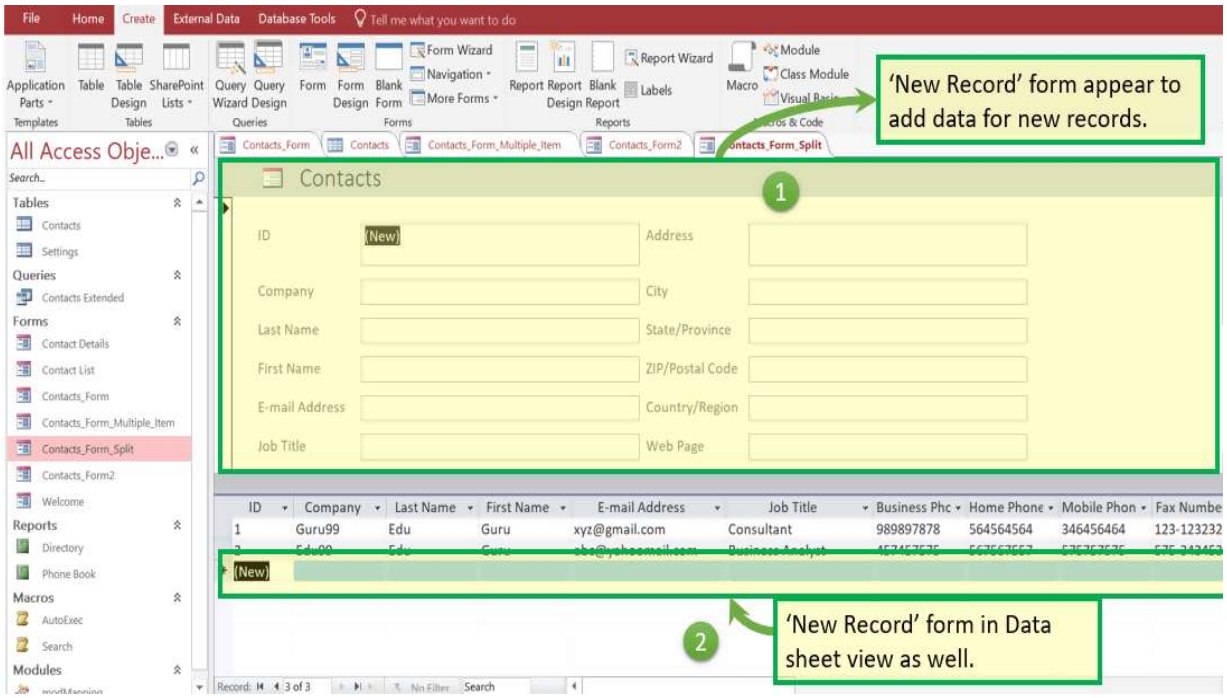
Step 1) Open 'Contact_Form_Split'

Step 2) To Add record, click on 'New (blank) Record Icon.'

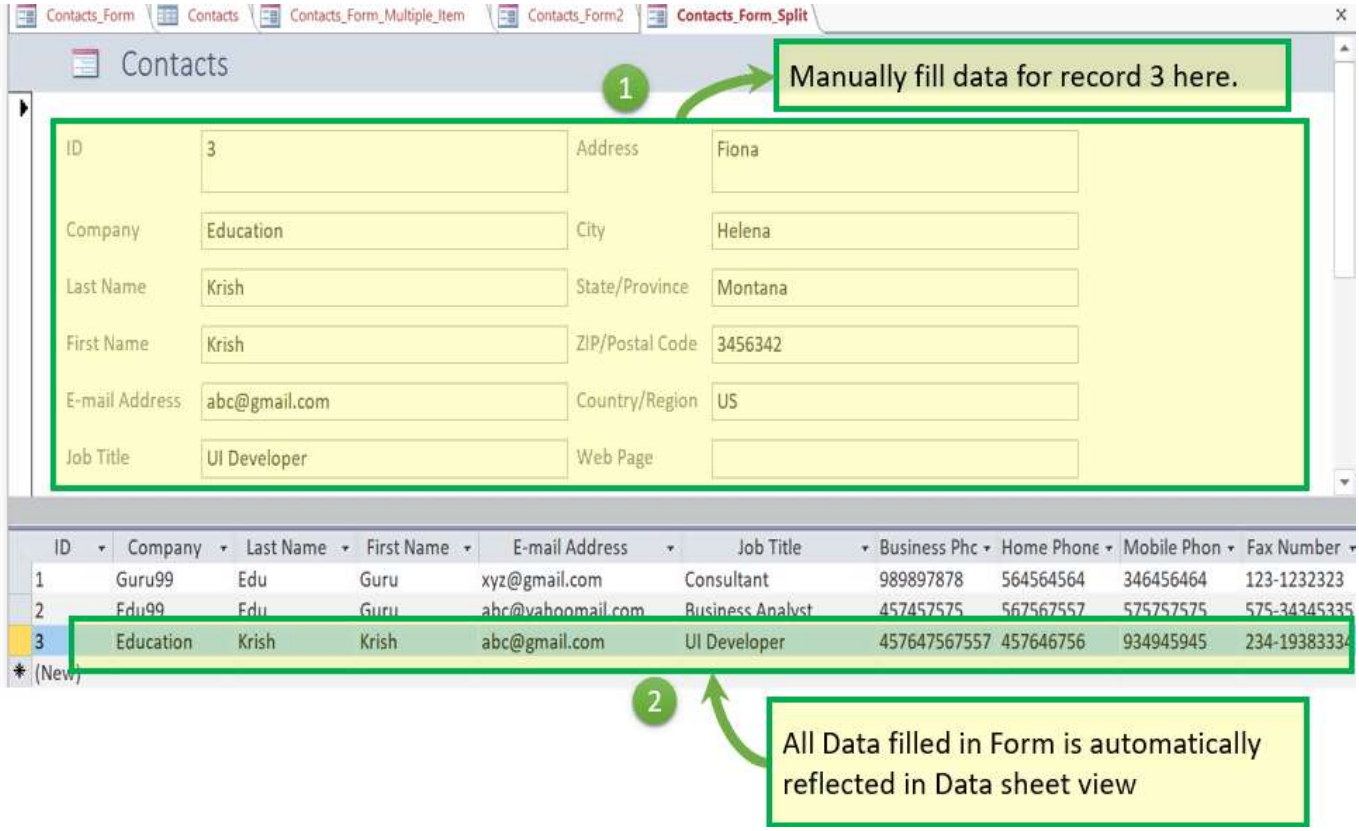


Result: New record window appear in:

1. Form View and
2. Datasheet View.

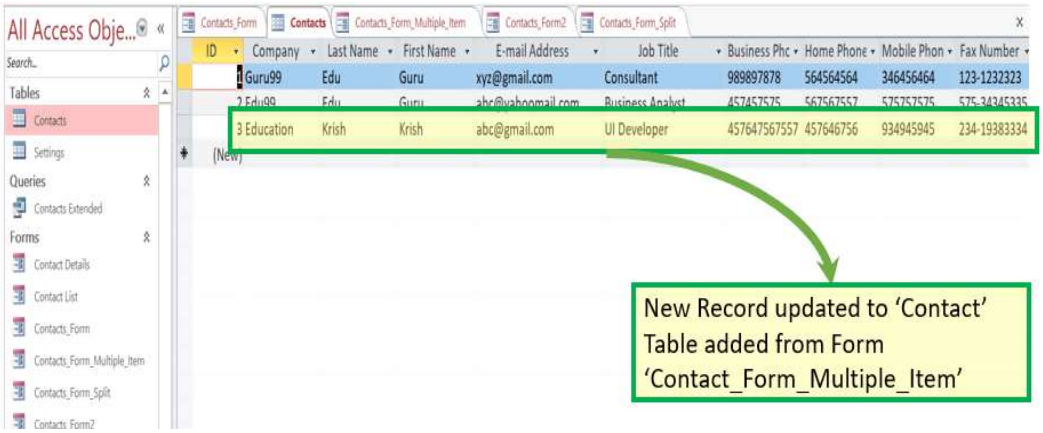


Step 3) Manually fill the data from Form. Note that in split form all data will be automatically reflected in below data sheet as well.



Step 4) Double Click on 'Contact' table.

Result: New Record updated to 'Contact' Table added from Form 'Contact_Form_Multiple_Item'

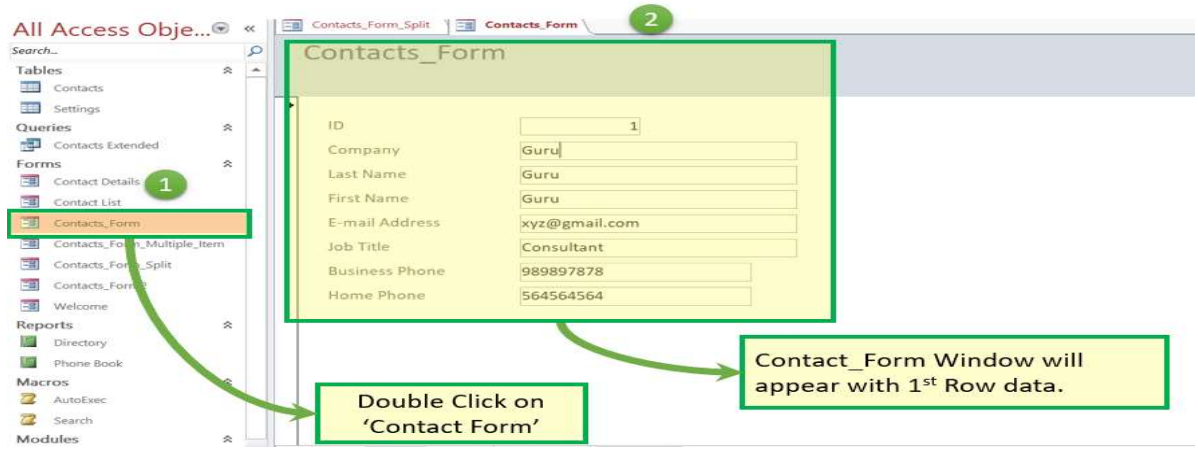


4.3.3 Modifying records using a simple modified form

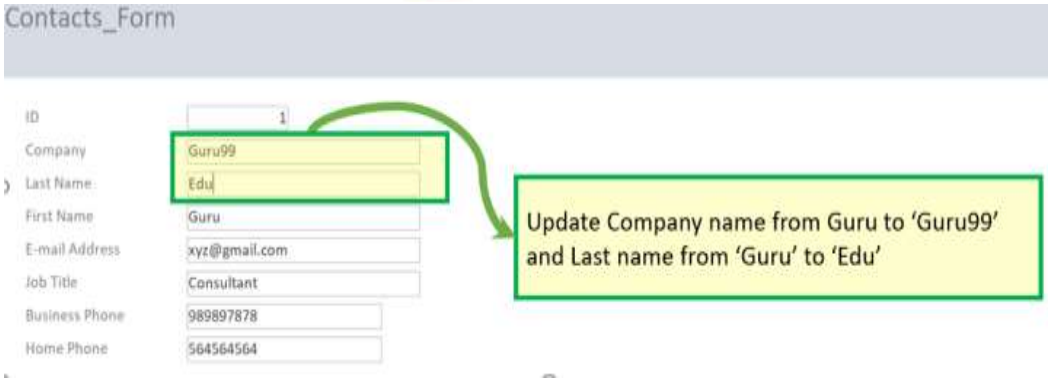
- One of the features of forms is that we can edit the values and data directly from the form.
- It is more user-friendly because as compared to row format in the table, forms have better visibility of selected fields and the user can do the direct updates.
- These values updated from forms will also be reflected in original tables immediately.

Let's have a look at how to edit value from the form:

Step 1) Click on **'Contact Form'**

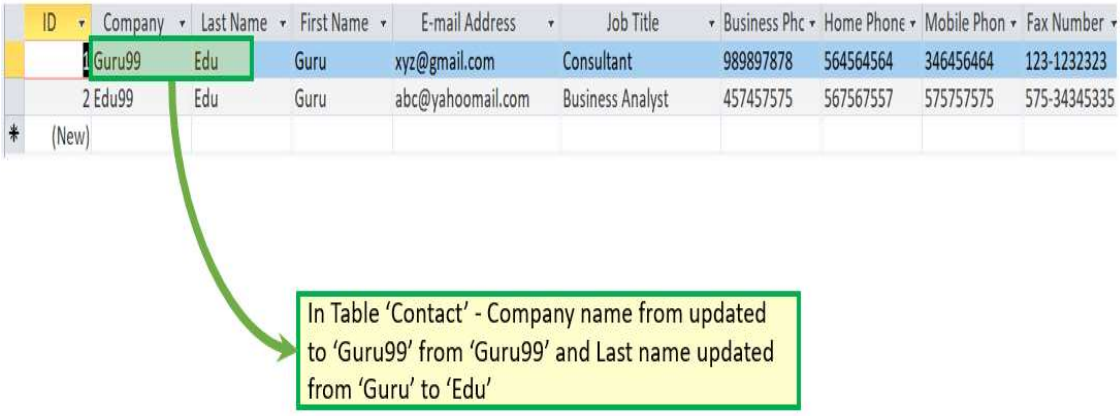


Step 2) Update some values on 'Contact_Form' value



Step 3) Double Click on 'Contact' table.

Result: Updated value is present in the original table record.



4.4. Rearranging objects within the form

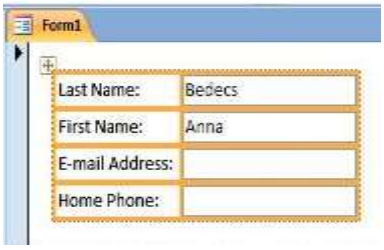
The Rearrange objects commands make permanent changes in your form. Save a copy of your form before making such changes. Rearranging the page order in the design form work screens. Do one of the following: On the Arrange tab, in the Table group, click the layout type that you want for the new layout (Tabular or Stacked).default, when you create a new form by using one of the form tools on the Create tab, or when you add fields to a form while it is open in Layout view, Access puts text boxes and other controls in guides called layouts. A layout, indicated by an orange

grid around the cons you align controls horizontally and vertically to give the form a uniform appearance. The following illustration shows a "stacked" layout on a form that is open in Layout view:

To move a field:

1. Locate the field you want to move, then hover your mouse over the bottom border of the field header. The cursor will become a four-sided arrow. Hovering the mouse over the field.
2. Click and drag the field to its new location. Moving a field.
3. Release the mouse. The field will appear in the new location.

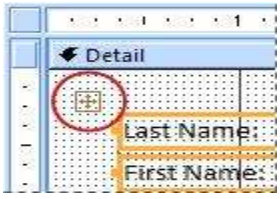
Although layouts can help you quickly create and modify a form, in some cases, you might prefer having the ability to move and size controls independently. This article describes how to remove controls from layouts, after which you can move and resize them without affecting other controls.



- **Move layouts**

After splitting one layout into two, the two layouts might overlap. To move a layout:

1. Select any control in the layout.
2. Press and hold the CTRL key.
3. Drag the layout by using the layout selector at the upper-left corner of the layout.



4.4.1 Command buttons for form

Access offers several options that let 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.

If you want to create a way for users of your form to quickly perform specific actions and tasks, consider adding **command buttons**. When you create a command button, you specify an action

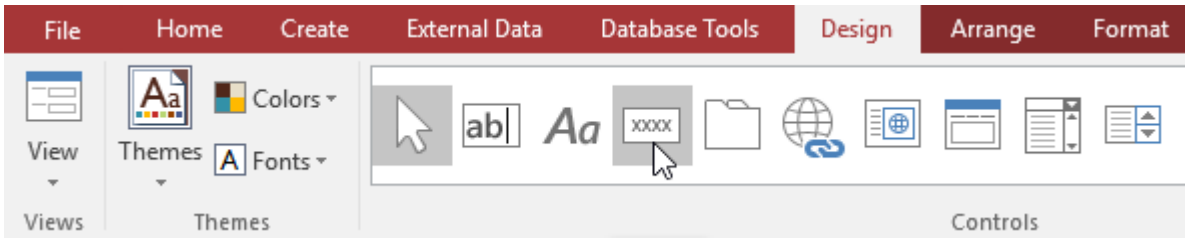
for it to carry out when clicked. By including commands for common tasks right in your form, you're making the form easier to use.

Access offers many different types of command buttons, but they can be divided into a few main categories:

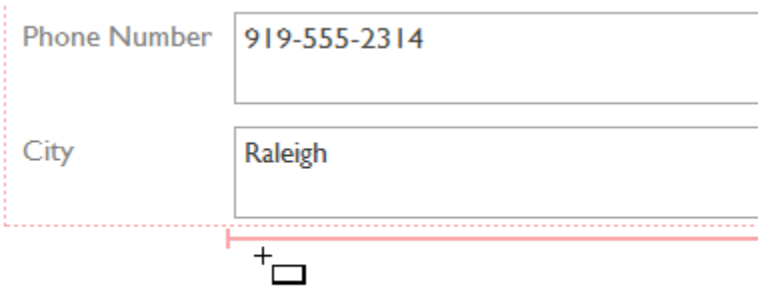
- **Record Navigation** command buttons, which allow users to move among the records in your database.
- **Record Operation** command buttons, which let users do things like save and print a record.
- **Form Operation** command buttons, which allow users to quickly open or close a form, print the current form, and perform other actions
- **Report Operation** command buttons, which offer users a quick way to do things like preview or mail a report from the current record.

- **To add a command button to a form:**

1. In **Form Layout** view, select the **Design** tab, then locate the **Controls** group.
2. Click the **Button** command.

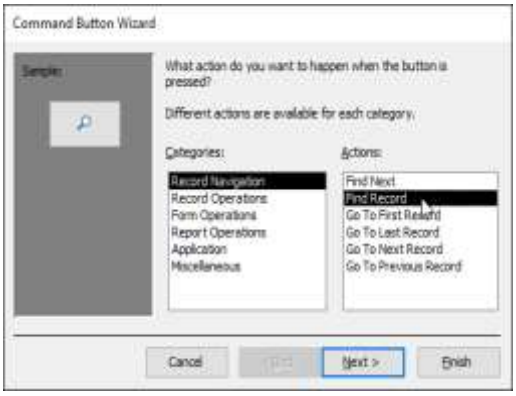


3. Choose the desired location for the command button, then click the mouse.



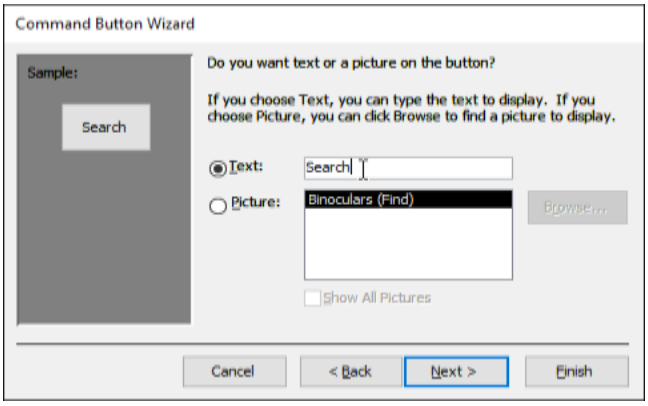
4. The **Command Button Wizard** will appear. In the **Categories** pane, select the category of button you want to add. We want to find a way to move more quickly to specific records, so we'll choose the **Record Navigation** category.

5. The list in the **Actions** pane will update to reflect your chosen category. Select the action you want the button to perform, then click **Next**. In our example, we'll choose **Find Record**.

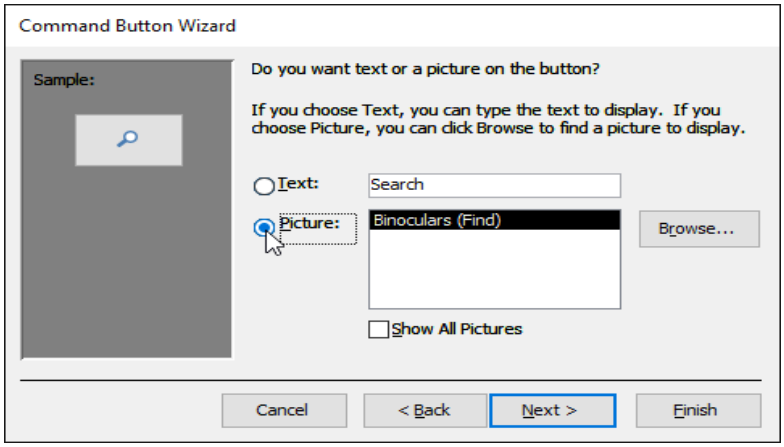


6. You can now decide whether you want your button to include **text** or a **picture.** A live preview of your button appears on the left.

7. To include **text**, select the **Text** option, then type the desired word or phrase into the text box.

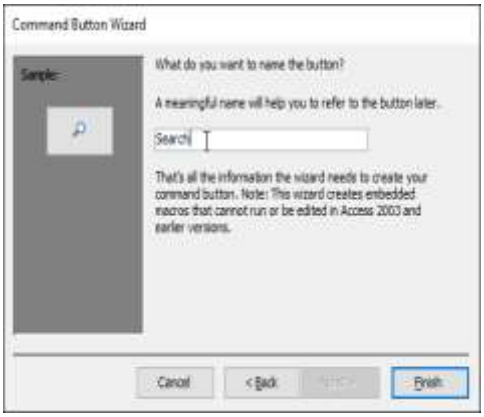


8. To include a **picture**, select the **Picture** option. You can decide to keep the default picture for that command button or select another picture. Click **Show All Pictures** to choose from another command button icon or **Browse** to choose a picture from your computer.



9. When you are satisfied with the appearance of your command button, click **Next**.

10. Type a **name** for the button. This name won't appear on the button, but knowing the name will help you quickly identify the button if you ever want to **modify** it with the **Property Sheet**. After adding the button name, click **Finish**.



Self-check 4

Part I: - Select the best answer from the given alternative

___1. The new record window appears in in the form of?

A. Form View and Datasheet View
C. Query form
B. Report form
D. Ala

___2. Which of the following is a types of form create?

A. Form Wizard
C. Multiple Item
B. Default Form
D. Split Form

___3. Which of the following is an object of f**orm?**

A. To allow users to perform data entry
B. To allow users to enter custom information
C. To allow users a method of navigating through the system
D. All

___4. ___is a database object that you can use to create a user interface for a database application.

A. Form
C. View
B. Design
D. All

___5. Which one of the following statement is true when your data record is modifying?

A. The existing data is replaced by the new one
B. The existing data is store in other location
C. The old and new data is store in the same table
D. All

Part II: - Give shore answer for

1. What is the main purpose of using form in access database?
2. List and explain the way of creating form?
3. Write down the steps the open the existing access database form?

Operation sheet 4.1 Procedures access database form

- **Operation title:** create database form
- **Purpose:** To create access database form
- **Instruction:** Using the figure below and given equipment. You have given 30Minut for the task and you are expected to complete tasks.
- **Tools and requirement:**
  5. Computes
  6. MS office access 2016
- **Steps in doing the task**

Step 1: - Open MS office access database

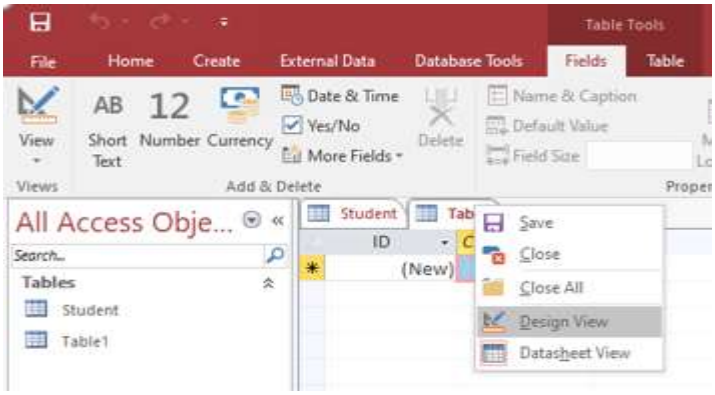
Step 2: - Give appropriate database name and click on create

Step 3: - Based on the following information create student table

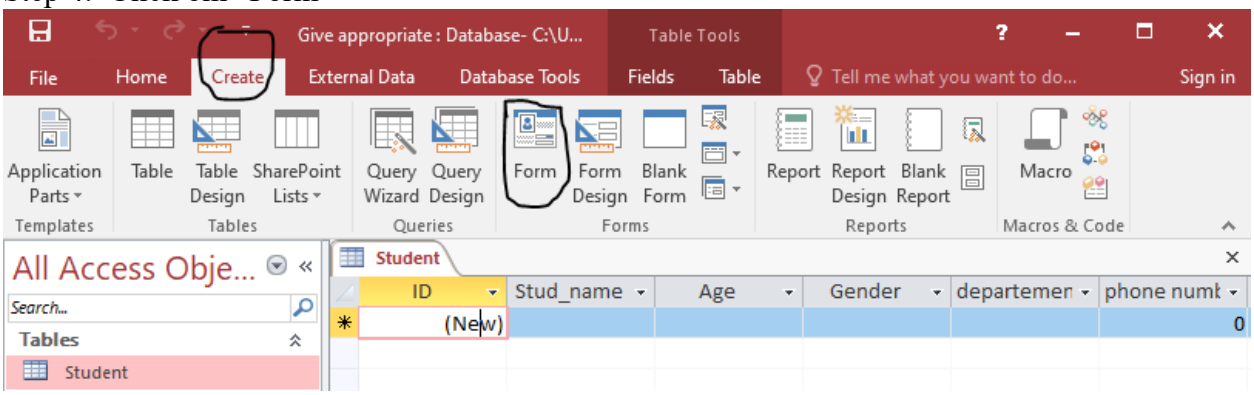
Filed name	Datatype
Std_ID	**AutoNumber**
Stud_name	**Short Text**
Age	**Number**
Gender	**Short Text**
Department	**Short Text**
Phone number	**Number**

- ✓ Right click on table name and select design view

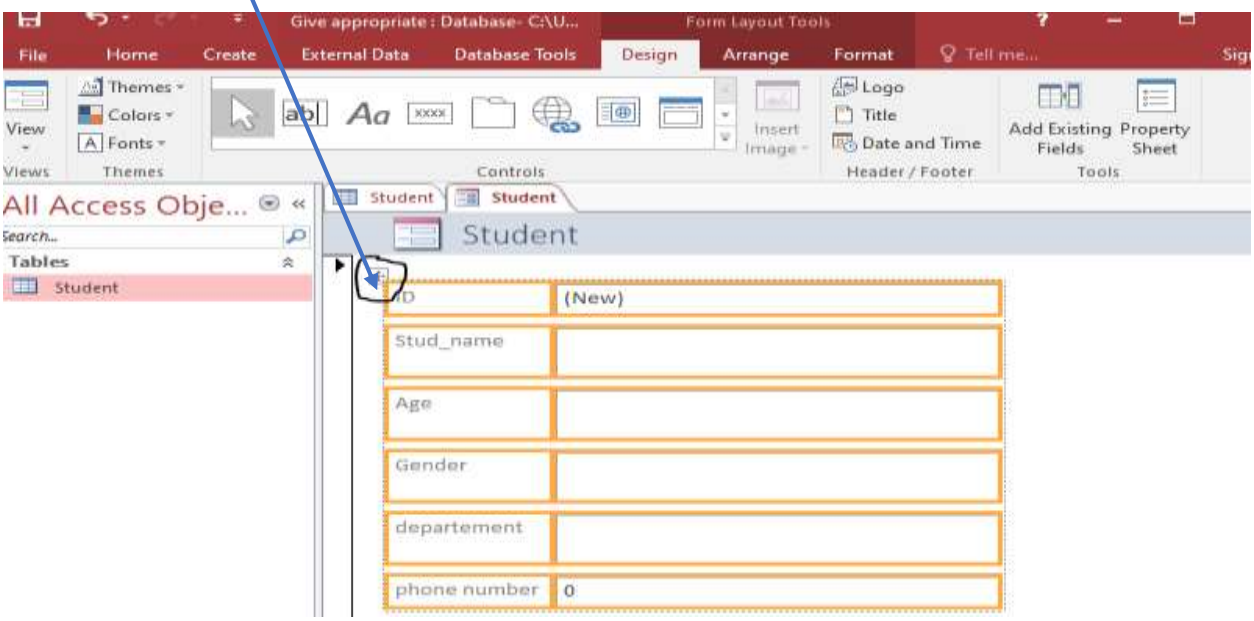
✓ Then give the above filed name based on the given information



Step 3: - Click on "Create" tape
Step 4: Click om "Form"



Step 5: - Click here or select all textbox and resize the text box and level



- **Quality Criteria:- Create student register form**

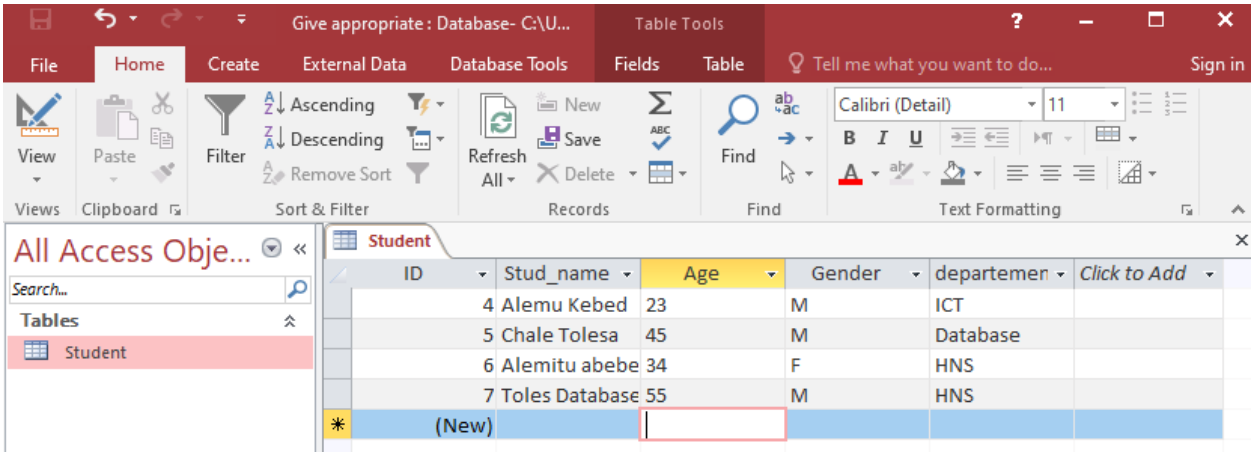
Operation sheet 4.2 Modifying records using a simple modified form

- **Operation title:** Modifying records
- **Purpose:** To update data using form
- **Instruction:** Using the figure below and given equipment. You have given 30 Minut for the task and you are expected to complete tasks.
- **Tools and requirement:**
  - ✓ Computes
  - ✓ MS office access 2016

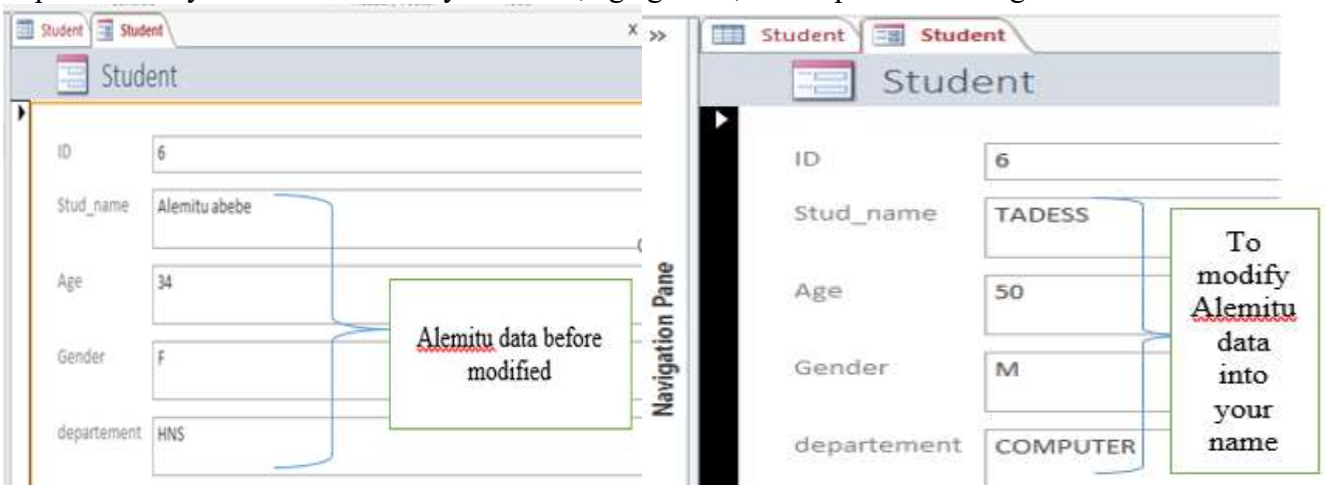
Stud_ID	Stud Name	Age	Gender	Department
1	Alemu Kebed	23	M	ICT
2	Chale Tolesa	45	M	DATABASE
3	Alemitu abebe	34	F	HNS
4	Toles Database	55	M	HNS

- **Steps in doing the task**

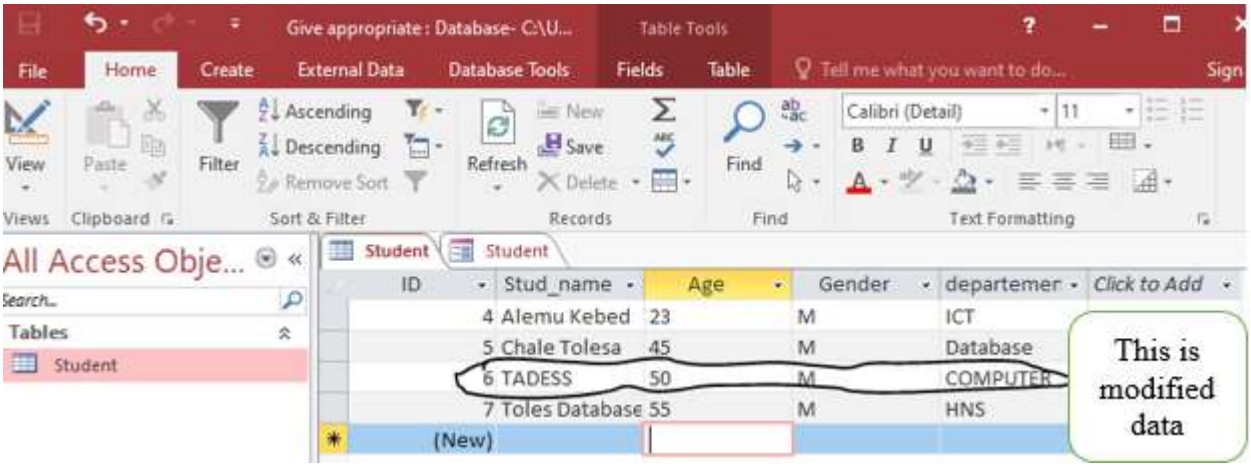
Step 1: - Create the above table called student
Step 2: Create form using all filed of the table
Step 3: Insert all data using the above created form



Step 4: - modify Alamitu data into your name, age gender, and department using form



Step 5:- Click on the normal table name and view the modified data



- **Quality Criteria: Insert the given data and modify the existing data using form**

LAP Test 4

Use the following data to perform below task

Emp_ID	emp Name	Age	Gender	Office	Phone number	Salary
1	Alemu Kebed	23	M	ICT	0911212122	56870
2	Fatuma mamo	56	f	Finance	0976765343	78940
3	Chale Tolesa	45	M	DATABASE	0987876545	12389
4	Alemitu abebe	34	F	HNS	0934532313	3290
5	Toles Database	55	M	HNS	0998765326	6780
6	Yonase Tola	54	M	Registrar	0954645434	5634

Task 1: - Create access database called college and the table name employee

Task 2: - Create form using all filed

Task 3: - Insert all data using the above created form

Task 4: - Modify the last two employee salary into 7000 and 6000 respectively.

Unit Five: Retrieve information

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Introduction to information retrieve
- Existing database is accessed and required records located
- Simple query is created and required information retrieved
- Query with multiple criteria is developed and required information retrieved
- Data are selected and appropriately displayed

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Define information retrieve
- Access and locate existing database record
- Retrieve information using simple query
- Retrieve information using multiple criteria or field of the table
- Display the selected data in appropriate format

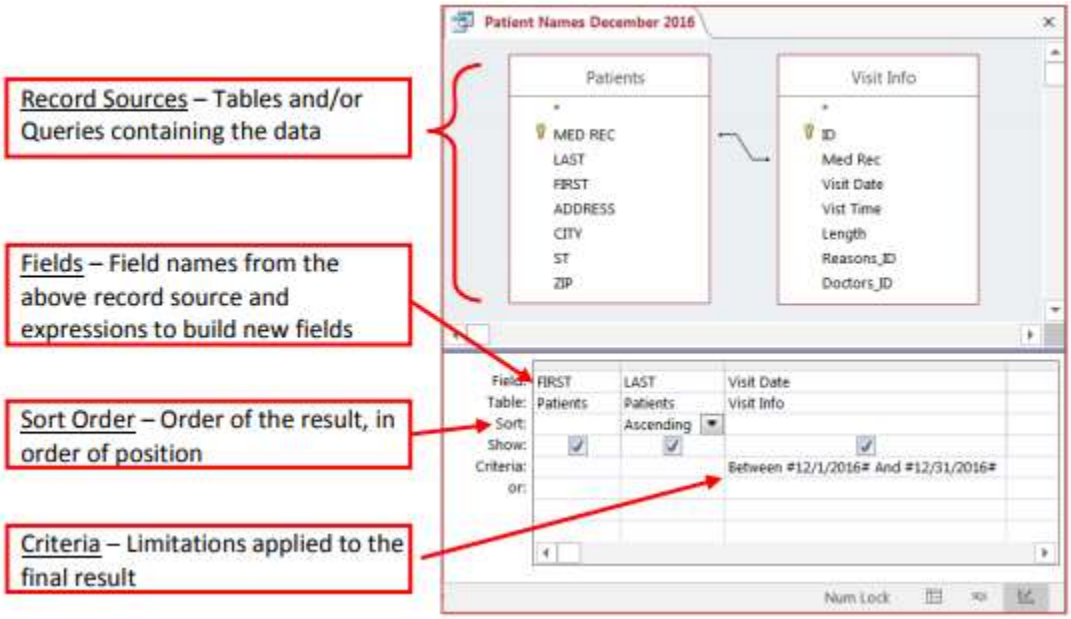
5.1. Introduction to retrieve information

A query is what you will use to retrieve information from your database. It consists of questions of which Access will give you the answers in the form of data from tables within your database. Queries are what make it easy to find data, then create new tables based on the queries.

Queries are a fundamental means of accessing and displaying data from tables. Queries used to view, update, and analyze data in different ways. Queries can access a single table or multiple tables. For example, you want to view a list of employee id and name, but you do not want to see phone number and other data, you can create a query that displays the employee's id and name only.

Queries answer a question by selecting and sorting and filtering data based on search criteria. Queries show a selection of data based on criteria (limitations) you provide. Queries can pull from one or more related Tables and other Queries. Types of Query can be SELECT, INSERT, UPDATE, DELETE.

Queries show a selection of data based on criteria (limitations) you provide. Queries can pull from one or more related Tables and/or other Queries. The Datasheet View of a Query looks like a Table. All data added or modified in a Query, will be saved in the Table. The Design View is where the structure of the Query is created. This is where we choose the record sources and fields, and set the sort order and criteria.



5.2. Access and locate existing database record

A **query** is a derived item in the database meant to answer specific questions that relate to the information in the database. Queries are handy during data processing.

To find and retrieve just the data that meets conditions that you specify, including data from multiple tables, create a query. A query can also update or delete multiple records at the same time, and perform predefined or custom calculations on your data.

A query requests data from the database. At its simplest, a query merely fetches all data from a single table. But as you create more complex (and more typical) queries, you can assemble exactly the data you want (i.e. unique sets of data that you require at any given time).

Queries can also be used to execute mathematical and logical functions to obtain certain information in the database.

Queries are derived from and linked to tables or other queries. (Due to these linkages, they tend to largely inflate the size of the database and should thus only be used to execute the intended functions, and stored only if updated information is to be retrieved).

5.3. Retrieve information using simple query

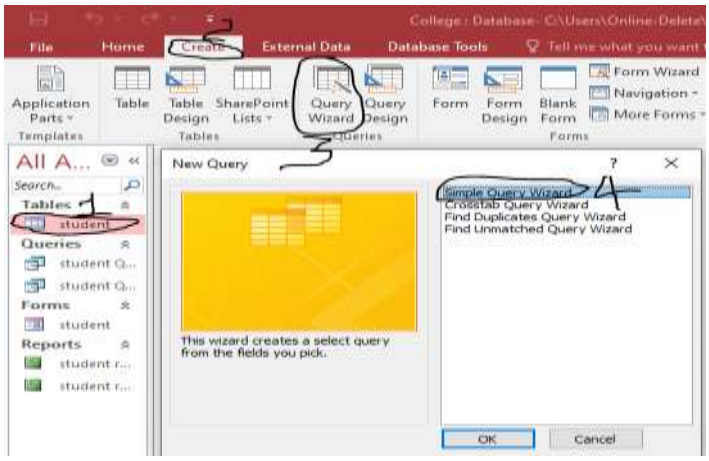
There are various types of queries for different uses but for this session we will just focus on the Select queries:

Select queries :- A select query is the most common type of query. It retrieves data from one or more tables and displays the results in a datasheet where you can update the records (with some restrictions). You can also use a select query to group records and calculate sums, counts, averages, and other types of totals.

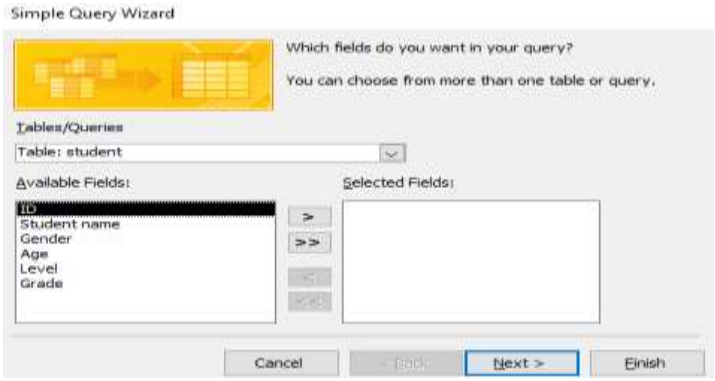
Example: Select all student's information

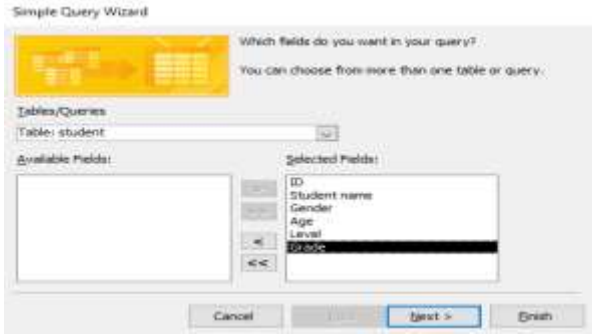
Step 1: - Select or click on table name

Step 2: click on **queries wizard** then select **simple queries wizard** and **ok**



Step 3: - Move all filed from available fields into selected fields by clicking **“>>”** and **Finish**





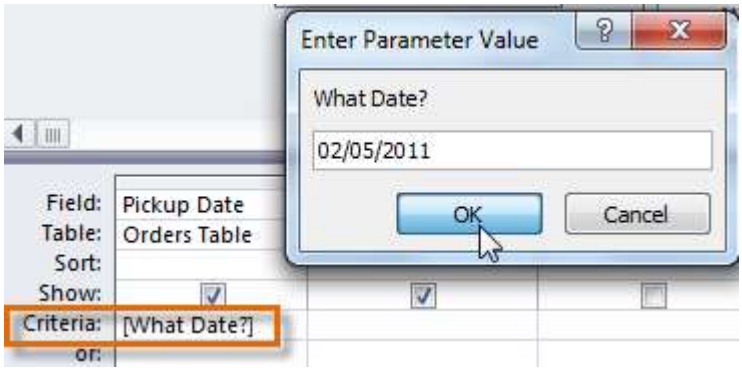
student Query2

ID	Student name	Gender	Age	Level	Grade
1	Tolosa Mohammed	M	20	V	C
2	Biruk Teshome	M	19	II	NYC
3	Astir Getnet	F	17	IV	C
4	Chaltu Solomon	F	18	I	C
5	Kedir Mehamed	F	18	I	NYC

This is the last selected data

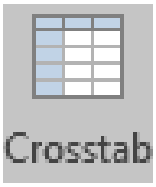
- **Parameter queries** - A parameter query is a query that when run displays its own dialog box prompting you for information, such as criteria for retrieving records or a value you want to insert in a field. You can design the query to prompt you for more than one piece of information. To generates the parameter box we use square parakeet “[ ]” inside the parakeet you can wright down the declaration what you find.

For Example: - We could create a parameter query with variable criteria in the **Date** field. This way, each time we run the query a dialog box will appear prompting us to enter the date we want our query to search for.



Parameter queries are also handy when used as the basis for **forms**, **reports**, and data access pages. For example, you can create a monthly earnings report based on a parameter query. When you

print the report, Access displays a dialog box asking for the month that you want the report to cover. You enter a month and Access prints the appropriate report.



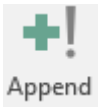
Crosstab queries :- You use crosstab queries to calculate and restructure data for easier analysis of your data. Crosstab queries calculate a sum, average, count, or other type of total for data that is grouped by two types of information one down the left side of the datasheet and another across the top.

Action queries

An action query is a query that makes changes to or moves many records in just one operation. There are four types of action queries:

Delete Queries: - A delete query deletes a group of records from one or more tables. For example, you could use a delete query to remove products that are discontinued or for which there are no orders. With delete queries, you always delete entire records, not just selected fields within records.

Update Queries: - An update query makes global changes to a group of records in one or more tables. For example, you can raise prices by 10 percent for all dairy products, or you can raise salaries by 5 percent for the people within a certain job category. With an update query, you can change data in existing tables.



Append Queries: - An append query adds a group of records from one or more tables to the end of one or more tables. For example, suppose that you acquire some new customers and a database containing a table of information on those customers. To avoid typing all this information into your own database, you'd like to append it to your Customers table.

Make-Table Queries: - A make-table query creates a new table from all or part of the data in one or more tables. Make-table queries are helpful for creating a table to export to other Microsoft Access databases or a history table that contains old records.

5.4. Retrieve information using multiple criteria

In order to control which records are displayed, you must define criteria in a query. The most common type of query is the Select Records query which will be discussed below.

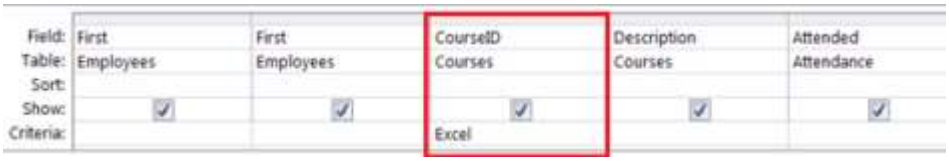
To Define Criteria for Your Query:

1. Position your cursor in the criteria row in the field for which you wish to define the criteria

2. Type the criteria

Example: To find all Excel courses:

3. Position your cursor in the criteria row of the Course ID field
4. Type Excel (Access adds the quote marks to the criteria automatically when you tab to the next column)



5. Click the Run Query button 

To Save the Query:

7. Click the Save icon
8. Enter a name for the query
9. Click OK

5.4.1. Criteria for Text, Memo, and Hyperlink fields

A criterion that you specify for a Hyperlink field is, by default, applied to the display text portion of the field value. To specify criteria for the destination Uniform Resource Locator (URL) portion of the value, use the **HyperlinkPart** expression. The syntax for this expression is as follows: **HyperlinkPart([Table1].[Field1],1) = "http://www.microsoft.com/"**, where Table1 is the name of the table containing the hyperlink field, Field1 is the hyperlink field, and http://www.microsoft.com is the URL you want to match.

To include records that...	Use this criterion	Query result
Exactly match a value, such as Ethiopia	" Ethiopia "	Returns records where the Country Region field is set to Ethiopia.
Do not match a value, such as addis Ababa	Not " addis Ababa "	Returns records where the Country Region field is set to a country/region other than addis Ababa.
Begin with the specified string, such as U	Like U*	Returns records for all countries/regions whose names start with "U", such as UK, USA, and so on. **Note:** When used in an expression, the asterisk (*) represents any string of characters — it is also called a wildcard character. For a list of such characters, see the article Access wildcard character reference.

To include records that...	Use this criterion	Query result
Do not begin with the specified string, such as U	Not Like U*	Returns records for all countries/regions whose names start with a character other than "U".
Contain the specified string, such as Korea	Like "*Korea*"	Returns records for all countries/regions that contain the string "Korea".
Do not contain the specified string, such as Korea	Not Like "*Korea*"	Returns records for all countries/regions that do not contain the string "Korea".
End with the specified string, such as "ina"	Like "*ina"	Returns records for all countries/regions whose names end in "ina", such as China and Argentina.
Do not end with the specified string, such as "ina"	Not Like "*ina"	Returns records for all countries/regions that do not end in "ina", such as China and Argentina.
Contain null (or missing) values	Is Null	Returns records where there is no value in the field.
Do not contain null values	Is Not Null	Returns records where the value is not missing in the field.
Contain zero-length strings	"" (a pair of quotes)	Returns records where the field is set to a blank (but not null) value. For example, records of sales made to another department might contain a blank value in the CountryRegion field.
Do not contain zero-length strings	Not ""	Returns records where the Country Region field has a nonblank value.
Contains null values or zero-length strings	"" Or Is Null	Returns records where there is either no value in the field, or the field is set to a blank value.
Is not empty or blank	Is Not Null And Not ""	Returns records where the CountryRegion field has a nonblank, non-null value.
Follow a value, such as addis Ababa, when sorted in alphabetical order	>= " addis Ababa "	Returns records of all countries/regions, beginning with addis Ababa and continuing through the end of the alphabet.
Fall within a specific range, such as A through D	Like "[A-D]*"	Returns records for countries/regions whose names start with the letters "A" through "D".
Match one of two values, such as USA or UK	"USA" Or "UK"	Returns records for USA and UK.

To include records that...	Use this criterion	Query result
Contain one of the values in a list of values	In("Amhara", "Oromia ", "Afare ", "SNNP ")	Returns records for all countries/regions specified in the list.
Contain certain characters at a specific position in the field value	Right([Country Region], 1) = "y"	Returns records for all countries/regions where the last letter is "y".
Satisfy length requirements	Len([CountryRegion]) > 10	Returns records for countries/regions whose name is more than 10 characters long.
Match a specific pattern	Like "Chi??"	Returns records for countries/regions, such as China and Chile, whose names are five characters long and the first three characters are "Chi". **Note:** The characters **?** and _, when used in an expression, represent a single character — these are also called wildcard characters. The character _ cannot be used in the same expression with the **?** character, nor can it be used in an expression with the ***** wildcard character. You may use the wildcard character _ in an expression that also contains the **%** wildcard character.

Table 5. 1 Criteria for Text, Memo, and Hyperlink fields

5.4.2. Criteria for Number, Currency, and AutoNumber fields

The following examples are for the UnitPrice field in a query that is based on a table that stores products information. The criterion is specified in the **Criteria** row of the field in the query design grid.

To include records that...	Use this criterion	Query Result
Exactly match a value, such as 100	100	Returns records where the unit price of the product is $100.
Do not match a value, such as 1000	Not 1000	Returns records where the unit price of the product is not $1000.
Contain a value smaller than a value, such as 100	< 100 <= 100	Returns records where the unit price is less than $100 (<100). The second expression (<=100) displays records where the unit price is less than or equal to $100.
Contain a value larger than a value, such as 99.99	>99.99 >=99.99	Returns records where the unit price is greater than $99.99 (>99.99). The second expression displays records where the unit price is greater than or equal to $99.99.

To include records that...	Use this criterion	Query Result
Contain one of the two values, such as 20 or 25	20 or 25	Returns records where the unit price is either $20 or $25.
Contain a value that falls with a range of values	>49.99 and <99.99 -or- Between 50 and 100	Returns records where the unit price is between (but not including) $49.99 and $99.99.
Contain a value that falls outside a range	<50 or >100	Returns records where the unit price is not between $50 and $100.
Contain one of many specific values	In(20, 25, 30)	Returns records where the unit price is either $20, $25, or $30.
Contain a value that ends with the specified digits	Like "*4.99"	Returns records where the unit price ends with "4.99", such as $4.99, $14.99, $24.99, and so on. **Note:** The characters ***** and **%**, when used in an expression, represent any number of characters — these are also called wildcard characters. The character **%** cannot be used in the same expression with the ***** character, nor can it be used in an expression with the **?** wildcard character. You may use the wildcard character **%** in an expression that also contains the _ wildcard character.
Contain null null (or missing) values	Is Null	Returns records where no value is entered in the UnitPrice field.
Contain non-null values	Is Not Null	Returns records where the value is not missing in the UnitPrice field.

Table 5. 2 Criteria for Number, Currency, and AutoNumber fields

5.4.3. Criteria for Date/Time fields

The following examples are for the OrderDate field in a query based on a table that stores Orders information. The criterion is specified in the Criteria row of the field in the query design grid.

To include records that ...	Use this criterion	Query result
Exactly match a value, such as 2/2/2006	#2/2/2006#	Returns records of transactions that took place on Feb 2, 2006. Remember to surround date values with the # character so that Access can distinguish between date values and text strings.
Do not match a value, such as 2/2/2006	Not #2/2/2006#	Returns records of transactions that took place on a day other than Feb 2, 2006.
Contain values that fall before a certain date, such as 2/2/2006	< #2/2/2006#	Returns records of transactions that took place before Feb 2, 2006.

To include records that ...	Use this criterion	Query result
		To view transactions that took place on or before this date, use the <= operator instead of the < operator.
Contain values that fall after a certain date, such as 2/2/2006	> #2/2/2006#	Returns records of transactions that took place after Feb 2, 2006. To view transactions that took place on or after this date, use the >= operator instead of the > operator.
Contain values that fall within a date range	>#2/2/2006# and <#2/4/2006#	Returns records where the transactions took place between Feb 2, 2006 and Feb 4, 2006. You can also use the **Between** operator to filter for a range of values, including the end points. For example, Between #2/2/2006# and #2/4/2006# is the same as >=#2/2/2006# and <=#2/4/2006# .
Contain values that fall outside a range	<#2/2/2006# or >#2/4/2006#	Returns records where the transactions took place before Feb 2, 2006 or after Feb 4, 2006.
Contain one of two values, such as 2/2/2006 or 2/3/2006	#2/2/2006# or #2/3/2006#	Returns records of transactions that took place on either Feb 2, 2006 or Feb 3, 2006.
Contain one of many values	In (#2/1/2006#, #3/1/2006#, #4/1/2006#)	Returns records where the transactions took place on Feb 1, 2006, March 1, 2006, or April 1, 2006.
Contain a date that falls in a specific month (irrespective of year), such as December	DatePart("m", [SalesDate]) = 12	Returns records where the transactions took place in December of any year.
Contain a date that falls in a specific quarter (irrespective of year), such as the first quarter	DatePart("q", [SalesDate]) = 1	Returns records where the transactions took place in the first quarter of any year.
Contain today's date	Date()	Returns records of transactions that took place on the current day. If today's date is 2/2/2006, you see records where the OrderDate field is set to Feb 2, 2006.
Contain yesterday's date	Date()-1	Returns records of transactions that took place the day before the current day. If today's date is 2/2/2006, you see records for Feb 1, 2006.
Contain tomorrow's date	Date() + 1	Returns records of transactions that took place the day after the current day. If today's date is 2/2/2006, you see records for Feb 3, 2006.
Contain dates that fall during the current week	DatePart("ww", [SalesDate]) = DatePart("ww", Date())	Returns records of transactions that took place during the current week. A week starts on Sunday and ends on Saturday.

To include records that ...	Use this criterion	Query result
	and Year([SalesDate]) = Year(Date())	
Contain dates that fell during the previous week	Year([SalesDate])* 53 + DatePart("ww", [SalesDate]) = Year(Date())* 53 + DatePart("ww", Date()) – 1	Returns records of transactions that took place during the last week. A week starts on Sunday and ends on Saturday.
Contain dates that fall during the following week	Year([SalesDate])* 53+DatePart("ww", [SalesDate]) = Year(Date())* 53+DatePart("ww", Date()) + 1	Returns records of transactions that will take place next week. A week starts on Sunday and ends on Saturday.
Contain a date that fell during the last 7 days	Between Date() and Date()-6	Returns records of transactions that took place during the last 7 days. If today's date is 2/2/2006, you see records for the period Jan 24, 2006 through Feb 2, 2006.
Contain a date that belongs to the current month	Year([SalesDate]) = Year(Now()) And Month([SalesDate]) = Month(Now())	Returns records for the current month. If today's date is 2/2/2006, you see records for Feb 2006.
Contain a date that belongs to the previous month	Year([SalesDate])* 12 + DatePart("m", [SalesDate]) = Year(Date())* 12 + DatePart("m", Date()) - 1	Returns records for the previous month. If today's date is 2/2/2006, you see records for Jan 2006.
Contain a date that belongs to the next month	Year([SalesDate])* 12 + DatePart("m", [SalesDate]) = Year(Date())* 12 + DatePart("m", Date()) + 1	Returns records for the next month. If today's date is 2/2/2006, you see records for Mar 2006.
Contain a date that fell during the last 30 or 31 days	Between Date( ) And DateAdd("M", -1, Date( ))	A month's worth of sales records. If today's date is 2/2/2006, you see records for the period Jan 2, 2006. to Feb 2, 2006
Contain a date that belongs to the current quarter	Year([SalesDate]) = Year(Now()) And DatePart("q", Date()) = DatePart("q", Now())	Returns records for the current quarter. If today's date is 2/2/2006, you see records for the first quarter of 2006.
Contain a date that belongs to the previous quarter	Year([SalesDate])*4+DatePart("q",[SalesDate]) = Year(Date())*4+DatePart("q",Date())- 1	Returns records for the previous quarter. If today's date is 2/2/2006, you see records for the last quarter of 2005.

To include records that ...	Use this criterion	Query result
Contain a date that belongs to the next quarter	Year([SalesDate])*4+DatePart("q",[SalesDate]) = Year(Date())*4+DatePart("q",Date())+1	Returns records for the next quarter. If today's date is 2/2/2006, you see records for the second quarter of 2006.
Contain a date that falls during the current year	Year([SalesDate]) = Year(Date())	Returns records for the current year. If today's date is 2/2/2006, you see records for the year 2006.
Contain a date that belongs to the previous year	Year([SalesDate]) = Year(Date()) - 1	Returns records of transactions that took place during the previous year. If today's date is 2/2/2006, you see records for the year 2005.
Contain a date that belongs to next year	Year([SalesDate]) = Year(Date()) + 1	Returns records of transactions with next year's date. If today's date is 2/2/2006, you see records for the year 2007.
Contain a date that falls between Jan 1 and today (year to date records)	Year([SalesDate]) = Year(Date()) and Month([SalesDate]) <= Month(Date()) and Day([SalesDate]) <= Day(Date())	Returns records of transactions with dates that fall between Jan 1 of the current year and today. If today's date is 2/2/2006, you see records for the period Jan 1, 2006 to to 2/2/2006.
Contain a date that occurred in the past	< Date()	Returns records of transactions that took place before today.
Contain a date that occurrs in the future	> Date()	Returns records of transactions that will take place after today.
Filter for null (or missing) values	Is Null	Returns records where the date of transaction is missing.
Filter for non-null values	Is Not Null	Returns records where the date of transaction is known.

Table 5. 3 Criteria for Date/Time fields

5.4.4. Criteria for Yes/No fields

As an example, your Customers table has a Yes/No field named Active, used to indicate whether a customer's account is currently active. The following table shows how values entered in the Criteria row for a Yes/No field are evaluated.

Field value	Result
Yes, True, 1, or -1	Tested for a Yes value. A value of 1 or -1 is converted to "True" in the Criteria row after you enter it.
No, False, or 0	Tested for a No value. A value of 0 is converted to "False" in the Criteria row after you enter it.
No value (null)	Not tested

Field value	Result
Any number other than 1, -1, or 0	No results if it's the only criteria value in the field
Any character string other than Yes, No, True, or False	Query fails to run due to Data type mismatch error

Table 5. 4 Criteria for Yes/No fields

5.4.5. Criteria for other fields

- **Attachments**

In the Criteria row, type Is Null to include records that do not contain any attachments. Type Is Not Null to include records that contain attachments.

- **Lookup fields**

There are two types of Lookup fields: those that look up values in an existing data source (by using a foreign key), and those that are based on a list of values specified when the Lookup field is created.

Lookup fields that are based on a list of specified values are of the Text data type, and valid criteria are the same as for other text fields.

The criteria you can use in a Lookup field based on values from an existing data source depend on the data type of the foreign key, rather than the data type of the data being looked up. For example, you may have a Lookup field that displays Employee Name, but uses a foreign key that is of the Number data type. Because the field stores a number instead of text, you use criteria that work for numbers; that is, >2.

If you do not know the data type of the foreign key, you can inspect the source table in Design view to determine the data types of the field. **To do this**: -

1. Locate the source table in the Navigation Pane.
2. Open the table in Design view by either:
   - Clicking the table, and then pressing CTRL+ENTER
   - Right-clicking the table, and then clicking Design View.
3. The data type for each field is listed in the Data Type column of the table design grid.

- **Multivalued fields**

Data in a multivalued field are stored as rows in a hidden table that Access creates and populates to represent the field. In query Design view, this is represented in the Field List by using an

expandable field. To use criteria for a multivalued field, you supply criteria for a single row of the hidden table. To do this:

1. Create a query containing the multivalued field, and open it in Design view.
2. Expand the multivalued field by clicking the plus symbol (+) next to it — if the field is already expanded, this is a minus symbol (-). Just below the name of the field, you will see a field representing a single value of the multivalued field. This field will have the same name as the multivalued field, with the string. Value appended.
3. Drag the multivalued field and its single value field to separate columns in the design grid. If you want to see only the complete multivalve field in your results, clear the Show check box for the single value field.
4. Type your criteria in the Criteria row for the single value field, using criteria that is appropriate for whatever type of data the values represent.
5. Each value in the multivalued field will be individually evaluated using the criteria you supply. For example, you may have a multivalued field that stores a list of numbers. If you supply the criteria >5 AND <3, any record where there is at least one value greater than 5 and one value less than 3 will match.

5.5. Selecting data and display appropriately

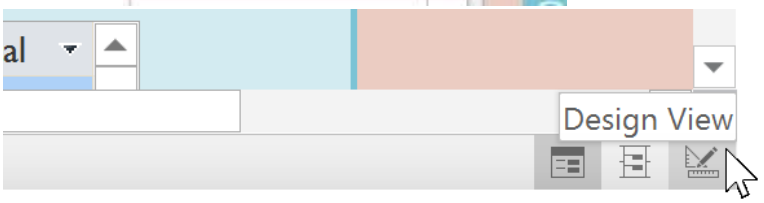
Select Create > Query Wizard. Select Simple Query, and then OK. Select the table that contains the field, add the Available Fields you want to Selected Fields, and select Next. Choose whether you want to open the query in Datasheet view or modify the query in Design view, and then select Finish. Access offers several options for making your queries work better for you. In addition to **modifying** your query criteria and joins after you build your queries, you can choose to **sort** and **hide** fields in your query results.

When you open an existing query in Access, it is displayed in **Datasheet view**, meaning you will see your query results in a table. To modify your query, you must enter **Design view**, the view you used when creating it.

There are two ways to switch to Design view:

- On the **Home** tab of the Ribbon, click the **View** command. Select **Design View** from the drop-down menu that appears.

- In the bottom-right corner of your Access window, locate the small **view icons**. Click the **Design View** icon, which is the icon farthest to the right.



Once in **Design view**, make the desired changes, then select the **Run** command to view your updated results.

- ## Input masks

An input mask is used to provide some control over what values can be entered. They are primarily used in Text and Date/Time fields, but can also be used in Number or Currency fields. Input Mask are used when data is entered in a fixed pattern of numbers, letters, spaces etc., such as a National Insurance number but is unsuitable where the pattern varies (e.g. postcode or telephone number). When you click in the input mask area, a build button appears on the right. Clicking this button will enable the Input Mask wizard, which will help you select an appropriate input mask for your field.

Character	Allows	Required/Optional
0	0-9 only	Required
9	Digit or space	Not required
#	+/-, digit or space	Not required

L	Letters A-Z	Required
?	Letters A-Z	Optional
A	Letter or digit	Required
a	Letter or digit	Optional
&	Any character or space	Required
C	Any character or space	Optional
>	All following characters converted to uppercase	
<	All following characters converted to uppercase	
\	Displays the following characters as type	

Table 5. 5 Input Mask validation

For example: an input mask for an NI Number would be: >LL000000>L Entry will be restricted to two letters, followed by six numbers, followed by one letter. The > symbol converts the letters to uppercase.

Note: - To find out more about how to create input masks, click in the Input Mask area and press F1

Self-check 5

Part I: - Select the best answer from the given alternative

2. Which one of the following is used to retrieve information from your database?
   A. Report
   B. Form
   C. Query
   D. Al
3. Which one is retrieves data from one or more tables and displays the results in a datasheet
   A. Update query
   B. Delete query
   C. Select query
   D. All
4. Which one is returns records where no value is entered in the field.
   A. Is Null
   B. Is Not Null
   C. Like
   D. All
5. Which one is Returns records where the value is not missing in the give field.
   A. Is Null
   B. Is Not Null
   C. Like
   D. All
6. Which types of filed is used based on the values from an existing data source depend on the data type of the foreign key
   A. Attachment
   B. Lookup fields
   C. Multivalued fields
   D. All

Operation sheet 5.1 retrieve information from access database

- **Operation title:** select data
- **Purpose:** - Retrieve data using simple query
- **Instruction:** Use the figure below, given equipment and task. You have given 30 Minut for the task and you are expected to complete tasks.
- **Tools and requirement:**
  7. Computes
  8. MS office access 2016
  9. Create database called **TVET** and Student_file table based on the below table. Give appropriate data type for each field

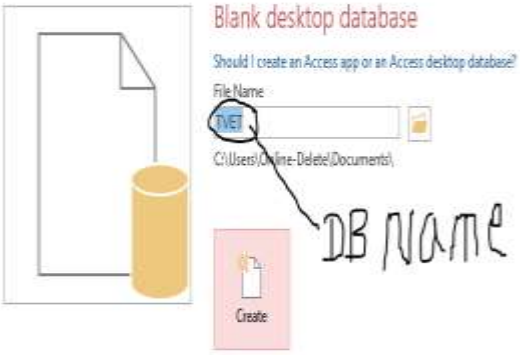
Task 1: - create database, table and insert the data

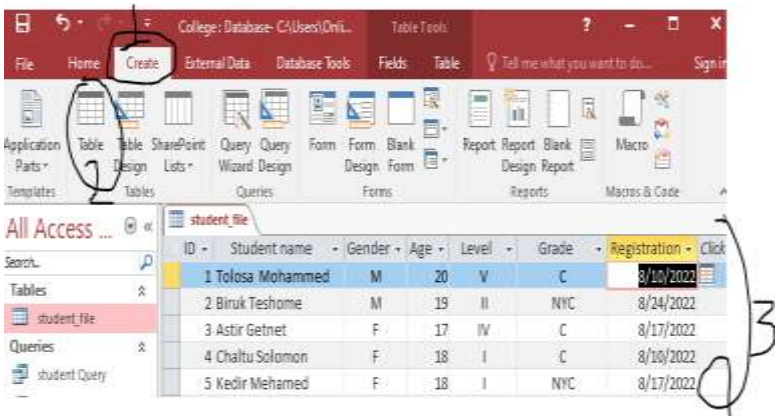
Task 2: - select all student information

Task 3: Save the query under Desktop called "Student_filesas Query"

Student name	Gender	Age	Level	Grade	Registration date
Tolosa Mohammed	M	20	V	C	8/10/2022
Biruk Teshome	M	19	II	NYC	8/24/2022
Astir Getnet	F	17	IV	C	8/17/2022
Chaltu Solomon	F	18	I	C	8/10/2022
Kedir Mehamed	F	18	I	NYC	8/17/2022

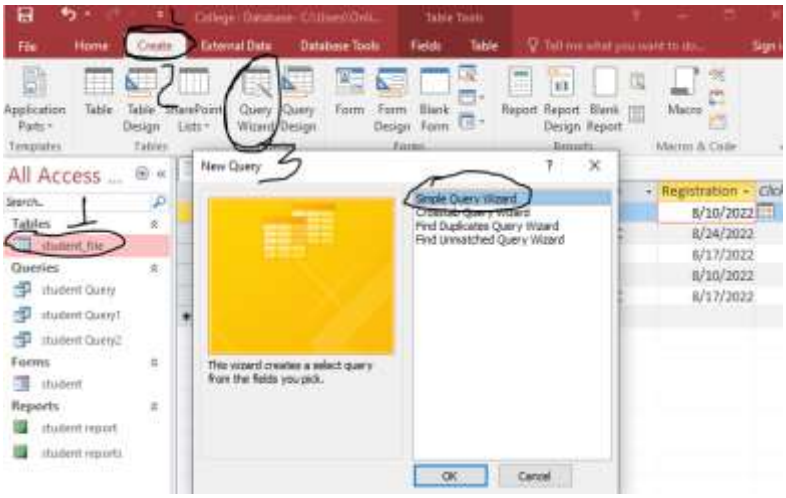
Step 1: - Create database and table



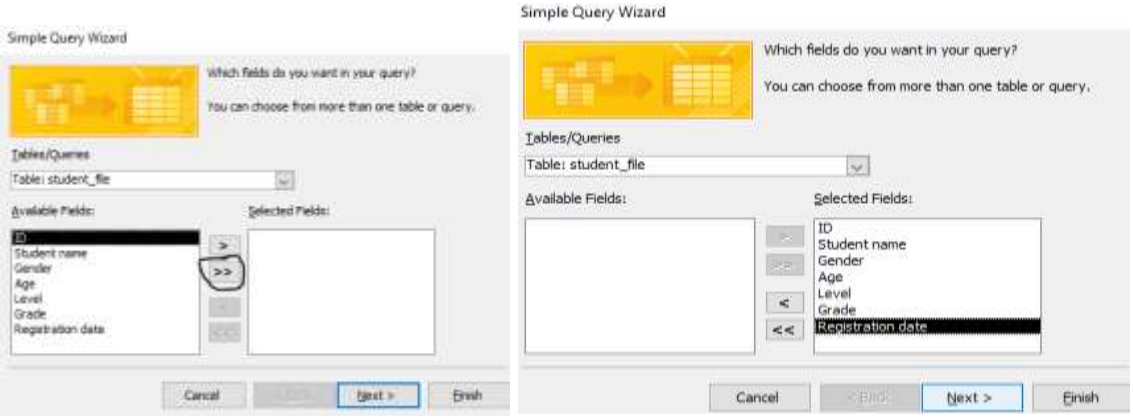


Step 2: - Select table name

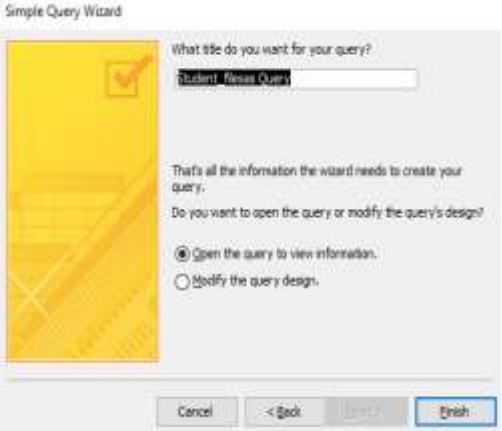
- ✓ Click on create
- ✓ Click on query wizard
- ✓ Select simple query wizard
- ✓ Ok

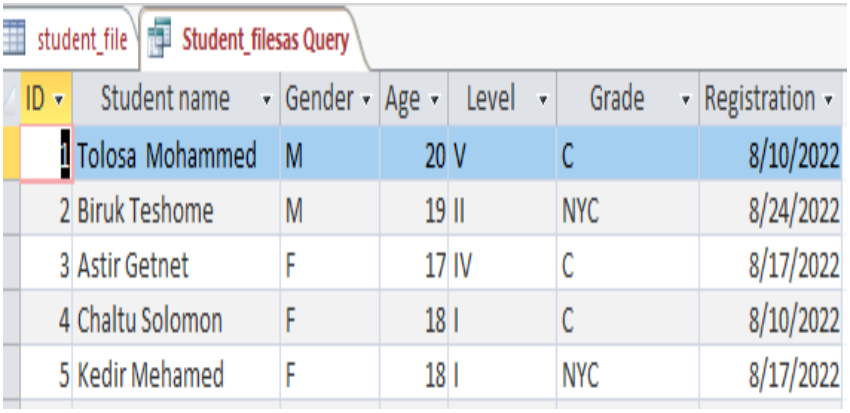


Step 3:- Move all filed from available fields into selected fields by clicking **">>"** and **Next**



Step 4:- click on Next➔ click on Next➔Give file name and click on "**Finish**"





Operation sheet 5.2 Retrieve information from access database

- **Operation title:** select data
- **Purpose:** - Retrieve data using multiple criteria
- **Instruction:** Use the figure below, given equipment and task. You have given 40 Minute for the task and you are expected to complete tasks.
- **Tools and requirement:**
  10. Computes
  11. MS office access 2016
  12. Use the above operation sheet database and table

Task 1: - select all student information having grade is “C” and gender is”F”

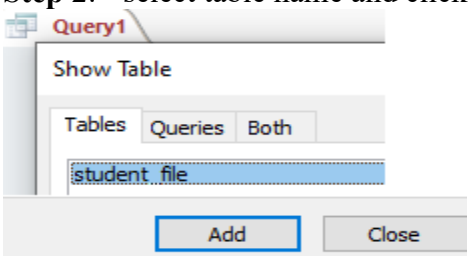
Task 2: Save the query under Desktop called “Student multiple criteria”

Task 3: Update grade is “NYC” into “C”

Step 1: - Select table name

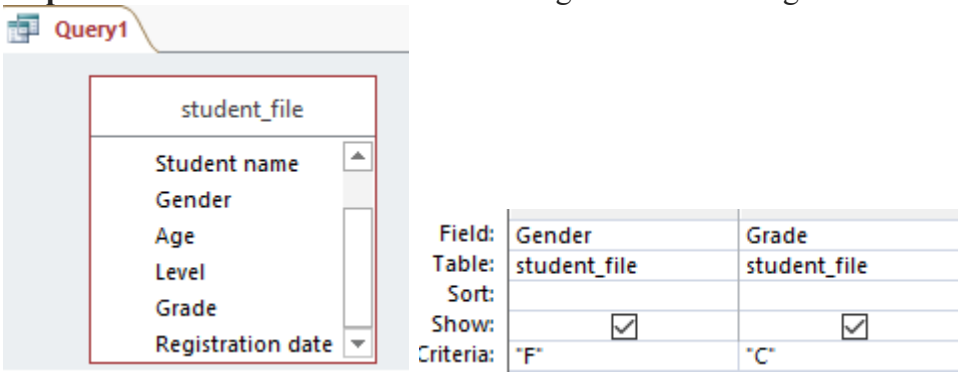
- ✓ Click on create
- ✓ Click on query design

Step 2: - select table name and click on “**Ok**” then click “**close**”

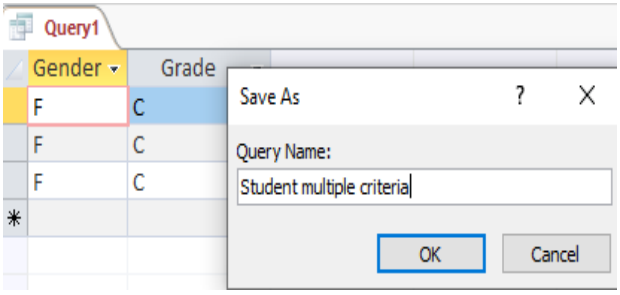


Step 3: - Double click on the field of the criterial to select data from the table

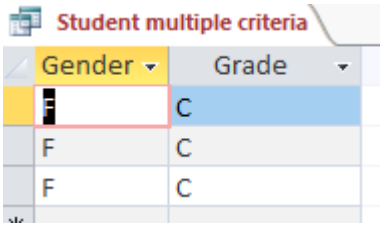
Step 4: - write down the criteria or “C” on grade and “F” on gender



Step 5: click on 



- ✓ Right click on query name and save as
- ✓ Give name on file and **OK**



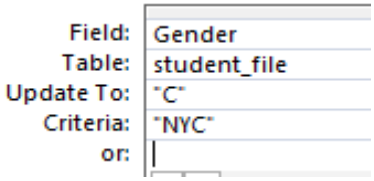
- ✓ **select data by using multiple criteria is like this**

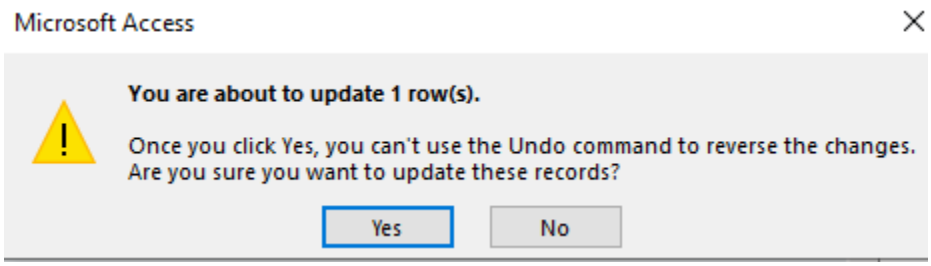
Task 3:- Update grade is "NYC" into "C"

Step 1:-Use the above steps up to" step 3"

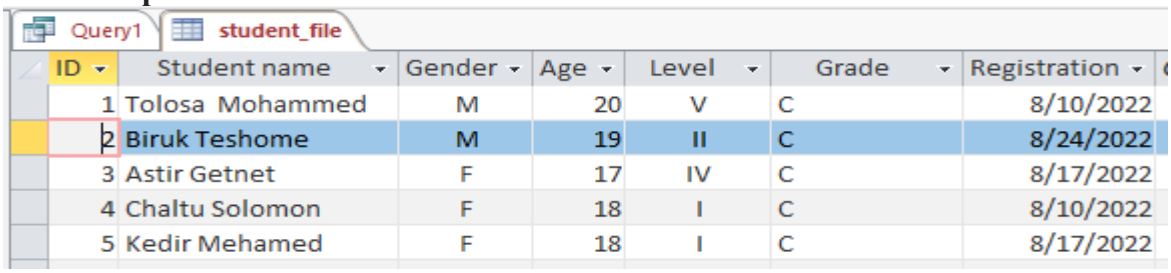
Step 2:- Duple click on "Grade" field and click on Update 

Step 3: - write down "C" on update to and criteria on "NYC". And click on Run 





Step 4: - Click on "OK"



ID	Student name	Gender	Age	Level	Grade	Registration
1	Tolosa Mohammed	M	20	V	C	8/10/2022
2	Biruk Teshome	M	19	II	C	8/24/2022
3	Astir Getnet	F	17	IV	C	8/17/2022
4	Chaltu Solomon	F	18	I	C	8/10/2022
5	Kedir Mehamed	F	18	I	C	8/17/2022

Quality criteria: - This is the last output of update

Lap Test 5

Task 1: Under this task you should create a database called "**My_school** " an save it on desktop

Task 2: Create the following table under My_School Database and save it by the name **Student**.

Task 3: Set appropriate data, field property the following for design view of the student table.

Field Name	Data type
Student_first_name	
Student_Middle_name	
Student_last_name	
Student_Id	
Age	
Gender	
Registration_date	
City	
Nationality	

3.1.Set an appropriate primary key for the student table.

3.2.Set the following field properties For **City Field**.

- **Default Value:** Gonder.
- **Validation Rule:** Gonder, Woliso, Jimma, Adama or Harar.
- **Validation text:** Enter only Gonder, Woliso, Jimma, Adama or Harar.

3.3. Set the following field properties For Sex field:

- **Default value**: M
- **Validation rule**: M or F
- **Validation text:** Please type either M or F.

Task 4: -Set the following field properties for age field is greater than twenty five.

Task 5: -Set the following the default field properties For Nationality field is Ethiopian.

Task 6: - Create the following table under My_School Database and save it by the name **course**.

Task 7: - Set appropriate data type, field property the following for design view of the **course** table.

Field Name	**Data type**
Course_name	
Course code	
Contact_Hr	

7.1. Set an appropriate **primary key** for **course** table.

7.2.The contact hr should not accept grater 4.

Task 8: - Create the following table under My_School Database and save it by the name **grade**.

Task 9: - Set appropriate data, field property the following for design view of the **grade** table.

Field Name	Data type
Student_id	
Course code	
Contact_Hr	
Grade	
Grade point	

8.1 Set an appropriate **primary key** for the above **grade** table.

8.2.The grade value only accepts A, B, C, D and F.

8.3.The grade point should not accept greater than 12 and less than 0

Task 9: - Enter the following data into **student** table

Student_first _name	Student_Middle_name	Student_last _name	Student_Id	Age	gender	Regstration _date	city	nationality
Mulu	Alemu	Facil	YA/001/15	23	M	13/01/15	Ha	Ethiopia
Milion	Solomon	Sime	YA/004/15	25	M	24/01/15	Ad	Ethiopia
Hana	Dawit	Worku	YA/003/15	36	F	22/10/15	Ji	Ethiopia
Helen	Yonas	Abera	YA/011/15	44	F	22/11/15	W	Ethiopia
Tigist	Worku	Solomon	YA/001/15	36	F	22/10/15	W	Ethiopia

Task 10: -Enter the following data into **course** table

Course_name	Course code	Contact_Hr
Operate Personal Computer	ICT ITS 06	4
operate database application	ICT ITS201	4
Access and Use Internet	ICT ITS204	2
Administer Network Hardware	ICT ITS202	3
Work in Team Environment	ICT ITS206	2
Work in Team Environment	ICT ITS106	4

Task 11: -Enter the following data into **grade** table

Student_Id	Course code	Contact_Hr	Grade	Grade point
YA/001/08	ICT ITS1 06	4	c	8
YA/004/08	ICT ITS2 01	4	B	12
YA/003/13	ICT ITS2 04	2	A	8

Task 12:-Create the relationship among the table

Task13: -Create data enter form the course table and give appropriate form name.

Task 14:-Enter the following data into course table by using the form.

Course_name	Course code	Contact_Hr
Apply Quality Standards	ICT ITS1 07	3
Work with Others	ICT ITS1 08	4

Task 14: - Retrieve the information that has the grade value is A or B. The queries should Include Course_name , Course code, Grade, Grade point ,Full name of student.

Task 15:-Create select queries by specific Course_name, The queries should Include Course_name , Course code, Grade, Grade point ,Full name of student

Task 16: -Create Update queries the Contact_Hr from 3 into 4.

Task 17: - Create Update Queries the course name is Operate Personal Computer and Contact_Hr is 4 into administrate network and 6 **respectively.**

Task 18: -Create the delete queries the student first name letter is H and age is 44.

Task 19:- Create the report the Contact_Hr is four. The queries should Include Course_name , Course code and Contact Hr

Task 20: - Create the report the student grade is A. The report s should include name of student, Course_name, Course code, Contact Hr and Grade point.

Task 21: -Create the report by specific course name. The report s should include name of Course_name, Course code, Contact Hr and student full name.

Task 22:- Print the equation 19 and 20.

Reference

1. MS Access - Objects (tutorialspoint.com)
2. Microsoft Access Tutorial: MS Access with Example [Easy Notes] (guru99.com)
3. https://www.databaseprimer.com/pages/table-relationships/ Steve's PC Tutorials (oneil.com.au)
4. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjP_O61zej3AhU9gf0HHZ5TBmkQFnoECAMQAQ&url=http%3A%2F%2Ficvcollege.edu.in%2Fsites%2Fdefault%2Ffiles%2FIT%2520notes%2520for%2520commerce4.pdf&usg=AOvVaw3WUvi4jElZlO38zciV8Iqd
5. https://edu.gcfglobal.org/en/access2013/introduction-to-objects/1/
6. https://support.microsoft.com/en-us/office/create-a-new-database-32a1ea1c-a155-43d6-aa00-f08cd1a8f01e
7. https://support.microsoft.com/en-us/office/create-edit-or-delete-a-relationship-dfa453a7-0b6d-4c34-a128-fdebc7e686af
8. https://www.webucator.com/article/how-to-create-a-form-with-the-form-wizard-in-micro/
9. https://www.customguide.com/access/create-a-form-with-the-form-wizard
10. https://www.customguide.com/access/create-a-report
11. https://support.microsoft.com/en-us/office/create-a-query-form-or-report-in-access-04eb597f-cb77-

Participants of this Module (training material) preparation

No	Name	Qualification (Level)	Field of Study	Organization/ Institution	Mobile number	E-mail
1	ERKYHUN AZEZE	B	Information Technology	Finote Damot PTC	0969082669	itsol2012s@gmail.com
2	YINEBEB TAMIRU	B	Computer Science	Akaki PTC	0936325182	yinebebtamiru07@gmail.com
3	EZRA ALEMAYEHU	A	Computer Science	Hosana PTC	0912243860	ezanets261@gmail.com
4	ALEMAYEHU ABERA	A	Computer Science	Bahidar PTC	0903124653	aberaalemayehu19@gmail.com