

## UNIT OUTCOME

## Students will be able to:

- ☞ know how to create charts and graphs in spreadsheet;
- ☞ apply spreadsheet for different applications;
- ☞ understand some common uses of database;
- ☞ recognize query, form and report in a database application.

## 4.1 KEY FEATURES OF SPREADSHEETS

The spreadsheets are one of the most widely used application software in the world. These are used everywhere from a small store to a large manufacturing house. These can be used for calculating accounts, managing inventory, managing payroll, managing and analysing the sales and marketing. These software are also used to manage household data like recording expenditures. As spreadsheets are much easier to learn than programming languages, these can be operated by any user having a moderate knowledge of programming.

In Grade 9, you have studied about spreadsheets. Let us revise some of the basic concepts.

**● Revision of Spreadsheet**

The spreadsheet is an application software which provides the users powerful tools and features to analyze, share, and manage the data with ease, for example, Microsoft Excel.

**Starting Spreadsheets**

MS-Excel 2007 is a GUI based spreadsheet package that is part of Microsoft Office 2007 suite of software.

To start MS-Excel 2007, perform the following:

Double-click on the MS-Excel 2007 icon on the desktop.

OR

Click **Start** → **All Programs** → **Microsoft Office** → **Microsoft Office Excel 2007**

**Screen Elements of Spreadsheets**

On starting spreadsheet *i.e.*, MS-Excel 2007, a spreadsheet window appears. The screen elements of Excel spreadsheet are shown in Fig. 4.1.

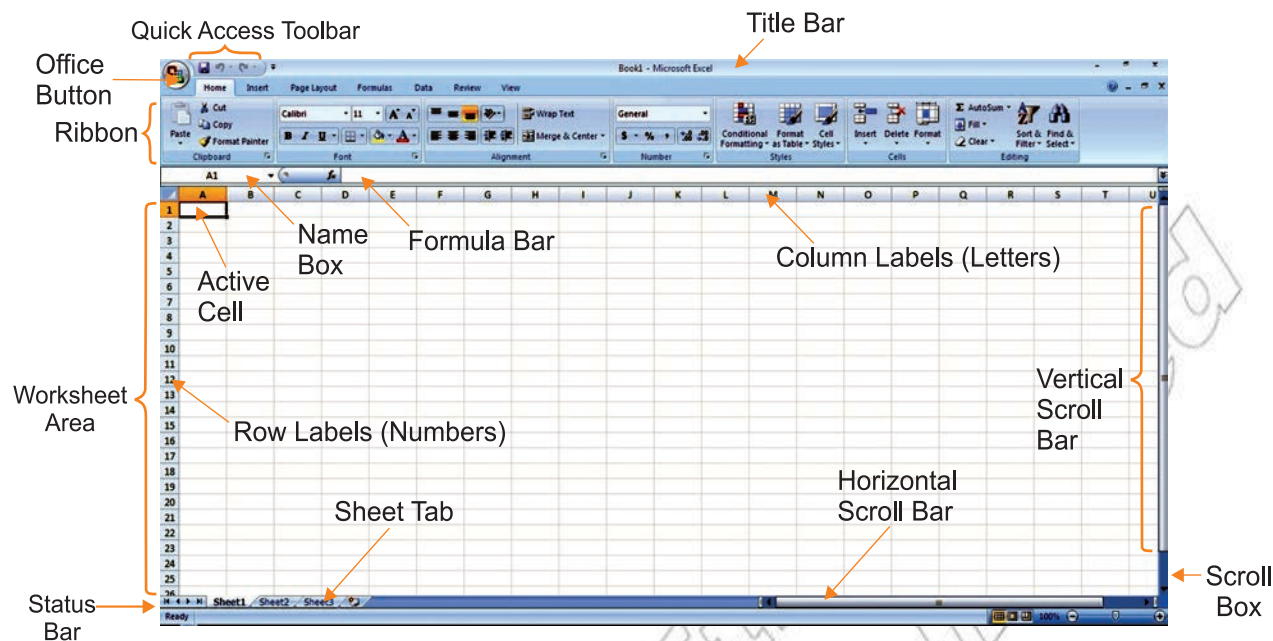


Fig. 4.1: Screen elements of Spreadsheet—Excel 2007

For exploring massive amounts of data, Excel 2007 grid is 1,048,576 rows by 16,384 columns. The columns now start from A and end at XFD.



**Fill handle** is a small black square displayed at the bottom right corner of the active cell. The *fill handle* is used to fill adjacent cells with the same data or consecutive data. The entries that are automatically inserted in the adjacent cells are dependent on the contents of the active cell.

## Create and Use a Simple Spreadsheet

### Creating a Worksheet

To create a worksheet, perform the following steps:

1. Click the *Office Button*.
2. Click the *New* option.
3. Double click the *Blank Workbook* or click on the *Create* button.

A new worksheet is created.

### Using a Spreadsheet

After creating a worksheet, you can enter data (for example, words, a number, or a formula) in the active cell. The spreadsheet can be used as per your need.

## Entering and Editing Text

### Entering Data

For entering data, perform the following steps:

1. Select the cell where the data has to be entered.
2. Type the data. To enter data in active cell, type the characters. Either press *Tab* key to go to the next cell in the same row or press *Enter* key to go to the next cell in the same column.

## Editing Data

For editing data (in case we have made mistakes or some changes are required), perform the following steps:

1. Double-click the cell, which has to be edited.
2. Use the *Backspace* or *Delete* key to edit the content of the cell.
3. Press the *Enter* key.

## Change Data in a Cell

After entering data into a cell, you can edit the data by pressing F2 while you are in the cell you wish to edit. For example, we wish to change “Shibra” shown in cell A1 (see Fig. 4.2) to “Shibru”.

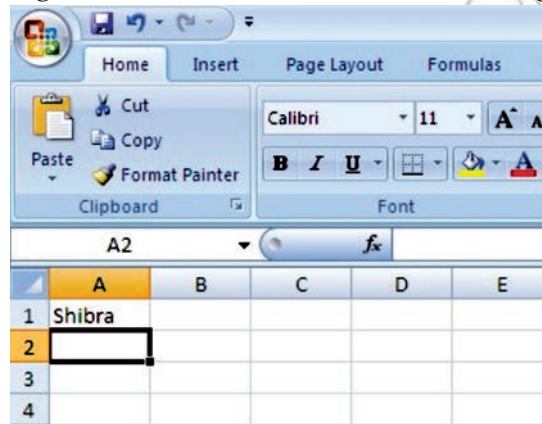


Fig. 4.2: Changing data in a cell

To change data in a cell, perform the following steps:

1. Move to cell A1.
2. Press F2.
3. Use the Backspace key to delete the “a”.
4. Type “u”.
5. Press Enter key. The cell contents change to “Shibru” (see Fig. 4.3).

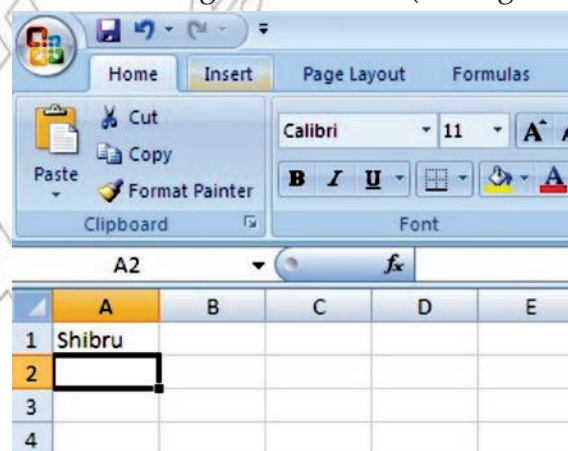


Fig. 4.3: Cell after changing data



You can also edit a cell by using the Formula Bar or by Double-Clicking in the cell or by typing in a cell.

## Saving the Worksheet

For saving a worksheet the first time, perform following steps:

1. Click the *Office Button*.
2. Click the *Save As* option.
3. Click the *Excel Workbook* option. A *Save As* dialog box appears.
4. Type the name for the worksheet in the *File name* textbox.
5. Click the *Save* button.

## Using the Four Mathematical Operators on Data to Create Custom Formula

In MS-Excel, you can enter numbers and mathematical formulae into cells. When entering a mathematical formula, precede with an equal (=) sign. For example, = A2 + A3 can be typed in cell A5 (where cells A2 and A3 have data to be added).



In MS-Excel, you can find the sum by dragging method and copy by using the fill handle.

Now, you have revised the Grade 9 main concepts about spreadsheet. Let us focus on some new concepts of spreadsheet.

## Definition of a Chart

A chart is a graphical representation of the figures in a spreadsheet.

Charts help in easy understanding of complex or detailed data. These reflect information in such a way that it can be easily understood just by having a look at the chart.

MS-Excel 2007 supports various types of charts to display data in meaningful ways. When you want to create a chart or change an existing chart, you can choose from a wide range of chart subtypes available for the different chart types. Figure 4.4 shows a pie chart.

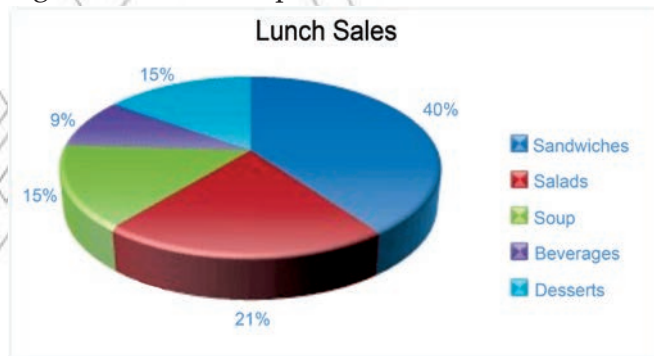


Fig. 4.4: Pie chart

## Creating Charts

A picture is worth thousands of words. Popular feature of spreadsheet software is the ability to generate charts based on numeric data. In MS-Excel 2007, it is easy to create professional looking charts simply by choosing a chart type, a chart layout, and a chart style—all of which are available on the Ribbon. You can also take advantage of the powerful Excel charting functionality in other MS-Office 2007 programs, such as PowerPoint 2007 and Word 2007.

## Column Chart

Data that is arranged in columns or rows on a worksheet can be plotted in a column chart. Column charts are useful for showing data changes over a period of time or for illustrating comparisons among items. In column charts, categories are typically organized along the horizontal axis and values along the vertical axis.

The subtypes of column charts are: Clustered column and clustered column in 3-D, Stacked column and stacked column in 3-D, 100% stacked column and 100% stacked column in 3-D, 3-D column, Cylinder, cone, and pyramid.

## Bar Chart

Data that is arranged in columns or rows on a worksheet can be plotted in a bar chart. Bar charts illustrate comparisons among individual items. The bar charts are generally used when:

1. The axis labels are long.
2. The values that are shown are durations.

The subtypes of bar charts are: Clustered bar and clustered bar in 3-D, Stacked bar and stacked bar in 3-D, 100% stacked bar and 100% stacked bar in 3-D, Horizontal cylinder, cone, and pyramid.

## Pie Chart

Data that is arranged in one column or row only on a worksheet can be plotted in a pie chart. Pie charts show the size of items in one data series, proportional to the sum of the items. The data points in a pie chart are displayed as a percentage of the whole pie (see Fig. 4.4). The pie charts are generally used when:

1. You only have one data series that you want to plot.
2. None of the values that you want to plot are negative.
3. Almost none of the values that you want to plot are zero values.
4. You do not have more than seven categories.
5. The categories represent parts of the whole pie.

The subtypes of pie charts are: Pie and pie in 3-D, Pie of pie and bar of pie, Exploded pie and exploded pie in 3-D.

## ● Presenting Data by Chart

The *Chart Wizard* (which was composed of a series of dialog boxes that provided all the available options for creating a chart) of earlier versions is no longer available in Excel 2007. It has been replaced by chart options listed under the *Insert ribbon*.

MS-Excel 2007 has tools for creating effective, dynamic charts to visually represent the data. The new Office 2007 Ribbon makes accessing these charting functions even easier and more efficient.

To create a chart, perform the following steps:

1. Open Excel 2007 and either open an existing worksheet or use the default. Enter or create some data that supports the creation of a chart, for example Students Marks in ICT (see Fig. 4.5). This data should be in the form of a table, with the element values to be charted populating the left hand column and the data series, or information about the elements, in the cells across from each element. More than one series can be included for each element. Title the data series across the top of the table and do not leave any blank spaces in the table.

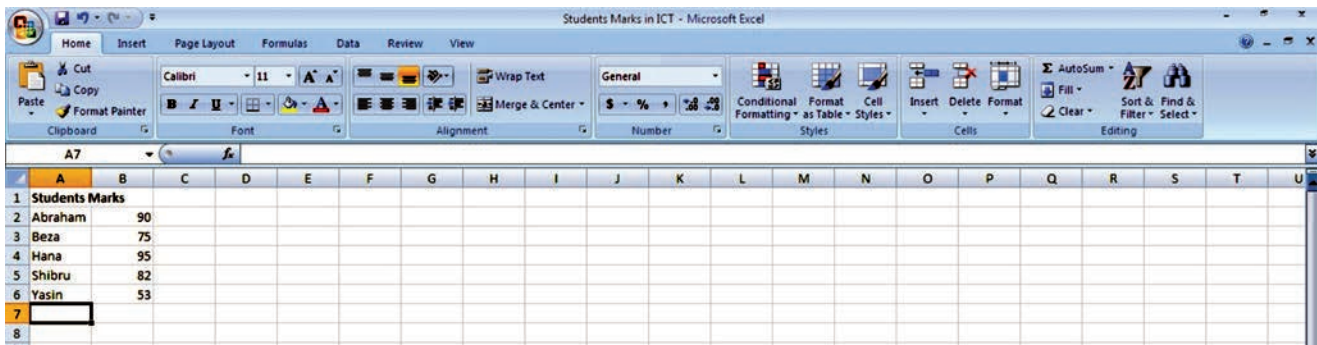


Fig. 4.5: Data in a worksheet to be charted

2. Select the data to be charted (see Fig. 4.6). Left-click and drag a box around the data to select it. Make sure to include both the data and the labels.

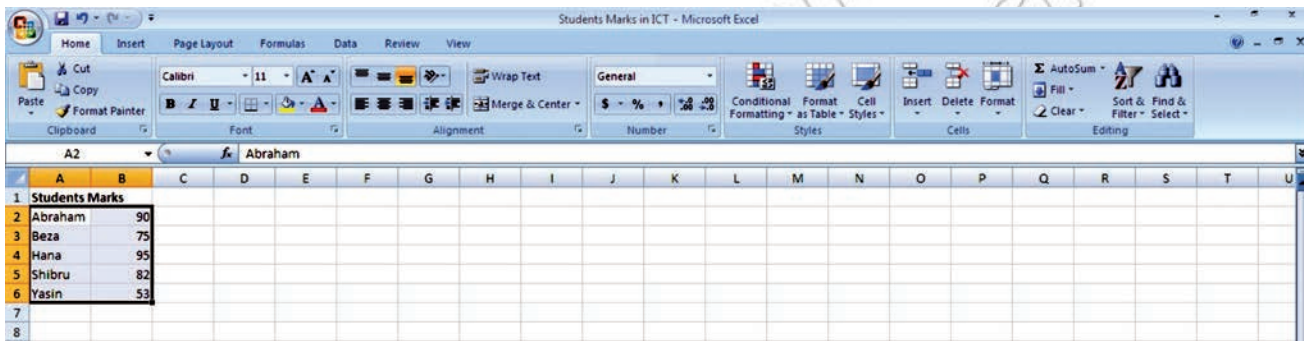


Fig. 4.6: Selecting data to be charted

3. Choose the chart type. Select *Insert* on the Excel 2007 ribbon and then choose from the chart types listed in the *Charts* section (see Fig. 4.7). For a chart type that’s not visible, select the *Other Charts* icon. The chart will be placed on the worksheet near the table of data. By default, the series will be listed across the bottom, or “x-axis” and the elements will be listed to the side. The element values will be listed on the left, or “y-axis” of the chart.

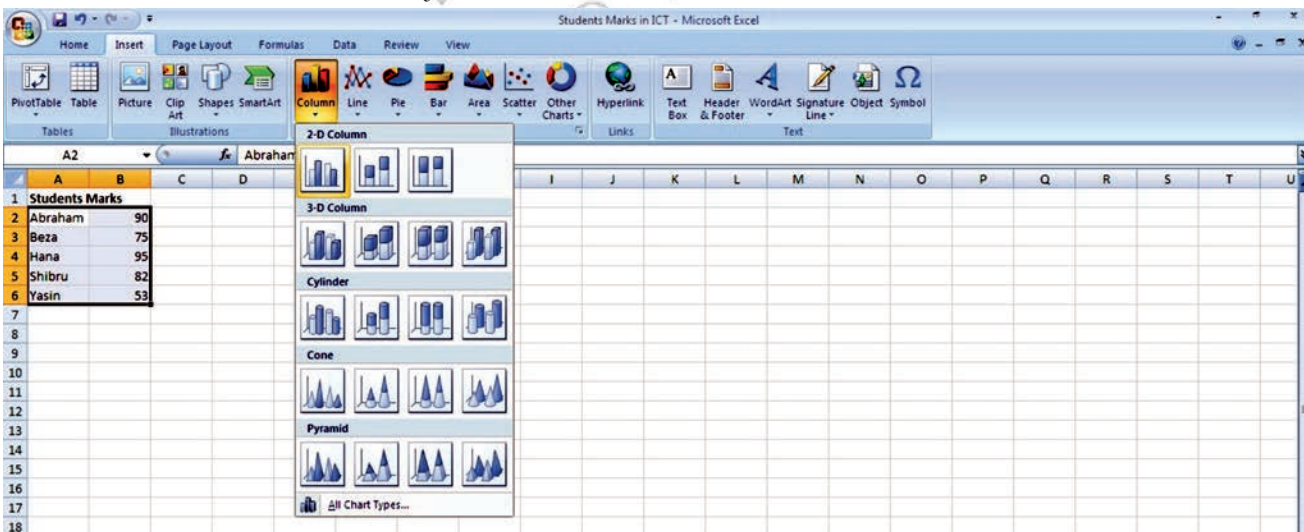


Fig. 4.7: Selecting chart type

4. Position the chart. Left-click on any white space on the chart, and move it to the desired location (see Fig. 4.8).

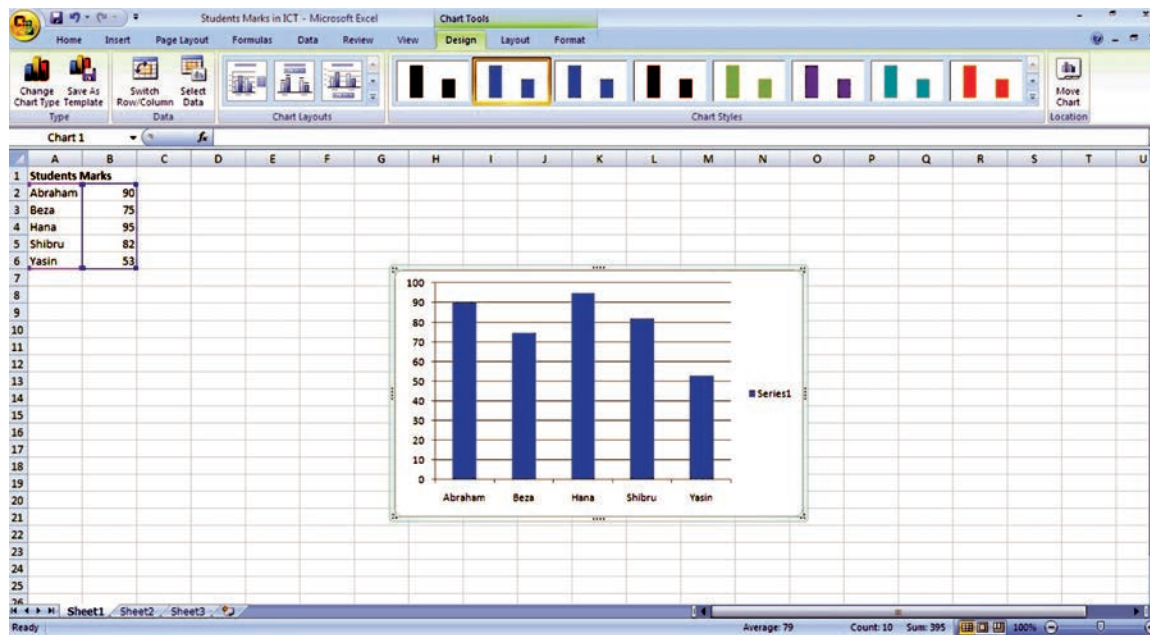


Fig. 4.8: Column chart ready to be placed in the desired location

- Now you can format the chart. Right-click on the chart and a variety of options will appear in a dialog. Change the font displayed within the chart, change the chart type and select different chart data by selecting the relevant item from the list. To change the chart's appearance, select *Format Chart Area* and then select from the options to change the chart's *Fill*, *Border Color*, *Border Styles*, *Shadow* and *3 D Format*.

### ● Using Spreadsheet to Process Data

Spreadsheet can be used to process data. In MS-Excel, you can enter numbers and mathematical formulae (formulae are equations that perform calculations on values) into cells. Whether you enter a number or a formula, you can reference the cell when you perform mathematical calculations such as addition, subtraction, multiplication, or division. A formula starts with an equal sign (=). Before using custom formula, let us identify the difference between absolute and relative cell references.

#### Difference Between Relative and Absolute Cell References

A reference identifies a cell or a range of cells on a worksheet and tells MS-Excel about where to look for the values or data that you want to use in a formula. With references, you can use data contained in different parts of a worksheet in one formula or use the value from one cell in several formulae.

**Relative Reference:** It is the default addressing used by Excel. A relative cell reference in a formula, such as A1, is based on the relative position of the cell that contains the formula and the cell the reference refers to. If the position of the cell that contains the formula changes, the reference is changed. If you copy or fill the formula across rows or down columns, the reference automatically adjusts. For example, if you copy or fill a relative reference in cell B2 to cell B3, it automatically adjusts from A 1 to A 2 (see Fig. 4.9).

	A	B
1		
2		=A1
3		=A2

Fig. 4.9: Copied formula with relative reference

**Absolute Reference:** Use absolute reference when you do not want Excel to change the cell addresses relatively, when you copy a formula. An absolute cell reference in a formula, such as \$A \$, always refers

to a cell in a specific location. If the position of the cell that contains the formula changes, the absolute reference remains the same. As mentioned earlier, by default, new formulae use relative references, and you may need to switch them to absolute references. For example, if you copy or fill an absolute reference in cell B2 to cell B3, it stays the same in both cells \$A\$1 (see Fig. 4.10).

	A	B
1		
2		=\$A\$1
3		=\$A\$1

Fig. 4.10: Copied formula with absolute reference

### Using Custom Formula

Using a custom formula is as simple as the other commands of Excel. To write the formula, click on the cell in which you want to have result of the calculation. Type = sign and write the formula using cell addresses and arithmetic and logical operators supported by Excel.

A formula in Excel contains cell addresses, operators and built-in functions. Working with formulae is very easy in Excel and it does not require a high programming knowledge. For example, in Fig. 4.11, the total of marks scored by students has been calculated in cell B8 by using the custom formula =B2+B3+B4+B5+B6. The cell B8 contains the sum of B2, B3, B4, B5, and B6 cells.

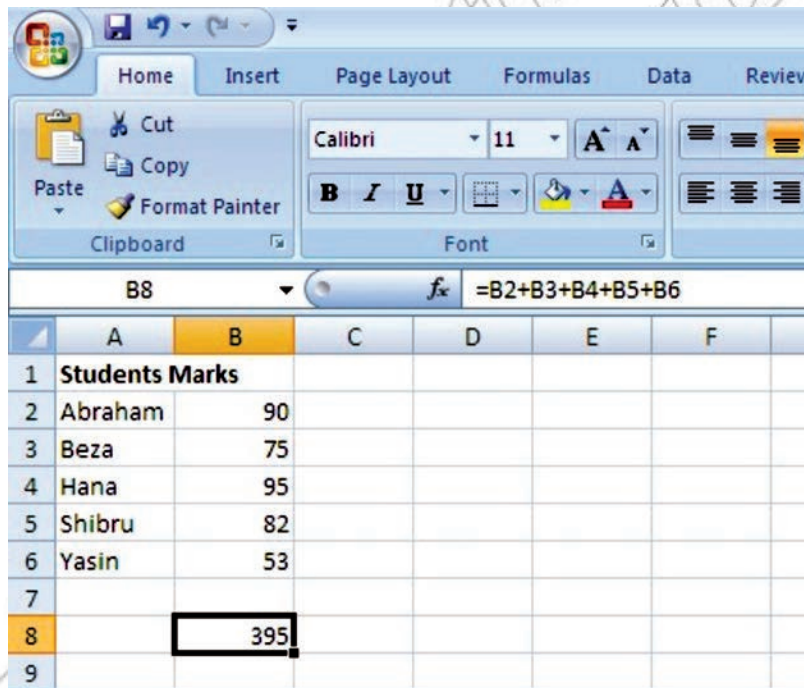


Fig. 4.11: Using custom formula

### Using IF condition

IF function of Excel is a conditional construct that displays one or the other value in a cell based on the condition applied. If the condition is true, one value is displayed otherwise the other value is displayed.

The syntax of IF function is:

**IF (Condition, Value if True, Value if False)**

The three items between the parentheses are the arguments of IF function. Here, **Condition** is what you want to test for.

**Value if True** is what you want to do if the answer to the first argument is TRUE.

**Value if False** is what you want to do if the answer to the first argument is FALSE.



For example, open a new spreadsheet, and perform the following steps:

1. Widen the B column, as we will be putting a message in cell B1.
2. Now click in cell A1 and type the number 7.
3. Type the following in cell B1.

**=IF(A1 >= 6, "Greater than or Equal to Six", "Less than Six")**

Press the Enter key and the spreadsheet should look as shown in Fig. 4.12.

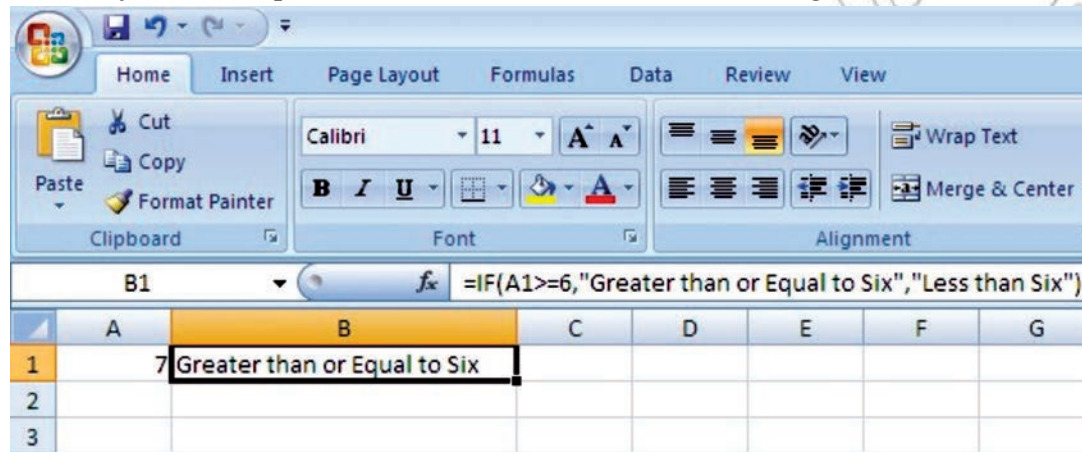


Fig 4.12: Using IF condition

In the above example, make sure that all the commas and double quotes are in the correct place; otherwise Excel will give an error message.

### Using Built-in Functions

Now you are familiar with the formulae in Excel. It is very easy to write these formulae but, in some situations, we have to solve complex problems that are difficult to be solved with these basic formulae. Excel has several built-in functions to make your work easy and fast. There are many functions, grouped under various categories like: math and trigonometry functions, statistical functions, date functions, text functions, etc.

Let us learn how to calculate using worksheets:

1. **AutoSum**  $\Sigma$ : It calculates the sum of the selected contiguous cells directly after the selected cells. For example,

Start Excel and open a worksheet to enter some numbers for addition in a column or a row. Click a cell below the column of numbers or to the right of the row of numbers.

On the *Home* tab, in the *Editing* group, click *AutoSum* button  $\Sigma$  (see Fig. 4.13).

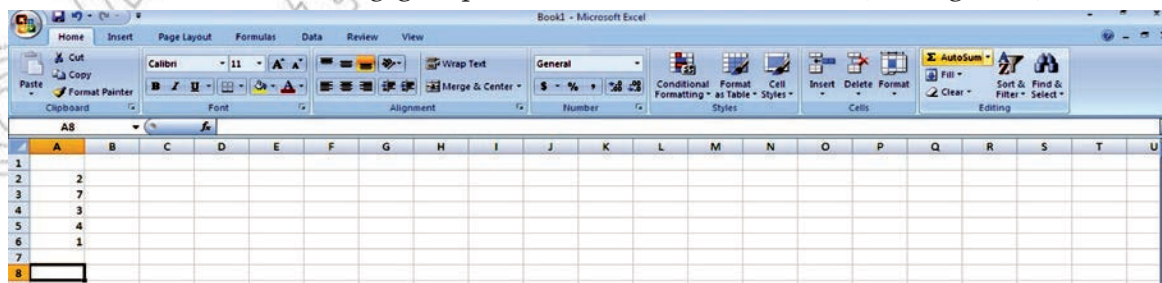


Fig. 4.13: Selecting AutoSum



Excel displays a dashed border on the cell range for parameters.

Press Enter key and you will get the sum of the numbers in the selected cell (see Fig. 4.14).

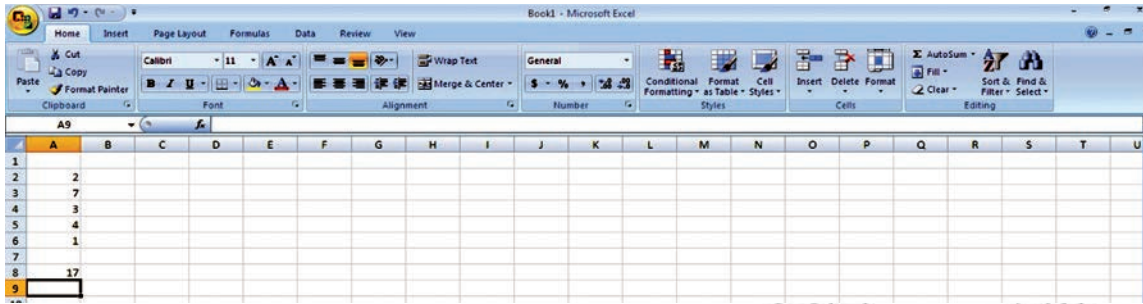


Fig. 4.14: Sum calculated using AutoSum

2. **SUM ( )**: It adds all the numbers in a range of cells.

The syntax of SUM function is:

**SUM(number1, number2, ...)**

Here, **number1, number2, ...** are 1 to 255 arguments for which you want the total value or sum.

For example,

§ **UM(A2:A6)** will give the sum of the specified range (see Fig. 4.15).

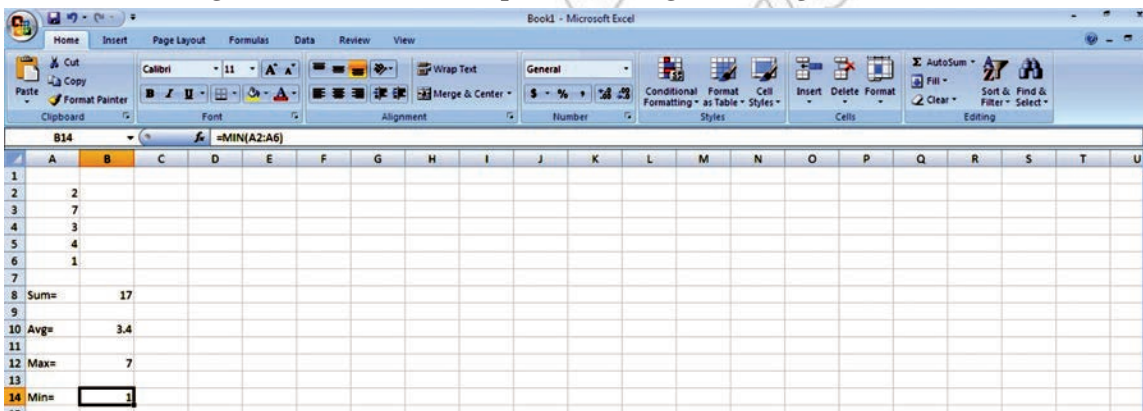


Fig. 4.15: Calculation using worksheet



The **SUM** function can include upto 30 cells or range references.

3. **AVERAGE ( )**: It returns the average (arithmetic mean) of the arguments.

The syntax of AVERAGE function is:

**AVERAGE(number1, number2, ...)**

Here, **number1, number2, ...** are 1 to 255 numeric arguments for which you want the average.

For example,

§ **AVERAGE(A2:A6)** will return the average of the specified range (see Fig. 4.15).

4. **MAX ( )**: It returns the largest value in a set of values.

The syntax of MAX function is:

**MAX(number1, number2, ...)**

Here, **number1, number2, ...** are 1 to 255 numbers for which you want to find the maximum value.



For example,

✎  $AX(A2:A6)$  will return the largest value in the specified range (see Fig. 4.15).

5. **M N( )**: It returns the smallest number in a set of values.

The syntax of MIN function is:

**MIN(number1, number2, ...)**

Here, **number1, number2, ...** are 1 to 255 numbers for which you want to find the minimum value.

For example,

✎  $IN(A2:A6)$  will return the smallest value in the specified range (see Fig. 4.15).

### More Complex Exercises Using +, -, \*, /

We can use Excel to perform advanced calculations using +, -, \*, /. For example,

1. Start Excel. Open a worksheet and move to a cell. Here, we have moved to cell A1.
2. Type  $=6-3+12/3*4$ .
3. Press Enter.

MS-Excel divides 12 by 3, multiplies the answer by 4, adds 6, and then subtracts 3. The answer, 19, is displayed in cell A1 (see Fig. 4.16).

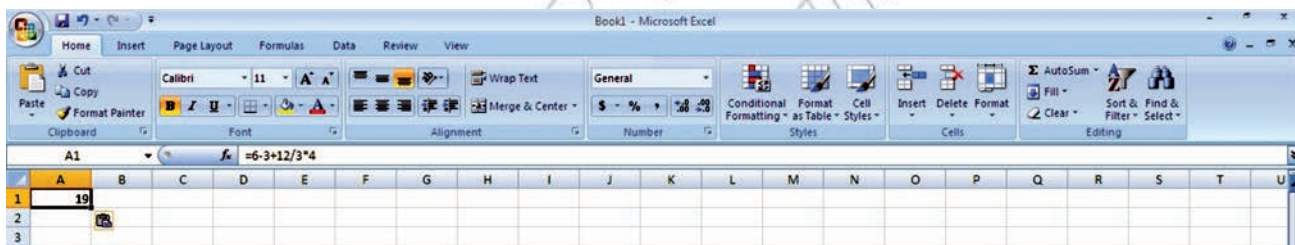


Fig. 4.16: Performing calculations

To change the order of calculation, use parentheses. MS-Excel calculates the expression in parentheses first.

1. Double-click in cell A1.
2. Edit the cell to read  $=6-3+12/3*4$ .
3. Press Enter.

MS-Excel adds 6 minus 3 plus 12, divides the answer by 3, and then multiplies the result by 4. The answer, 20, is displayed in cell A1 (see Fig. 4.17).

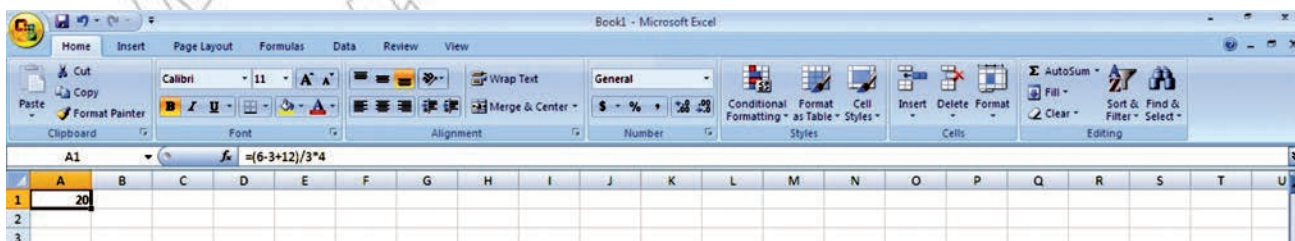


Fig. 4.17: Changing order of calculations using parentheses

● **Formatting Worksheet**

Formatting refers to the act of changing the appearance of data in cells. In MS-Excel, you can format text, format cells, adjust columns and rows and print worksheets. Let us apply formatting on a worksheet.

1. Start Excel. Open an existing worksheet (here we have opened Students Marks in ICT) and click cell A1.
2. In the Ribbon, click the *Bold button* **B** and the *Italic button* **I**.
3. Click the drop-down arrow beside the *Font Size* box.
4. When the menu appears, click 20 (see Fig. 4.18).
5. In the Font list, click *Arial Black*.
6. Highlight the text in range A3:A7.

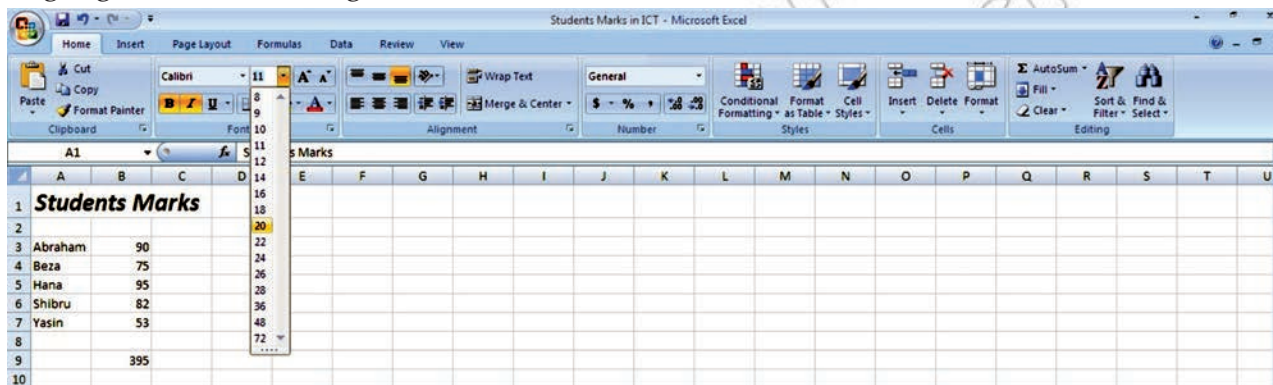


Fig. 4.18: Formatting a worksheet

7. Click the *Bold button* **B** to make the text bold. The worksheet will look as shown in Fig. 4.19.

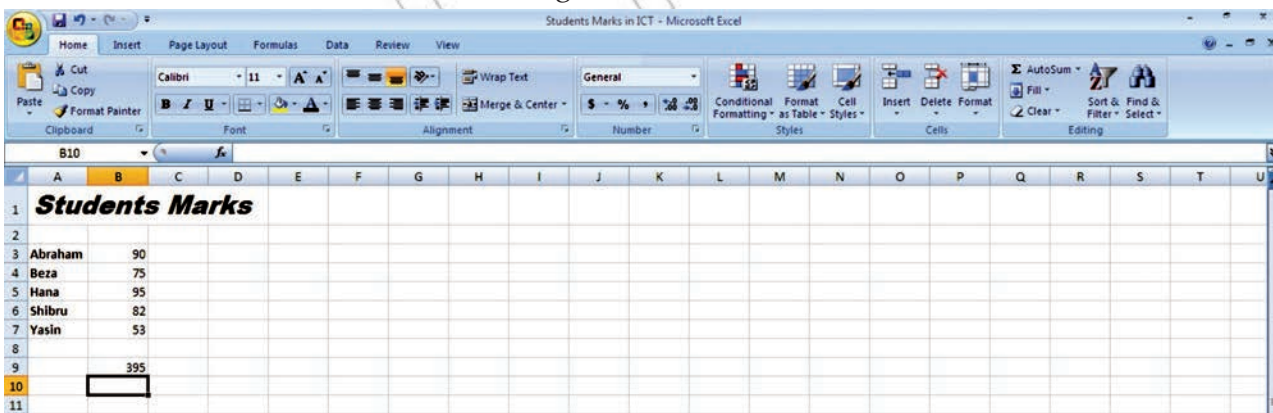


Fig. 4.19: Worksheet after formatting

**ACTIVITY 4.1**

COMPUTE THE RANK USING THE RANK FUNCTION TAKING A GIVEN NUMERICAL ITEM AS AN EXAMPLE

In small groups students will explain and demonstrate how to compute rank.



## What is Rank?

The rank of a number is its position in a list of numbers.

**RANK( ):** This statistical function returns the rank of a number in a list of numbers.

The syntax of RANK function is:

**RANK(Number, Ref, Order)**

The three items between the parentheses are the arguments of RANK function. Here, **Number** is the number whose rank you want to find.

**Ref** is a reference to, or a list of numbers. Nonnumeric values in ref are ignored.

**Order** is a number specifying how to rank number.

If order is 0 (zero) or omitted, Excel ranks number in descending order. If order is any nonzero value, Excel ranks number in ascending order.

RANK gives duplicate numbers the same rank. However, the presence of duplicate numbers affects the ranks of subsequent numbers. For example, in a list of integers sorted in ascending order, if the number 20 appears twice and has a rank of 5, then 21 would have a rank of 7 (no number would have a rank of 6).

## Example of Computing Rank

To compute rank, perform the following steps:

1. Open an existing worksheet (see Fig. 4.19) or create a new one.
2. Click on cell D5—the location where the result will be displayed.
3. Click on the *Formulas* tab.
4. Select **More Functions** → **Statistical** from the ribbon to open the function drop down list (see Fig. 4.20).

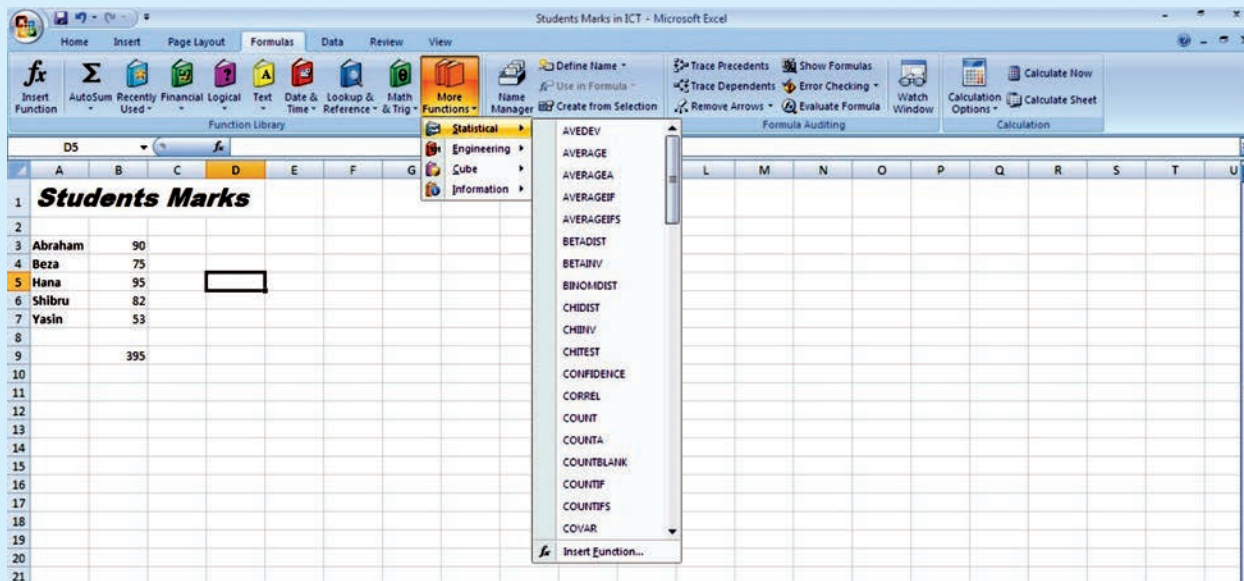


Fig. 4.20: Selecting Statistical in More Functions

5. Click the drop-down arrow and select **RANK** from the list to bring up the function's dialog box.
6. Click on cell B5 to choose the number to be ranked (95).

7. Click on the *Ref* line in the dialog box.
8. Drag select cells B3 to B7 in the spreadsheet to enter the range into the dialog box.
9. Click on the *Order* line in the dialog box.
10. Type 0 (zero) on this line to rank the number in descending order.
11. Click *OK*.
12. The number 1 should appear in cell D5 since the number 95 is the largest number.
13. The complete function = *RANK (B5,B2:B7,0)* appears in the formula bar above the worksheet when you click on cell D5 (see Fig. 4.21).

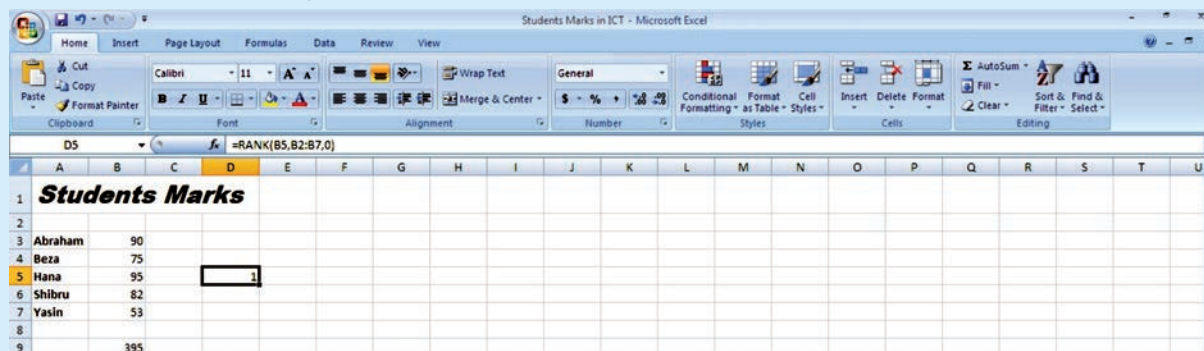


Fig. 4.21: Computing rank



### KEY CONCEPTS

- Spreadsheet is an application software, which allows us to perform quick and easy calculations on our stored data.
- Fill handle can be used for copying cells, copying formulae using relative references, generating series and generating auto lists.
- A chart is a graphical representation of the figures in a spreadsheet.
- IF function of Excel, is a conditional construct that displays one or the other value in a cell based on the condition applied.
- Excel has several built-in functions to make your work easy and fast. For example, SUM( ), MAX( ), RANK( ), etc.



### ASSESSMENT 4.1

#### Fill in the Blanks

1. The ..... allows users to create tables and financial schedules by entering data and formulae into rows and columns arranged as a grid on a display screen.
2. There are ..... rows and ..... columns in Excel 2007 worksheet.
3. .... charts are useful for showing data changes over a period of time or for illustrating comparisons among items.
4. .... refers to the act of changing the appearance of data in cells.



### State Whether True or False

1. Fill handle is a special utility in Excel, which is mainly used for copying formulas.
2. A chart is a graphical representation of the figures in a spreadsheet.
3. We cannot use spreadsheet to process data.
4. Rank function returns the average (arithmetic mean) of the arguments.

### Answer the Following

1. Define a chart and explain the use of charts.
2. What are the various types of charts supported by Excel? Write steps to insert a chart.
3. Explain any four built-in functions of Excel.
4. What do you mean by formatting a worksheet? Write steps to format text and numbers in the cell of a worksheet.

### Suggested Activities

1. Master introductory parts of spreadsheet by revising the Grade 9 main contents.
2. Explain the use of charts.
3. Demonstrate how to create the listed charts in Excel.
4. In mathematics compare the growth of an arithmetic progression with a geometric progression.

### Field Trip

Using the Internet or computer magazines, look up information on Microsoft Excel 2010. List any features you find. List which of these features appeal to you and describe why they do.

## 4.2 DATABASE APPLICATION

Every organization maintains data for its business, employees and finance. This data need to be maintained in such a manner that it is easily available and can be presented in desired formats. The data also needs to be updated regularly.

Traditionally data were maintained in paper files. The following are the disadvantages of manual data maintenance by using paper files:

1. Data redundancy
2. Slow data access
3. Security problems
4. Integrity problems

The advent of database management system paved a way to overcome these disadvantages.

### ● Introduction to Database

#### What is Database?

A database is a collection of related data that is organized, so that it can easily be accessed, managed and updated.

For example, a database can contain data about all the students in a school, data about telephone numbers in a directory, data about all products in a manufacturing company, or data about weather conditions in an area or a city (say Addis Ababa).

*Microsoft Office Access* is one of the database creation and management programs.

It is a Database Management System (DBMS) included with Microsoft Office suite. Interacting with a DBMS occurs when one performs daily routine activities, for example, withdrawing cash from the ATM, or purchasing tickets using a credit card.

## ● Uses of Database

A database stores information in an organized way, and makes it easy to get information in and out. In today's world databases are used by websites such as [Google.com](http://Google.com) and [Yahoo.com](http://Yahoo.com), and in places such as banks, libraries and hospitals.

The common areas where data bases are used are:

1. **Government:** The government uses a database to store records of people's data for different purposes, for example, census, income tax payments, etc.
2. **Business:** Today the business world depends on databases round the clock. Inventory, order processing, payroll, accounting, shipping and transportation routing are often tracked within a main database that keeps the organization/company functioning.
3. **Educational Institutions:** From elementary schools/colleges to universities, educational institutions use the database to keep track of students' data. Specialized database packages for schools/colleges and universities are also available.
4. **Non-Profit Organizations:** Most of the charities and other non-profit groups use a database for keeping track of donations, volunteers, hours served in the community, clients helped and other information related to the organization.
5. **Household and Family Management:** The database is very useful in household and family management for many individuals and families. Many individuals/families use a database to keep track of family birthdays, bills and expenses within a home; addresses of friends and relatives; movie/DVD collections; and other lists.
6. **Everyday Life:** Some departmental stores keep your information stored in a customer database. When you make a purchase, the sales clerk asks for your address or customer account number. These collections of data are used to send mailings of special offers, discounts and other deals.

## ● Common Database Applications

Databases are used in many applications, covering almost the entire range of computer software. Databases are the preferred method of storage for large multiuser applications, where coordination between many users is needed. Many electronic mail programs and personal organizers are based on standard database technology.

Some examples of database applications are:

1. Computerized library systems.
2. Automated Teller Machines (ATMs).
3. Flight reservation systems.
4. Computerized inventory systems.



Any application that involves storing and maintaining a large amount of data in an organized manner can be set up as an Access database. For example, customers and invoices, suppliers and purchases, inventory and orders, etc.

## ● Database Terminology

Let us discuss some of the useful terms related to database:

**Table:** A table in a database is a predefined format of rows and columns that define an entity. It is also called a *relation*. For example, the STUDENT table shown in Table 4.1.

**Table 4.1: STUDENT Table**

ID	Stud Name	Father Name	Sex	Age	Phone Number
1	Abraham	Nigatu	Male	13	222222
2	Beza	Yasin	Female	12	111111
3	Hana	Fuad	Female	13	555555
4	Shibru	Engda	Male	14	444444
5	Maru	Tariku	Male	13	333333

**Record:** A database record consists of one set of *tuples* in a table. In other words, a row of information in a table is called a record. For example, Table 4.1 has five records.

**Field:** A field is a single unit of data stored as part of a database record. Each record is made up of one or more fields, which correspond to the columns in a database table. Fields are often called *attributes*. For example, Table 4.1 has six fields.

**Data Type:** A data type specifies the type of data that a column in a table represents in a database. For example, numeric, character or text, date, logical, etc. For example, in Table 4.1 Stud Name is of text type.

**Primary Key:** Every table should contain a field that uniquely identifies each record stored in it. This field is called the primary key of the table. Primary keys may consist of a single field or multiple fields in combination. For example, in Table 4.1, the student's unique ID number would be a good choice for a primary key. The Stud Name would not be a good choice, as there is always the chance that more than one student might have the same name.

## ● Designing a Database Structure

Before you start creating a database, it is essential to create a good database design. Planning the design structure is important, as an improper design will cause changing the design structure. A good database design ensures that the database is easy to maintain and store data.

To plan and design a database, the points to be considered are:

1. The purpose of the database.
2. The number of tables and the type of information each table will contain.
3. Columns that will form each table.
4. Relationship between tables.



You can decide your own database structure as per your requirement. For example, one table in a customer database might store names and addresses while another table stores the customer invoices and another table stores the customer payments.

## ● Open an Existing Database

Suppose you are having MS-Access 2007 installed on your computer. There are different methods you can use to open existing Access 2007 databases. You can open databases from Windows Explorer or from within Access. You can open multiple databases at once, and you can also create desktop shortcuts that open database objects directly.

To open an existing database from Access, perform the following steps:

1. Click **Start** → **All Programs** → **M**icrosoft Office → **M**icrosoft Office Access  (see Fig. 4.22).

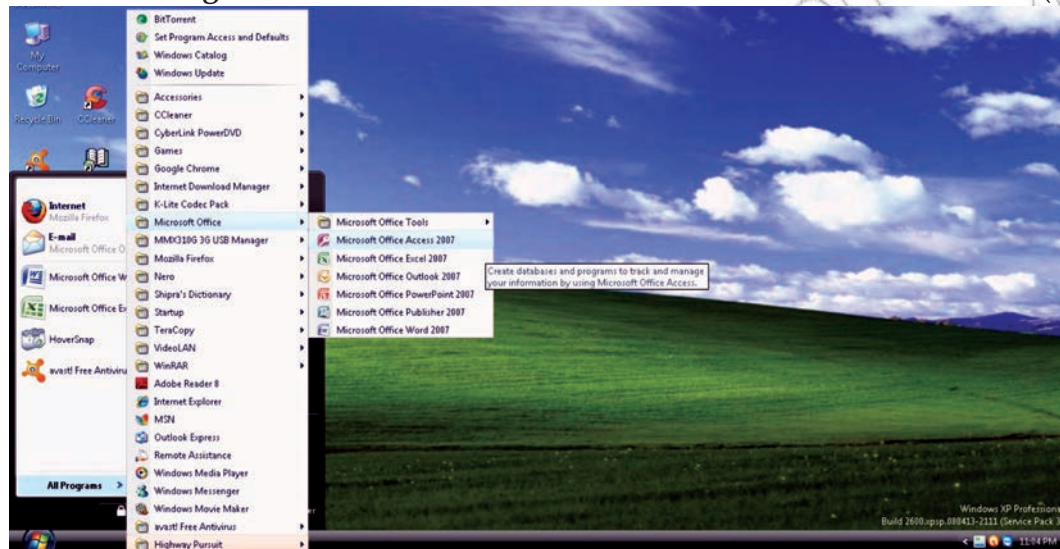



Fig. 4.22: Starting MS-Access

2. Click the *Microsoft Office Button* , and then click *Open*.
3. Click a shortcut in the *Open* dialog box, or in the *Look in* box, click the drive or folder that contains the database that you want to open.
4. In the folder list, browse to the folder that contains the database.
5. When you find the database, double-click the database to open it in the default mode specified in the *Access Options* dialog box or the mode that was set by an administrative policy.

## ● Overview of a Table

A database table contains data about a particular subject (see Table 4.1). In a table the data is arranged in rows and columns. To get the most flexibility out of a database; the data needs to be organized into tables so that redundancies do not occur. For example, if you are storing information about students, each student should only need to be entered once in a table that is set-up just to hold student data.

Each row in a table is referred to as a record. Records are where the individual pieces of information are stored. Each record consists of one or more fields. Fields correspond to the columns in the table. Fields must have a certain data type, whether it is text, date or time, number, or some other type.

## ● Creating a Table

One must plan and design a table properly for a new database before creating it. You can use Design view to create an Access table. Using Design view is the preferred method for creating a table because it provides you with the most options and enables you to precisely define your table. In addition to selecting a data

type, you can set the other available options in Design view. Suppose we have to create Table 4.1 in Access. Perform the following steps:

1. Start Ms-Access and activate the *Create* tab. Click *Table Design* in the *Tables* group (see Fig. 4.23).

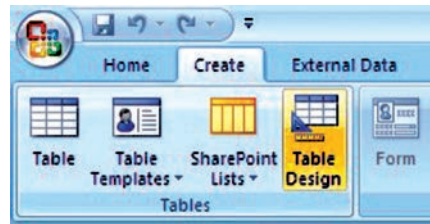


Fig. 4.23: Clicking Table Design

2. Access changes to Design view and the Table Tools become available.
3. Type the field name in the *Field Name* field.
4. Press the *Tab* key.
5. Click the down-arrow that appears when you click in the *Data Type* field and then select a data type.
6. Click *Primary Key* if the column you created is a primary key. A small key appears next to the field name.
7. Press the *Tab* key.
8. Type a description. The description is optional.
9. Press the *Tab* key. Access moves to the *Field Name* field.
10. Repeat steps 3 through 9 until you have created all of your fields (see Fig. 4.24).

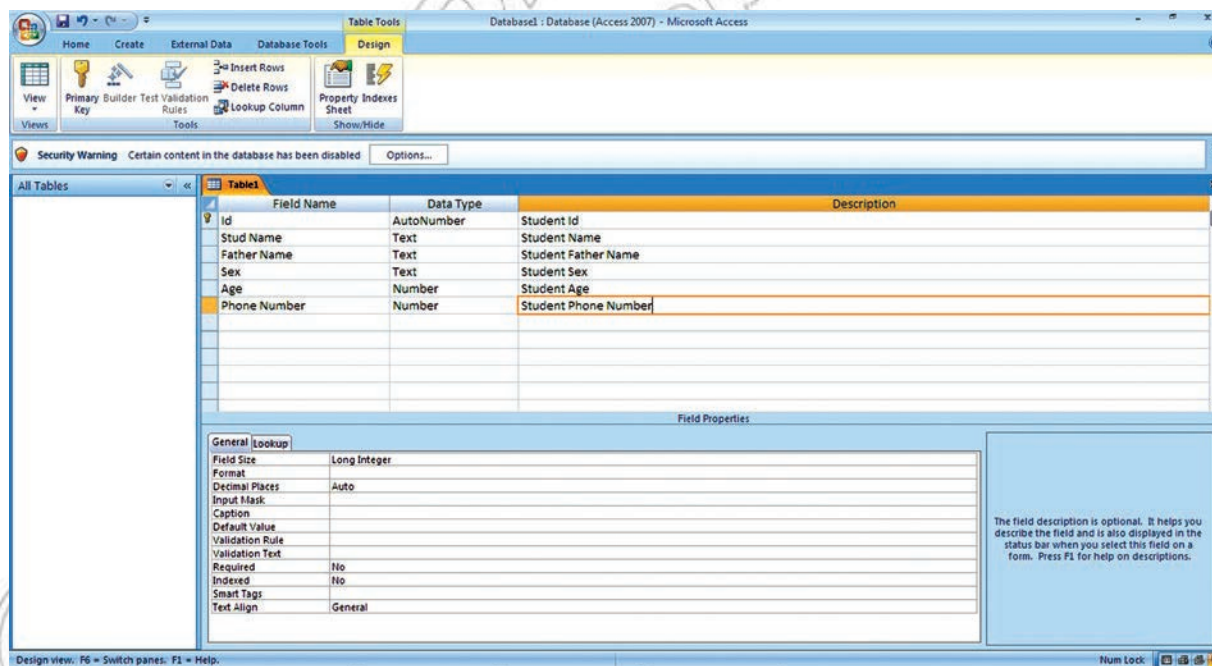


Fig. 4.24: Creating a Table

11. To set field properties, click the field for which you want to set the field properties. Activate the *General* tab in the *Field Properties* area. Set the properties you want to set. Repeat until you have set all the properties for all fields.

- After finishing the task, click the *Save* button on the *Quick Access Toolbar*. Access saves the table unless you are saving for the first time. If you are saving for the first time, the *Save As* dialog box appears. Type the name you want to give your table. Here, we have saved the table as *STUDENT* (see Fig. 4.25).

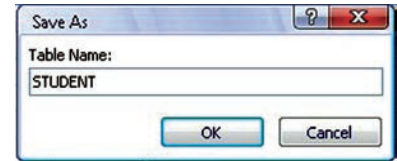



Fig. 4.25: Save As dialog box

- Click *OK*. Access saves the table.



You can use field names that include spaces, but this can affect how queries have to be written, so it is best not to do so.

### ● Add, Edit, Delete and Sort Records

After creating an Access table, you can add, edit, delete and sort records in it. Before you can perform an operation on a record, you must select it. To select a record, click the blank area to the left of the row. To select several records, click the blank area to the left of a row and then drag. To select the entire table, click the *Select All* button  in the upper-left corner of the table.

In Datasheet view, you can select the field or fields as:

To select one field, click its header.

To select more than one adjacent fields, click the header of one, hold down the *Shift* key, and then click the header of another. The two fields and any fields in between are selected.

In Design view, you can select the field or fields as:

To select one field, click the row selector for the field you want.

To select more than one field, hold down *Ctrl* key and then click the row selector for each field.

### Adding Records

Adding a new record to an existing Access 2007 database is quite simple. In fact, being able to modify the database in this way is one of the reasons why Access is so accessible and easy to use. To add record(s) in a table, perform the following steps:

- Open the table. Here, we have opened the *STUDENT* table. Notice that the table contains an empty record at the bottom of the table's data with the word *(NEW)* in the first column.
- Click on that cell in the table and then press the *TAB* key on your keyboard.
- Type the new information you want in that field and then press *TAB* again. Now type the information you want in that cell and continue in this way until you wish to add records to the table (see Fig. 4.26).

STUDENT							
	Id	Stud Name	Father Name	Sex	Age	Phone Num	Add New Field
	1	Abraham	Nigatu	Male	13	222222	
	2	Beza	Yasin	Female	12	111111	
	3	Hana	Fuad	Female	13	555555	
	4	Shibru	Engda	Male	14	444444	
	5	Maru	Tariku	Male	13	333333	
*	(New)						

Fig. 4.26: Adding records



When you add a record in a table, the cursor in the row selector moves down to the next (new) record. When you move on to a new record, Access automatically saves the previous record.

## Editing Records

Data stored as records in tables can be modified at any point in time.

To make changes to a record in a table, perform the following steps:

1. Open the table having the record(s) you want to edit.
2. Place the cursor in the required cell.
3. Remove the existing value.
4. Enter the new data.

The value in the field will be changed. Make other changes (if any) and save the table.

## Deleting Records

You can delete record(s) from tables if it/they is/are not required.

To delete a record from a table, perform the following steps:




1. Open the table and select the record you want to delete.
2. Activate the *Home* tab.
3. Click *Delete* in the *Records* group. A prompt appears.
4. Click the *Yes* button.

The selected record will be deleted. Similarly delete the other records (if you wish) and save the table.

## Sorting Records

Sorting is arranging records in a table, so that the records can be retrieved quickly and easily. By sorting, you can put a column of information in alphabetical, numerical, or date order. You can sort in ascending order (alphabetical from A to Z, lowest number to highest number, earliest date to latest date) or descending order (alphabetical from Z to A, highest number to lowest number, latest date to earliest date). You can also sort within a sort.

To sort records in a table, perform the following steps:

1. Open the table. Here, we have opened the STUDENT table (see Fig 4.26).
2. Click the column label for the column (here, Phone Number) you want to sort.
3. Activate the *Home* tab.
4. Click the Ascending  or Descending  button in the Sort & Filter group. Here, we have selected the Ascending  button.
5. Access sorts the column in ascending (see Fig. 4.27).

STUDENT							
	Id	Stud Name	Father Name	Sex	Age	Phone Number	Add New Field
	2	Beza	Yasin	Female	12	111111	
	1	Abraham	Nigatu	Male	13	222222	
	5	Maru	Tariku	Male	13	333333	
	4	Shibru	Engda	Male	14	444444	
	3	Hana	Fuad	Female	13	555555	
*	(New)						

Fig. 4.27: Sorting the records

## ● Overview of Query

Queries are one of the most important features of database management system. The process of accessing the database and retrieving data selectively is known as querying. Queries often serve as the record source for forms and reports. Query is a database object, which is used for extracting data from one or more tables based on specific conditions. The set of records returned by a query is known as *Dynaset*.

### Query Types

MS-Access supports many types of queries. The major categories are:

1. **Select Queries:** Retrieve records or summaries (totals) across records. Also includes cross-tabulations.
2. **Make Table Queries:** Similar to Select Queries but results are placed in a new table.
3. **Append Queries:** Similar to Select Queries but results are added to an existing table.
4. **Update Queries:** Modify data in a table.
5. **Delete Queries:** Records are deleted from a table.

*Select* queries are the most common queries and can be used for viewing as well as a data source for forms, reports, controls, and other queries. The other queries create or change data and are known collectively as *Action queries*.

## ● Creating a Query

When you want to build a query for your database, there are two ways to create it.

1. Either use the Query Wizard, or
2. Use the Design View.

### Creating a Query using Query Wizard

To create a query using Query Wizard, perform the following steps:

1. Start MS-Access 2007. Click the *Create* tab on the Ribbon. Click *Query Wizard* button in the *Other* group (see Fig. 4.28).

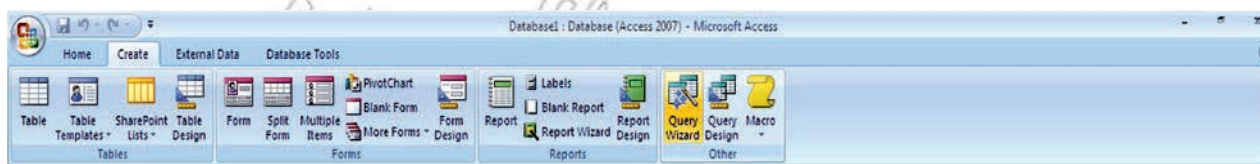


Fig. 4.28: Clicking Query Wizard

2. When the *New Query* window appears, make sure *Simple Query Wizard* is selected (see Fig. 4.29).

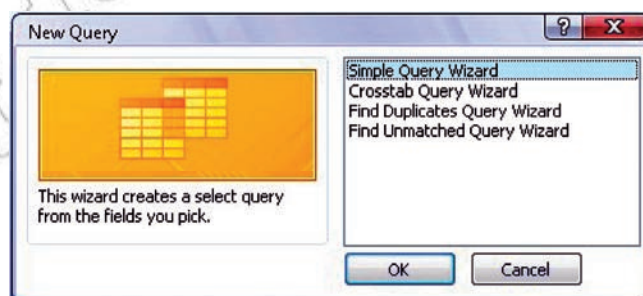



Fig. 4.29: Selecting Simple Query Wizard



Then click the  button to open the Simple Query Wizard.

- Choose table. Here, the STUDENT table is already selected in the *Tables/Queries* list box (see Fig. 4.30). Now you have to select the fields that you wish to display in query results datasheet.
- Now double-click *Stud Name* in the *Available Fields* list. *Stud Name* should appear in the *Selected Fields* column (see Fig. 4.30).

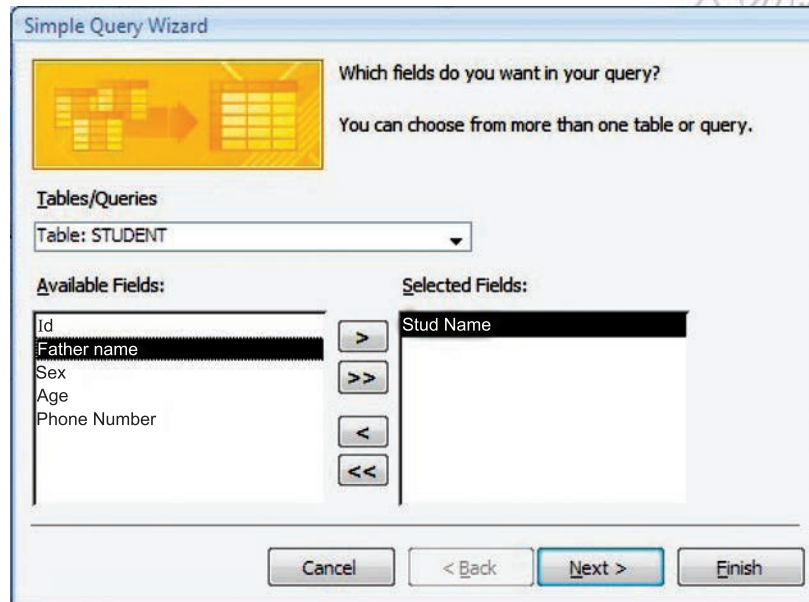



Fig. 4.30: Selecting fields from Available Fields list

- Click the  button. This should add the *Father Name* field to the *Selected Fields* list (see Fig. 4.31).

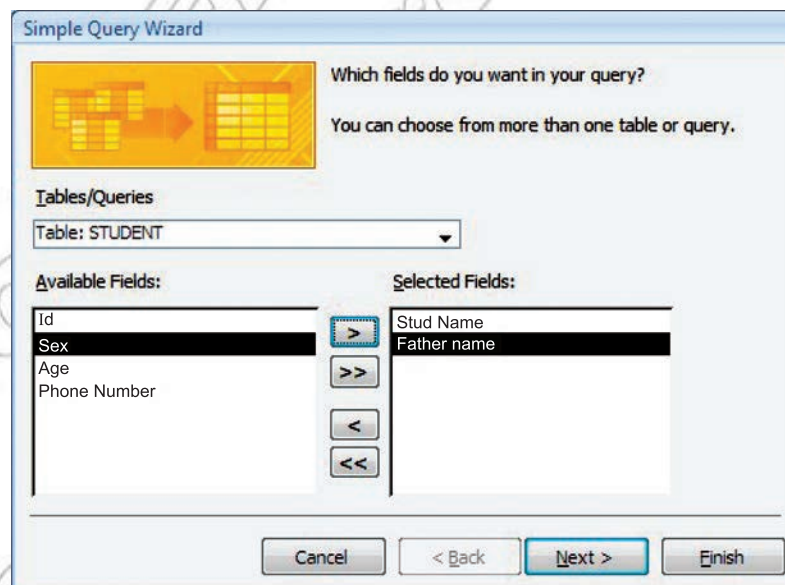


Fig. 4.31: Adding more fields to Selected Fields

- Double-click *Phone Number*. This should add the *Phone Number* field to the *Selected Fields* list (see Fig. 4.32).

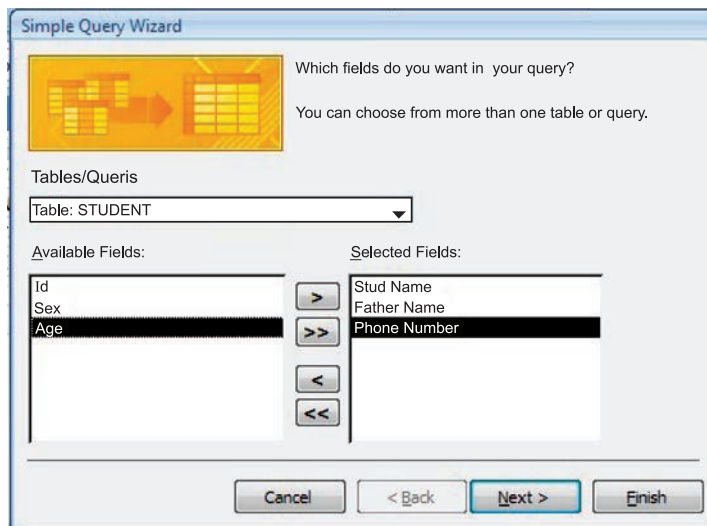


Fig. 4.32: Adding the last field to Selected Fields

7. Click the **Next >** button twice.
8. When the final screen appears, type: *Select Query* (see Fig. 4.33).

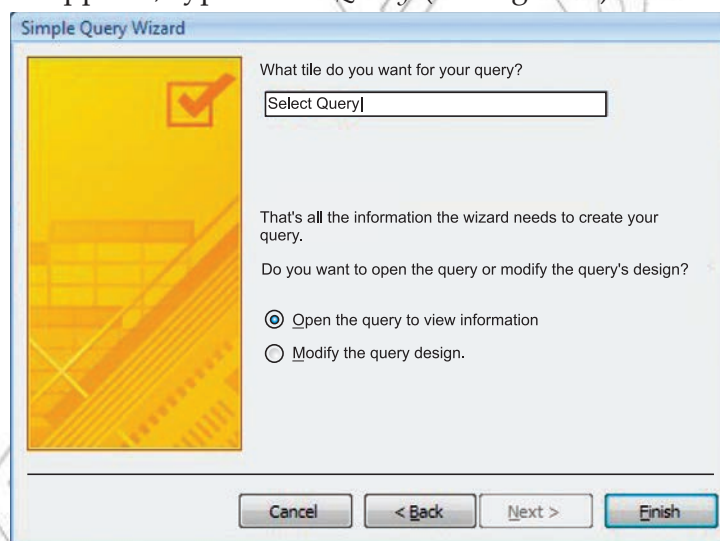


Fig. 4.33: Giving title for the query

9. Click the **Finish** button. The query is automatically saved and executed. It should look as shown in Fig. 4.34.

STUDENT	Select Query	
Stud Name	Father Name	Phone Num
Abraham	Nigatu	222222
Beza	Yasin	111111
Hana	Fuad	555555
Shibru	Engda	444444
Maru	Tariku	333333
*		

Fig. 4.34: Result of query





The Simple Query Wizard does not allow you to include criteria to choose which records you want to include in the query datasheet. If you want to include criteria in your query, open it in the Design View and add the criteria.

## Creating a Query in Design View

To create a query using Design View, perform the following steps:

1. Start MS-Access 2007. Click the *Create* tab on the Ribbon. Click *Query Design* button in the *Other* group (see Fig. 4.35).

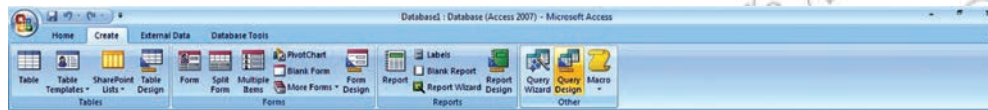


Fig. 4.35: Clicking Query Design

Access displays the *Design View* and the *Show Table* dialog box (see Fig. 4.36).

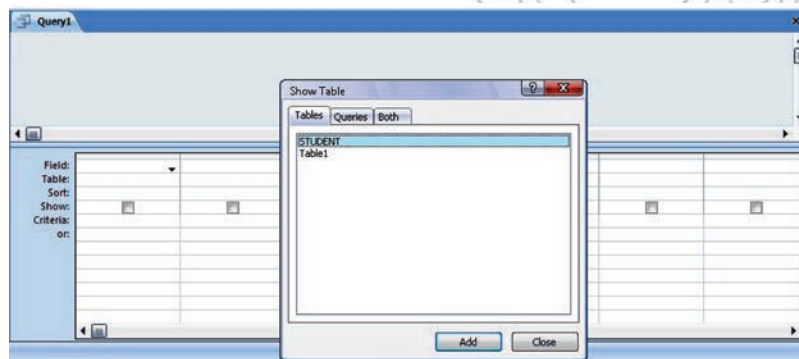


Fig. 4.36: Show Table dialog box

2. In the *Show Table* dialog box, select the table that contains the fields you want to display in the query datasheet (here, we select *STUDENT* table), and then click the dialog box's *Add* button.
3. Click the *Close* button in the *Show Table* dialog box.
4. Double-click a field name in the top pane to display the field name in the bottom pane-the design grid. Repeat this process to include any additional fields (see Fig. 4.37).

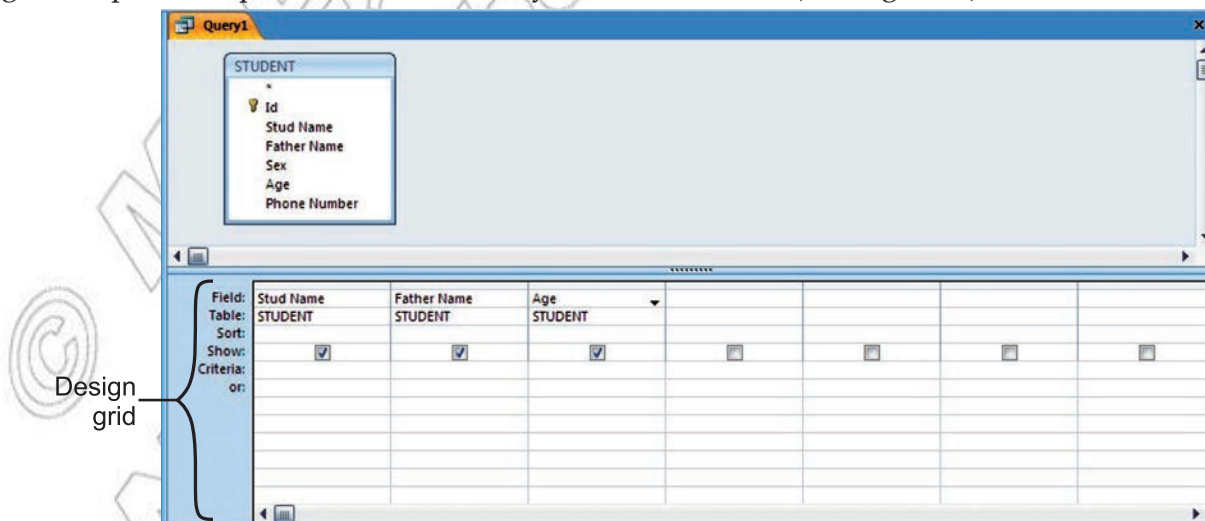

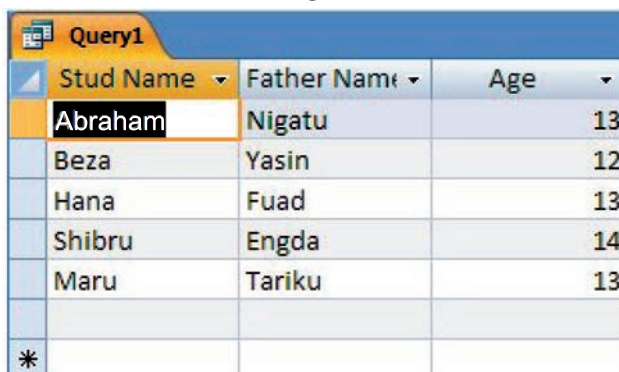


Fig. 4.37: Adding fields to query

- Click the *View* button in *Views* group on *Home* tab to see the datasheet having the data selected with your query (see Fig. 4.38).
- Click *Save* button  on the *Quick Access Toolbar* or press *Ctrl + S*. Type a name for the query in the *Save As* box (see Fig. 4.39).



Stud Name	Father Name	Age
Abraham	Nigatu	13
Beza	Yasin	12
Hana	Fuad	13
Shibru	Engda	14
Maru	Tariku	13

Fig. 4.38: Datasheet showing the data

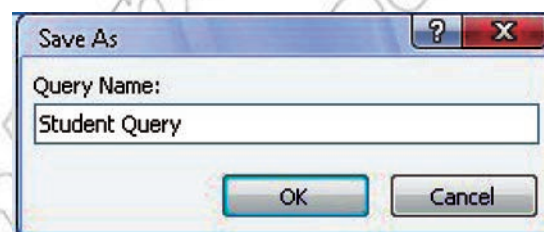


Fig. 4.39: Saving a query

- Click *OK*.



Select queries display selected fields from table(s). Action queries make changes to a group of records.

## ● Overview of a Form

A form is a database object that you can use to enter, edit, or display data from a table or a query. Forms are sometimes called “data entry screens”. You can create a database without using forms by simply editing your data in the table datasheets. However, most database users prefer to use forms for viewing, entering, and editing data in the tables.

Forms provide an easy-to-use format for working with the data, and you can also add functional elements, such as command buttons, to them. You can program the buttons to determine which data appears on the form, open other forms or reports, or perform a variety of other tasks. For example, you might have a form named “Student Form” in which you work with student data. The *Student Form* might have a button which opens a help form where you can enter various types of help for that student (say financial help).

Forms also allow you to control how other users interact with the data in the database. For example, you can create a form that shows only certain fields and allows only certain operations to be performed. This helps protect data and to ensure that the data is entered properly.

## ● Creating a Form

MS-Access 2007 gives you new tools (available in the *Forms* group on the *Create* tab) to help you create forms quickly, and provides new form types and features that improve the usability of your database (see Fig. 4.40).

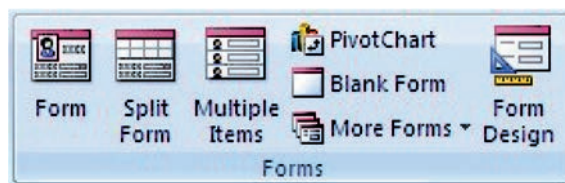


Fig. 4.40: Forms group for creating forms

## Different Methods of Creating a Form

In Access 2007, forms can be created using the following tools:

**Form Tool:** It creates a form with a single mouse-click. When you use this tool, all the fields from the underlying data source are placed on the form. You can begin using the new form immediately, or you can modify it in Layout view or Design view to better suit your needs.

**Split Form Tool:** It shows two views for a form, with the bottom half displaying the form using Form view while the same form displays in the top half using Datasheet view. The two views are synchronized so that scrolling one view causes the other view to scroll to the same location.

**Multiple Items Tool:** When you create a form by using the Simple Form tool, the form that Access creates displays a single record at a time. If you want a form that displays multiple records but is more customizable than a datasheet, you can use the Multiple Items tool.

**Form Wizard:** It provides more choices for the form's design than the Form tool. In the Form Wizard, available in *More Forms*, the user is guided through a series of dialog boxes to generate a form, including selecting the fields to be included and the form layout.

**Blank Form Tool:** You can use it to build a form if the wizard or the form-building tools do not fit your needs. This can be a very quick way to build a form, especially if you plan to put only a few fields on your form.



A view is a way of looking at an Access object. Forms have three views: Form view, Layout view, and Design view. You can enter, edit, and view data in Form view. You can modify a form in Layout view or Design view.

## Creating a form using the Form tool

We assume that you have already created a table (or a query based on one or more tables), and that you want to build a form to view or manipulate the data.

To create a new form using the Form tool, perform the following steps:

1. Start Access. In the Navigation Pane (at the left of the database), double-click the table that contains the fields for your form. Here, we select STUDENT table.
2. On the *Create* tab, in the *Forms* group, click *Form* (see Fig. 4.41).

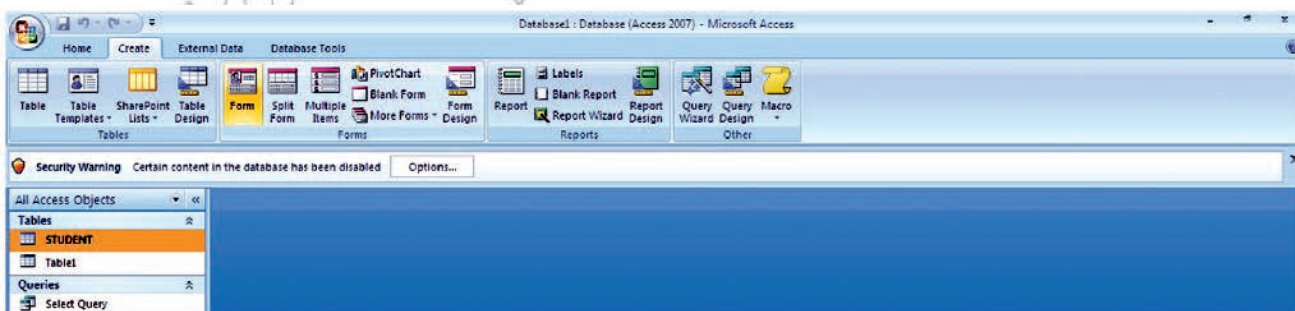


Fig. 4.41: Clicking Form in the Forms group

Access creates the form and displays it in *Layout View* (see Fig. 4.42).

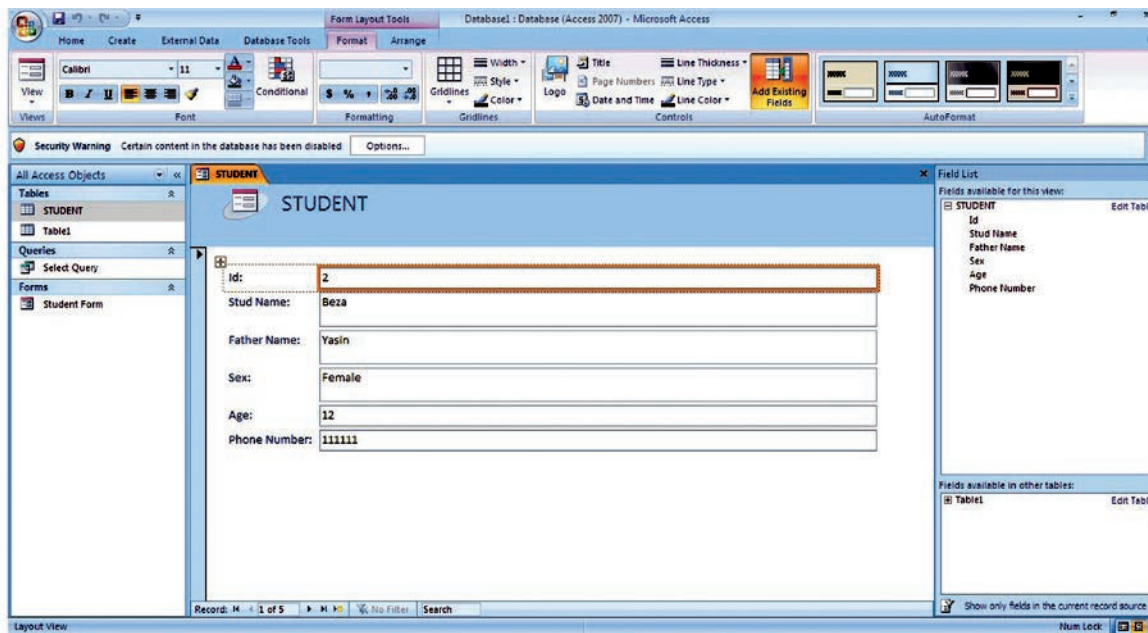


Fig. 4.42: Form created and displayed in Layout View



You can use the Navigation bar to move through the records on a form.

3. Click *Save* button in *Quick Access Toolbar* and enter a new name for the form (see Fig. 4.43).

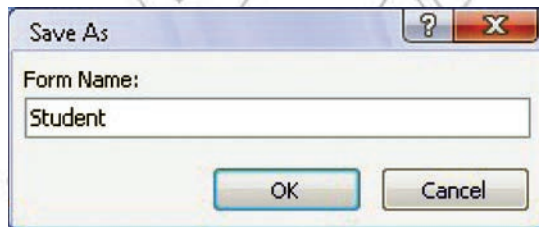


Fig. 4.43: Saving a Form

4. Click *OK*.



The newly created form has the same name as the source table by default. You can give the form a new name by saving the form.

● **Section of a Form**

Access forms have several basic sections (see Fig. 4.42). These are given in Table 4.2.

**Table 4.2: Form Sections**

Form Section	Description
Form Header	Appears at the top of the first page and displays the form title.
Page Header	Appears at the top of every page and displays the headings (field labels) for each column.

Page Footer	Appears at the bottom of every page and displays the page number and total number of pages.
Detail Section	Appears between the page header and page footer and displays the records from the table or query.
Form Footer	This section is optional. Appears on the last page of the form and displays summary information such as grand totals.



You can switch the view on and off for an area. In Access 2007, locate the *Arrange* tab from the ribbon bar in the Form's design view and toward the right (end) look for *Show/Hide* section. You will see two on/off buttons one for a Form and the other for a Page.

### ● Adding Data using Form

Once you have created a form, adding data to a database becomes simple. The record navigation works the same way for forms as it works for tables.

To add a record to the database using a form, perform the following steps:

1. Navigate to a new record, either by using the *New Record* navigation button (the *Navigation Bar* is located in the bottom left of the form as shown in Fig. 4.44), or the *New* command in the *Records* group on the *Ribbon*.
2. Now add the new data in the form (see Fig. 4.44). The data must be entered using an acceptable format. (*The format are established when the field properties are set.*)

Fig. 4.44: Form for Adding data

3. *Save* the data.

### ● Formatting a Form

After creating a form, you can apply formatting to it. You should still be in Layout View at this point in the process. Click the *Format* tab on the ribbon (see Fig. 4.45).

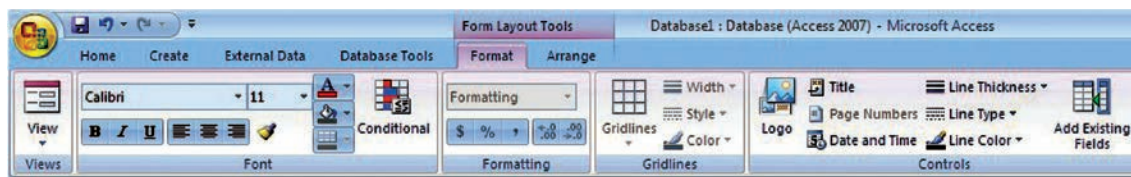


Fig. 4.45: Tools to format a Form

Now use these icons to change the color and font of text, the style of gridlines around the fields, include a logo and many other formatting tasks. For example, you can adjust the size of the text boxes to fit the data, if necessary.

To use the form, switch to *Form View*. Click the drop-down arrow on the *Views* section of the Ribbon and select *Form View* (see Fig. 4.46).

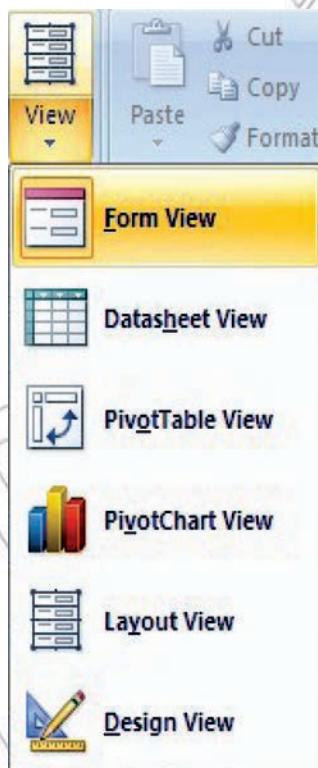


Fig. 4.46: Selecting Form View

### Performing Calculations in a Form

*Expression:* Any combination of mathematical or logical operators, constants, functions, and names of fields, controls, and properties that evaluates to a single value. Expressions can perform calculations, manipulate characters, or test data. Precede each expression with the = operator.

In Access 2007, you can use calculation controls to display the results of a calculation. A calculation control object containing a formula is created using a text box control object. It is not stored as a field, each time the form is opened the results are calculated dynamically. Display a form in *Design* view to add text box control objects.



Text boxes are the most popular choice for a calculation control because they can display so many different types of data.

To add Calculation Control Object to form, perform the following steps:



1. Start Access. Open the form, for adding calculation, in Design view by right-clicking the form in the Navigation Pane, and then clicking *Design View*.
2. On the *Design* tab, in the *Controls* group, click *Text Box*  (see Fig. 4.47).



Fig. 4.47: Controls group in Design tab

3. Position the pointer where you want the text box to be placed on the form, and then click to insert the text box.
4. Do one of the following:
  - (i) Place the cursor in the *text box*, and then type an expression that calculates a total.
  - (ii) Select the text box, press F4 to display the property sheet, and type the expression in the *Control Source* property box. To use the Expression Builder to create the expression, click  next to the *Control Source* property box.
5. *Save* the form and then switch to *Form view* to check the results.



1. Expression Builder is an Access tool that you can use to create an expression. It includes a list of common expressions that you can select.
2. If you need more room to type an expression in the *Control Source* property box, press **SHIFT+F 2** to open the Zoom box.
3. When you sort on a calculation control in a form, ensure that the *Format* property of the control is set appropriately. Otherwise, calculated numeric or date values might sort alphabetically instead of numerically.

## ● Main/Subforms


*Form* is a graphical user interface for the database. Users can enter, edit and even delete data through a form. A *subform* is a form that is inserted in another form. The primary form is called the main form, and the form within the form is called the subform. A form/subform combination is sometimes called a hierarchical form, a master/detail form, or a parent/child form.

*Subforms* are especially effective when you want to show data from tables or queries that have a one-to-many relationship (an association between two tables in which the primary key value of each record in the primary table corresponds to the value in the matching field or fields of many records in the related table). Subforms can be created along with the form or separately.

## Creating Subform

To create a subform from an existing form, perform the following steps:

1. Start *Access* and right click the form, to which you want to add a subform, in the Navigation Pane.

2. Select *Design View*.
3. Select the *Design* tab.
4. Select *Subform/Subreport*  in the *Controls* group. Before selecting any controls, make sure that *Use Controls Wizard* is selected.
5. Click once on your form in the location you want to add the subform (see Fig. 4.48).

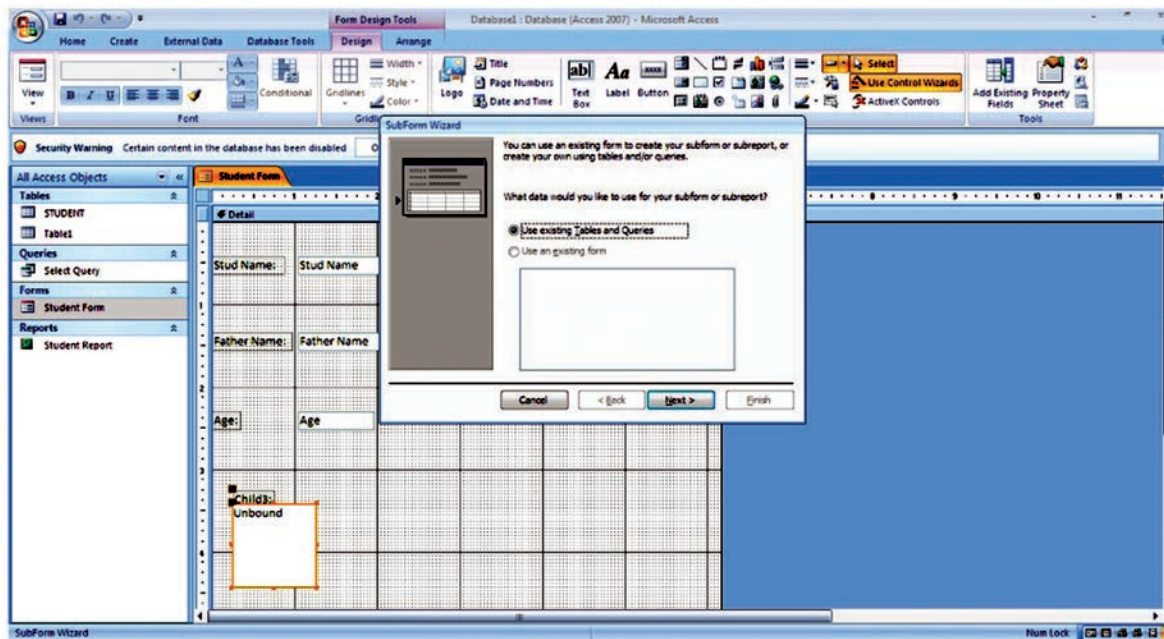


Fig. 4.48: Selecting location for Subform

6. Follow the subform wizard to add the subform.
7. If you already have a form created that you want to use as your subform, drag it from the Navigation Pane to your open form. The main form must be open in Layout View.
8. Click on the *Finish* button to complete the *SubForm* wizard.



1. Adding a *subform* during the *form* creation process links the two more easily than adding the *subform* in a different way.
2. You cannot create a *subform* in a *form* if no relationship exists between the two.

## ● Overview of a Report

Reports are what you use to summarize and present the data in the tables. A report usually answers a specific question, such as “What phone numbers are the students having?” Each report can be formatted to present the information in the most readable way possible.

A report can be run at any time, and will always reflect the current data in the database. Reports are generally formatted to be printed out, but they can also be viewed on the screen, exported to another program, or sent as e-mail message.

## Creating a Report

Access 2007 has several report generation tools (*Report* tool, *Report Wizard*, *Blank Report* tool) that you can use to create both detail and summary reports quickly. The *Report* button creates a simple report that lists the records in the selected table or query in a columnar format.



To create a report using the Report button, perform the following steps:

1. Start *Access* and open the Navigation pane.
2. Click the table or query on which you want to base your report. Here, we select *STUDENT* table.
3. Activate the *Create* tab. Click the *Report* button in the *Reports* group (see Fig. 4.49).

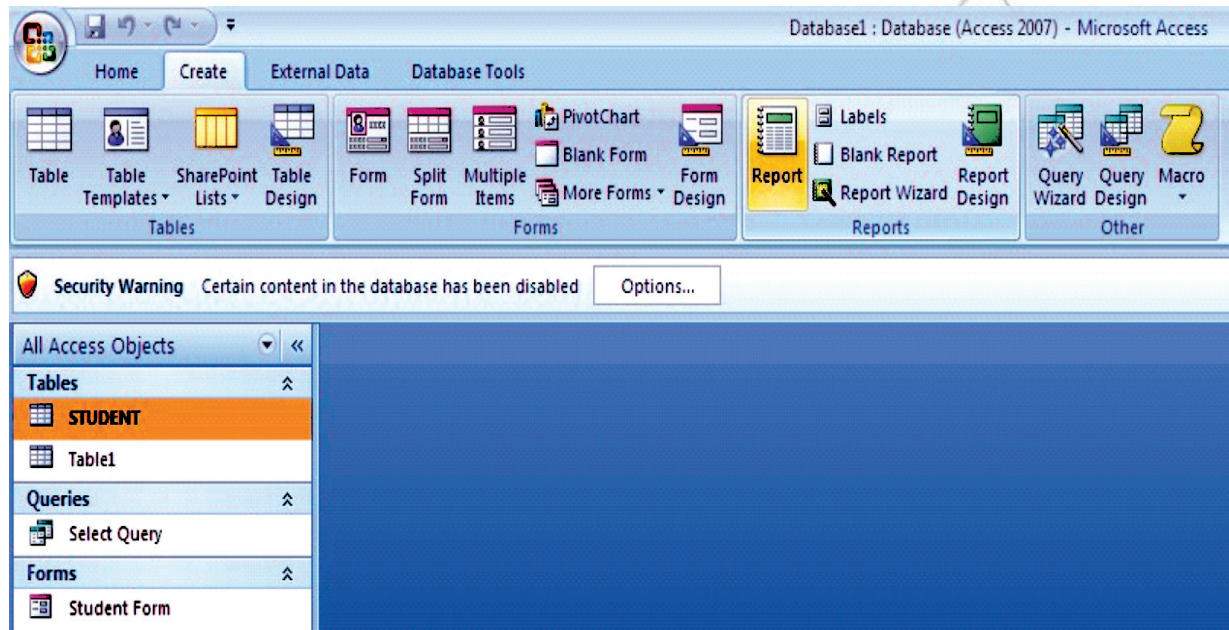


Fig. 4.49: Clicking the Report button in the Reports group

4. *Access* creates your report and displays your report in Layout view (see Fig. 4.50). You can modify the report if you want.

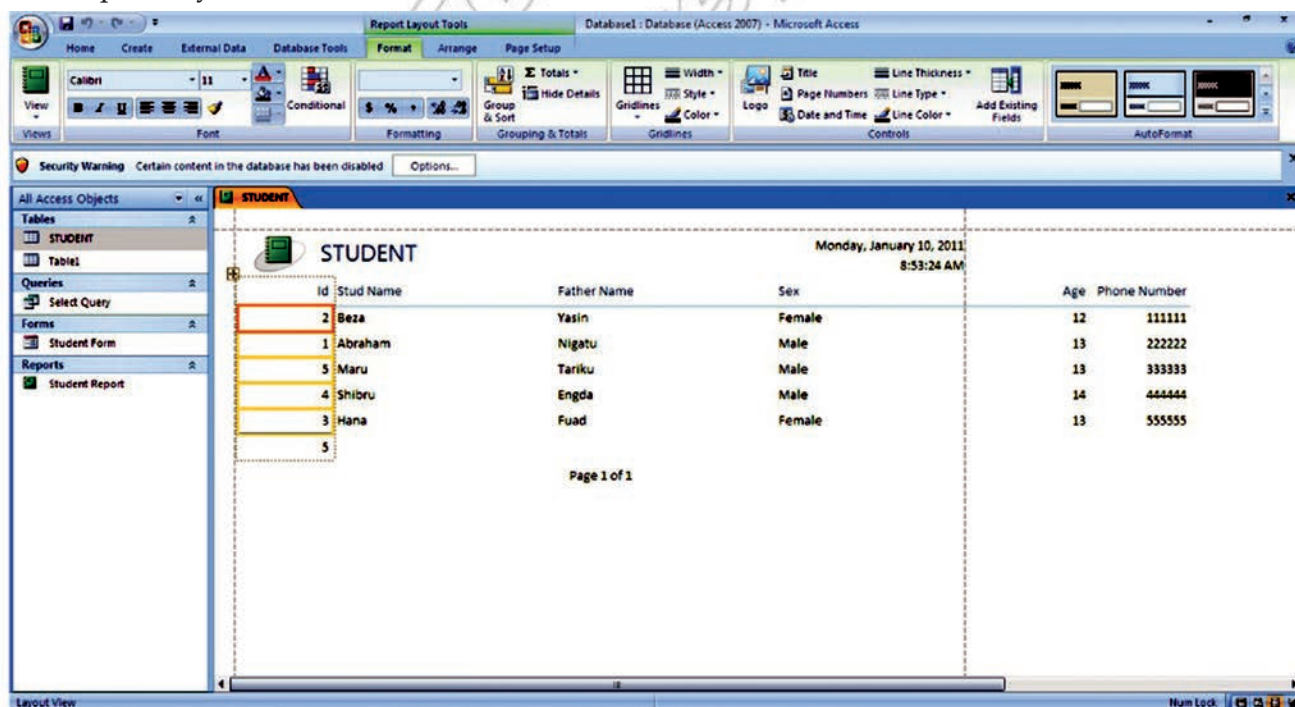


Fig. 4.50: Creating a Report

- Click the *Save* button on the *Quick Access toolbar*. Access saves the report unless you are saving for the first time. If you are saving for the first time, the *Save As* dialog box appears (see Fig. 4.51).
- Type the name you want to give to your report.

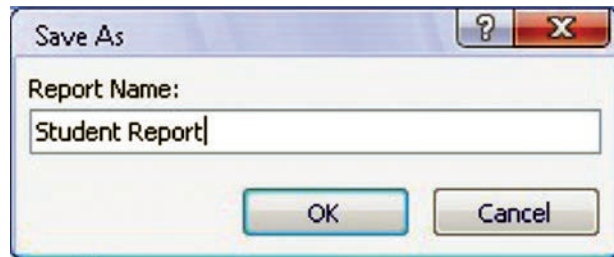


Fig. 4.51: Saving the Report

- Click *OK*. Access saves the report. You can now access the report by using the *Navigation pane*.



Reports created by using the *Report* button are plain and simple. You can customize a report to meet your needs.

### ● Sections of a Report

Access reports have several sections (see Fig. 4.50). These are given in Table 4.3.

Table 4.3: Report Sections

Report Section	Description
Report Header	Appears at the top of the first page and displays the report title.
Page Header	Appears at the top of every page and displays the headings (field labels) for each column.
Page Footer	Appears at the bottom of every page and displays the page number and total number of pages.
Detail Section	Appears between the page header and page footer and displays the records from the table or query.
Report Footer	This section is optional. Appears on the last page of the report and displays summary information such as grand totals.

### ● Adding Controls to a Report



Controls are objects that display data, perform actions, and let you view and work with information that enhances the user interface, such as labels and images. Some controls are created automatically, such as the bound text box control that is created when you add a field from the *Field List* pane to your report. Many other controls can be created in *Design View* by using the tools in the *Controls* group on the *Design* tab (see Fig. 4.52).



Fig. 4.52: Controls group in Design View

To determine the name of a tool, place the mouse pointer over the tool. Access displays the name of the tool.

To add a control by using the tools in the Controls group, perform the following steps:

1. Click the tool for the type of control that you want to add. For example, to create a check box, click the Check Box  tool.
2. Click in the report design grid where you want to position the upper-left corner of the control. Click once to create a default-sized control, or click the tool and then drag in the report design grid to create a control of the size that you want.
3. If you do not position the control perfectly on the first try, you can move it by using the following procedure:
  - (i) Click the control to select it.
  - (ii) Position the mouse pointer over the edge of the control until the pointer turns into a four-headed arrow .
  - (iii) Drag the control to the location that you want.

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



To display the property sheet in Design view: On the *Design* tab, in the *Show/Hide* group, click *Property Sheet*  Or Press F4.

## • Formatting a Report

The easiest and quickest way to apply formatting is by using the *Format* tab.

To format a report, perform the following steps:

1. Start *Access*. Open the report you want to format. Here, we open Student Report.
2. Click *Format* → *AutoFormat* (see Fig. 4.53).

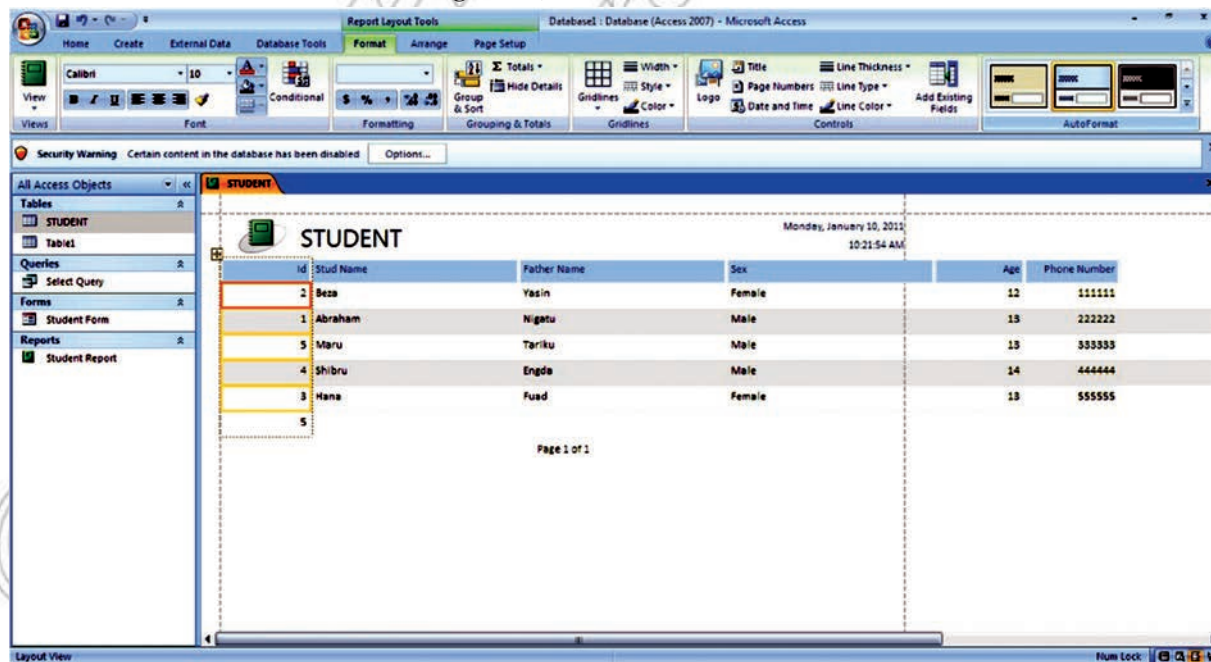


Fig. 4.53: Formatting a Report

Each AutoFormat applies a combination of fonts, colors, and border settings. AutoFormat lets you change the entire look of your report in one step, but these do not provide you the fine-grained control to apply exactly the details you want. Format the report as you want.

3. Save the report.



To format a report, open it in Layout View. If you double-click a report in the navigation pane, it opens in Report View. Right-click the tab title, and then choose Layout View to switch over.



## ACTIVITY 4.2

EXPLAIN ABOUT THE DATABASE OBJECT FORM, ITS PRIMARY USE, AND DEMONSTRATE THE STEPS REQUIRED IN CREATING FORM IN DESIGN VIEW

In small groups students will explain about the database object form, its primary use, and demonstrate the steps required in creating form in design view.

### Form and its Primary Use

A form is a database object that you can use to enter, edit, or display data from a table or a query. You can use forms to control access to data. A form makes easy to use the database. You can also add buttons and other functionality to a form to automate frequently performed actions.

Forms are like windows through which people see and reach your database. An effective form speeds the use of your database. A visually attractive form makes working with the database more pleasant and more efficient, and it can also help prevent incorrect data from being entered.

### Creating Form in Design View

To create a form in Design View, perform the following steps:

1. Start MS-Access 2007 and open the database to which you would like to add a new form. Select *Form Design* in *Forms* group from the *Create* tab on the Access ribbon (see Fig. 4.54).



Fig. 4.54: Selecting Form Design

This will open a blank form in *Design View* as shown in Fig. 4.55.

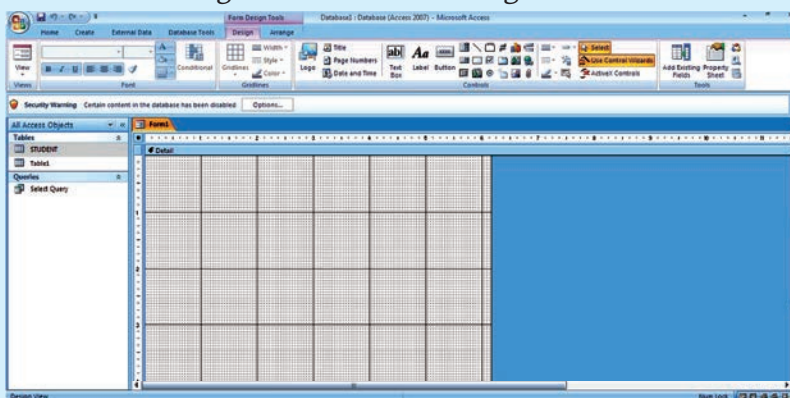


Fig. 4.55: Design Tab in Access

- Make sure that the *Design* tab under *Form Design Tools* is open on the Access ribbon. Click on *Property Sheet*. This will open the *Property Sheet* panel as shown in Fig. 4.56.

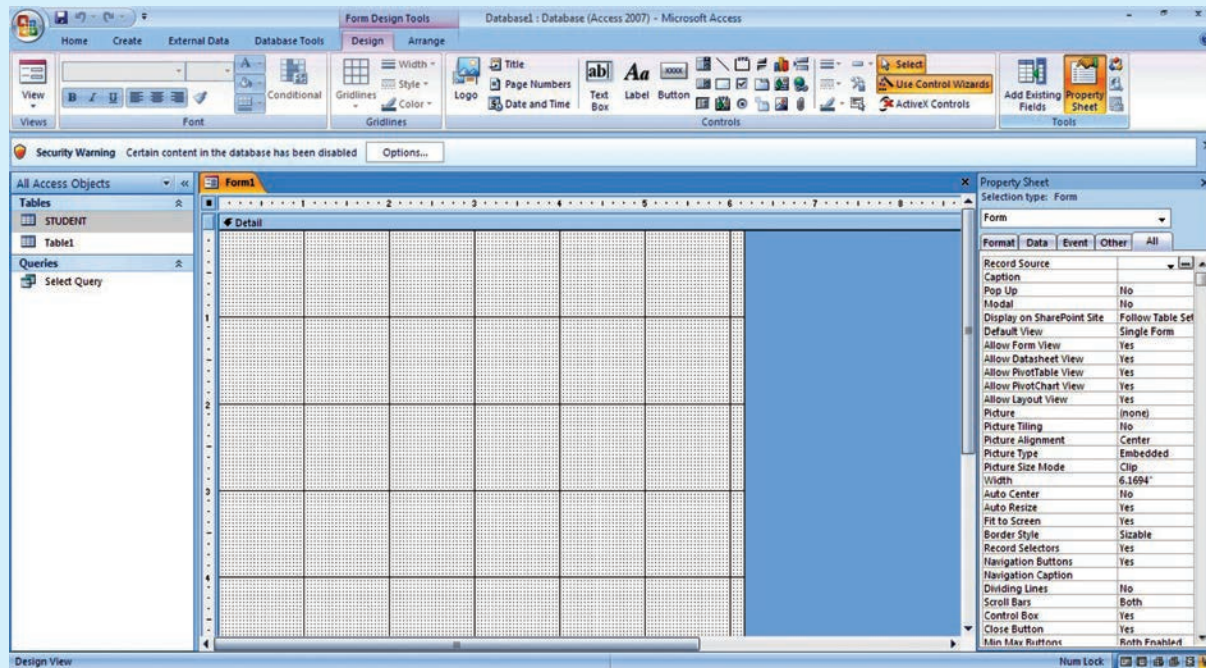


Fig. 4.56: Property Sheet shown in the Right Panel

- In the *Property Sheet* window, click on the tab labeled *Data*. From the *Record Source* dropdown list, select the table that contains the fields you want to include in your form. Here, we select *STUDENT* table (see Fig. 4.57).

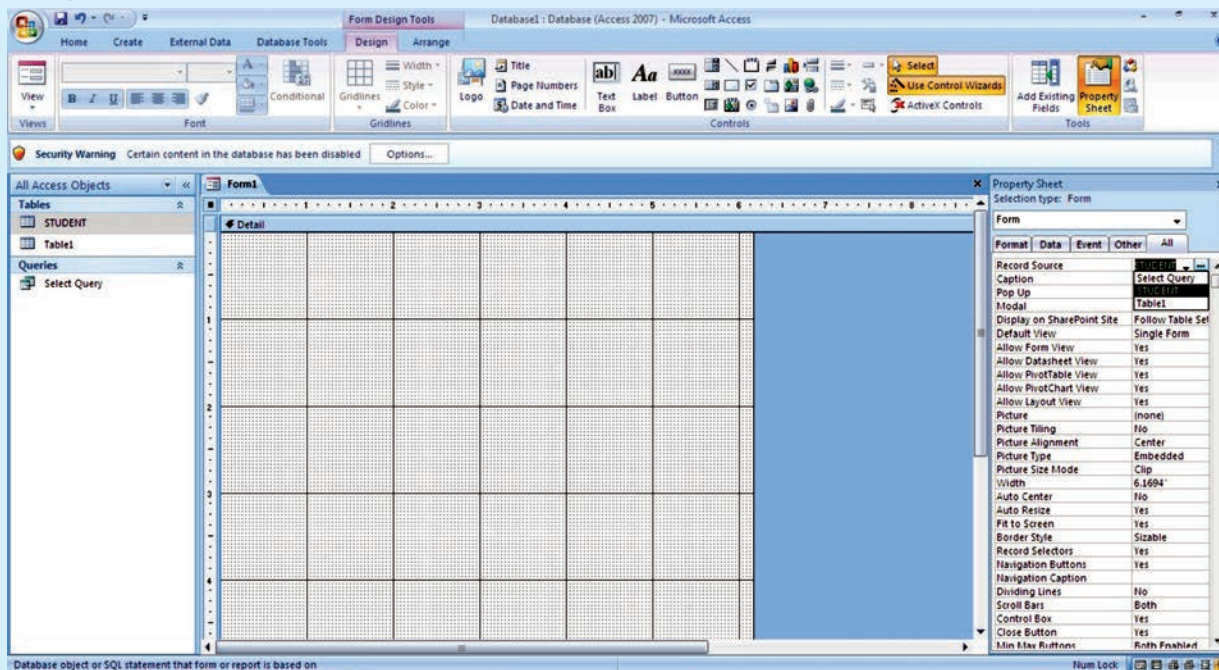


Fig. 4.57: Selecting a Record Source

- Click on the *Add Existing Fields* button on the Access ribbon. Now, in the right panel, you will see a list of all available fields from the table you have selected in Step 3 (see Fig. 4.58).



Fig. 4.58: Selecting Add Existing Fields

5. Click on a field in the *Field List* panel that you wish to add to the form. Hold down the mouse key and drag the field to the position on the form where you want it to be located. After placing the field, you can resize both the field label and content boxes by clicking and dragging the boundary boxes around the field name. Repeat this process for each field you want to add to the form (see Fig. 4.59).

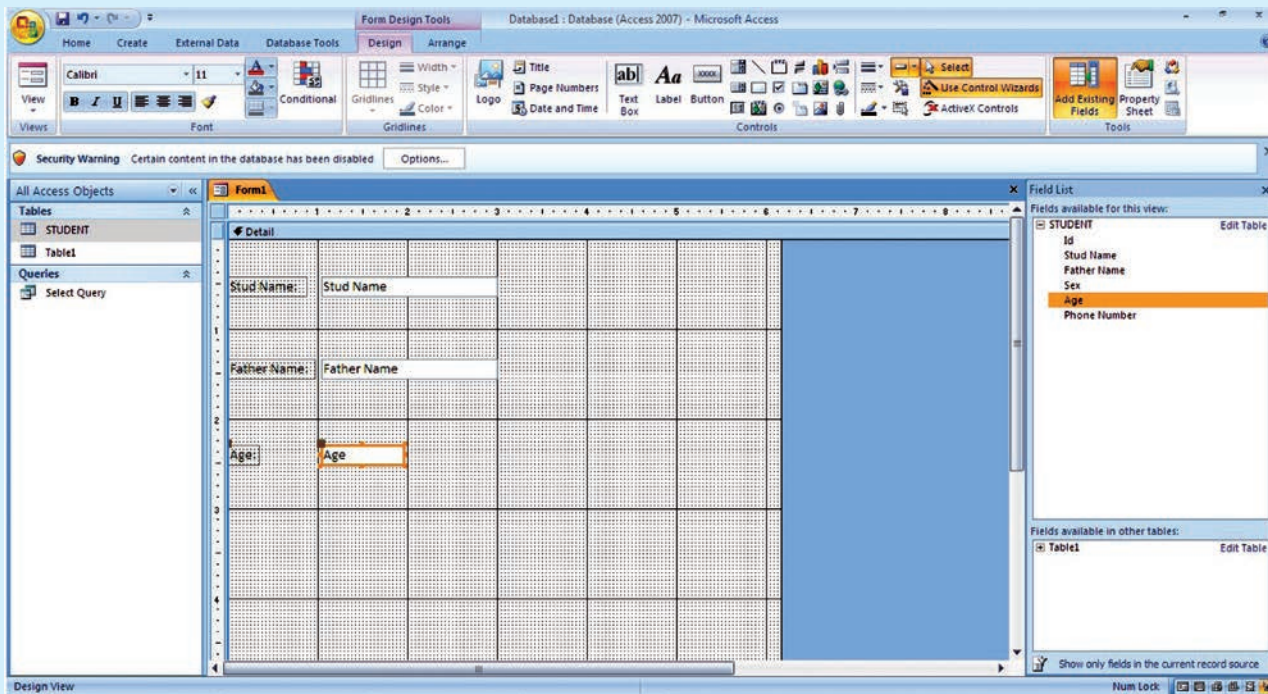


Fig. 4.59: Adding fields by clicking and dragging

At any time during this process, if you want to have an idea of how the final form will look, click on the *View* button on the Access ribbon and select *Form View* (see Fig. 4.60).

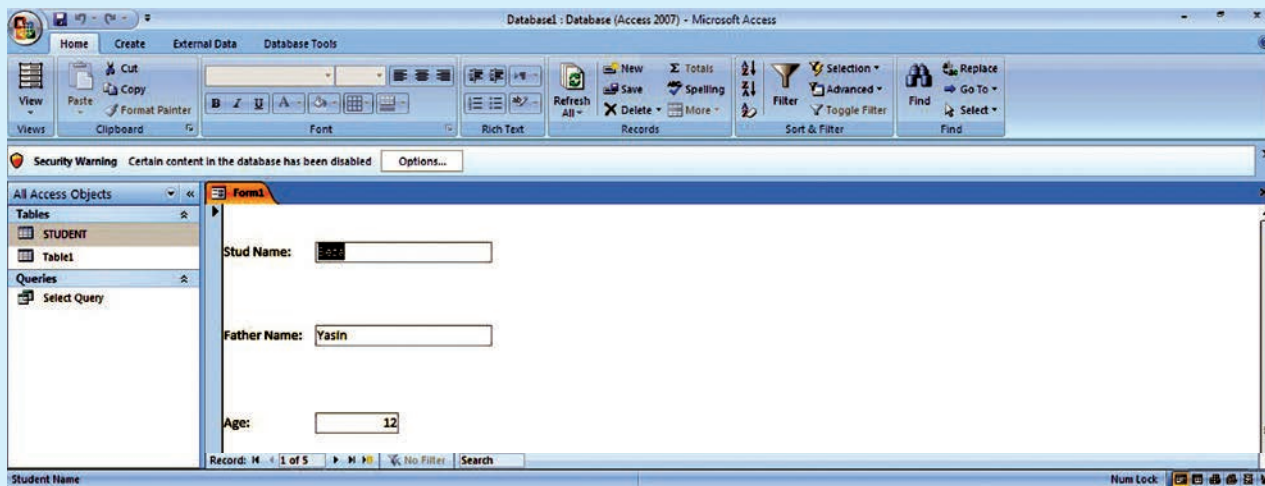


Fig. 4.60: Form View

To return to your form design in order to make some changes, click *View* again and choose *Design View*.

- When finished designing the form, click the *Save* icon in the *Quick Access Toolbar* (or click the *Office* button and select *Save*). Enter a name for the form in the pop-up box that appears on the screen (see Fig. 4.61).

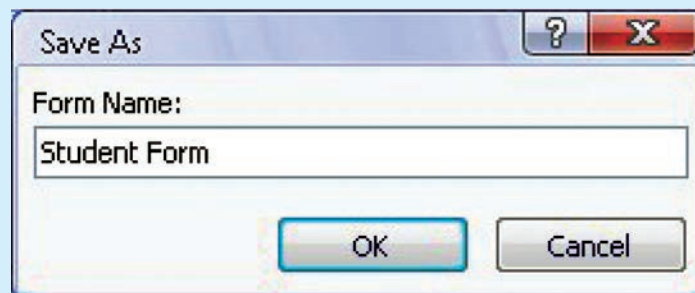


Fig. 4.61: Saving Form

- Click *OK* and the new form will be visible in the *Forms* list.



### KEY CONCEPTS

- A table contains data about a particular topic. In a table, data is arranged in row and column format.
- A database is a collection of related data that is organized, so that it can easily be accessed, managed and updated.
- Databases are used in many applications, covering almost the entire range of computer software. For example, computerized library systems, ATMs, flight reservation systems and computerized inventory systems etc.
- *Query* is a database object, which is used for extracting data from one or more tables based on specific conditions.
- A *form* is a database object that you can use to enter, edit, or display data from a table or a query.
- *MS-Access 2007* has several report generation tools (Report tool, Report Wizard, Blank Report tool) that you can use to create both detail and summary reports quickly.



## REVIEW QUESTIONS

### Fill in the Blanks

1. A ..... in a database is a predefined format of rows and columns that define an entity.
2. .... is a database object, which is used for extracting data from one or more tables based on specific conditions.
3. In Access, a ..... is a form that is inserted in another form.
4. The ..... button creates a simple report that lists the records in the selected table or query in a columnar format.

### State Whether True or False

1. A column of information in a table is called a record.
2. A data type specifies the type of data that a column in a table represents in a database.
3. A field that uniquely identifies each record stored in a table is called the foreign key of the table.
4. You cannot use the Navigation bar to move through the records on a form.

### Multiple Choice Questions

1. The formula  $\$A\$1$  is using which type of reference?
  - (a) Relative
  - (b) Mixed
  - (c) Absolute
  - (d) None of these
2. Which of the following function will return the rank of a number in a list of numbers?
  - (a) SUM( )
  - (b) RANK( )
  - (c) AVERAGE( )
  - (d) MIN( )
3. Data duplication is also called
  - (a) Data Recovery
  - (b) Data Error
  - (c) Data Reply
  - (d) Data Redundancy
4. MS-Access 2007 database file names end with the file name extension
  - (a) .pptx
  - (b) .accdb
  - (c) .xlsx
  - (d) .docx

### Match the Following

#### Column A

1. Extension of MS-Excel 2007 files
2. Spreadsheet Formula
3. Query
4. Database application

#### Column B

- (a) A simple expression created by using operators and cell addresses
- (b) .xlsx
- (c) Automated Teller Machines(ATMs)
- (d) Used for extracting data from one or more tables based on specific conditions



### Answer the Following

1. Define a database and explain some common uses of database.
2. Define the following terms in context of a database system:
 

(i) Table	(ii) Record	(iii) Field
(iv) Data type	(v) Primary key	
3. What is a form? Explain the use of a form. Give the steps to create a form in Access 2007 using Design View.
4. Explain the following in Access 2007:
 

(i) Creating a query	(ii) Manipulating Access Controls
(iii) Performing calculation in a form	(iv) Creating a subform

### Suggested Activities

1. Decide three own database structures.
2. Add, edit, delete, and sort records in a table.
3. Explain about query in general and the different types of query and demonstrate methods of creating a query.
4. Identify the options for creating a form such as Form tool, Split Form tool, Multiple Items tool, Form Wizard and Blank Form tool.
5. Explain and demonstrate the sections of a form in a database.
6. Perform calculations in a form and create a subform.
7. Perform report by formatting.

### Field Trip

Using the Internet or computer magazines, look up information on Microsoft Access 2010. List any features you find. List which of these features appeal to you and describe why they do.