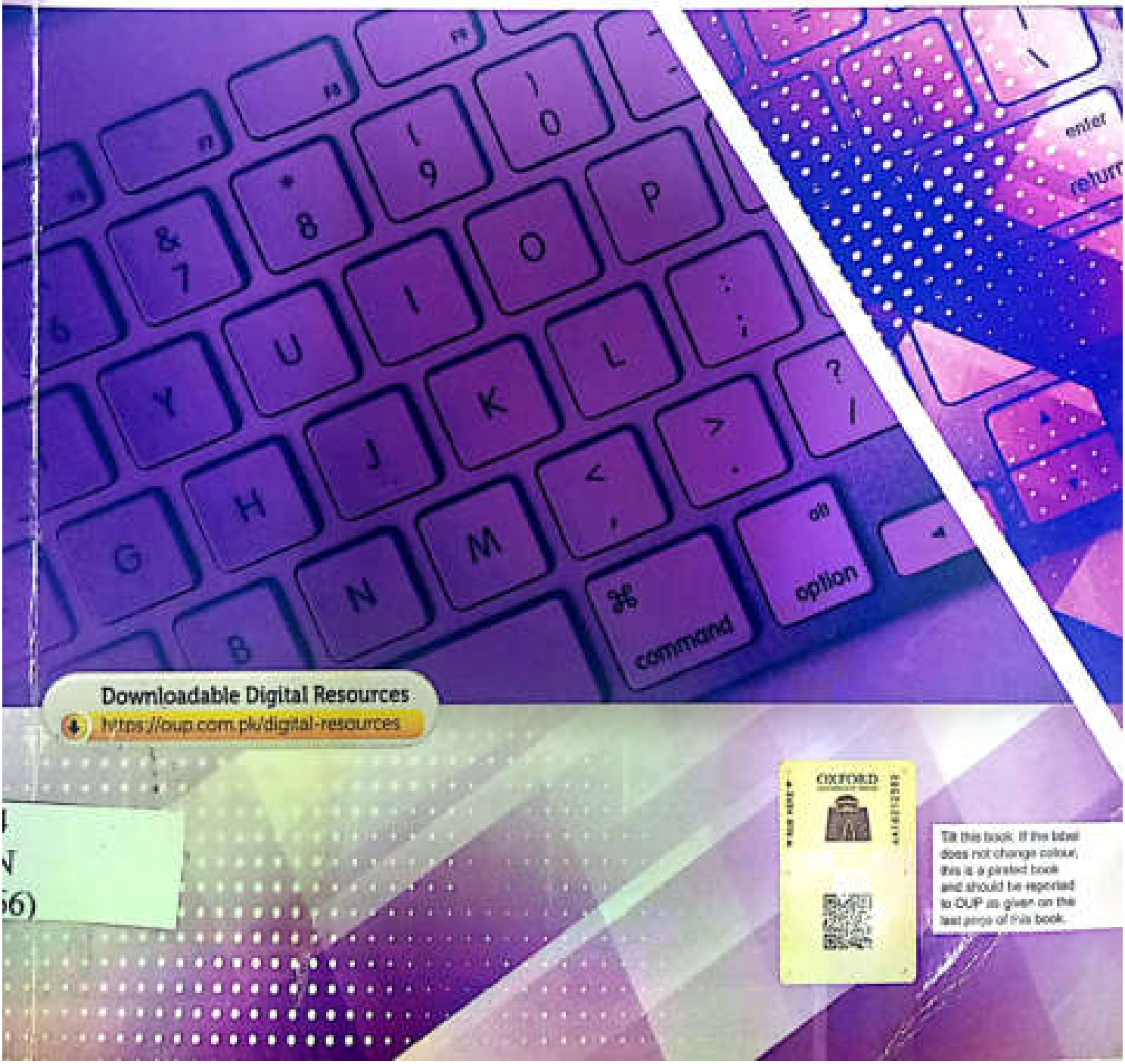
OXFORD

6 BOOK

KEYBOARD

Computer Science With Application Software

THIRD EDITION



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Preface

Keyboard: *Computer Science with Application Software* (Third Edition); a series of eight books for Classes 1 to 8; is a concerted effort to impart knowledge about computers using an interesting and interactive approach. Computer science is a fascinating and wide-ranging subject with limitless opportunities for creativity and application. Today computers influence every facet of our lives. In the highly competitive world we live in, a basic working knowledge of computers is essential for success. There is, therefore, a great desire to introduce computer education to children at an early age. There should also be enough room for them to explore and create on their own.

This series introduces the subject in language that is simple and direct. Technical vocabulary is introduced where necessary and all such terms are defined at the end of each chapter. Comic strips, icons, engaging characters, and illustrations make the learning process an enjoyable experience.

The content is based on extensive feedback from teachers, and on the latest trends in computer education. Particular care has been taken to update facts and figures, and to include information about the latest devices in the market.

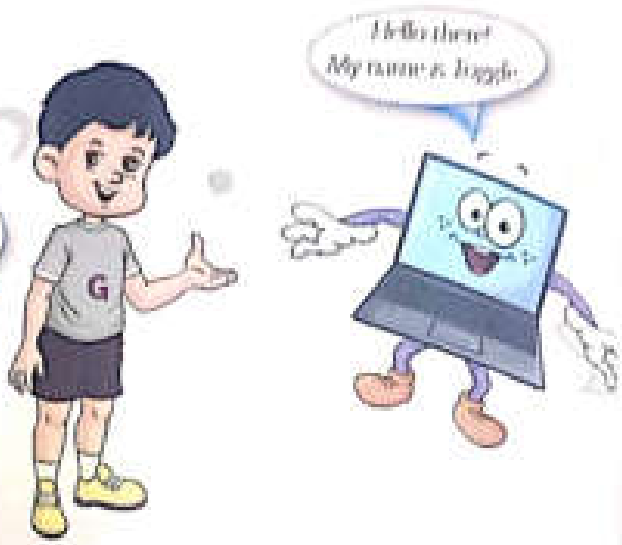
The focus of Books 1 to 5 is on learning the basics of computer science; on understanding MS Office 2013 and using KTurtle, as a programming language.

Books 6 to 8 move beyond elementary concepts and introduce Publisher 2013 (Flash Version CS3), HTML 5, Dreamweaver (Version CS3), Photoshop (CS3), Microsoft Small Basic, and Visual Basic (Version Microsoft Visual Basic 2013 Express). This edition also gives them the potential opportunity for hands-on experience of sound and video editing through the programmes, Audacity and Lightworks.

With a strong emphasis on developing 21st century computer skills: critical thinking, communication, collaboration, and creativity—this edition of *Keyboard: Computer Science with Application Software* will prove to be invaluable for students and teachers.

Key Features

Each chapter in this book is introduced through two delightful characters, Goggle and Toggle.



The key features in this series can be broadly divided into:

- LEARNING TOOLS
- ASSESSMENT TOOLS
- FOR TEACHERS the course includes teacher's notes within the Student's Books, comprehensive Teaching Guides, and an exciting new **downloadable digital resources.**

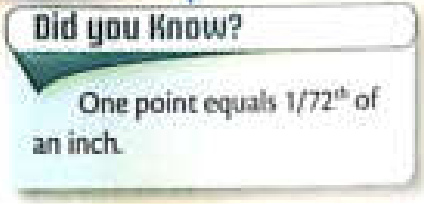
Learning Tools

Fast Forward *provides keyboard shortcuts for menu commands, to help users save time while performing routine operations.*

Top Tip *gives students useful tips on the options available for different operations.*

Practice Time, *included after every major topic, provides situational exercises along with their solutions to reinforce learning.*

Did You Know? *provides interesting information on the topic being covered.*



Assessment Tools

Exercises
contain both objective and descriptive questions, and test learners on all aspects of conceptual theory covered in a chapter.

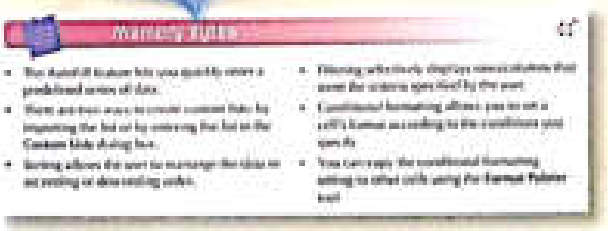
Group Project
encourages students to collaborate and exchange ideas on common project.

In the Lab
challenges students to apply the concepts learned to real-life situations.

Worksheets
unit-based and conforming to the continuous assessment recommendations of various boards.

Computer Manners *presents computer etiquette in a child-friendly manner using cartoon strips.*

Memory Bytes *summarises each chapter for a quick recapitulation of all the topics in that chapter.*



FOR TEACHERS

- **The downloadable teaching resource** is an exciting new digital teaching aid that offers reinforcement and assessment materials.
- The **Test Generator** is an innovative, easy-to-use assessment tool. It has been designed to aid teachers in creating a variety of test papers from an extensive pool of questions for effective evaluation.

The course is also supported by:

(a) **Teacher's Notes** within the Student's Books that provide important information and suggestions on creative approaches to a chapter or a topic.

(b) **Teaching Guides** that include lesson plans, the complete answer key to the Student's Books, worksheets, and test papers.

Tricky Terms *at the end of each chapter provides a list of important terms along with their definitions for easy recall.*

Contents

Chapter 1

The Computer System

Computers are available in different sizes and types. In this chapter we will discuss the classification of computers on the basis of their size. We will also discuss some not-so-common input and output devices, such as barcode readers, magnetic ink character readers, braille printers, etc.

In this Chapter

- Classification of Computers by Size
- Hardware
- Software
- Computer Languages

CLASSIFICATION OF COMPUTERS BY SIZE

On the basis of size, we can classify computers into five groups—mobile computers, microcomputers, minicomputers, mainframes, and supercomputers.

Mobile Computers

Mobile computers are the smallest computers designed to be carried around by users. Laptops/Ultrabooks, netbooks, tablets, e-book readers, smartphones, personal data assistants (PDAs), and portable media players (PMPs) are all mobile computers (Fig. 1.1).

Did you Know?

A carputer is a type of mobile computer designed to be installed and run in a car or another automobile.

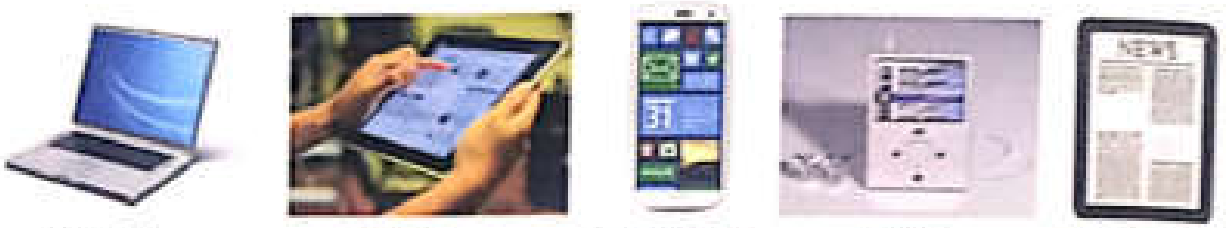


Fig. 1.1 Mobile computers

Laptops are portable versions of desktop PCs whereas **netbooks** are smaller than laptops and usually do not have DVD drives. Both laptops and netbooks are capable of running the same software. However, netbooks primarily focus on Internet access. An **ultrabook** is another category of laptops that is slimmer and lighter but built to offer the same performance as a laptop.

Tablets are easy to identify; they come without a keyboard and mouse, and are operated via touchscreen. **E-book readers** are used to store and read books, newspapers, and magazines. **Kindle** is an example of an e-book reader. **Smartphones** are phones with wireless Internet connectivity. A **PDA** (Personal Digital Assistant) is also known as a **palmtop** computer. These handheld devices can function as a cell phone, fax sender, personal organiser, and have the ability to connect to the Internet. A **PMP** (**Portable Media Player**) is an electronic device that stores and plays audio, images, videos, etc.

Microcomputers

A **microcomputer** is a small computer that is used by one person at a time. The **desktop computers** (Fig. 1.2) that you see in most offices, schools, colleges, and homes are microcomputers. Desktop computers are also called **personal computers** or **PCs**.

Fig. 1.2 A desktop computer

Fig. 1.3 A minicomputer

Minicomputers

Minicomputers are larger than microcomputers, typically being the same size as a refrigerator. Minicomputers first appeared in the 1960s. In the 1980s they got replaced by microcomputers, which have become smaller and more powerful with time. CDC 160A (Fig. 1.3), MicroVAX 3100 , and HP 2100 are some examples of minicomputers.

Mainframes

Mainframes (Fig. 1.4) are big, powerful, and expensive multi-user computers. They are mainly used for bulk data processing in large organisations like government offices, airlines, and banks. IBM 4381, DEC 10, and NEC 610 are examples of mainframes.

Fig. 1.4 A mainframe computer

Supercomputers

Supercomputers are the biggest and most powerful computers. They often occupy whole rooms. They can process trillions of instructions per second. Government organisations and large industries use them for work that requires a lot of numeric calculations, such as weather forecasting. IBM's Sequoia and Fujitsu's K Computer are some examples of supercomputers.

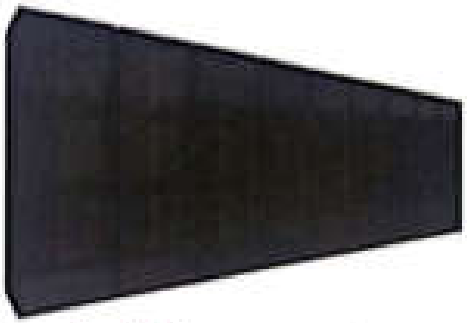


Fig. 1.5 A supercomputer

Whatever be the size, a computer system consists of two main components, **hardware** and **software**. Let us discuss each of these separately.

HARDWARE

The physical components of a computer system that we can see and touch are called **hardware**. Input and output devices, storage devices, and the Central Processing Unit are examples of hardware.

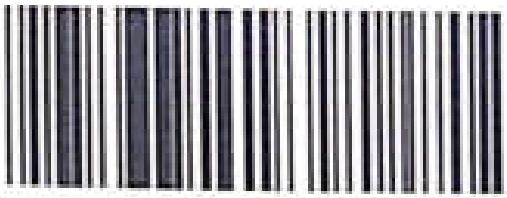
Let us now learn about some input and output devices that are used mainly for commercial purposes.

Input Devices

Input devices accept input from the user and convert it into a form that the computer can understand. Supermarkets, banks, etc., use specialised input devices to collect large amounts of data rapidly. Such devices include **barcode readers**, **magnetic ink character readers**, **optical character readers**, and **card readers**.

Barcode Reader

You may have seen barcodes [Fig. 1.6 (a)] on products like grocery items and clothes. A barcode is a unique combination of vertical bars that represents product information, such as price, place of manufacture, etc. The cashier uses a **barcode reader** [Fig. 1.6 (b)] to scan the barcode



(a) Barcodes

(b) A barcode reader

Fig. 1.6 Barcodes represent product information

on each purchased item which gets input into the computer. The computer uses the barcode to identify the product.

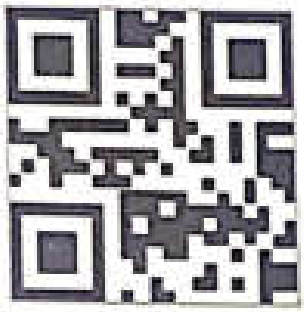
Magnetic Ink Character Reader

Magnetic ink is a special ink that contains magnetic particles of iron oxide. A **magnetic ink character reader** can scan characters printed in magnetic ink. This technique is called magnetic ink character recognition (MICR). MICR is used extensively in banks because magnetic ink characters are difficult to forge. This makes them ideal for marking and identifying cheques.

Cheques usually have the cheque number, bank code, and branch code printed in magnetic ink. This information is scanned by magnetic ink character readers and the cheques are sorted city-wise or branch-wise. Figure 1.7 shows MICR characters on a sample cheque.

Did you Know?

QR codes are a new style of barcodes in square shape that can store enormous data. Smartphones are able to scan and read QR codes.



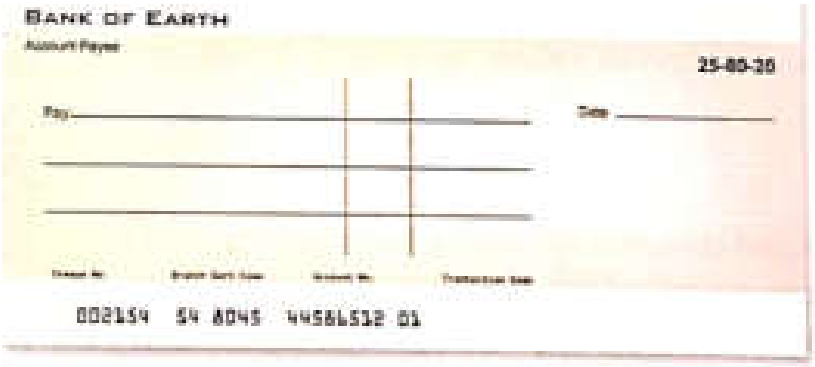


Fig. 1.7 A cheque with MICR characters

Optical Character Reader

An **optical character reader** is a device to input normal printed or handwritten text. The process first produces a digital image of the text. Character-recognition software is then used to convert this image into character codes that can be understood, stored, and processed by the computer. This technique is called optical character recognition.

Optical Mark Reader

An **optical mark reader** is a device capable of reading printed forms used for objective type exams, with boxes or circles that can be filled with a dark pencil or ink. When a light beam is passed through such a form, the marked areas reflect less light than the unmarked ones. This way the optical mark reader recognises the boxes or circles that are filled.

Fig. 1.8 An OMR Sheet

This technology is called optical mark recognition (OMR). It is commonly used for checking answer sheets of exams that have multiple choice questions (Fig. 1.8).

Card Reader

Card readers are used for reading information stored on cards, such as **magnetic strip cards** and **smart cards**. Gift cards (Fig. 1.9(a)) are examples of magnetic strip cards. Information in the form of numbers and characters is magnetically stored on a magnetic strip (Fig. 1.9(b)). When the card is swiped through a magnetic card reader (Fig. 1.10), it reads the information quickly and accurately. Exposure to magnetic fields, physical damage, and contact with certain liquids can destroy the information on the card.

(a)

(b)

Fig. 1.9 Magnetic strip card

Fig. 1.10 Magnetic card reader

Smart cards look like magnetic strip cards but contain a small chip instead of a magnetic strip. Most of the credit and debit cards issued by banks nowadays have both a chip and a magnetic strip. They store more data than magnetic strip cards. A smart card reader can read and write data on the card. Petrol companies and departmental stores use smart cards to keep track of customers' shopping history. Satellite television companies use smart cards in their receivers to store the code that is used to decode satellite signals and display pictures. Figure 1.11 shows a smart card reader.

Fig. 1.11 Smart card reader

Output Devices

Output devices convey information from the computer to the user. We will discuss output devices such as LCD projectors, Braille printers, and plotters here.

Liquid Crystal Display Projector

A **Liquid Crystal Display (LCD) projector** (Fig. 1.12) shows the output from a computer on a large screen. It is commonly used for displaying presentations during meetings and conferences.

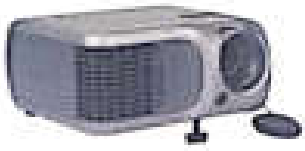


Fig. 1.12 LCD projector

Braille Printer

A **Braille printer** (Fig. 1.13) or embosser produces Braille printouts (patterns of raised dots) of computer files. It works with software that translates text to Braille.

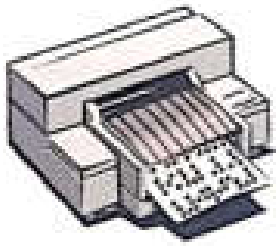


Fig. 1.13 Braille printer

Plotter

A **plotter** is a printing device that is used for creating high-quality graphics, charts, graphs, tables, and diagrams. Plotters use ink pens or ink jets to create graphics on paper or polyester film.

(a) Drum plotter

(b) Flatbed plotter

Fig. 1.14 Plotters

They are commonly used in computer-aided design (CAD) and computer-aided manufacturing (CAM) for printing plans for houses, car parts, machinery, etc. Plotters are of four types: drum plotters (Fig. 1.14 (a)), micrographic plotters, inkjet plotters, and flatbed plotters (Fig. 1.14 (b)).

SOFTWARE

The term **software** refers to the computer programs that are needed for running or operating a computer system. A **program** is a sequence of step-by-step instructions to perform a particular task. Software can be classified as shown in Figure 1.15.

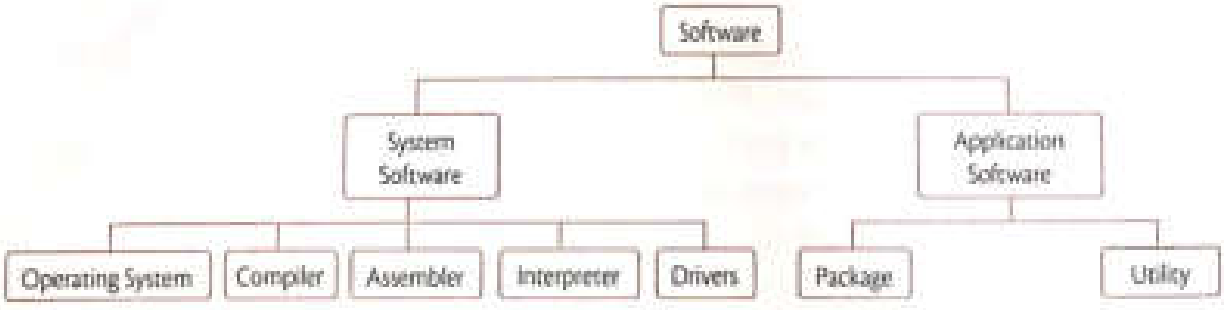


Fig. 1.15 Classification of software

System Software

System software refers to programs designed to control the operation of a computer system. These programs assist in running application programs. System software can be classified into **operating systems**, **drivers**, **interpreters**, **compilers**, and **assemblers**.

Operating Systems

An **operating system** is the master control program that runs the computer. It controls the flow of signals from the central processing unit to the various parts of a computer. When the computer is switched on, the operating system is the first program loaded in its memory. Some popular operating systems are Windows, Android, Linux, and MAC OS.

Drivers

A **driver** is a computer program that enables a computer to interact with a hardware device, such as, a printer, a flash, USB drive, etc.

Compilers

A **compiler** is a program that translates a high-level computer language program into a machine language program. The compiler first reads the whole program and then at one go translates it into machine language. It reports program errors to the user along with the line numbers on which the error has occurred. The translated program is called the **object program** or **object code**. This object program is saved permanently for future use.

Interpreter

An **interpreter** is a program that translates one statement of a high-level language program into machine code and executes it. It then does the same for the next statement and proceeds in this way until all the statements in the program have been translated and executed. An interpreter is a smaller program than a compiler. The object code produced by the interpreter is not saved. If the same instruction is needed later, the process will be repeated.

Assembler

An **assembler** is a program that translates an assembly language program into a machine language program.

Application Software

Application software is designed to help users do some type of work. It can be classified into two categories: **packages and utilities**.

Packages

A **package** is a computer application consisting of one or more programs created to do a particular type of work. Packages include the following:

- Word processors such as WordPad and Word 2013

- Graphics and presentation software such as PowerPoint 2013
- Database management systems such as Access 2013, MySQL, and Oracle
- Accounting packages such as Tally
- Spreadsheets such as Excel 2013

Utilities

A **utility** is a program designed to do maintenance work on the system or on system components. Utilities include the following:

- Backup software such as Amanda and Box Backup
- Antivirus software such as McAfee, Quick Heal, or Norton
- Disk defragmenters
- Disk compression utilities

COMPUTER LANGUAGES

A **computer language**, also called a **programming language**, is used to write and develop software programs for the computer. Computer languages can be classified into two broad categories: **low-level languages** and **high-level languages**.

Low-level Languages

Low-level languages are of two types: **machine language** and **assembly language**. Low-level languages are machine dependent. Code written for one machine might not work on the other.

Machine Language

Machine language is the language that the computer understands and can execute directly without translation. In machine language, each instruction is written in the form of a long string of 0s and 1s. A program written in machine language runs very fast because no translation is required. These programs are, however, very difficult to write.

Assembly Language

Assembly language was the first computer language to use words made with letters of the English alphabet. It was developed in 1950. In assembly language, each instruction to the computer is written using a letter combination. It tells the computer where the data is and what to do with it. Like machine language, assembly language is also machine-dependent.

High-level Languages

The wide use of computers by the mid 1950s led to the development of high-level languages. These languages use English and mathematical symbols and they make computer programming simpler. A program in a high-level language is called a **source program**. It cannot run directly on the computer. It must be compiled or interpreted first. High-level language programs are

machine independent. They can be run on different types of computers without change. Some examples of high-level languages are BASIC, COBOL, FORTRAN, C, C++, and Java.

Computer Manners

If you are in a public place like in your school computer lab, in an Internet café, or in an office, good manners dictate that you should not play music loudly. Ideally, use headphones or set the volume low so that the music does not disturb others who prefer to work in silence.

Tricky Terms

Hardware the physical components of a computer system

Input Devices devices that accept input from the user and convert it into a form that the computer can understand

Output Devices devices that convey information from the computer to the user

Software computer programs that are needed for running or operating a computer system

Program a sequence of step-by-step instructions to perform a particular task

System Software programs that are designed to control the operation of a computer system

Operating System the master control program that runs the computer

Compiler a program that translates a high-level language program into a machine language program

Interpreter a program that reads source code one line at a time, translates it into machine language, and executes it

Assembler a program that translates an assembly language program into machine language

Application Software software designed to help users do some type of work

Package a computer application consisting of one or more programs to do a particular type of work

Utility a program designed to perform maintenance work on the system or on system components

Computer Language a language used to write and develop software for the computer

Source Program a program written in a high-level language

Memory Bytes

- On the basis of size, going from smallest to largest, computers can be classified into mobile computers, microcomputers, minicomputers, mainframes, and supercomputers.
- Input devices accept input from the user and convert it into a form that the computer can understand. Examples are barcode readers, card readers, etc.
- Output devices convey information from the computer to the user e.g. LCD projectors.
- Operating systems, drivers, compilers, assemblers, and interpreters are types of system software.
- Application software can be classified into packages and utilities.
- Machine language (that uses strings of 0s and 1s) and assembly language (that uses letter codes) are examples of low-level languages.
- High-level languages are simpler to work with as they use English words and mathematical symbols. BASIC, COBOL, and C++ are examples of high-level languages.

EXERCISES

Objective Type Questions

1. Choose the correct option.

a. Which of the following is not a utility program?
i. Disk Defragmenter ii. Antivirus software iii. C++ iv. Backup software

b. Which of the following is not a kind of system software?
i. Compiler ii. Driver iii. Operating system iv. Package

c. Which of the following is an input device?
i. Plotter ii. Barcode reader iii. Braille printer iv. LCD Projector

d. It is a unique combination of vertical bars.
i. Barcode ii. OCR iii. OMR sheet iv. none of these

e. MICR characters can be seen on
i. OMR sheet ii. Bank cheques iii. Smart card iv. none of these

Descriptive Type Questions

1. Answer the following.

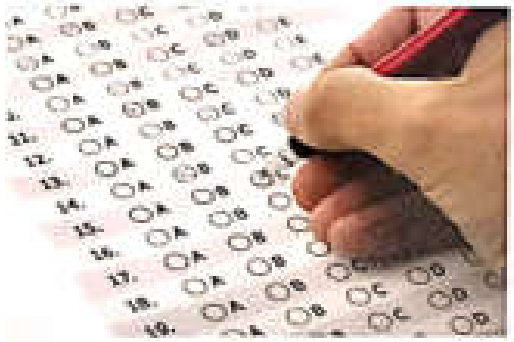
a. Write the full form of: i. MICR ii. OMR
b. Define a program.
c. What do you understand by an operating system? Give two examples.

d. Differentiate between assembly language and machine language.
e. What is the difference between a compiler and an interpreter?
f. Identify a few instances where LCD projectors are used.
g. Analyse how the reduction in size and the portability of computers have influenced their usage.
h. Smart cards hold a great deal of personal information about an individual. Examine the hazards of having so much information in one place.
i. Imagine you are a teacher and you have to create a computer based examination mark sheet for your class. Using a flowchart, develop a sequence of actions to show the step-by-step process.

Application-Based Questions

a Observe the given figure on the right and answer the following questions:
   i. What does the figure represent?
   ii. Name the device used in the figure.
   iii. Name any two items on which you find such types of lines.

b. Observe the figure alongside on the left, and answer the following questions:



   i. What is the sheet shown in the figure called?
   ii. Name the device used to check such types of sheets.
   iii. What purpose are these types of sheets used for?

c. Identify the following as hardware or software and write them under the correct heading in the given table.

Barcode reader **compiler** **driver** **card readers** **plotters** **Windows**

Hardware	Software

d. Kabir's father has purchased a computer and installed Windows 7 and Quick Heal software.
   i. Identify the types of software (system software or application software) that he has installed.
   ii. When the computer is switched on, which kind of software is first loaded onto the memory?

IN THE LAB

1. Find out which operating system is installed on your computer. Name two operating systems other than the one on your computer.
2. Make a list of 10 application software and 5 utility programs installed on your computer, along with their uses. Take the help of your teacher or an elder in the family to create this list.
3. Collect pictures of various input devices and make a chart giving details about each of them.
4. Find out which antivirus software is installed on your computer. Also, collect names of 5 other antivirus software.

GROUP PROJECT

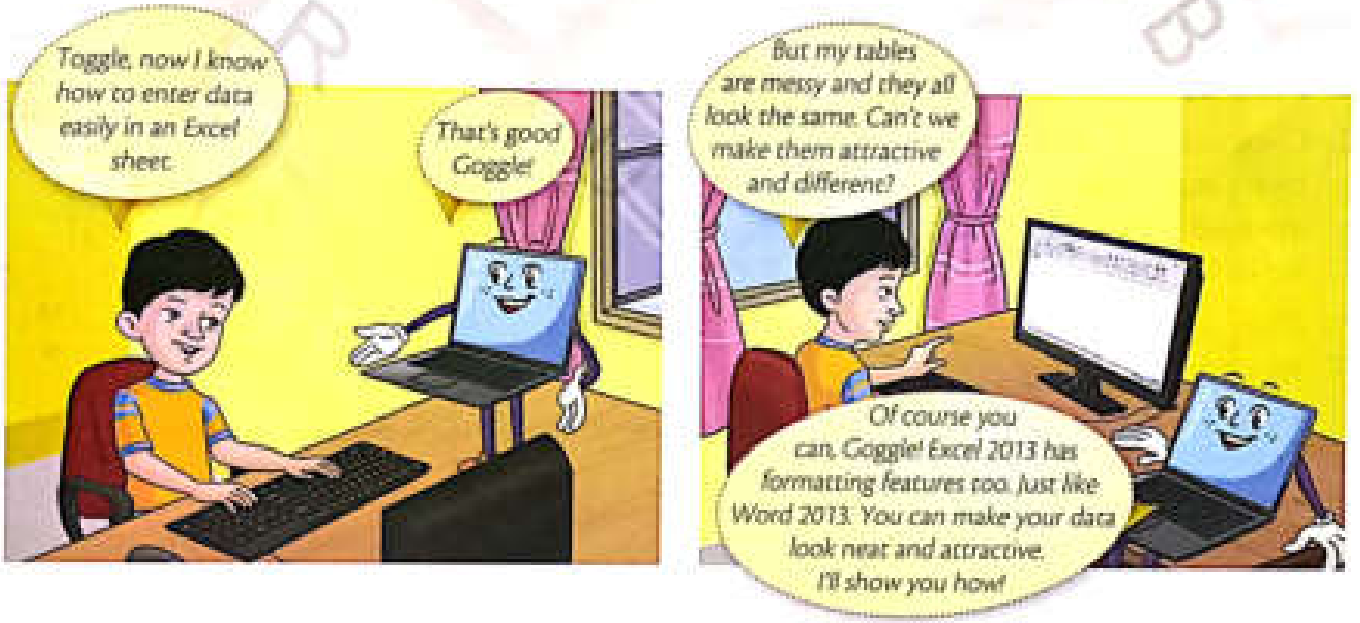
1. For each of the situations below, make a list of the hardware and software components that you would need to complete each task. Give reasons for your answers.
   - marking a standardised test paper in which all students use a similar answer sheet and use the same type of pencil
   - offering shopping rewards to customers who spend more than Rs. 10,000/-
   - installing a computer system in a school

TEACHER'S NOTES

- Have a class discussion on how mobile phones have evolved into multipurpose smartphones. Let the students come up with ideas about smart phones of the future.
- Show the students some samples of bank cheques and OMR sheets.
- Have a class discussion on devices that could be used for various purposes. For example, to issue and receive books in a library, to record details for census, etc. Do not limit the discussion to devices mentioned in this chapter.

Chapter 2

Formatting Data in Excel 2013



The presentation of data and its appearance on a printed page is called **formatting**. Formatting changes the appearance of data but does not affect the actual cell value. Excel 2013 has several features to help you make important data stand out and to make your worksheet easy to read and understand. We will learn about these features in this chapter. You will find quite a few formatting commands on the **HOME** tab in the **Font** group (Fig. 2.1).

In this Chapter

- Font Formatting
- Alignment and Orientation of Data
- Number Formatting
- Cell Styles

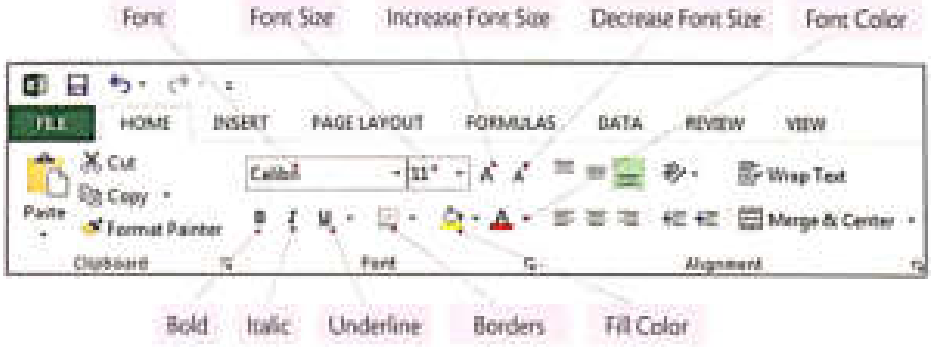


Fig. 2.1 **Font** group on the **HOME** tab

FONT FORMATTING

A **font** is a set of letters of the alphabet and numbers written in a particular style. For example, Calibri is a font and so is Times New Roman.

Changing Font, Font Size, and Font Color

Consider the worksheet shown in Figure 2.2 and follow these steps to change the font, its size, and its colour:

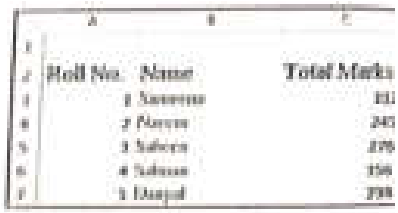


Fig. 2.2 Worksheet data

1. Select cells A2:C2.
2. Click the drop-down menu arrow next to the **Font** option. A list of fonts appear (Fig. 2.3).
3. As you point to various font options in the list, you will see the data preview for the selected font. Click **Times New Roman**. Excel changes the font in the selected cells.

Click the drop-down menu arrow to view the list of fonts

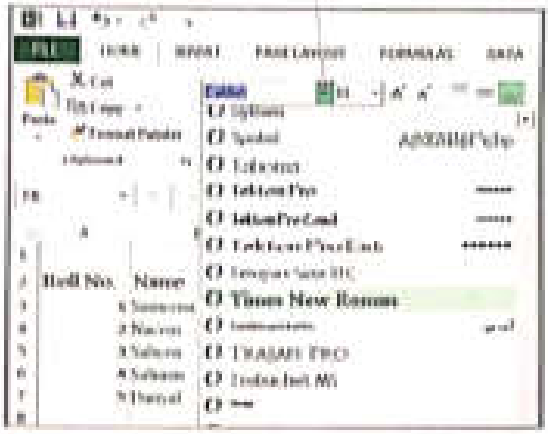


Fig. 2.3 List of fonts

Top Tip

You can also type the font name or font size in the respective boxes instead of choosing from the drop-down list.

4. Click the arrow next to **Font Size**. A list of font sizes appears. As you scroll down the list you see the data preview for the selected font size in cells A2:C2 (Fig. 2.4).
5. Select 14. Excel changes the font size in the selected cells.

Click the drop-down menu arrow to view the list of font sizes

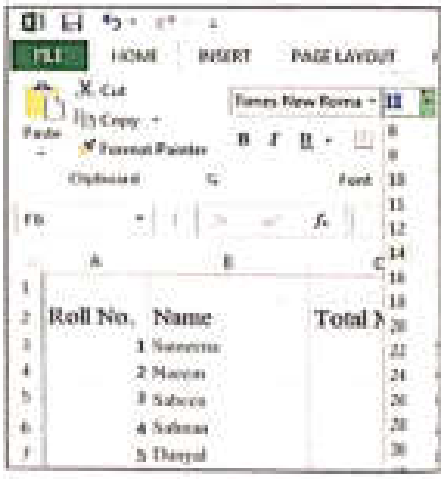


Fig. 2.4 List of font sizes

Did you Know?

The size of a font is measured in points. There are 72 points in an inch. The number of points assigned to a font is based on the distance from the top to the bottom of its longest character.

6. Click the arrow next to **Font Color** (Fig. 2.5). A gallery of colours appears. Click **More Colors** to get a wider range of colours to choose from.

Top Tip

You can also change the font size by using the **Decrease Font Size** and **Increase Font Size** buttons in the **Font** group on the **HOME** tab.

7. The **Colors** dialog box appears (Fig. 2.6). Select your preferred colour from the options on the **Standard** tab or mix colours to get your desired colour on the **Custom** tab.

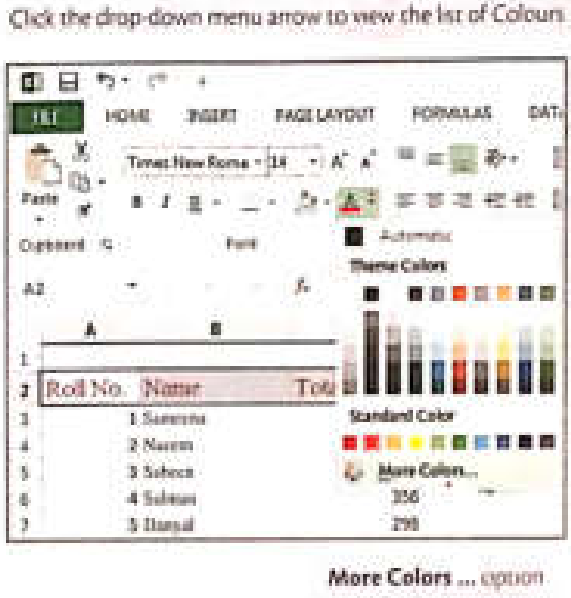


Fig. 2.5 Selecting font color

Fig. 2.6 **Colors** dialog box

Bold, Italics, and Underline

You can emphasise the contents of a cell by making the text **bold**, by using italics, or by underlining the text. Just select the cell and click the **Bold**, **Italic**, or **Underline** button.

To underline text, you can also click the arrow next to **Underline** and then select **Underline** or **Double Underline** from the drop-down list (Fig. 2.7). Figure 2.8 shows how the text looks after applying bold, italic, and double underline formatting to the cell range A2:C2.

Fig. 2.7 **Underline** drop-down menu

Fig. 2.8 After applying **Bold**, **Italics**, and **Double Underline** commands

Background Colors and Borders

You can add a background colour and borders to a cell, or a group of cells. In this example, we will add a background colour to the header row of the table and a border to the whole table. The steps are:

1. Select the header row (row 2).

2. Click the arrow next to **Fill Color** (Fig. 2.9).
3. Choose a colour. The colour will be set as the background of cells A2:C2.

Or

Select **More Colors...** at the bottom of the gallery to access additional colour options.

4. Now select the whole table.
5. Click the arrow next to **All Borders**. A drop-down menu appears [Fig. 2.10(a)].
6. Click the **All Borders** option. You will see borders drawn around each cell in the table [Fig. 2.10(b)].

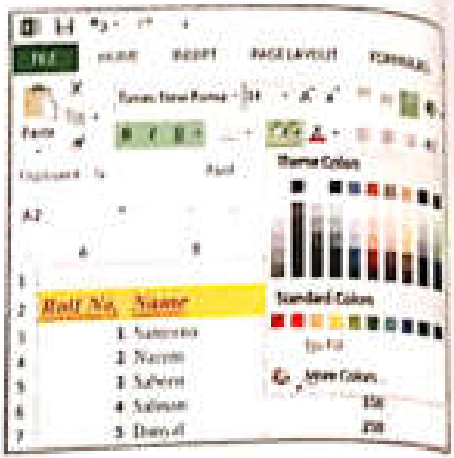


Fig. 2.9 Selecting a background Colour

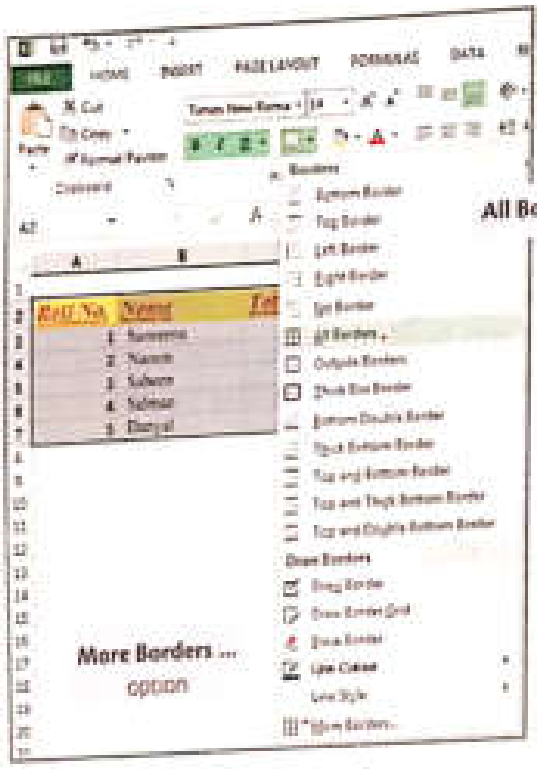


Fig. 2.10(a) **Borders** drop-down menu

	A	B	C
1			
2	Roll No.	Name	Total Marks
3	1	Sameera	312
4	2	Aleena	245
5	3	Saleem	276
6	4	Salman	356
7	5	Daryal	298

Fig. 2.10(b) Table with borders

Top Tip

You can also use the commands in the **Draw Borders** section to add borders [Fig. 2.10(a)].

After selecting the line colour and line style, click **Draw Border** to draw single border lines or click **Draw Border Grid** to draw borders around every cell in a range.

You will have to select the range using the cursor which will change to a pencil in both cases.

Or

Click the **More Borders ...** option. The **Format Cells** dialog box will appear (Fig. 2.11). Select a border style and a border colour. You can also choose one of the preset border schemes or select border outlines separately in the **Border** area.

7. Click **OK**.

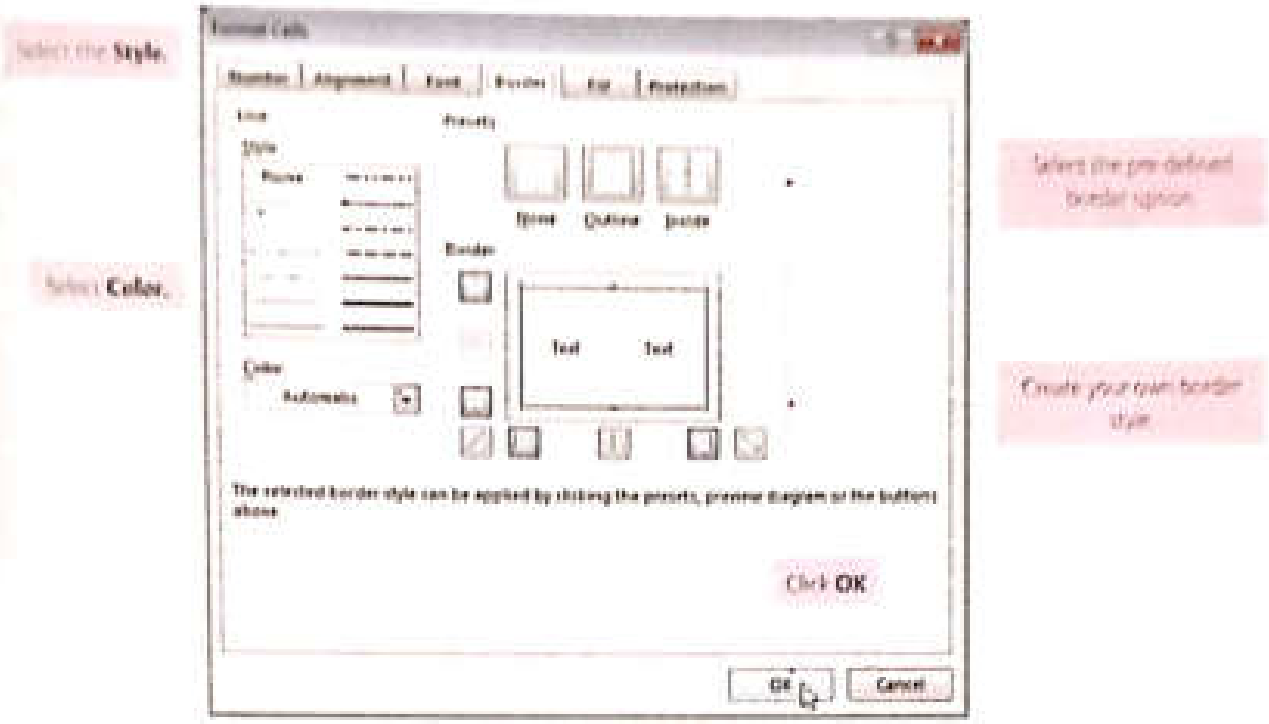


Fig. 2.11 **Format Cells** dialog box

ALIGNMENT AND ORIENTATION OF DATA

Alignment refers to the position where data is placed within the boundary of a cell. By default, Excel applies the appropriate horizontal alignment to each data type, for example, numbers are always right-aligned and text is left-aligned. You can also control the vertical alignment within a cell.

Figure 2.12 shows the various commands in the **Alignment** group on the **HOME** tab.

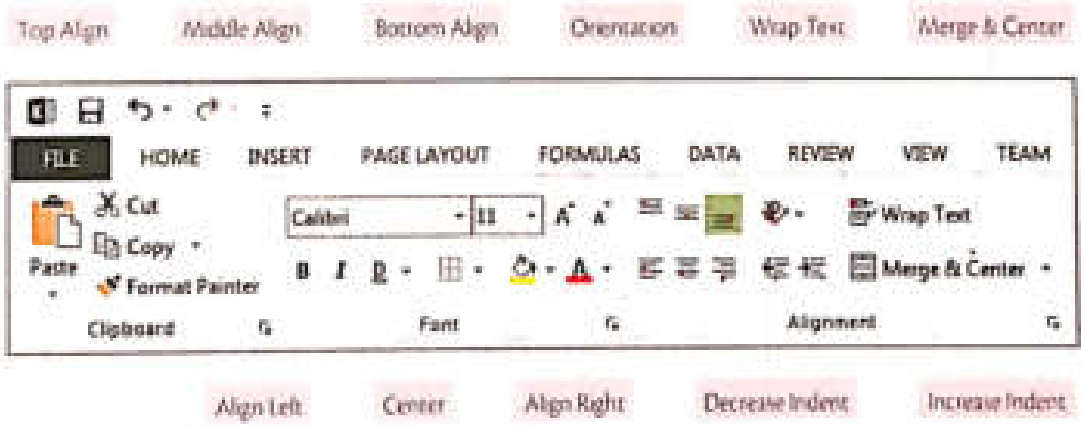


Fig. 2.12 **Alignment** group on the **HOME** tab

To set alignment, select a cell or range and click the required vertical and horizontal alignment buttons.

Vertical alignment can be **top**, **middle**, or **bottom** (Fig. 2.13). Horizontal alignment can be **left**, **center**, or **right** (Fig. 2.14).

Fig. 2.13 Vertical alignments

Fig. 2.14 Horizontal alignments

Orientation refers to the relative physical position or direction of text. The usual orientation is horizontal. To change it, first select the cell or cells and then click **Orientation** in the **Alignment** group. Then click the required option from the menu that appears (Fig. 2.15). Figure 2.16 shows various types of orientation.

Top Tip

By default, any text entered in the worksheet is aligned to the bottom-left of a cell and a number is aligned to the bottom-right of a cell.

Fig. 2.15 **Orientation** drop-down menu

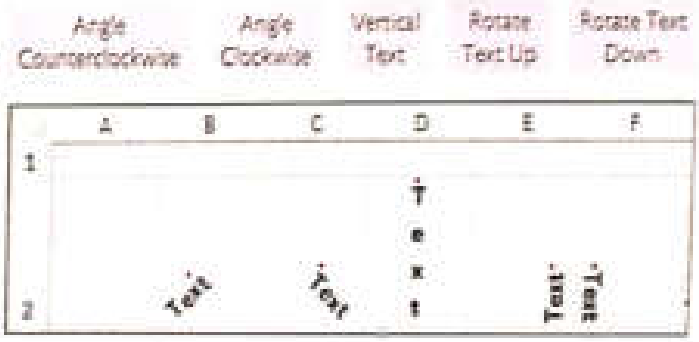


Figure 2.16 Different orientations

If you have to align the data to a specific angle, click **Format Cell Alignment** option (Fig. 2.15).

The **Format Cells** dialog box appears with the **Alignment** tab selected (Fig. 2. 17).

Under **Orientation**, using the mouse, drag the pointer to the required angle.

The text in the selected cell will appear tilted at this angle.

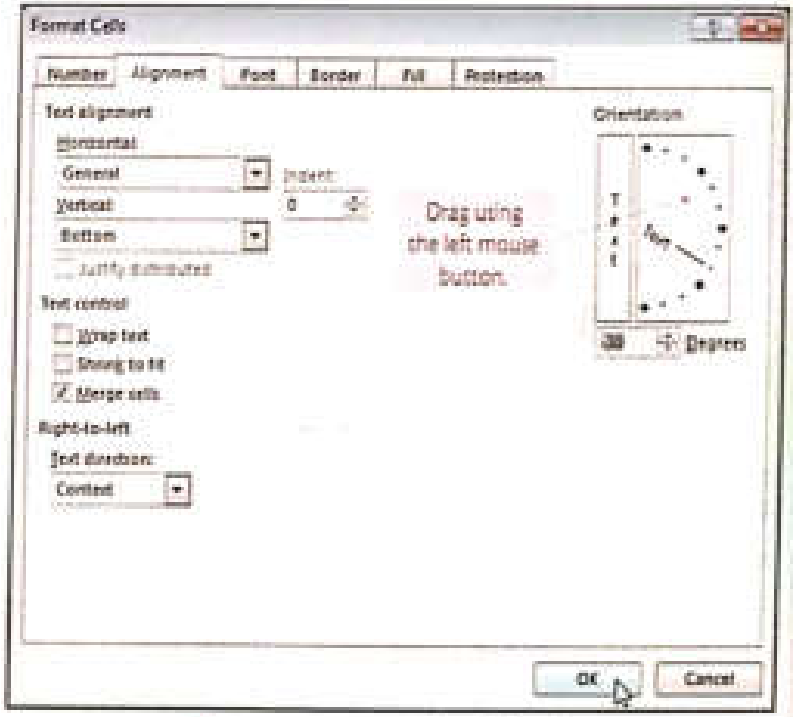


Fig. 2.17 **Format Cells** dialog box

Working with Long Text

When text cannot fit in a cell, it spills out into adjacent cells (Fig. 2.18). You can let the data spill out, but if the next cell contains data, the spilled-out portion will not be visible.

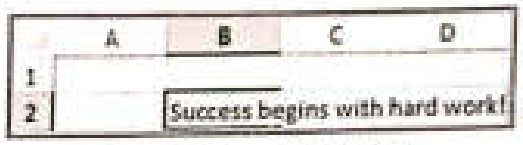


Fig. 2.18 Long text in a cell

Fig. 2.19 Wrapped Text

To avoid this, you can make the text wrap within the same cell. Select the cell and click **Wrap Text** in the **Alignment** group (Fig. 2.12). The data is confined to the cell but is displayed in multiple lines (Fig. 2.19).

Did you Know?

If you have to unmerge the cells, click the drop-down menu arrow of **Merge & Center** and select **Unmerge Cells** option.

Another way of dealing with long text is to merge adjacent cells into one large cell.

This can be done by selecting the cells and clicking **Merge & Center** in the **Alignment** group (Fig. 2.12). The text will be center-aligned in the single merged cell (Fig. 2.20).

Fast Forward

To write data in multiple lines in the same cell **ALT + Enter**

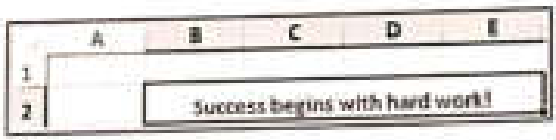


Fig. 2.20 Merge & Center

PRACTICE TIME

Various competitions were held in Aslan Public School to celebrate World Environment Day. The teacher in-charge of competitions has asked the head boy, Talha, to type the competition results and format it so that it can be put up on the notice board. Can you list the steps for doing this?

SOLUTION

1. Create the worksheet as shown.
2. To align the worksheet and row headers, click **Merge & Center** in the **Alignment** group on the **HOME** tab for the cell ranges A1:C1, A2:A3, A4:A5, and A6:A7.

	A	B	C
1	Competition Result		
2	Debate	Ayman Sabir	First
3		Ali Raza	Second
4	Quiz	Ahmed Ahsan	First
5		Ghauri Rashid	Second
6	PowerPoint Presentation	Danial Rahim	First
7		Wasim Taha	Second

3. Select cell range A2:C7. In the **Font** group on the **HOME** tab, do the following:
   a. Click the arrow next to **Font** and select **Times New Roman**.
   b. Click the arrow next to **Font Size** and select **16**.
4. Select cells A1:C1. In the **Font** group on the **HOME** tab, do the following:
   a. Click the arrow next to **Font** and select **Times New Roman**.
   b. Click the arrow next to **Font Size** and select **18**.
   c. Click the **Bold** button.
   d. Click the arrow next to **Font Color** and select red.
   e. Click the arrow next to **Fill Color** and select grey.
5. Select the cell range A2:C3. Click the arrow next to **Fill Color** and select blue. Similarly, select the appropriate **Fill Color** for cell ranges A4:C5 ad A6:C7.

Note: You can choose your own fonts, font sizes, and colours. The ones chosen here are examples only.

6. Select the cell range A1:C7. Click the arrow next to the **Borders** button in the **Font** group on the **HOME** tab and select **All Borders**. Borders will appear around all the cells. The final formatted worksheet will appear as shown alongside.

	A	B	C
1	Competition Result		
2	Debate	Ayman Sabir	First
3		Ali	Second
4	Quiz	Ahmed Ahsan	First
5		Ghani Rashid	Second
6	PowerPoint Presentation	Danial Rahim	First
7		Wasim Taha	Second

Fig. 2.21 **Number Format** list

NUMBER FORMATTING

Excel has various options for formatting numbers. You can specify the number of decimal places, add commas to separate long numbers into thousands, place a currency sign in front of the number, and display the number as a percentage. The various formatting type options for numbers are available in the **Number Format** drop-down list (Fig. 2.21). Examples of their use are given in Figure 2.22.

	A	B	
1	Number Formatting Type	Formatted Number	
2	General		1234
3	Number		3465.00
4	Currency		$1,500.00
5	Accounting	PKR	1,23,44,567.00
6	Short Date		07-09-2015
7	Long Date		07 September 2015
8	Time		13:17:46
9	Percentage		54.60%
10	Fraction		1/8
11	Scientific		1.23E+09

Fig. 2.22 Different Number Formatting types

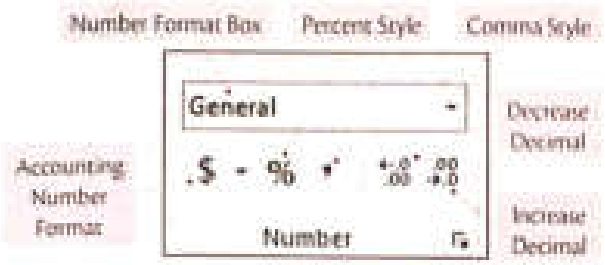


Fig. 2.23 **Number** group on the HOME tab

Figure 2.23 shows the various buttons in the **Number** group on the **HOME** tab.

There are additional options, such as, **Accounting Number Format** to select a currency format, the **Percent Style** button, and the **Comma Style** button. The **Number** group also has buttons to increase and decrease the number of decimal places. To explain these options, consider the number 123456 in cell A1 (Fig. 2.24).

Fig. 2.24 Number in cell A1

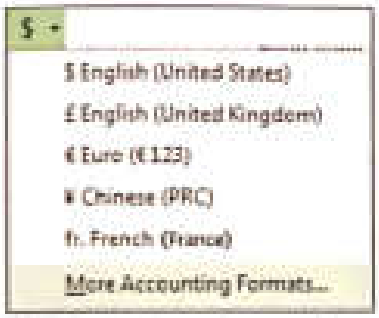


Fig. 2.25 **More Accounting Formats...** option

Click the arrow next to **Accounting Number Format** and select **More Accounting Formats...** (Fig. 2.25).

The **Format Cells** dialog box appears. Select **Symbol** as PKR (Fig. 2.26) and click **OK**. The rupee symbol appears before the number in cell A1 (Fig. 2.27). Also notice the comma and two decimal points that appear by default.

Now if you click **twice** on the **Increase Decimal** button, the number format changes to show four decimal places (Fig. 2.28). Click the **Decrease Decimal** button once. The number of decimal places will come down to three (Fig. 2.29).

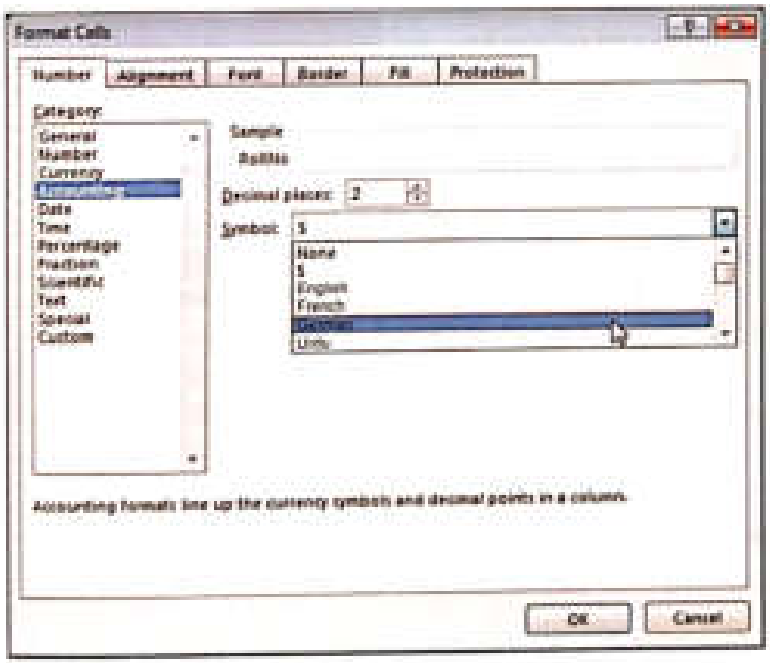


Fig. 2.26 **Format Cells** dialog box

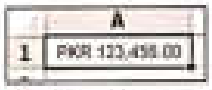


Fig. 2.27 Number formatted with Rupee symbol

Fig. 2.28 Increase Decimal

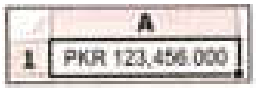


Fig. 2.29 Decrease Decimal

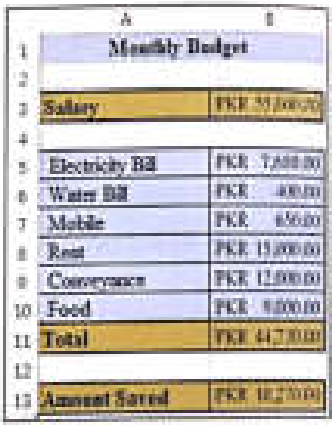
PRACTICE TIME

Ahsan's brother made a list of his monthly expenditure and savings as given alongside. Ahsan has learnt about formatting features available in Excel, and guides his brother in making the worksheet data neat and presentable as shown. Can you format the worksheet in a similar manner?

	A	B
1	Monthly Budget	
2		
3	Salary	55000
4		
5	Electricity Bill	7680
6	Water Bill	400
7	Mobile	650
8	Rent	15000
9	Conveyance	12000
10	Food	9000
11	Total	44730
12		
13	Amount Saved	10270

SOLUTION

1. Enter the given data in an Excel worksheet.
2. Now select cells A1:B13. In the **Font** group on the **HOME** tab, do the following:
   a. Click the arrow next to **Font** and select **Times New Roman**.
   b. Click the arrow next to **Font Size** and select **12**.
3. Select cells A1:B1. Click **Merge & Center** in the **Alignments** groups on the **HOME** tab. In the **Font** group on the **HOME** tab, do as follows:
   a. Click the **Bold** button.
   b. Click the arrow next to **Fill Color** and select blue colour.



4. Select the cell range A3:B3. Click the arrow next to **Fill Color** and select the colour brown. Similarly, select background colours for cell ranges A5:B10, A11:B11, and A13:B13.
5. Then select the cell range B3:B13. Click **Accounting Number Format** button in the **Number** group and select **More Accounting Formats** if you do not find the rupee symbol in the list.
6. The **Format Cells** dialog box appears with the **Accounting** option selected under **Category**. Select PKR **English (UK)** from the **Symbol** drop-down menu.
7. Click **OK** to show the numerical values as currency.
8. Select the cell range A3:B3. Click the arrow next to the **Borders** button in the **Font** group on the **HOME** tab and select **Outside Borders**. A border will appear around the cells. Similarly, select the border for the cell ranges A5:B10, A11:B11, and A13:B13.

CELL STYLES

You can also use Excel 2013's pre-designed cell styles rather than formatting cells manually. Cell Styles are used to quickly add professional-level formatting to different parts of a worksheet like the titles, the headers, etc.

Applying a Cell Style

1. Select the cell(s) in which you want to apply formatting.
2. Click the **Cell Styles** button in the **Styles** group on the **HOME** tab. A live preview of the format is displayed as you move the pointer to various styles.

Top Tip

You can also create your own cell style. Click **New Cell Style...** in the **Cell Styles** gallery. This will open the **Style** dialog box. Give a name to your style and then click **Format....** The **Format Cells** dialog box appears. Select your settings for each of the tabs and click **OK**. This will add your style to the options in the gallery!

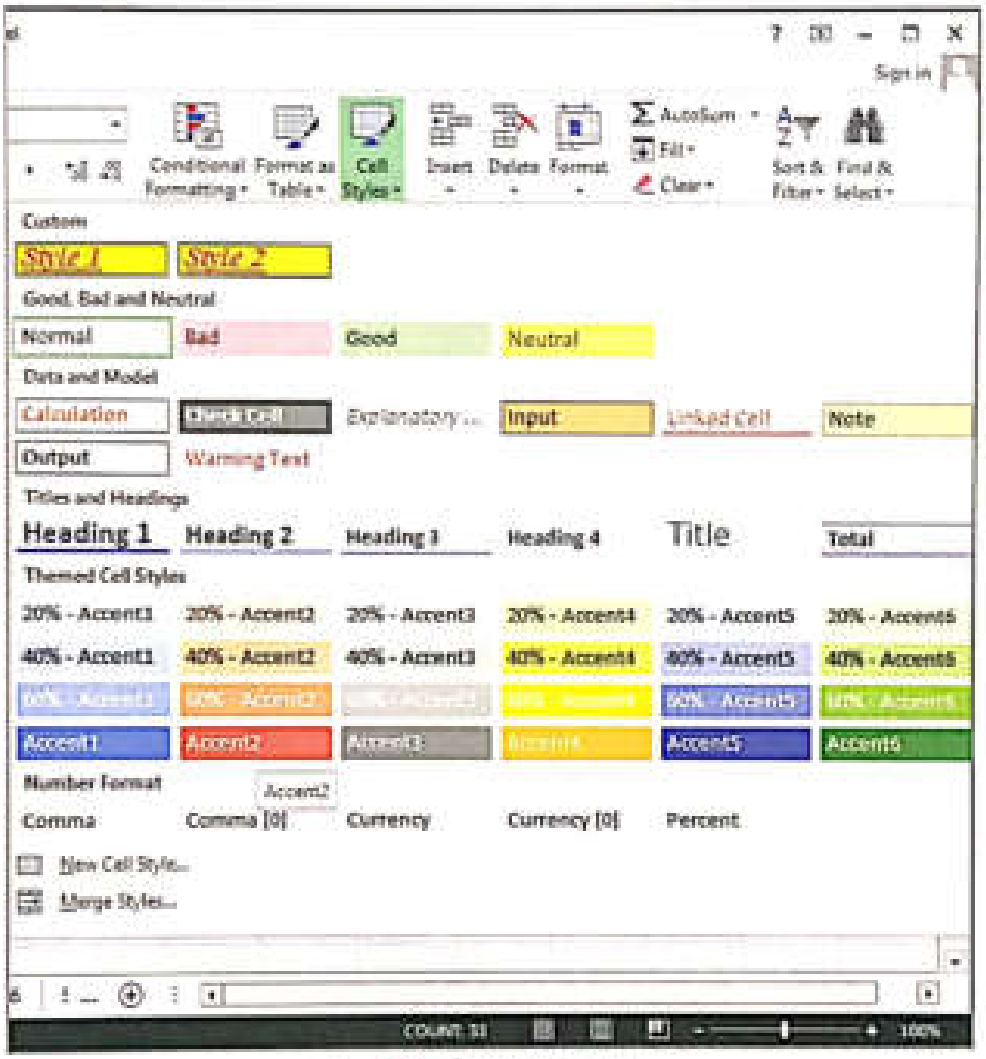


Fig. 2.30 **Cell Styles** gallery

3. Select the desired style from the gallery. Here, we will choose Accent 2 (Fig. 2.30). The cell style will be applied to the selected cells.

Tricky Terms

Formatting the presentation of data and its appearance on a printed page

Alignment the position in which data is placed within the boundary of a cell

Orientation the relative physical position or direction of the text

Memory Bytes

- The commands for formatting data are available on the **HOME** tab.
- Formatting changes the appearance of data but does not affect the actual cell value.
- Font formatting commands include **Bold, Italic, Underline, Double Underline, Borders, Fill Color, Font Color, Font, Font Size, Increase Font Size,** and **Decrease Font Size.**
- Alignment formatting commands include **Top Align, Middle Align, Bottom Align, Orientation, Align Left, Center, Align Right, Decrease Indent, Increase Indent, Wrap Text,** and **Merge & Center.**
- Number formatting commands include **Number Format, Accounting Number Format, Percent Style, Comma Style, Increase Decimal,** and **Decrease Decimal.**
- You can also choose ready-made cell styles (in the **Styles** group on the **HOME** tab) for formatting data in Excel 2013.

EXERCISES

Objective Type Questions

1. Choose the correct option.

a. Which one is not a vertical alignment?
i. Top ii. Middle iii. Bottom iv. Left

b. Which one is a horizontal alignment?
i. Left ii. Center iii. Right iv. all of these

c. Which command is used to display text in a cell in multiple lines?
i. Merge & Center ii. Wrap Text iii. Left-aligned iv. none of these

d. A cell style can consist of
i. Number format ii. Font format iii. Cell protection iv. all of these

e. Consider a number 54,612.00 in cell A1. Select A1 and click the **Increase Decimal** button. The result will be:

i. 54,612.00 ii. 54,612.000 iii. 54,612.0000 iv. 54,612

Descriptive Type Questions

1. **Answer the following.**

a. Explain the two ways to handle long text in Excel—Wrap Text and Merge & Centre.
b. How will you add the Rupee symbol to numeric data in a cell?
c. How will you add a background colour to the cell range A1:E5?
d. Name the buttons in the lower row of the **Number** group on the **HOME** tab.
e. What will you do to rotate the text in a cell to a 25° angle?
f. Analyse the advantages of having different types of formatting in Excel 2013.
g. Your teacher has asked you to help format an Excel worksheet. You can only use cell styles or font formatting. Which one would you choose? Give reasons for your answer.
h. Create an Excel worksheet which contains the following information, your first name, your age, your school, your class, your teacher's name, and the number of pupils in your class. You could add other information as well to make it more comprehensive.

Application-Based Questions

a. Consider the worksheet given alongside. Name all the font formatting features that have been applied to the cell range A1:D5.

	A	B	C	D
1	Item Number	Item Name	Cost	Quantity
2	S01	Mouse	350	12
3	S02	Keyboard	1200	10
4	S03	Hard Disk	5800	5
5	S04	USB	500	9

b. Consider the worksheet given along side showing the assessment pattern of Alsan Public School.

i. Name the formatting features applied to cells A2:C2.
ii. Which formatting feature has been applied to the cell range B3:B8? How can you apply this feature manually?

	A	B	C
2	S. No	Assessment	Marks
3	1	Formative Assessment - I (FA - I)	10
4	2	Formative Assessment - II (FA - II)	10
5	3	Summative Assessment - I (SA - I)	30
6	4	Formative Assessment - III (FA - III)	10
7	5	Formative Assessment -IV (FA - IV)	10
8	6	Summative Assessment - II (SA - II)	30

c. The company expenses of Kyro Pvt. Ltd. in various areas over the past three years have been summarised in the worksheet given below.

i. Name the type of alignment in cells B3:E3 and A4:A6.
ii. Which number formatting feature is used to get the rupee symbol in the cell range B4:E6?

	A	B	C	D	E
1					
2		Kyro Pvt. Ltd.			
3		Purchase	Production	Marketing	Administration
4	Year I	PKR 1,000,000.00	PKR 1,500,000.00	PKR 500,000.00	PKR 600,000.00
5	Year II	PKR 2,000,000.00	PKR 1,600,000.00	PKR 400,000.00	PKR 500,000.00
6	Year III	PKR 3,000,000.00	PKR 1,700,000.00	PKR 350,000.00	PKR 400,000.00

d. Ms. Maheen, the incharge of Chemistry lab, has asked the monitor to make a list of chemicals available in the lab, as shown in the figure.

i. How will you give the background colour pink and the border colour blue to the cell range A2:C7?

ii. What are the steps for making a number a subscript in the chemical formula?

S.No.	Chemical Name	Chemical Formula
1	Sulphuric Acid	H_2SO_4
2	Nitric Acid	HNO_3
3	Hydrochloric Acid	HCl
4	Potassium Permanganate	$KMnO_4$
5	Sodium Bisulphate	$NaHSO_4$

IN THE LAB

1. The science teacher has asked the monitor of the class to collect data about the gaseous composition of air from the Internet and create an Excel table. Format the data as shown alongside.

Gaseous Composition of Air		
Constituent	Chemical symbol	Percentage
Nitrogen	N_2	78.084
Oxygen	O_2	20.947
Argon	Ar	0.934
Carbon dioxide	CO_2	0.035
Neon	Ne	0.001818
Helium	He	0.000524
Methane	CH_4	0.0002
Krypton	Kr	0.000114
Hydrogen	H_2	0.00005
Nitrous oxide	N_2O	0.00003
Xenon	Xe	0.000008
Ozone	O_3	0.0001
Carbon monoxide	CO	0.00002
Sulphur dioxide	SO_2	0.00001
Nitrogen dioxide	NO_2	0.000002
Ammonia	NH_3	0.000001

2. Meer is given a task by the class teacher to type data about facts of temperature and format it as shown alongside, as the chart will be put up on the class notice board. Can you do the same task?

Facts about Temperature		
Description	Temperature in Celsius	Temperature in Fahrenheit
Boiling water	100	212
Hot water bath	40	104
Body temperature	37	98.6
Room temperature	21	70
Cold day	10	50
Freezing point of water	0	32
Very cold day	-18	0
Extremely cold day	-40	-40

Diseases caused by deficiency of vitamins			
Vitamin	Disease	Symptoms	Diet should include
A	Loss of vision	poor vision in dim light	carrot, mangoes, butter, egg yolk
B1	Beri-beri	loss of weight and weak muscles	Beans, meat, eggs, corn
C	Scurvy	bleeding gums	oranges, tomatoes, lemon, guavas, and amla
D	Rickets	soft and bent bones	fish, eggs, milk, butter

3. The doctor visiting the school for the monthly health camp has made a list of diseases caused by deficiency of vitamins. The doctor has asked Hina to type out the data and format it so that it can be distributed to all the students. Can you do this task in the manner shown in the screenshot alongside?

Note: Font–Verdana; Size–12

4. The accountant of Myra Pvt. Ltd. company has prepared a list of employee salary and commission details. The salary, commission, and total (salary + commission) should appear up to two decimal places with a comma as the thousands separator. Can you create a similar table in Excel 2013?
Note: Font–Tahoma; Size–12

	A	B	C	D	E
1	Myra Pvt. Ltd. Employee Details				
2	EmpNumber	Employee Name	Salary	Commission	Total
3	E01	Subha Murad	PKR 58,000.00	PKR 4,500.00	PKR 58,500.00
4	E02	Dariya Sameer	PKR 34,000.00	PKR 3,600.00	PKR 37,600.00
5	E03	Mona Ahmed	PKR 65,500.00	PKR 6,500.00	PKR 72,000.00
6	E04	Anas Asif	PKR 67,000.00	PKR 10,000.00	PKR 77,000.00
7	E05	Omar Asif	PKR 48,600.00	PKR 6,400.00	PKR 55,200.00

GROUP PROJECT

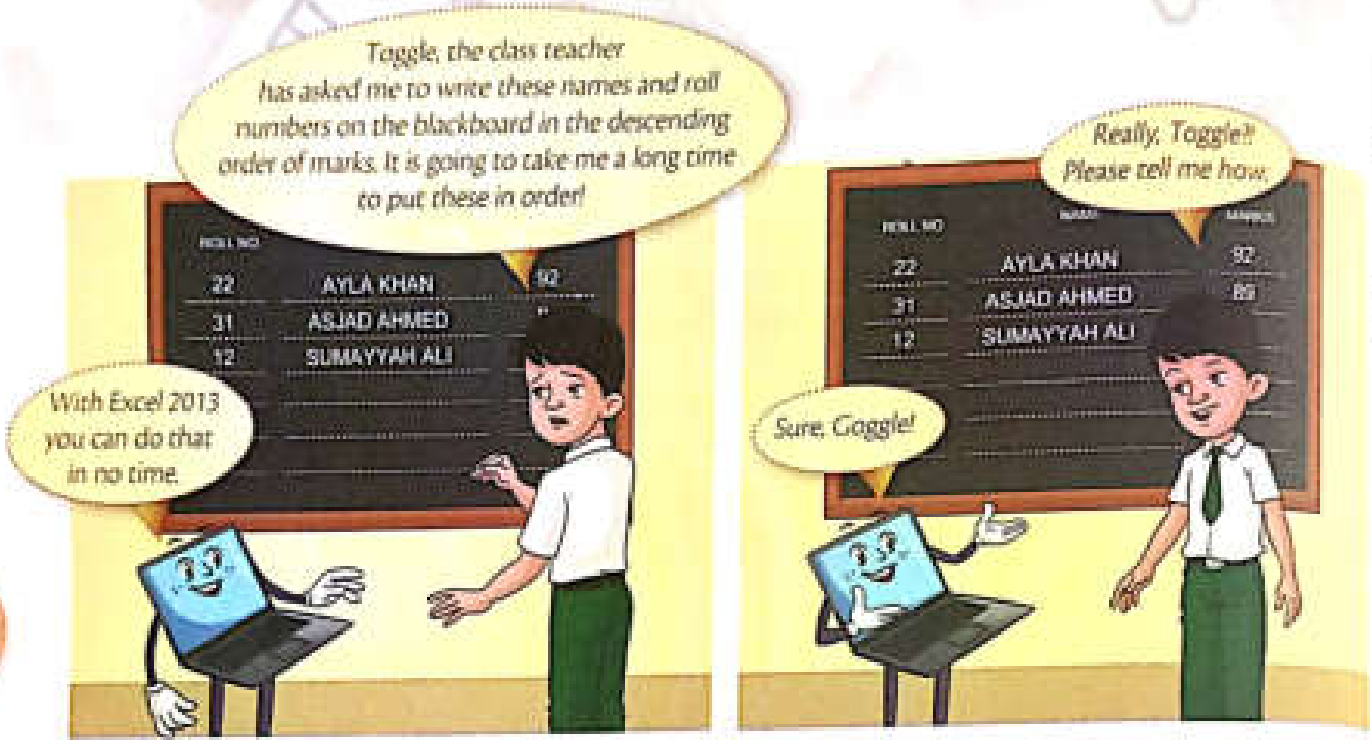
You have been given the proud honour of creating an information Excel worksheet for your school principal. The principal would like to see all the subject marks for your entire class. How will you do it? Discuss together and then delegate the responsibilities to each member of the group making sure you check all the data as it is entered. Check you have presented everything in as clear a way as possible. Good luck!

TEACHER'S NOTES

- Demonstrate the formatting features by using examples of printed tables from real life.
- Explain to the students that too many formatting elements used together can distract the reader. You may discuss the basic principles of good design in this connection.

Chapter 3

Advanced Features of Excel 2013



Excel 2013 has the facility to fill a data series automatically using the **AutoFill** feature. It also has the **Flash Fill** feature that recognises the pattern of data, and fills the remaining list accordingly.

Once you have entered data in a worksheet, you can also change its order of appearance. This is called **sorting** of data. You can also **filter** data, which selectively blocks data you don't want to see.

Sorting and filtering are very useful when you work with long data lists. Excel 2013 also has a feature called **conditional formatting** that sets a cell's format according to a condition that you specify.

Let us learn more about these advanced features.

In this Chapter

- AutoFill
- Flash Fill
- Sorting
- Filtering
- Conditional Formatting
- More Sorting and Filtering

AutoFill

The **AutoFill** feature of Excel allows you to fill a range of cells with a series of data without actually typing it in. There are two predefined series that can be filled in Excel using AutoFill: months of the year and days of the week. To use AutoFill for a series like this, you can follow these steps:

1. Select the cell, say B2, which has the data, say, the first day of the week. You want to fill the rest of the days of the week in the worksheet.
2. Move the cursor to the small black square at the lower-right corner of the cell. This square is called the **fill handle**. When you point to the fill handle, the cursor changes to a plus sign (Fig. 3.1).
3. Drag it to enclose the area you want to fill (Fig. 3.2).
4. Release the mouse button. The cells enclosed will be filled with the days of the week (Fig. 3.3).

Fill handle

Fig. 3.1 First item of AutoFill series

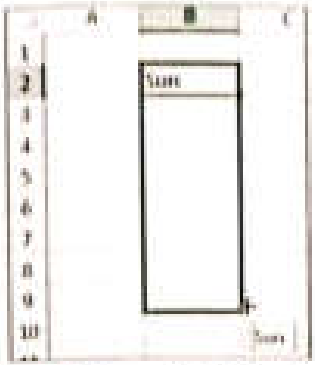


Fig. 3.2 Drag the **fill handle**

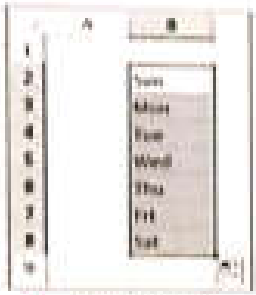


Fig. 3.3 Filled list

Fig. 3.4 **AutoFill Options** menu

Top Tip

If you continue dragging, the weekday's list is repeated. If you press the CTRL key while you drag the fill handle, Excel repeats the value 'Sun' in each cell.

You also have the **AutoFill Options** button in Excel that appears next to the data you add to a worksheet by using the fill handle. Clicking the **AutoFill Options** button displays a list of actions (Fig. 3.4). The available options and their respective actions are given in **Table 3.1**.

Table 3.1 AutoFill options and their respective actions

Option	Action
Copy Cells	This copies the content of the selected cell(s) to the cells indicated by the fill operation.
Fill Series	This fills the cells indicated by the fill operation with the next items in the series.
Fill Formatting Only	This copies the format of the selected cell to the cells indicated by the fill operation but does not place any value in the target cells.
Fill Without Formatting	This fills the cells indicated by the fill operation with the next items in the series, but ignores any formatting applied to the source cell.

Option	Action
Fill Days or Fill Weekdays	This option changes according to the series filled using AutoFill.
Flash Fill	This fills the cells by using Flash Fill. It fills the values by identifying a pattern in the worksheet data.

You can also fill a cell range with a series of numbers. The steps for that are:

1. Type the first two values of the series in two adjacent cells.

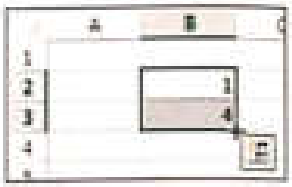


Fig. 3.5 First two values for AutoFill

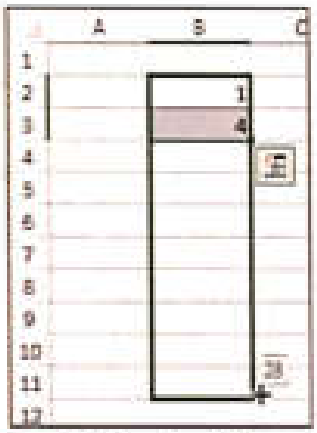


Fig. 3.6 Drag the **fill handle**

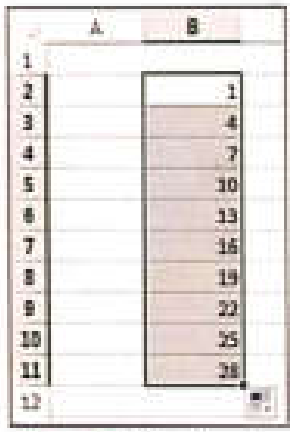


Fig. 3.7 Filled series

2. Select the two cells. Click the fill handle in the lower-right corner of the selected cells (Fig. 3.5). Drag it to enclose the area you want to fill (Fig. 3.6).
3. Release the mouse button (Fig. 3.7). AutoFill uses the difference between the first two numbers and keeps adding it to the last number. So the range gets filled automatically.

Custom Lists

You have seen that AutoFill can fill in names of the days of the week and the months in a year. This is because these lists are already stored in **Custom Lists**. You can add your own lists to the custom lists. There are two ways to add a list: (a) by importing a list of items and (b) by typing the list in the **Custom Lists** dialog box.

To import a list of items do as follows:

Fig. 3.8 Select the list

1. In a worksheet, type, say, the seasons in Pakistan and select the list (Fig. 3.8).
2. Click the **File** tab, and in the menu click **Options** (Fig. 3.9). The **Excel Options** dialog box appears.

Select **Options**

Fig. 3.9 Select **Options**

3. In the left pane of the dialog box, click **Advanced** and then under **General**, click the **Edit Custom Lists...** button (Fig. 3.10).

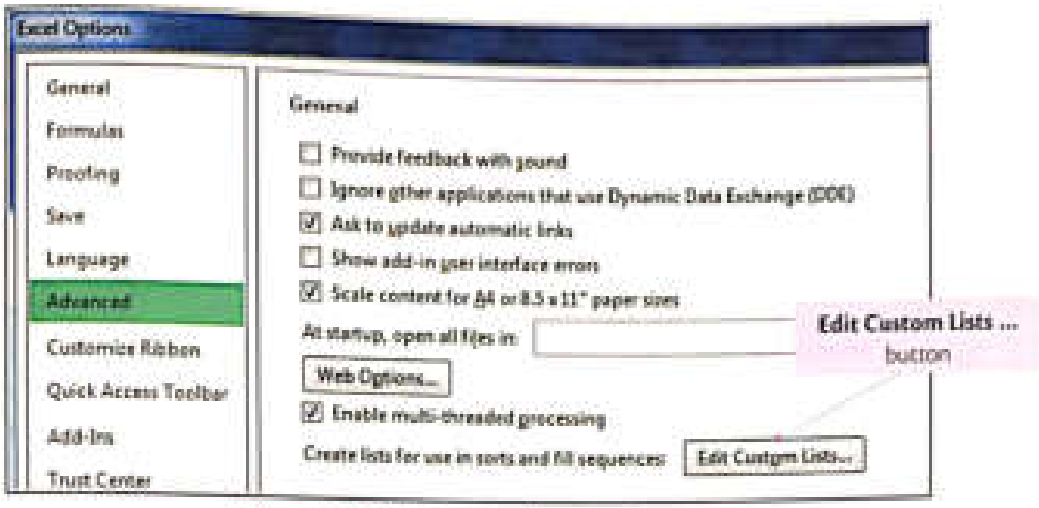


Fig. 3.10 **Edit Custom Lists ...** button

4. The **Custom Lists** dialog box appears (Fig. 3.11). Verify that the cell range of the list of items that you selected gets filled in the **Import list from cells** text box, and then click **Import**. The list gets added to the **List entries** and the **Custom Lists** boxes.
5. Click **OK** on both the dialog boxes.
6. Now in the worksheet, type Spring in a cell. Click its fill handle and drag it across the cells that you want to fill. The list of seasons gets filled.

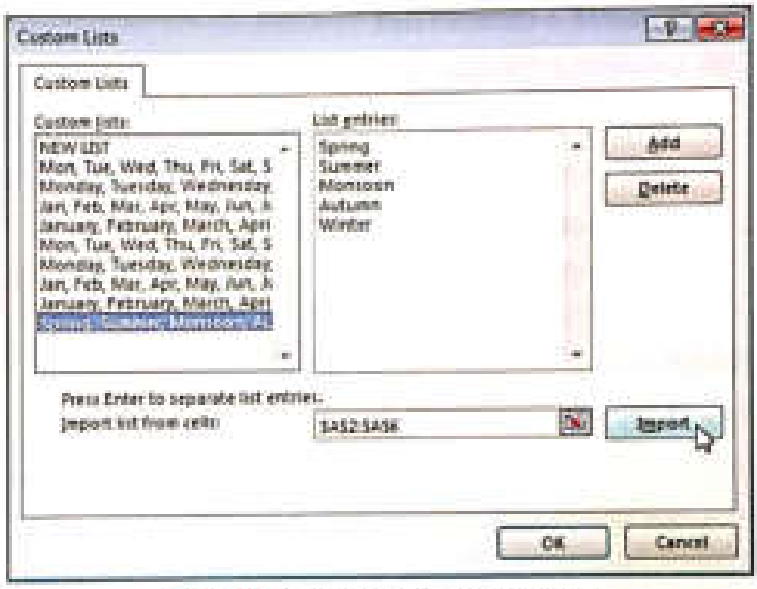


Fig. 3.11 **Custom Lists** dialog box

Another way to add a list is to type it directly in the **Custom Lists** dialog box. This can be done in the following manner:

1. After you have opened the **Custom Lists** dialog box, click **NEW LIST** in the **Custom Lists** box and type the entries, say, the lists of subjects you are studying, in the **List entries** box. Press ENTER after each item (Fig. 3.12).
2. Then click **Add**. You will find that the list gets added in the **Custom Lists** box.
3. Finally, click **OK** on both the dialog boxes.

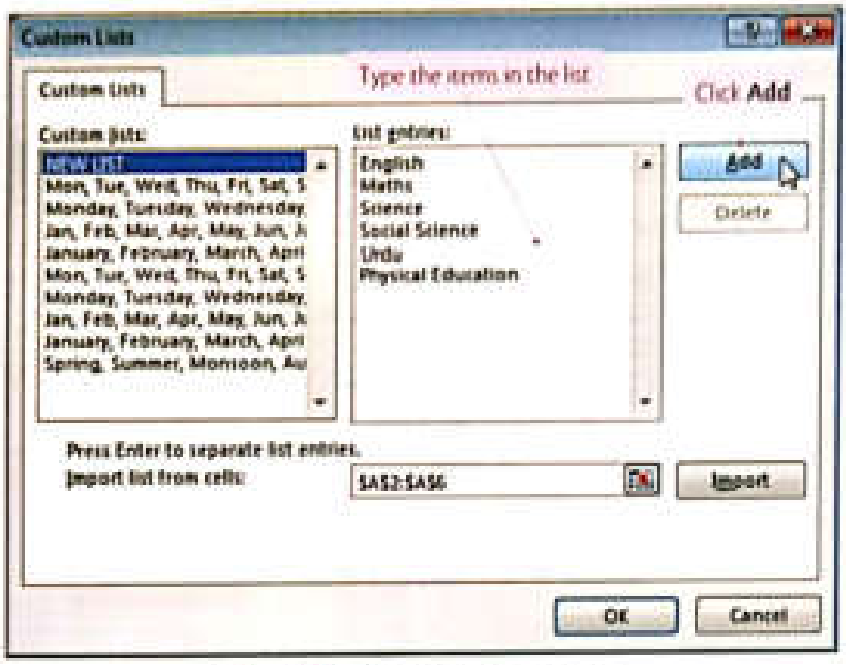


Fig. 3.12 Type the list of items

Edit or Delete a Custom List

You can also modify or delete a custom list:

- To edit the list, make changes in the **List entries** box, and then click, **Add**.
- To delete the list, click the **Delete** button. A message box appears with a warning (Fig. 3.13). Click **OK**.

Fig. 3.13 Custom list deletion message

FLASH FILL

The **Flash Fill** feature is a new feature in Excel 2013. It recognises the data fill pattern in a worksheet and fills the remaining series accordingly. To understand Flash Fill, consider the worksheet shown in Figure 3.14, consisting of Last Name, First Name, Middle Name, and Full Name. The Full Name column should have data that is a combination of the First Name, the Middle Name, and the Last Name.

	A	B	C	D
1	**Last Name**	**First Name**	**Middle Name**	**Full Name**
2	Chaudhry	Sabeen	C	
3	Khan	Naael	A	
4	Hamid	Nishad		
5	Javed	Sumayyah		

Fig. 3.14 Data in a worksheet

1. Enter Sabeen C Chaudhary in cell D2.
2. In cell D3, start typing the First Name Naael. As you do, the Flash Fill logic suggests a series of values to fill in cells D3:D5 (Fig. 3.15).

	A	B	C	D
1	**Last Name**	**First Name**	**Middle Name**	**Full Name**
2	Chaudhry	Sabeen	C	Sabeen C Chaudhry
3	Khan	Naael	A	Naael A Khan
4	Hamid	Nishad		Nishad Hamid
5	Javed	Sumayyah		Sumayyah Javed

Fig. 3.15 Flash Fill suggesting values

3. Press ENTER to accept the suggestions (Fig. 3.16).

	A	B	C	D
1	Last Name	First Name	Middle Name	Full Name
2	Chaudhry	Saleem	C	Saleem C Chaudhry
3	Khan	Nasir	A	Nasir A Khan
4	Hamid	Nishat		Nishat Hamid
5	Javed	Samaiyah		Samaiyah Javed

Fig. 3.16 Accept the value suggestions

SORTING

One of Microsoft Excel's most useful features is the ability to **sort data**. **Sorting** re-arranges data, which may be textual, numerical, or alphanumeric (mixed letters and numbers), in a specified order.

One Column Sorting

Consider a table of employees with their department numbers and salaries (Fig. 3.17). In this example, we will use sorting to arrange the data in the ascending order of salary.

	A	B	C	D
1	Employee No.	Employee Name	Department No.	Salary
2	E101	Shamila Jamil	10	45000
3	E102	Anas Khawar	20	54000
4	E103	Haris Kabir	20	60000
5	E104	Maheen Kabir	10	55000
6	E105	Zainab Asad	30	58000
7	E106	Zoha Rizvi	30	48000
8	E107	Saleem Chughtai	30	54000
9	E108	Beenish Jamal	10	49500
10	E109	Shirin Kazi	20	52500
11	E110	Kazim Raza	20	51500

Fig. 3.17 Data in worksheet

1. Select a cell in the column according to which you want to sort the data. Here, select a cell in column D, say D2.
2. The command for sorting is available at two places in Excel:
   - Click the **HOME** tab. In the **Editing** group, click the **Sort & Filter** button. A drop-down list appears (Fig. 3.18). Click **Sort Smallest to Largest** for ascending order or **Sort Largest to Smallest** for descending order.
   - The same commands are also available on the **DATA** tab, in the **Sort & Filter** group (Fig. 3.19).
3. Click the ascending order option (using either of the two ways) and the worksheet will be sorted in the ascending order of Salary (Fig. 3.20).

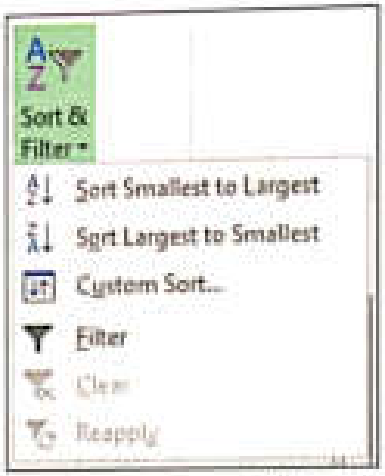


Fig. 3.18 Sort & Filter options

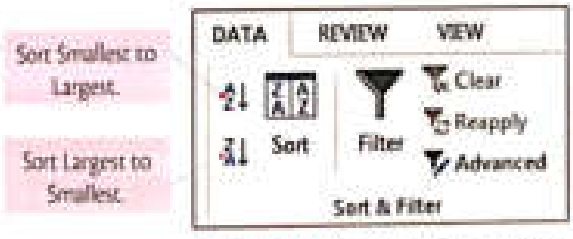


Fig. 3.19 Sort & Filter group

	A	B	C	D
1	Employee No.	Employee Name	Department No.	Salary
2	E101	Shamila Jamil	10	45000
3	E108	Anas Khawar	30	48000
4	E108	Haris Kabir	10	49500
5	E110	Maheen Kabir	20	51500
6	E109	Zainab Asad	20	52500
7	E102	Zoha Rizvi	20	54000
8	E107	Saleem Chughtai	30	54000
9	E104	Beenish Jamal	10	55000
10	E105	Shirin Kazi	30	58000
11	E103	Kazim Raza	20	60000

Fig. 3.20 Data sorted in ascending order of Salary

Multiple Column Sorting

Suppose we want the list of employees in descending order of salary in each department for the data given in Figure 3.17. For this, we will need to sort the data in the ascending order of the department number, and in the descending order of salary for each department.

This can be done in the following manner:

1. Select range A1:D11 or select any cell in the table.
2. Click the **HOME** tab. In the **Editing** group, click **Sort & Filter** and select **Custom Sort** (Fig. 3.18).

   Or

   Click the **DATA** tab. In the **Sort & Filter** group, click **Sort** (Fig. 3.19).
3. The **Sort** dialog box appears (Fig. 3.21).

   Excel assumes you have a header row, meaning that the first row of the table consists of column headings. So the option **My data has headers** is already selected.

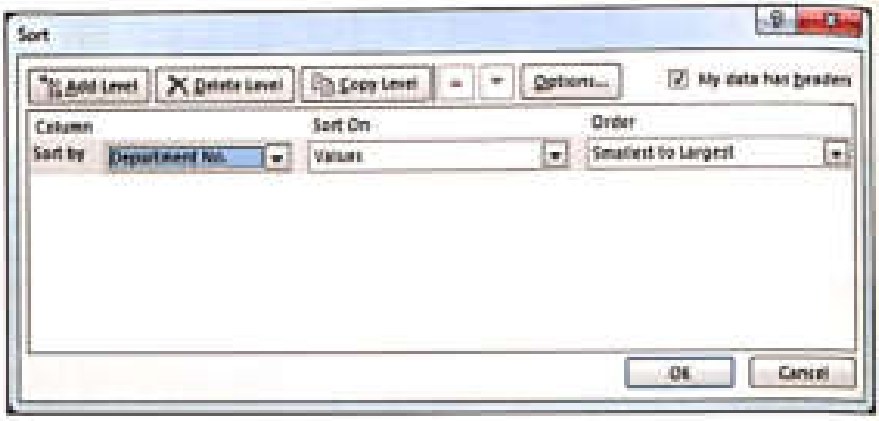


Fig. 3.21 **Sort** dialog box

   If you do not have a header row, you can deselect it.

   Under **Column**, select **Department No.** for **Sort by**. Under **Sort On**, select **Values** and under **Order**, select **Smallest to Largest.** Therefore, the data will first be sorted in the ascending order of Department No.
4. Click **Add Level** to create an additional sorting level.

   A new row appears (Fig. 3.22).

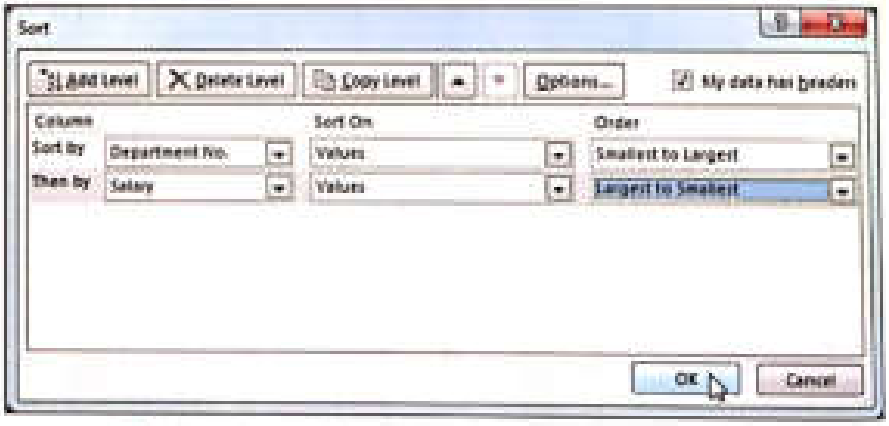


Fig. 3.22 **Sort** dialog box with a second sorting level

   Under **Column**, select **Salary** and under **Order**, select **Largest to Smallest.**

5. Click **OK**.

   The data gets rearranged in the ascending order of department number and the descending order of salary for each department (Fig. 3.23).

	A	B	C	D
1	Employee No.	Employee Name	Department No.	Salary
2	E104	Shanila Jamil	10	55000
3	E108	Anas Khawar	10	49500
4	E101	Haris Kabir	10	45000
5	E103	Maheen Kabir	20	60000
6	E102	Zainab Asad	20	54000
7	E109	Zoha Rizvi	20	52500
8	E110	Saheen Chughtai	20	51500
9	E105	Beenish Jamal	30	58000
10	E107	Shirin Kazi	30	54000
11	E106	Kazim Raza	30	48000

Fig. 3.23 Data sorted by Department No. and Salary

Organizing Data into Levels

If you want to total the salary of each department and then want to find out the grand total of all salaries, you can organise the data into department levels.

1. Click any cell in the data in Figure 3.17.
2. Click the **DATA** tab. In the **Outline** group, click **Subtotal** (Fig. 3.24) to open the **Subtotal** dialog box.
3. Select the commands as shown in Figure 3.25.

   New rows appear showing total salary for each department and the grand total of salaries (Fig. 3.26).

Fig. 3.24 **Outline** group on the **DATA** tab

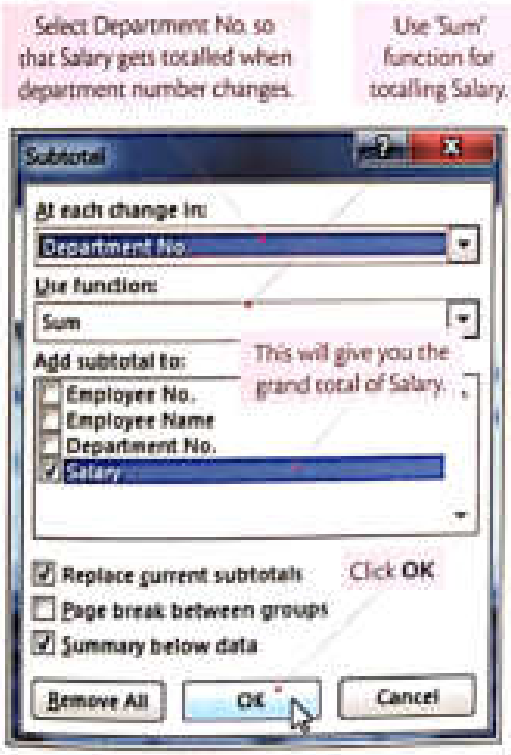


Fig. 3.25 **Subtotal** dialog box

	A	B	C	D
1	Employee No.	Employee Name	Department No.	Salary
2	E104	Shanila Jamil	10	55000
3	E108	Anas Khawar	10	49500
4	E101	Haris Kabir	10	45000
5			10 Total	149500
6	E103	Maheen Kabir	20	60000
7	E102	Zainab Asad	20	54000
8	E109	Zoha Rizvi	20	52500
9	E110	Saheen Chughtai	20	51500
10			20 Total	218000
11	E105	Beenish Jamal	30	58000
12	E107	Shirin Kazi	30	54000
13	E106	Kazim Raza	30	48000
14			30 Total	160000
15			Grand Total	527500

Fig. 3.26 Worksheet showing data levels

PRACTICE TIME

The class teacher of Class VI B of Aslan Public School wants to sort the list of students in the ascending order of bus numbers and the ascending order of names so that the list can be provided to the concerned bus in-charge. The teacher has given this task to the class monitor, Amir. Can you help Amir in completing this task?

	A	B	C
1	Roll No.	Student Name	Bus No.
2	1	Aisha Khan	6
3	2	Ghazi Gul	5
4	3	Asiya Das	4
5	4	Kanwal Kabir	4
6	5	Aman Jamali	5
7	6	Seema Javed	6
8	7	Alisha Dawood	3
9	8	Hasham Kabir	2
10	9	Javaid Sabir	1
11	10	Shamim Qureishi	2

Fi. 3(a)

SOLUTION

1. Enter the data in Excel as shown in Figure 3(a).
2. Click the **HOME** tab. In the **Editing** group, click **Sort & Filter** and then select **Custom Sort.**

   Or

   Click the **DATA** tab. In the **Sort & Filter** group, click **Sort**. The **Sort** dialog box appears [Fig. 3(b)].

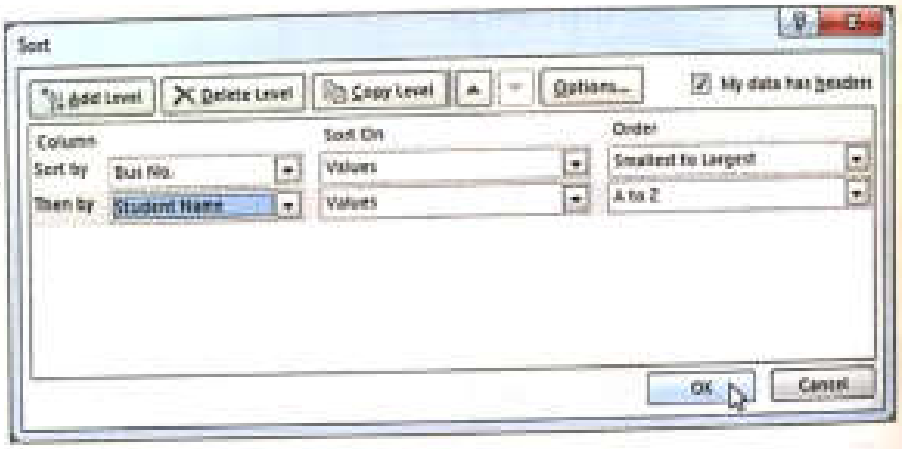


Fig. 3(b)

3. Under **Column**, select **Bus No.** under **Sort On**, select **Values**, and under **Order**, select **Smallest to Largest**.

   So the data will first be sorted in the ascending order of **Bus Number**.
4. Click **Add Level** to create an additional sorting level. A new row appears in the dialog box.
5. In the new row, under **Column**, select **Student Name** and under **Order**, select **A to Z**.
6. Click **OK**. The data gets arranged in the ascending order of Bus No. and for the same value of Bus No., the data is arranged in the ascending order of Student Name [Fig. 3(c)].

	A	B	C
1	Roll No.	Student Name	Bus No.
2	9	Javaid Sabir	1
3	10	Hasham Kabir	2
4	8	Shamim Qureishi	2
5	7	Alisha Dawood	3
6	4	Asiya Das	4
7	3	Kanwal Kabir	4
8	5	Aman Jamali	5
9	2	Ghazi Gul	5
10	1	Aisha Khan	6
11	6	Seema Javed	6

Fig. 3(c)

FILTERING

The **Filter** feature selectively blocks or hides the data you don't want to see. A filtered range displays only the rows/columns that meet the conditions or criteria you specify.

Filtering is a quick and easy way to find and work with selected data. Unlike sorting, filtering does not rearrange data. It temporarily hides the rows/columns you don't want. You can edit, format, or print the chosen range.

There are three types of filters in Excel: by a **list value**, by a **format**, and by **criteria**. Excel provides two commands for filtering data ranges: **Filter** (for simple criteria) and **Advanced Filter** (for complex criteria).

In this chapter we will discuss the **simple filter** feature. Let us take an example to understand how to use this feature.

1. Enter the data as shown in Figure 3.27. Select a cell in the range A1:E11, say B3.
2. Click the **HOME** tab. In the **Editing** group, click **Sort & Filter** and select **Filter** in the drop-down list.

   Or

   Click the **DATA** tab. In the **Sort & Filter** group, click the **Filter** button.

   Drop-down menu arrows will appear next to each column heading (Fig. 3.27).

   You can click any of these drop-down menu arrows to apply a filter to that field.
4. Click the drop-down menu arrow for **Year** and you will be presented with various options (Fig. 3.28).

	A	B	C	D	E
1	Building Name	City	Number of Floors	Height in Metre	Year
2	Burj Khalifa	Dubai	163	828	2010
3	Shanghai Tower	Shanghai	121	632	2014
4	Makkah Clock Royal Tower	Makkah	120	601	2012
5	One World Trade Center	New York City	104	541	2014
6	Taipei 101	Taipei	101	509	2004
7	Shanghai World Financial Center	Shanghai	101	492	2008
8	International Commerce Centre	Hong Kong	118	484	2010
9	Petronas Tower 1	Kuala Lumpur	88	452	1998
10	Petronas Tower 2	Kuala Lumpur	88	450	1998
11	Zifeng Tower	Nanjing	66	442	2010

Fig. 3.27 Data with drop-down arrows in each column heading

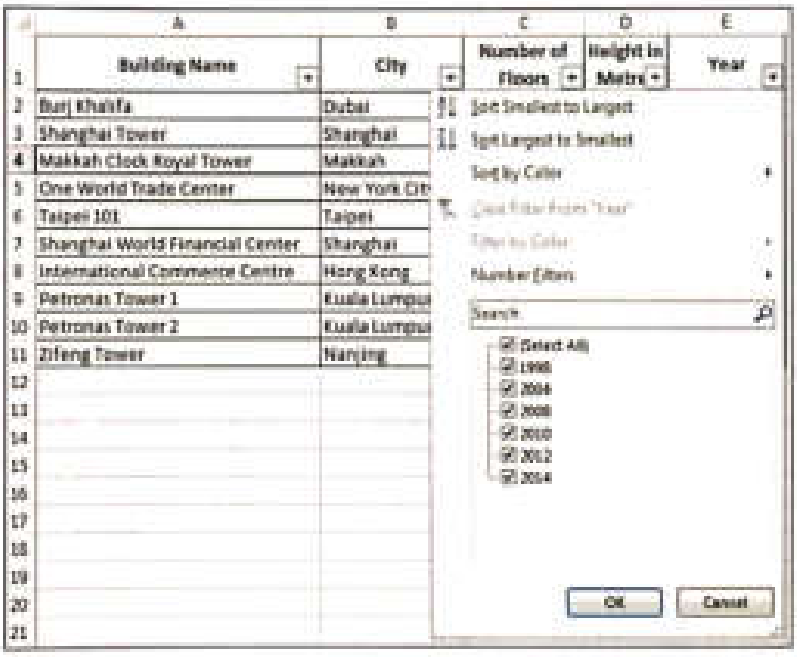


Fig. 3.28 **Filter** drop-down menu options

5. Initially, **Select All** is ticked. Deselect **Select All**, select any number in the drop-down menu, say 2010, and click **OK** (Fig. 3.29).
6. The rows containing **2010** in the **Year** field will be displayed (Fig. 3.30).

Fig. 3.29 Selecting 2010

	A	B	C	D	E
1	Building Name	City	Number of Floors	Height in Metre	Year
2	Burj Khalifa	Dubai	163	828	2010
8	International Commerce Centre	Hong Kong	118	484	2010
11	Zifeng Tower	Nanjing	66	442	2010

Fig. 3.30 Filtered rows with Year 2010

To determine whether a filter has been applied to data in a worksheet, look at the icon in the column heading:

- A drop-down menu arrow means that filter is enabled but not applied.
- A filter button means that filter is applied. When you bring the mouse pointer over this icon, the filter criteria is displayed as a screen tip (Fig. 3.31).

Screen Tip showing filter criteria

	A	B	C	D	E
1	Building Name	City	Number of Floors	Height in Metre	Year
2	Burj Khalifa	Dubai	163	828	2010
8	International Commerce Centre	Hong Kong	118	484	2010
11	Zifeng Tower	Nanjing	66	442	2010

Year
Equals "2010"

Fig. 3.31 Filter criterion as screen tip

If you want to remove the filter criteria, do one of the following:

- Select **Clear** in the **Sort & Filter** menu. Or
- Click **Clear** in the **Sort & Filter** group on the **DATA** tab. Or
- Click the arrow next to Year and select **Clear Filter From 'Year'** or **Select All** in the drop-down menu (Fig. 3.28).

Top Tip

If you have modified the data and want to filter the new data, click **Reapply**. If you want to remove all filters, click the **Filter** button again.

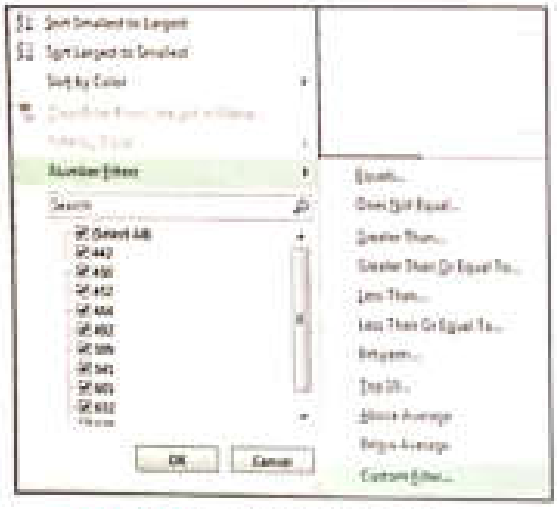


Fig. 3.32 **Number Filters** options

Custom Filtering

You can also use **AutoFilter** to filter data based on certain specific conditions. This is called **custom filtering**. For example, let us say you want to display only that data which shows a Height in Metres greater than or equal to 500 but less than or equal to 600. The steps are:

1. Point to **Number Filters** in the AutoFilter drop-down menu of the column Height in Metres. A submenu appears (Fig. 3.32). You can choose any comparison operator for filtering your data,

such as, **Equals** (=), **Does Not Equal** (< >), **Greater Than** (>), etc.

2. Click **Custom Filter**. This will open the **Custom AutoFilter** dialog box (Fig. 3.33).

3. To display only those rows where the data is in the range 500 to 600, fill in the values as shown in the dialog box and click **OK**. The filtered rows that satisfy the condition will be displayed in the worksheet (Fig. 3.34).

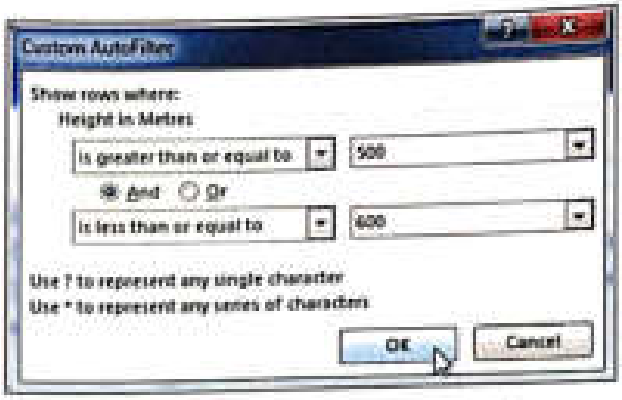


Fig. 3.33 **Custom AutoFilter** dialog box

	A	B	C	D	E
1	Building Name	City	Number of Floors	Height in Metres	Year
5	One World Trade Center	New York City	104	541	2014
6	Taipei 101	Taipei	101	509	2004

Fig. 3.34 Rows showing **Height in Metres** between 500 and 600

Highest or Lowest Values

Filtering also enables you to easily view the highest and lowest values from a large set of data. For such a kind of custom filtering, remove the filter already applied to the worksheet.

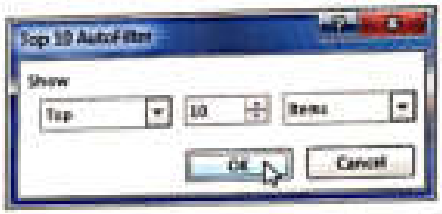


Fig. 3.35 **Top 10 AutoFilter** dialog box

To find out the three tallest buildings, point to **Number Filters** in the AutoFilter drop-down menu of the column Height in Metres and click **Top 10**. The **Top 10 AutoFilter** dialog box appears (Fig. 3.35). Type 3 in place of 10 and click **OK**. You will see three rows filtered, showing the buildings that stand first, second, and third with respect to height (Fig. 3.36). Similarly, you can display the three smallest buildings out of the given ones by choosing **Bottom** instead of **Top** in the dialog box.

	A	B	C	D	E
1	Building Name	City	Number of Floors	Height in Metres	Year
2	Burj Khalifa	Dubai	163	828	2010
3	Shanghai Tower	Shanghai	121	632	2014
4	Makkah Clock Royal Tower	Makkah	120	601	2012

Fig. 3.36 Top three tallest buildings

Filtering by Searching Data

In case you want to filter out a specific value out of thousands of rows of data, you can search for your preferred value in the list. For example, in the AutoFilter drop-down menu of Building Name, type 'Petronas' in the **Search** box and click **OK** (Fig. 3.37). All the records with **Building Name** starting with **Petronas** get filtered (Fig. 3.38).

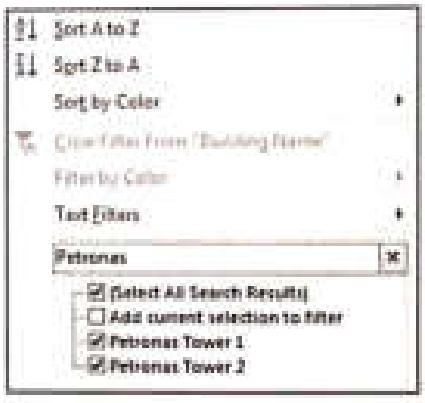


Fig. 3.37 Type **Petronas** in the Search box

	A	B	C	D	E
1	Building Name	City	Number of Floors	Height in Metre	Year
9	Petronas Tower 1	Kuala Lumpur	88	452	1998
10	Petronas Tower 2	Kuala Lumpur	88	450	1998

Fig. 3.38 Filter using the **Search** box

PRACTICE TIME

The accountant of Zaira Pvt. Ltd. wants to know the details of all sales representatives whose name starts with 'S'. Can you help him in his task? Is there any other way to do this task?

SOLUTION

1. Enter the data as shown in Figure 3(d).
2. Select any cell in the table and do one of the following to enable filtering:
   a. Click the **HOME** tab. In the **Editing** group, click **Sort & Filter** and select the **Filter** option.

      Or

   b. Click the **DATA** tab. In the **Sort & Filter** group, click **Filter**.
3. Click the drop-down control for **Salesman Name** and you will be presented with various options in a drop-down menu.
4. Bring the mouse pointer to **Text Filters** and from the submenu, select **Begins With ...** [Fig. 3(e)].
5. The **Custom AutoFilter** dialog box appears. Select **Begins With ...** in the combo box and type 'S' in the text box [Fig. 3(f)].

	A	B	C	D
1	Salesman No.	Salesman Name	Zones	Sales Amount
2	501	Inaya	North	1120000
3	502	Jibran	South	1050000
4	503	Hasan	North	1500000
5	504	Azam	East	1300000
6	505	Shaheer	West	1090000
7	506	Jamil	West	2000000

Fig. 3(d)

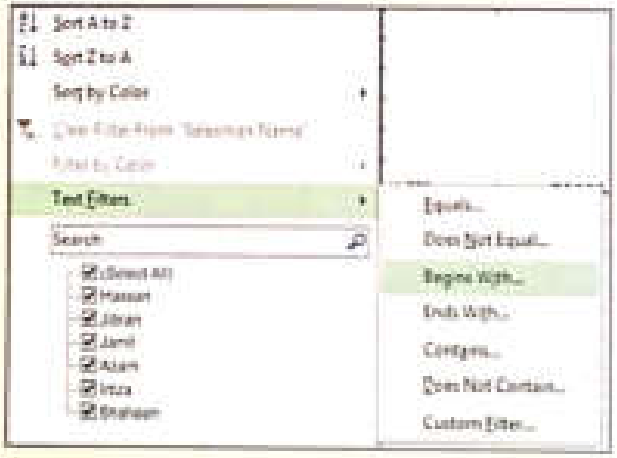


Fig. 3(e)

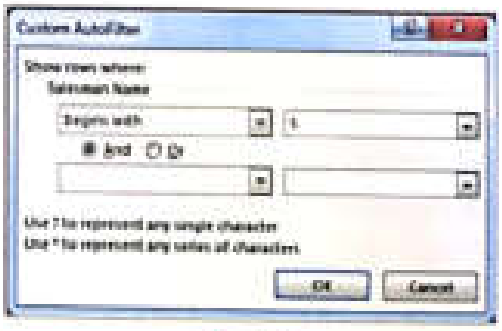


Fig. 3(f)

6. Click **OK.** All the rows in which the salesman's name starts with 'S' will be displayed [Fig. 3(g)].

Note: You can also do this task by typing 'S*' in the **Search** box.

	A	B	C	D
1	Salesman N	Salesman Na	Zones	Sales Amou
2	S05	Shaheer	West	1090000
3				
4				

Fig. 3(g)

CONDITIONAL FORMATTING

Conditional formatting is a feature that allows you to set a cell's format according to the conditions you specify. For example, using conditional formatting, you can display numbers in a particular colour depending on whether they are greater than, equal to, or less than a certain value.

Fig. 3.39 **Conditional Formatting** option in the **Styles** group

The **Conditional Formatting** command is available in the **Styles** group on the **HOME** tab (Fig. 3.39). Let us study a few ways to apply conditional formatting in Excel 2013.

Highlighting Selected Cells

Consider the data given in Figure 3.40. Suppose we want marks greater than 75 to be displayed in red background. The steps to be followed for this are:

	A	B	C	D	E
1	StudentID	Test I	Test II	Test III	Total
2	S001	56	79	70	205
3	S002	78	92	89	259
4	S003	68	59	78	205
5	S004	69	87	59	215
6	S005	76	86	73	235
7	S006	79	91	68	238
8	S007	88	77	98	263

Fig. 3.40 Selected data range

1. Select range B2:D8, as shown in Figure 3.40.
2. Click **Conditional Formatting** in the **Styles** group on the **HOME** tab. A drop-down menu will appear (Fig. 3.41).

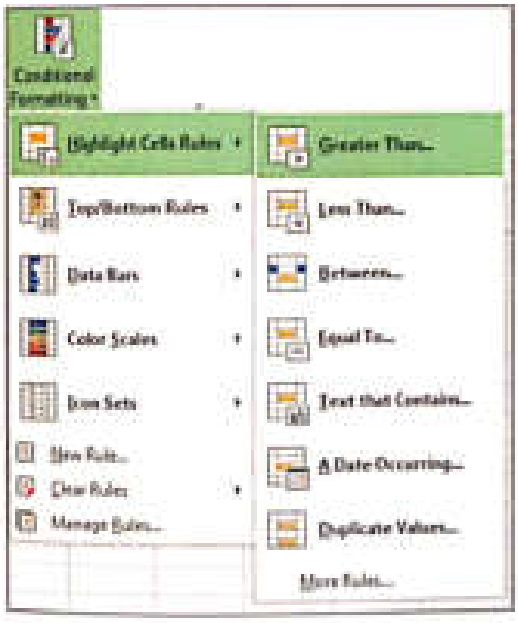


Fig. 3.41 **Conditional Formatting** menu

3. Select **Highlight Cells Rules.** In the submenu, click **Greater Than.**

   The **Greater Than** dialog box appears (Fig. 3.42).

4. Type 75 in the text box.

Fig. 3.42 **Greater Than** dialog box

5. Select **Custom Format** from the drop-down list on the right side. The **Format Cells** dialog box is displayed (Fig. 3.43).
6. Select the **Fill** tab in the dialog box and then select red colour.
7. Click **OK**. The **Greater Than** dialog box appears again.
8. Click **OK** and all marks greater than 75 will be displayed in red background in the worksheet (Fig. 3.44).

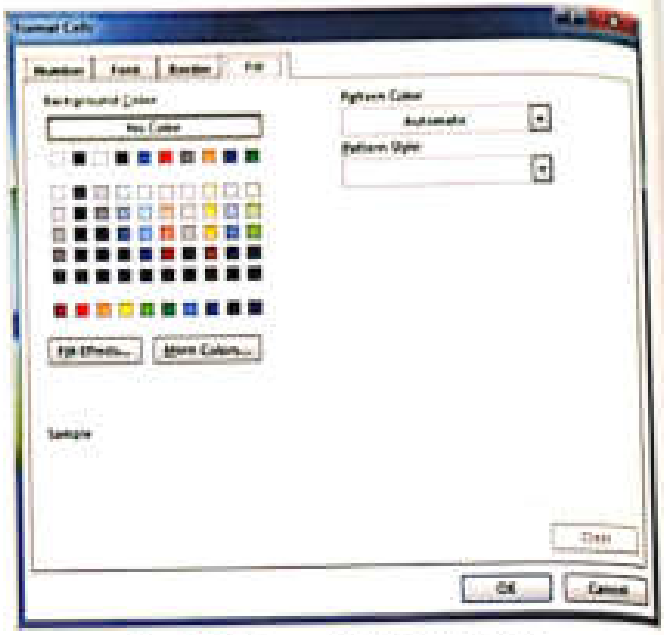


Fig. 3.43 **Format Cells** dialog box

	A	B	C	D	E
1	StudentID	Test I	Test II	Test III	Total
2	S001	56	79	70	205
3	S002	78	92	89	259
4	S003	68	59	78	205
5	S004	69	87	59	215
6	S005	76	86	73	235
7	S006	79	91	68	238
8	S007	89	77	96	263

Fig. 3.44 Highlighted Cells

Clearing Conditional Formatting

To clear conditional formatting, click **Clear Rules** in the **Conditional Formatting** drop-down menu. A submenu appears with two options: **Clear Rules from Selected Cells** and **Clear Rules from Entire Sheet** (Fig. 3.45). Select your preferred option.

Fig. 3.45 **Clear Rules** submenu

Top Tip

To copy conditional formatting:

1. Right-click the cell(s) with conditional formatting.
2. Click **Format Painter** in the toolbar that appears. A moving dashed border appears around the cell(s).
3. Select the range where you want to copy the conditional formatting.

Highlighting Selected Rows

This is another manner of applying conditional formatting in Excel. Suppose, in the earlier example, you want rows with total marks greater than 250 to be coloured blue. The steps would be as follows:

1. Select the range A1:E8 in the worksheet shown in Figure 3.40. Since we want to highlight rows, we are selecting the whole table.

2. Click **New Rule** in the **Conditional Formatting** drop-down menu. The **New Formatting Rule** dialog box appears (Fig. 3.46).
3. In the **Select a Rule Type** box, click **Use a formula to determine which cells to format.**
4. Under **Format values where this formula is true,** type '=' and then click a cell in the Total column of the worksheet, say E2. You will see the value '=E2' appear in the text box.

   Delete the dollar sign before the row number and type '> 250' after E2. So now you have the value '=$E2 > 250' in the box.
5. Click **Format**. The **Format Cells** dialog box appears.
6. Click the **Fill** tab. Choose blue as background colour and click **OK.**
7. You will see the **New Formatting Rule** dialog box again. Click **OK**. The rows with total marks greater than 250 now have a blue background (Fig. 3.47).

Fig. 3.46 **New Formatting Rule** dialog box

	A	B	C	D	E
1	StudentID	Test I	Test II	Test III	Total
2	S001	56	79	70	205
3	S002	78	92	80	250
4	S003	68	59	78	205
5	S004	69	87	59	215
6	S005	76	86	73	235
7	S006	79	91	68	238
8	S007	88	77	98	263

Fig. 3.47 Rows with blue background

MORE SORTING AND FILTERING

You have learnt how to sort or filter data based on cell values. Excel also allows you to sort or filter data by cell colour.

Sorting by Cell Color

Suppose we want to arrange the data such that all the plain rows are on top. For this, we need to sort by cell colour, which, can be done by following these steps:

1. Consider the data given in Figure 3.47. Click any cell in the range A2:E8.
2. Click **Sort** in the **Sort & Filter** group on the **DATA** tab. The **Sort** dialog box appears (Fig. 3.48).

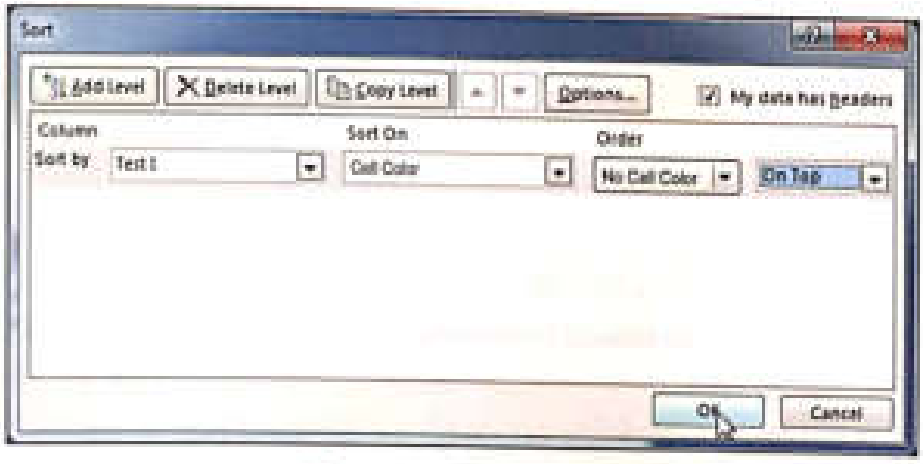
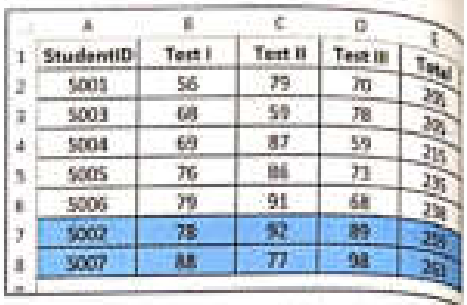


Fig. 3.48 **Sort** dialog box

3. Select any column under **Column**, **Cell Color** under **Sort On**, **No Cell Color** under **Order**, and **On Top**. Click **OK**. The blue-coloured rows appear at the bottom in the worksheet (Fig. 3.49).



	A	B	C	D	E
1	StudentID	Test I	Test II	Test III	Total
2	5001	56	79	70	205
3	5003	68	59	78	205
4	5004	69	87	59	215
5	5005	76	86	73	235
6	5006	79	91	68	238
7	5002	78	92	89	259
8	5007	88	77	98	263

Fig. 3.49 Rows sorted by cell Colour

Filtering by Cell Color

If you want to display only the blue-coloured rows in a worksheet, do the following:

1. Consider the data given in Figure 3.47. Select a cell in the range A1:E8.
2. Click the **Filter** option of **Sort & Filter** of the **Editing** group on the **HOME** tab. Drop-down menu arrows will appear next to the column headers.
3. Click the arrow next to **Total**. Choose **Filter by Color** in the drop-down menu and click blue colour in the submenu (Fig. 3.50). You will now see only the rows with the chosen cell colour (Fig. 3.51).

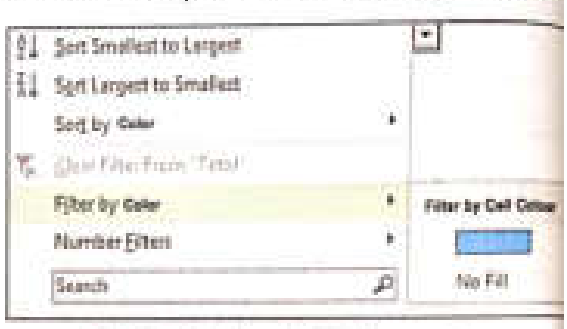


Fig. 3.50 **Filter by Colour** option

	A	B	C	D	E
1	Student	Test I	Test I	Test I	Tota
3	5002	78	92	89	259
8	5007	88	77	98	263

Fig. 3.51 Rows filtered by Colour

PRACTICE TIME

The class teacher of Class VI wants Subhan to mark the cells with grade A1 in green colour and then display the list of those students who have scored A1 grade in English. Can you help Subhan do this task?

	A	B	C	D	E
1	Roll No.	Student Name	English	Maths	Science
2	1	Sabeen Chughtai	A1	A2	A1
3	2	Shahana Saleem	B1	C2	A2
4	3	Seema Dawood	C1	B2	B2
5	4	Jugnu Ali	A1	A1	B1
6	5	Kashif Hameed	B2	C1	C1

Fig. 3(h)

SOLUTION

1. Enter the data in Excel as shown in Figure 3(h).
2. Select the cell range C2:E6.
3. Click **Conditional Formatting** in the **Styles** group on the **HOME** tab. The drop-down menu appears.
4. Point to **Highlight Cells Rules** and click **Equal To** in the submenu. The **Equal To** dialog box appears.

5. Type 'A1' in the box on the left and select **Custom Format** on the right. The **Format Cells** dialog box appears.
6. Select red colour for font and fill colour as green.
7. Click **OK** in both dialog boxes. The selected cells get highlighted in the worksheet [Fig. 3(i)].
8. To filter the formatted rows, do the following:
   a. Select a cell in the range A1:E6. Click the **Filter** option under **Sort & Filter** of the **Editing** group on the **HOME** tab or click **Filter** under the **Sort & Filter** group on the **DATA** tab.
   b. Click the drop-down menu arrow next to English.
   c. Choose **Filter by Color** in the drop-down menu and click the green colour in the submenu. Only the rows with green background in English will be displayed [Fig. 3(j)].

	A	B	C	D	E
1	Roll No.	Student Name	English	Maths	Science
2	1	Saheen Chaghtai	A1	A2	A1
3	2	Shabana Saheen	B1	C2	A2
4	3	Seema Dawood	C1	B2	B2
5	4	Jugnu Ali	A1	A1	B1
6	5	Kashif Hameed	B2	C1	C1

Fig. 3(i)

	A	B	C	D	E
1	Roll No.	Student Nan	Englis	Maths	Scienc
2	1	Saheen Chaghtai	A1	A2	A1
5	4	Jugnu Ali	A1	A1	B1

Fig. 3(j)

Computer Manners

Correct posture is very important, especially when working for long hours at the computer. Adjust your seat height so that your feet are flat on the floor. Make sure your upper and lower back is well supported. Position the keyboard directly in front of your body and sit close to it. Sit at least an arm's length away from the monitor screen.

Tricky Terms

Fill Handle a small black square in the lower-right corner of (the) active cell(s)

AutoFill a feature that lets you quickly fill in a predefined list or an arithmetic series

Custom List an ordered list of frequently used text entries that you can enter quickly through AutoFill

Flash Fill a feature that recognises the data pattern and fills the data series in the column

Sorting rearranging the data in cells in a specified order

Filtering to display only the rows/columns that meet the specified conditions or criteria

Custom Filtering to use complex criteria to filter data

Conditional Formatting setting cell format according to the conditions specified by the user

Memory Bytes

- The AutoFill feature lets you quickly enter a predefined series of data.
- There are two ways to create custom lists: by importing the list or by entering the list in the **Custom Lists** dialog box.
- Sorting allows the user to rearrange the data in ascending or descending order.
- Filtering selectively displays rows/columns that meet the criteria specified by the user.
- Conditional formatting allows you to set a cell's format according to the conditions you specify.
- You can copy the conditional formatting setting to other cells using the **Format Painter** tool.

EXERCISES

Objective Type Questions

1. **Choose the correct option.**

   a. This feature recognises the data pattern in a worksheet and fills the series accordingly.
   i. AutoFill ii. Flash Fill iii. Custom Fill iv. Copy

   b. The filter button  means.
   i. Filter is applied. ii. Filter is enabled but not applied.
   iii. Filter is disabled. iv. none of these

   c. To remove filter
   i. Click the **Filter** option of the **Sort & Filter** button in the **Editing** group on the **HOME** tab.

ii. Click the **Filter** option in the **Sort & Filter** group on the **DATA** tab.
iii. both (i) and (ii).
iv. Press DELETE.

d. The **Conditional Formatting** button is available in the ..... group on the **HOME** tab.
i. Cells ii. Editing iii. Styles iv. Alignment

e. When you bring the mouse pointer over a small black square in the lower-right corner of the active cell(s), it changes to a ..... sign.
i. – ii. ^ iii. * iv. +

Descriptive Type Questions

1. **Answer the following.**

a. Explain any one method of creating a custom list.

b. How will you display only those rows in which the total marks obtained by the students is greater than 500?

c. Evaluate the importance of the various features of the 'Fill' command in Excel

d. Zaid's father owns a mobile phone shop. He has asked Zaid to help him maintain the records of all his customers in an Excel worksheet. He now wants Zaid to check the details of Ali Murtaza, an old customer, in his records. Which of these two options should Zaid use for this? Give reasons for your answer.
- filter
- sort

e. Create an Excel worksheet to record data collected from your fellow students. Ask them for their favourite colours, animals, birds, flowers, and trees. Input the data. Now use the appropriate commands to:
- Sort each list alphabetically.
- Apply the colour red to all the cells where more than 3 students have the same favourite.
- Filter those cells where the data begins with the letter M.

Application-Based Questions

a. Consider the given worksheet and answer the following questions:
i. How will you copy the formatting of cell B2 to cells C2:E2?
ii. If you select the cells B4 and C4 and drag the AutoFill to cell E4, what numbers will you get in cells D4 and E4?

	A	B	C	D	E
1					
2		**North**	South	East	West
3					
4		3	6		
5					

b. Consider the worksheet showing the total marks obtained by some students of Class VI A and answer the following questions:

i. Which feature of Excel is shown by the drop-down menu arrows in the column headings?

ii. List the Roll No. of all the records that will be displayed when you click the drop-down menu arrow of Name and type 'A*' in the **Search** box and press ENTER.

iii. How will you turn off this feature in the worksheet?

	A	B	C
1	Roll No.	Name	Total
2	1001	Anaya	350
3	1002	Dina	326
4	1003	Anoosha	215
5	1004	Beenish	167
6	1005	Qasim	259
7	1006	Hashim	235
8	1007	Sameen	314

c. Consider the worksheet showing the student attendance record and answer the following questions:

i. Which type of formatting is shown?

ii. Which tab and group has the option for this formatting?

iii. How will you clear this formatting?

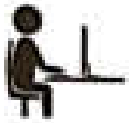
	A	B	C	D	E	F
1	Roll No.	Day1	Day2	Day3	Day4	Day5
2	1	P	P	P	A	A
3	2	A	P	P	A	P
4	3	P	A	A	P	P
5	4	P	P	P	P	A
6	5	A	A	P	P	P

d. Consider the given worksheet and answer the following questions:

i. What will you do so that StudentName starting with Z is at the top and the one starting with A is at the bottom?

ii. What will you do so that the lowest value of Fees is at the top and the highest value is at the bottom?

	A	B	C	D
1	StudentID	StudentName	Course	Fees
2	S101	Sabiha	MCA	35000
3	S102	Javid	MBA	80000
4	S103	Akbar	BTech	80000
5	S104	Manaf	B.Com.	15000
6	S105	Dina	BBA	30000
7	S106	Reema	Economics Hons.	34000



IN THE LAB

1. The accountant of a car showroom maintains the monthly details of cars sold by each salesperson. The given worksheet shows this data for the last three months. The accountant wants the following information:

a. Data showing car sales more than 10 in dark red background

b. Data showing car sales below 8 in dark blue background

Can you help the accountant with this task?

	A	B	C	D	E
1	SalesmanID	Salesman Name	Month 1	Month 2	Month 3
2	AL01	Shahnawaz	10	12	11
3	AL02	Azam	12	11	15
4	AL03	Babar Aziz	8	10	12
5	AL04	Dina	6	9	11
6	AL05	Reema	15	14	15

2. Aryan Chemicals Pvt. Ltd. maintains employee details and their allotted projects as shown in the given worksheet. The company's HR team wants the following sorts:

a. Sort the data in ascending order of DepartmentNo.

b. Sort the data in the descending order of ProjectNo.

	A	B	C	D
1	EmployeeNo	Employee Name	DepartmentNo	ProjectNo
2	K01	Hasbir	A1	P1
3	K02	Sobika	A3	P2
4	K03	Esra	A2	P3
5	K04	Anjum	A3	P3
6	K05	Reema	A1	P2
7	K06	Noor	A1	P2
8	K07	Ehsan	A2	P3

c. Sort the data in the ascending order of DepartmentNo and then the ascending order of ProjectNo. Can you do this task?

3. The class teacher of Class VI maintains personal details of her students in an Excel worksheet. Part of the worksheet is shown here. She wants to do the following:
   a. Filter all the records for height greater than 155 centimetres.
   b. Filter all the records for weight less than 60 kilograms.
   c. Filter all the records of students whose birthday is in October.
   d. Filter all the records of students with names starting with 'S'.

   Could you help the teacher in doing this task?

	A	B	C	D	E
1	StudentID	Student Nar	BirthDate	Height in Centimetres	Weight in Kilograms
2	AP01	[illegible]	11-05-2001	153	55
3	AP02	Ramveer	10-12-2001	160	60
4	AP03	Tanya	01-08-2000	165	65
5	AP04	Anjum	02-09-2001	170	58
6	AP05	Kiran	23-03-2001	165	59
7	AP06	Esha	16-01-2001	154	70
8	AP07	Yusuf	18-10-2000	150	69
9	AP08	Dhruv	21-10-2000	157	65

4. The Computer Department of a school has allotted usernames to all the students of Class VI in the form of First Name.Last Name@alsan.org. Can you fill the respective values in column C of the worksheet? Try to use the Flash Fill method to get the values in cells C2:C6.

	A	B	C
1	First Name	Last Name	Username
2	Shazia	Khanam	
3	Roshan	Zaki	
4	Kamla	Kabir	
5	Manan	Verma	
6	Javeria	Shamim	

GROUP PROJECT

Your school leaders want to find out more about the sporting activity of their students. Your task is to:

- research this information.
- present your findings in an Excel worksheet.
- analyse your data and make recommendations for new sports facilities for your school.

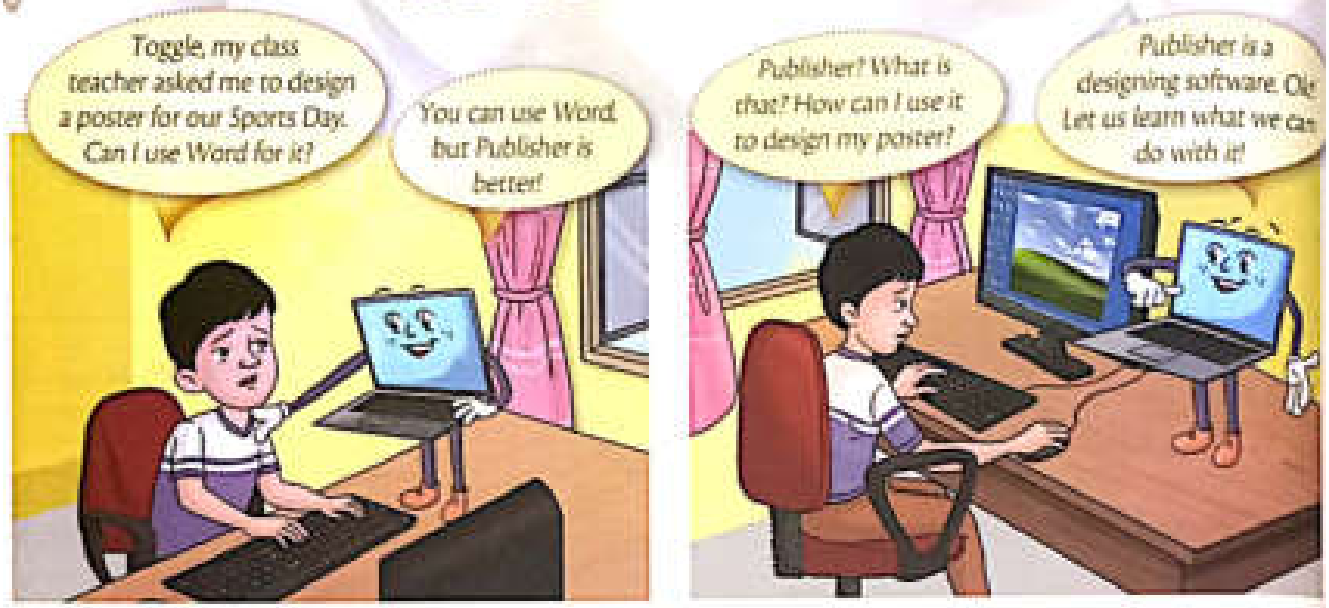
Remember to use multiple column sorting and show at least one feature of conditional formatting.

TEACHER'S NOTES

- Discuss how the AutoFill feature and custom lists can help save time. Give some practical examples of their uses and let the students suggest some more.
- Discuss sorting, filtering, and conditional formatting by taking some practical examples.
- Demonstrate how conditional formatting is useful in enhancing the readability and usefulness of data.
- The students should be given enough time to practise entering data in Excel and using the advanced features, so that they are comfortable working in Excel.

Chapter 4

Introducing Publisher 2013



Publisher is a program that allows you to create documents such as brochures, labels, cards, certificates, flyers, etc. It has several pre-designed templates that help in quick and easy designing of a document. Publisher comes as part of the Office package.

In this Chapter

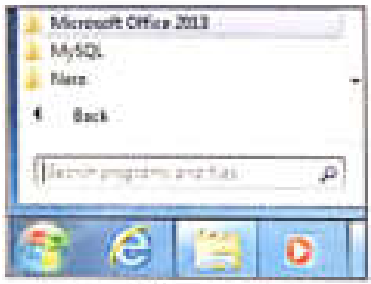
- Starting Publisher 2013
- Publisher 2013 Interface
- Working with Publisher 2013
- Creating a New Blank Publication
- Connecting Text Boxes
- Typography

STARTING PUBLISHER 2013

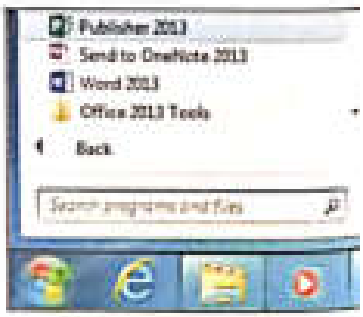
To start Publisher 2013 follow the given steps:

1. Select **Start ▶ All Programs ▶ Microsoft Office 2013 ▶ Publisher 2013** (Fig. 4.1).

(a) Selecting **Start ▶ All Programs**



(b) Selecting **Microsoft Office 2013**



(c) Selecting **Publisher 2013**

Fig. 4.1 Starting Publisher 2013

You will see the starting screen of **Publisher 2013** (Fig. 4.2).

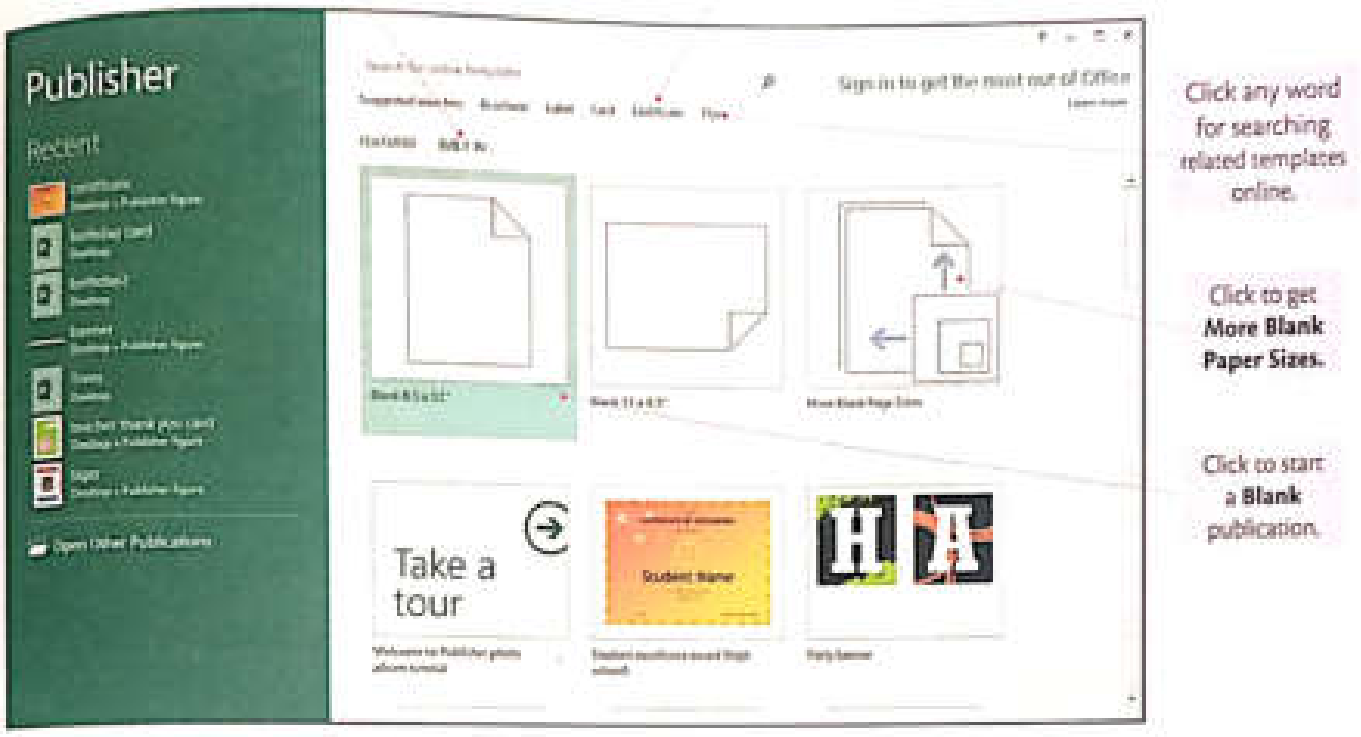


Fig. 4.2 Starting screen of **Publisher 2013**

2. Click **BUILT-IN** if you want to have a look at the templates available (Fig. 4.3).

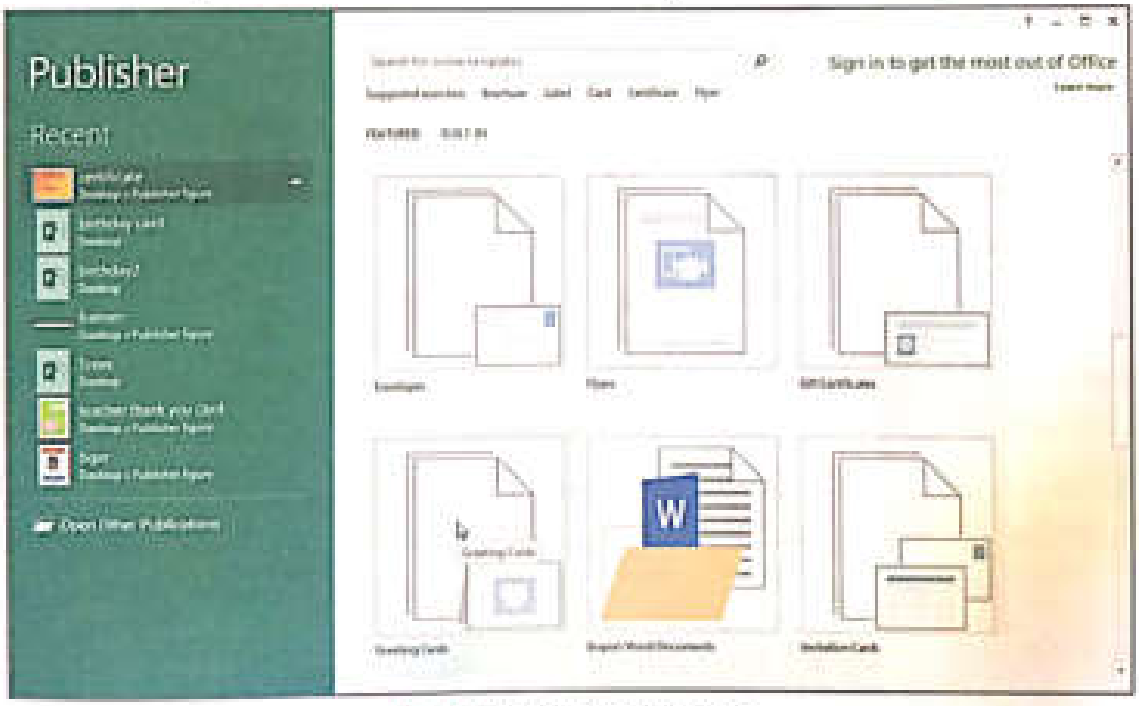


Fig. 4.3 **BUILT-IN** Templates

3. Scroll to the desired publication type.
4. Say, for example, you wish to create a birthday card. So, click the **Greetings Cards** thumbnail to display the greeting card templates (Fig. 4.4).

   Notice that templates for all types of greeting cards will appear such as birthday, holidays, etc.

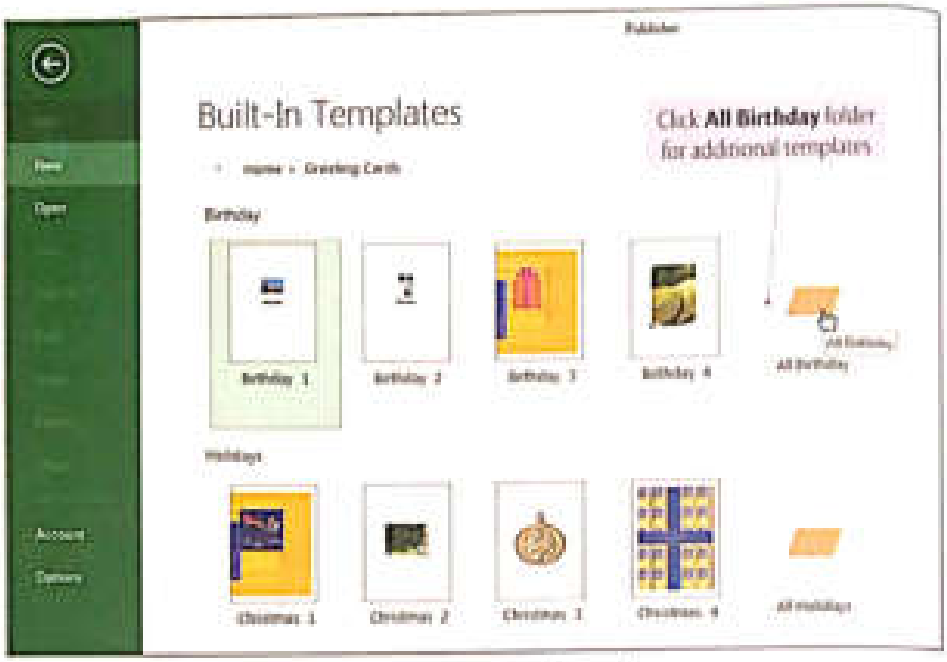


Fig. 4.4 Greeting Card Templates

5. Click **All Birthday** to show the entire set of templates for birthday cards. Select the card you like, say Birthday 78. The selected card will appear in the panel on the right side of the window (Fig. 4.5).

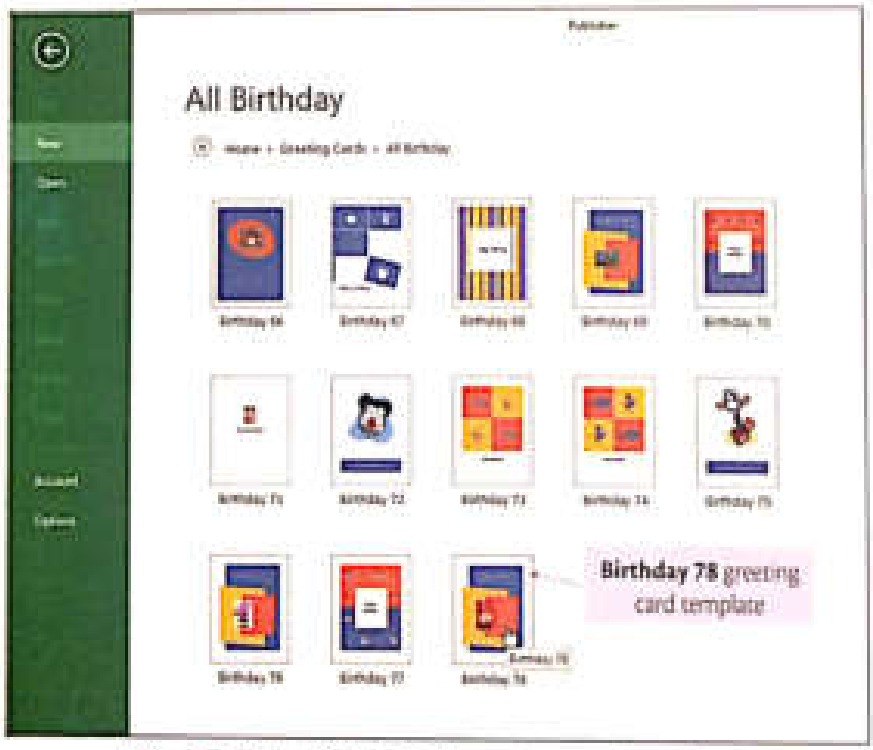


Fig. 4.5 Select **Birthday 78** greeting card template

Customising the Template

You can customise the card by changing its **Color scheme** and **font scheme**. You can also add your business contact information and change the **paper size** and **layout** style (Fig. 4.6).

The options chosen here are:

Customization	Options
Color scheme	Bluebird
Font Scheme	Default
Business Information	Custom 1
Page size	Quarter-sheet side fold
Layout	Juxtaposition

Finally, click **CREATE**. The card will appear on the screen (Fig. 4.7).

Fig. 4.6. Customizing the Template

PUBLISHER 2013 INTERFACE

The selected birthday card appears on the Publisher screen, as shown in Figure 4.7.

You can see that the Publisher 2013 window has a similar look as the Word 2013 screen. The following elements are common:

- Quick Access Toolbar
- The rulers
- The Ribbon with the tabs, the groups, and the commands within the groups
- The vertical and horizontal scroll bars
- The status bar

Besides the elements you are already familiar with, you can see that the Publisher screen has some new ones. These are the **page navigation pane**, **guides**, and the **scratch area**.

Page navigation pane The **page navigation pane** allows you to view and work with all the pages in your publication. You can view the page thumbnails and add, delete, rearrange, and duplicate pages in this pane.

Guides They are horizontal and vertical lines that appear on your publication while you are working with it. Guides help in aligning text, images, and other objects on the page.

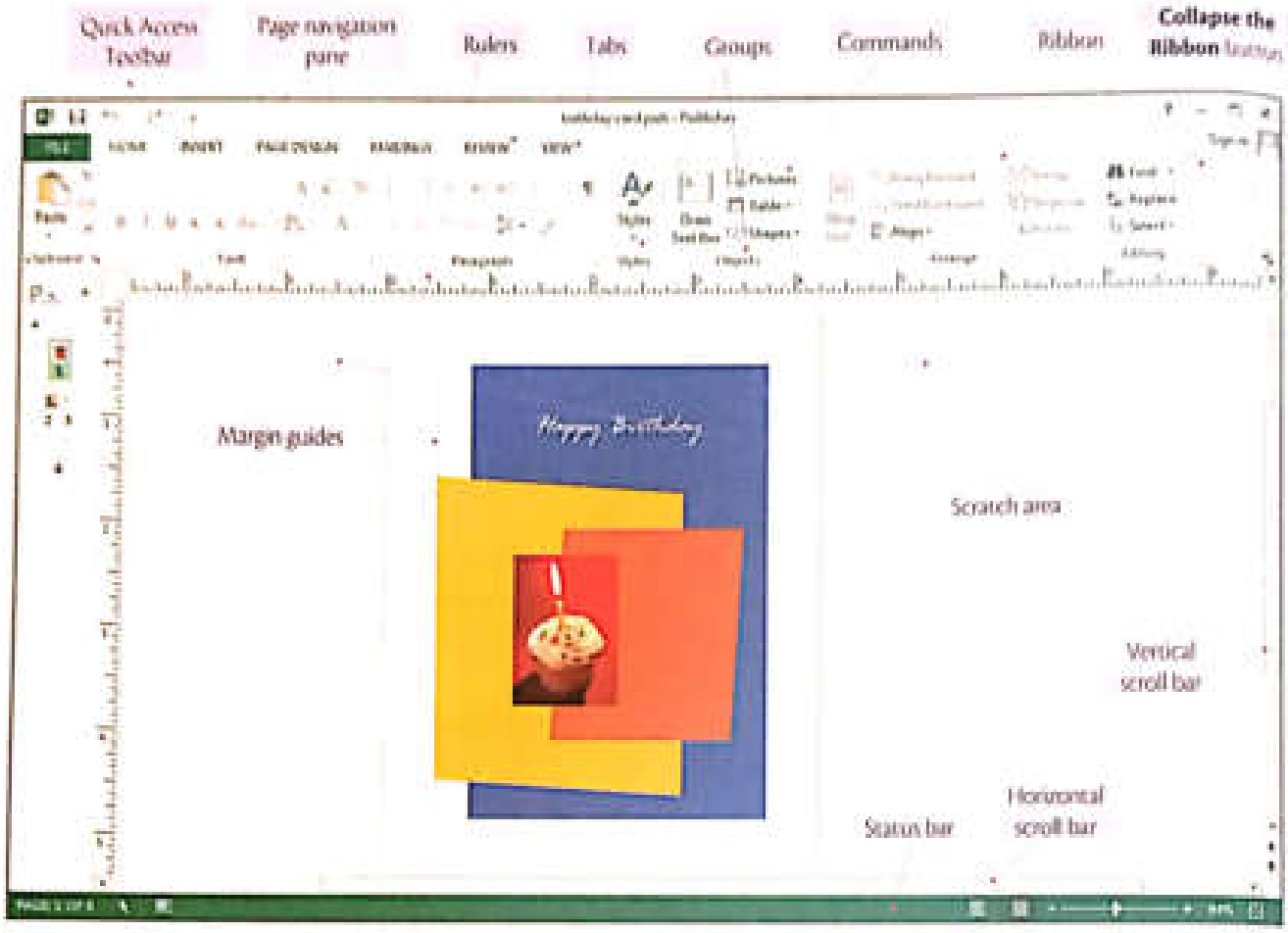


Fig. 4.7 Birthday Card on the screen

There are two types of guides (Fig. 4.8):

- **Margin guides** These are the blue lines that mark the edges or margins of the printable area on each page of your publication. These guides are created automatically when you set your page margins.
- **Customisable guides** These are the green lines that you can add anywhere on your publication. To add green guides, click either the horizontal or the

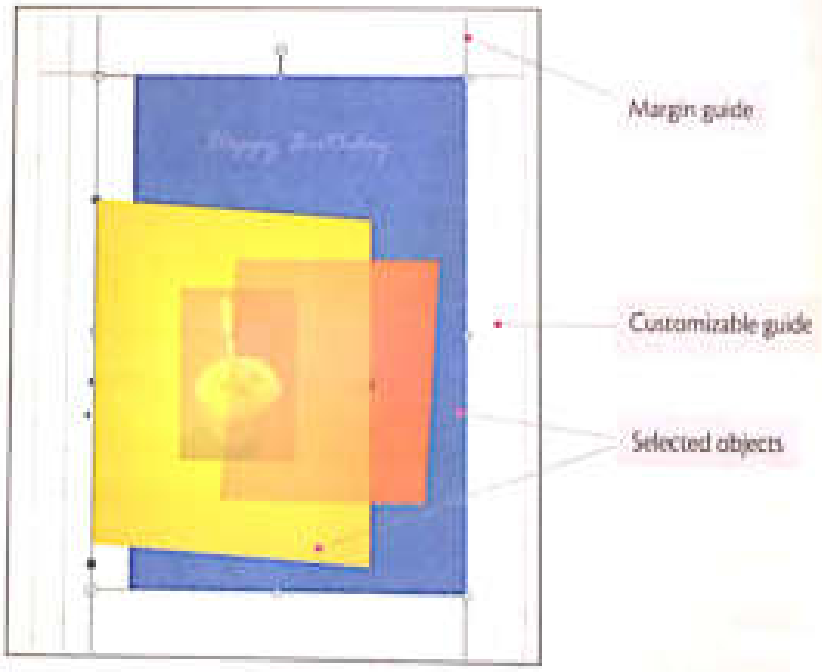


Fig. 4.8 Guides in a publication

vertical ruler. Drag the mouse to your publication and release to add the guide at the desired location. The elements you want to place in your publication are called objects. These include text, WordArt, graphics, pictures, etc.

Scratch area The grey area on both sides of the card layout is the scratch area. This area is used to place the objects of your publication.

WORKING WITH PUBLISHER 2013

If you have started with a template, one of the first things you may need to do is to modify or add text. For adding text you have to insert text boxes. Let us learn how to do that.

Inserting a Text Box

To add the desired text to your publication, you will have to insert text boxes. The steps for that are:

1. Select the **HOME** tab.
2. In the **Objects** group, click **Draw Text Box**. The cursor will change to a plus sign.
3. Click anywhere on the publication and drag the mouse to insert the text box (Fig. 4.9).

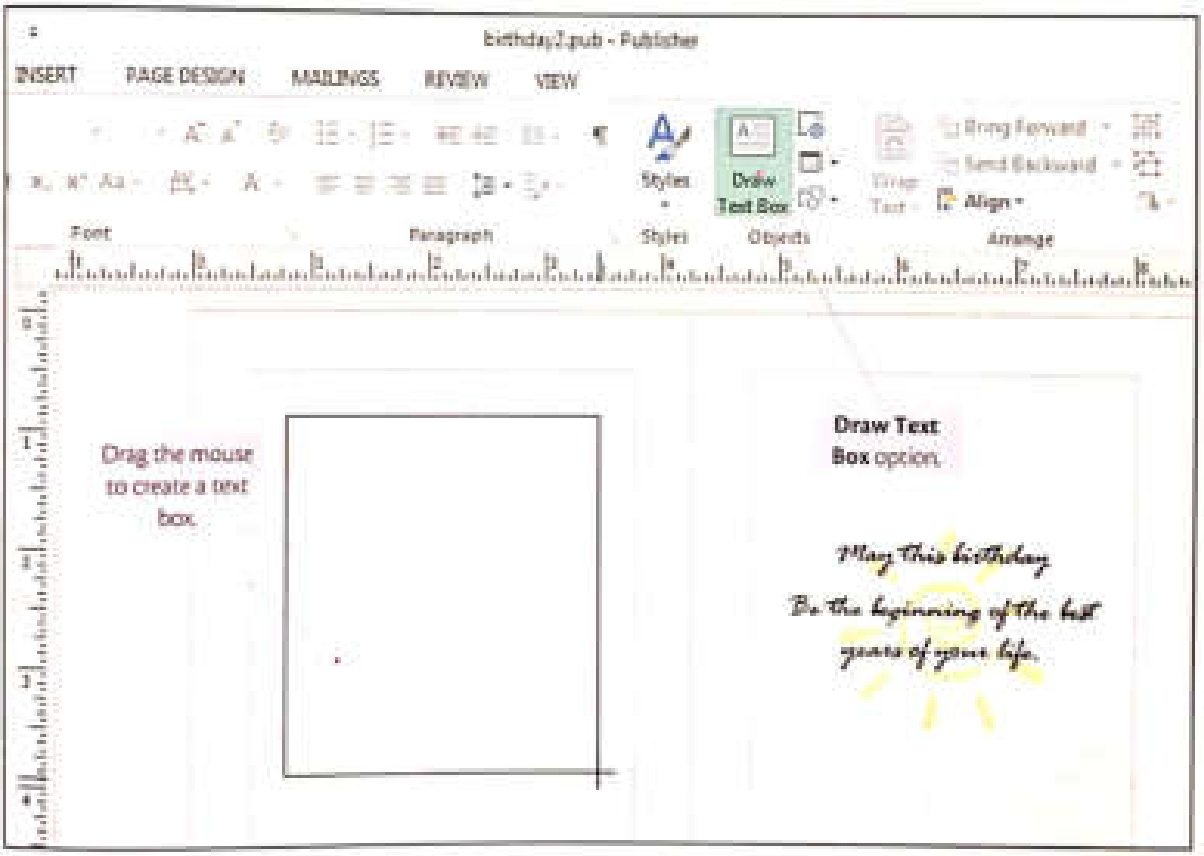


Fig. 4.9 Inserting a Text Box

4. Type the text as shown in Figure 4.10. Notice that on selecting the text box, two additional tabs appear on the ribbon: **DRAWING TOOLS** and **TEXT BOX TOOLS**, with their respective **FORMAT** tabs (Fig. 4.11).

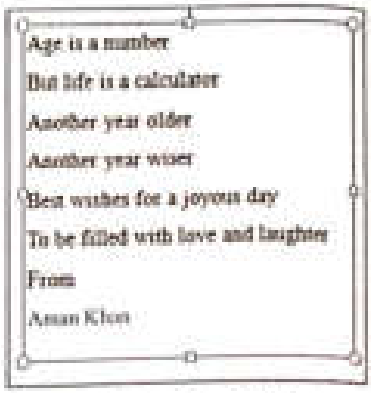


Fig. 4.10 Text for birthday card

Formatting Text

Similar to font formatting in Word, PowerPoint, or Excel, Publisher also allows you to format the text the way you want to. The various options to enhance your text appear on the **FORMAT** tab under **TEXT BOX TOOLS** tab (Fig. 4.11).

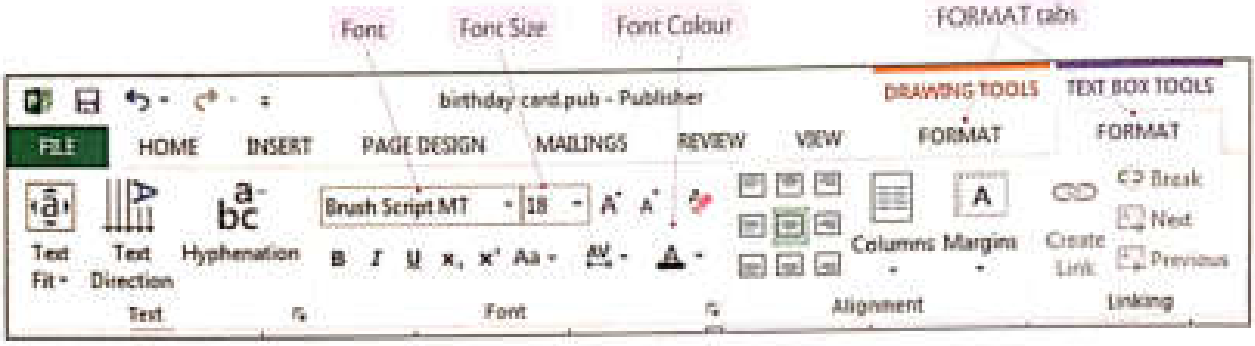


Fig. 4.11 **FORMAT** tab options under **TEXT BOX** and **DRAWING TOOLS**

Select the text and do the following to format it:

1. Click the **Font** drop-down menu arrow and select Brush Script Std.
2. Click the **Font Size** drop-down menu arrow and select 18.
3. Click the **Font Color** drop-down menu arrow and select blue colour.

Top Tip

The **mini toolbar** appears automatically on selecting the text and contains commands related to changing the appearance of text in a publication. If you do not use the mini toolbar, it disappears from the screen. If you press and hold or right-click an item in the publication window, Publisher displays both the mini toolbar and a shortcut menu.

Formatting Text Boxes

The **FORMAT** tab under **DRAWING TOOLS**, has various options to format a text box. Select the text box that you want to format.

Click the **FORMAT** tab under **DRAWING TOOLS** on the ribbon. You will now see options that will allow the border, shade, shadow effect, etc., of the box to be changed (Fig. 4.12).

Fig. 4.12 Commands on the **FORMAT** tab under **DRAWING TOOLS**

For changing the fill and border colour of the text box, do the following in the **Shape Styles** group:

1. Click the **Shape Fill** option and select gold to fill the text box with that colour (Fig. 4.13).
2. Click **Shape Outline** and select orange to change the outline colour of the box (Fig. 4.14). The final text will look as seen in Figure 4.15.

Fig. 4.13 **Shape Fill** options

Fig. 4.14 **Shape Outline** options

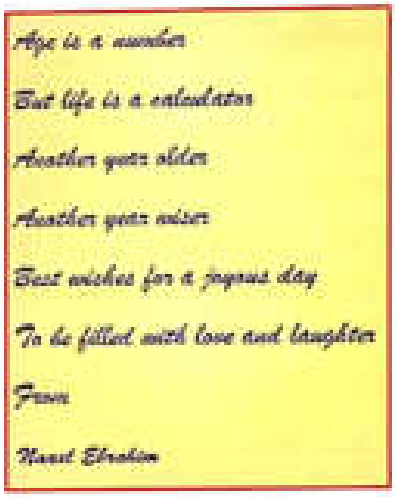


Fig. 4.15 Formatted text and text box

Top Tip

Publisher also allows you to control hyphenation, text fit, and text direction in your text boxes. These commands are in the **Text** group on the **FORMAT** tab under **TEXT BOX TOOLS**.

Use the **Text Direction** command in combination with the alignment options in the **Alignment** group on the same tab.

Saving a Publication

By default, Publisher saves a file in the default working folder. If you want, you can specify a different location.

1. Open the **Backstage** view by clicking the FILE tab.
2. Click the **Save As** option (Fig. 4.16).

   or

3. Press CTRL + S or click the **Save** icon on the **Quick Access Toolbar**.
4. Usually, **Computer** will be highlighted as the default location for saving the file.

   Click the **Browse** button in the right pane to display the **Save As** dialog box (Fig. 4.17).

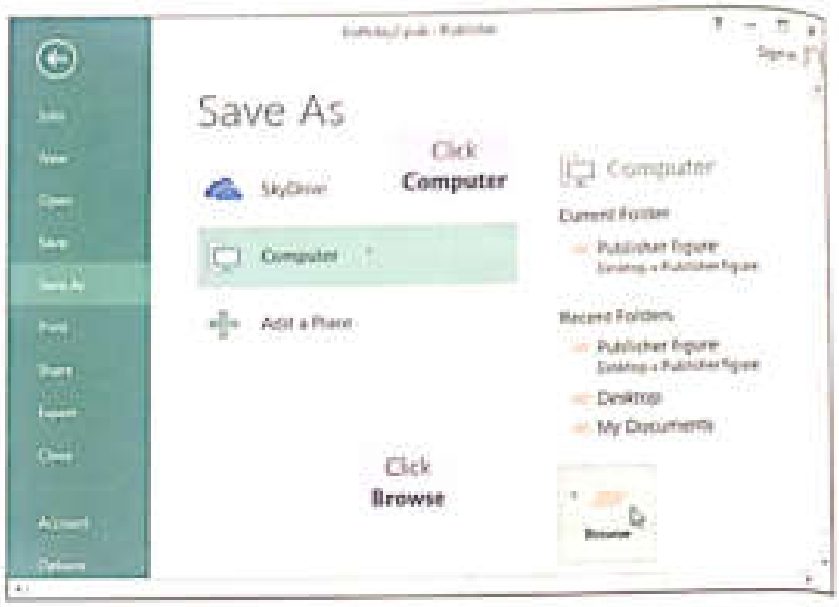


Fig. 4.16 **Save As** options

5. Type a name for your publication in the **File name** text box.
6. Click **Save**.

The default extension of a publisher file is .pub. If you want to save the file in .pdf format, select PDF in the **Save as type** drop-down list. This type of file cannot be modified.

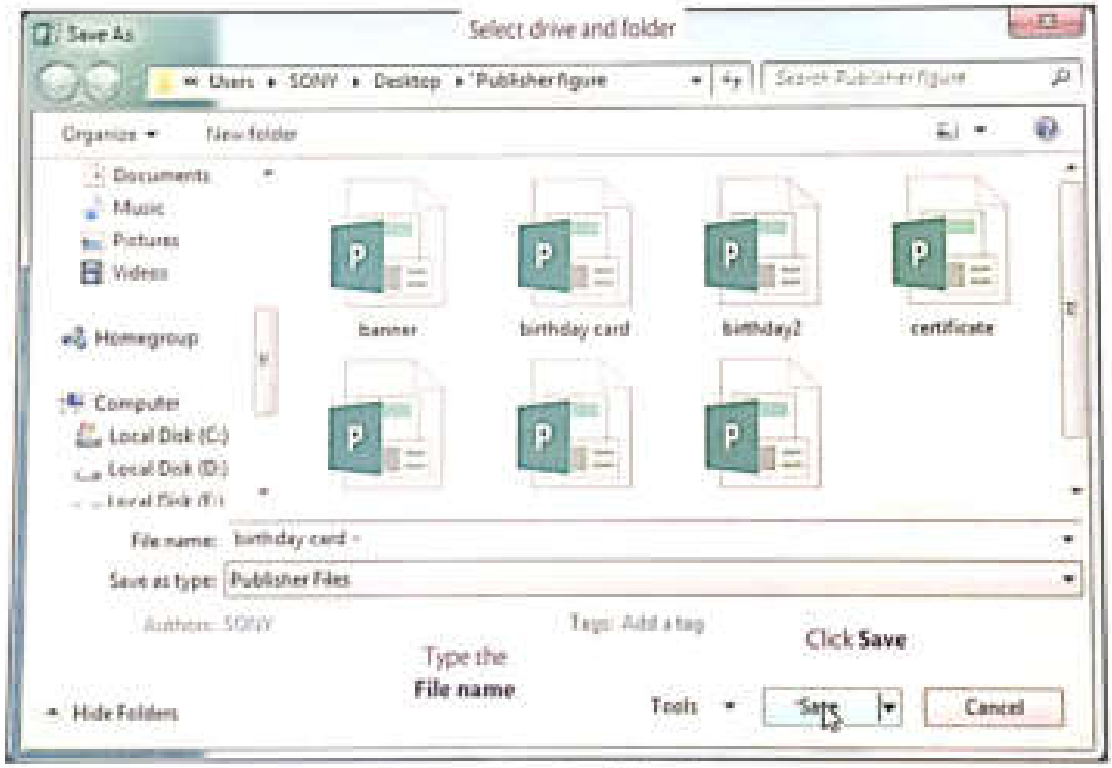


Fig. 4.17 **Save As** dialog box

Printing the Publication

You can take a printout of the publication you have just created. This can be done as follows:

1. Open the **Backstage** view and click **Print** (Fig. 4.18).
2. In the **Print** pane, enter the number of copies to print in **Copies of print job** box.
3. Under **Printer**, select the printer you want to print on. Make sure that the printer is ready to print.
4. Under **Settings**, do the following:
   - Make sure that the correct range of pages or sections is selected.
   - Select the format for imposing your pages on the sheet.
   - Set the paper size.
   - Set whether to print on one side of the sheet or paper or both.
   - If your printer is capable of colour printing, choose if you want to print in colour or grayscale.
5. Click the **Print** button when you are ready to print.

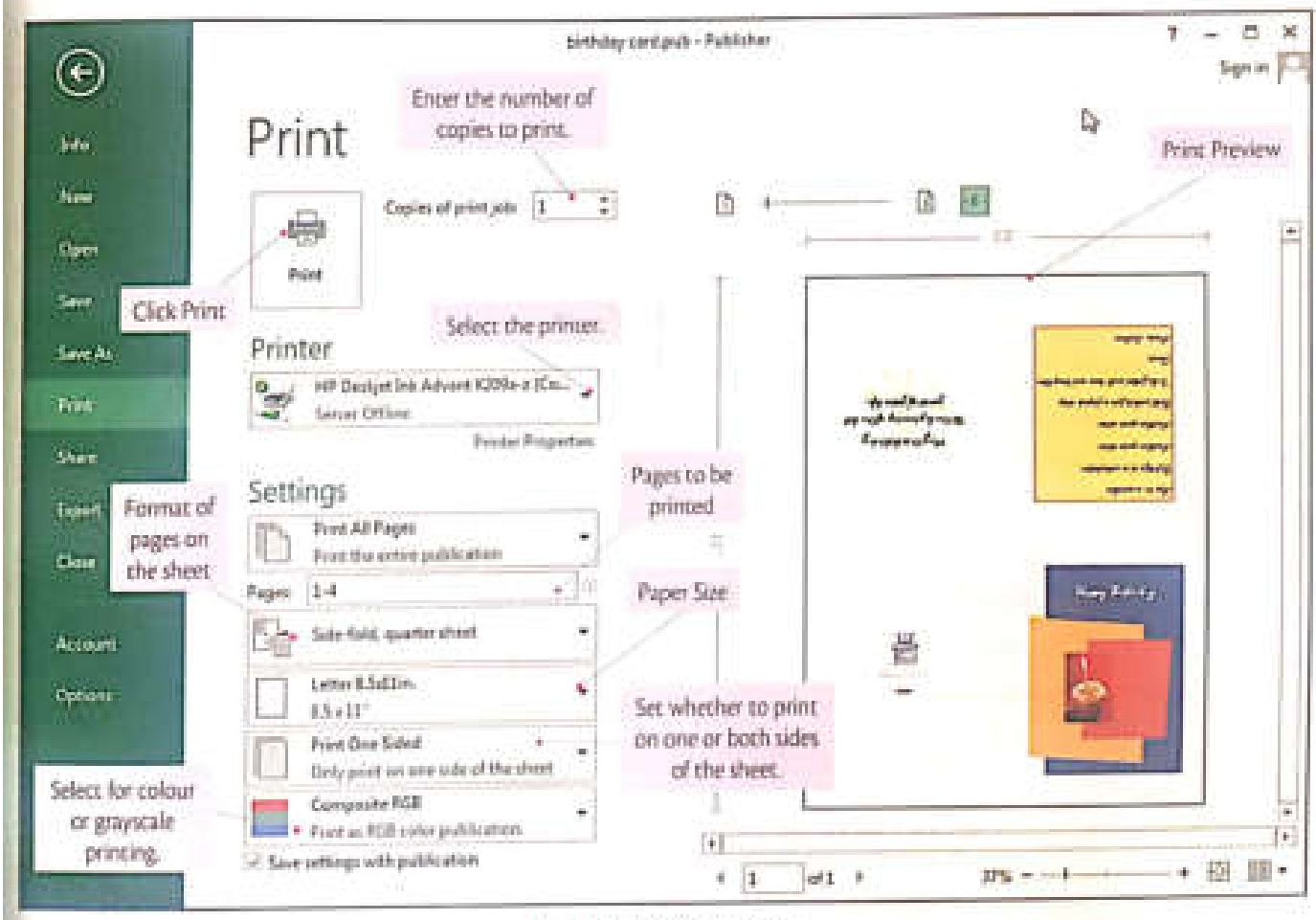


Fig. 4.18 **Print** gallery

Close and Exit a Publication

To close the publication you are working on, open the **Backstage** view and click **Close**. To exit from Publisher, click the **Close** button in the upper right corner of the window.

Or

Directly click the **Close** button in the upper right corner of the window. Publisher will prompt you if you have not saved your document.

PRACTICE TIME

Jibran wants to create a greeting card for his teacher to give on Teachers' Day. Can you also design a Thank You card for your teacher using Publisher?

SOLUTION

1. Select **Start ▸ All Programs ▸ Microsoft Office 2013 ▸ Publisher 2013**. The Publisher start screen will appear.
2. Select **BUILT-IN**. The built-in templates will appear.
3. Click the **Greeting Cards** template.
4. Under the **Thank You** category, click the **All Thank You** folder. A list of templates appears.
5. Select the template you like. It will appear in the right pane.
6. Customise the card, if you want, and then click **CREATE**. The greeting card will appear in the Publisher window. It has four pages.
7. On the second page, draw two text boxes.
8. In the left text box, type the poem, as shown in Figure 4(a).
9. Select the text.
10. Click the **FORMAT** tab under the **TEXT BOX TOOLS** tab and do the following:
    a. Click the **Font** drop-down menu arrow and select Segoe UI Semibold.
    b. Click the **Font Size** drop-down menu arrow and select 14.
    c. Click the **Font Color** drop-down menu arrow and select pink.
11. In the text box on the right side, write 'Happy Teachers' Day!'
12. Select this text, Click the **FORMAT** tab under **TEXT BOX TOOLS**, and do the following:
    a. In the **Text** group, click **Text Direction**.

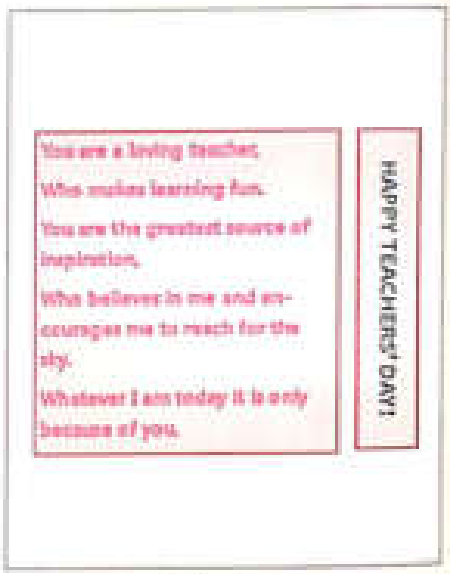


Fig. 4(a)

b. In the **Alignment** group, select any of the vertical alignment options to vertically align the text.
c. Click the **Font** drop-down menu arrow and select Cambria.
d. Click the **Font Size** drop-down menu arrow and select 16.
e. Click the **Font Color** drop-down menu arrow and select blue.

13. Select the text boxes.
14. Click the **FORMAT** tab under **DRAWING TOOLS** and do the following:
    a. Click **Shape Fill** and select light grey colour.
    b. Click **Shape Outline** and select red colour.
    c. Click weight and select 2¼ pt.
15. The final text will appear as shown in Figure 4(a). To save your publication:
    a. Click **FILE ▸ Save As**.
    b. Under **Save As**, click **Computer** if it is not already selected and click **Browse** to display the **Save As** dialog box.
    c. Select the drive and folder, type the **File name** and click **Save**.
16. To print your publication, do the following:
    a. Click **FILE ▸ Print**. The card preview will appear in the right pane.
    b. Select the required options and then click **Print**.

CREATING A NEW BLANK PUBLICATION

For creating your own publication designs, you can start by selecting a blank template in Publisher, instead of choosing a pre-designed one. This can be done as given below:

1. Click any **Blank** thumbnail in the starting screen of Publisher 2013 (Fig. 4.2).
2. Let us insert three text boxes on the page as shown in Figure 4.19.

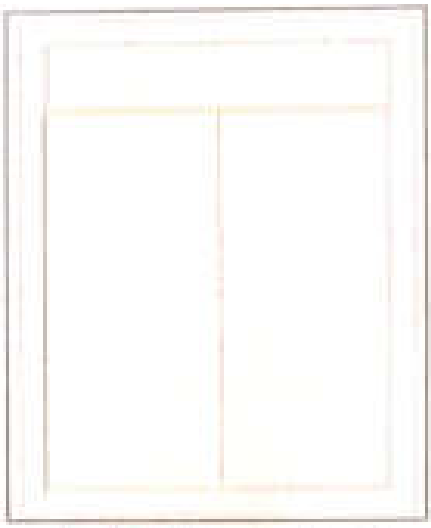


Fig. 4.19 Three text boxes inserted on the page

CONNECTING TEXT BOXES

As you work with text boxes, you might find that a text box is not large enough to contain all of the text you want to include.

When you run out of space for text, you can use the **linking feature** to connect text boxes. Once two or more text boxes are connected, text will overflow or continue from one text box to the next.

Copy the text given in Figure 4.20 on **Grow More Trees** and paste it in the lower-left box.

Trees are our friends. We take in oxygen and breathe out carbon dioxide. Trees breathe in carbon dioxide and breathe out oxygen. Therefore, trees purify the air and make the environment clean and pure.

Trees are useful to us in many ways. They give us Timber which we use to make our furniture and as firewood. We use timber to build our houses too and we use wood pulp to make paper. Trees provide us with useful medicines. We also get fruits and vegetable from trees.

People always go to picnics to places where there are many trees, so that they can enjoy the shade. In summer, it is very refreshing to sit in the shade of trees and enjoy the cool breeze.

School children should be encouraged to plant trees. They can do it either in the school premises or around their houses. The government should encourage school children and provide plants free of cost.

Do not cut down trees. Plant more and more trees. If each one of us planted one tree, there would be enough trees for a truly green and prosperous planet.

Fig. 4.20 Text on 'Trees'

You will notice that the text does not fit in fully in the text box. To accommodate the complete text, you can link the left and the right text boxes. This can be done in the following manner:

1. Select the left text box.

   Click the **FORMAT** tab under **TEXT BOX TOOLS** and in the **Linking** group click **Create Link** (Fig. 4.21).

2. The cursor changes to the link (a pitcher or a jug) icon (Fig. 4.22). Click in the text box that you want to link to (in this case it is the text box on the right).

3. The text boxes are now linked.

   Resize the linked box as necessary. Any text that overflows from the original text box will now appear in the connected box (Fig. 4.23).

Fig. 4.21 Create Link option

TYPOGRAPHY

Typography refers to the style and appearance of the character in a piece of text.

Publisher 2013 has tools to transform ordinary text into stylised text that enhances the presentation of the text.

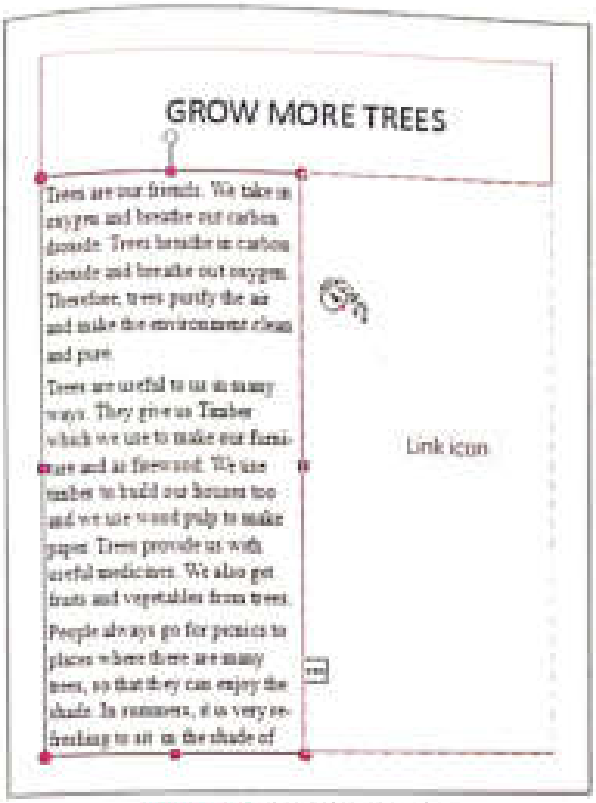


Fig. 4.22 Linking process

Fig. 4.23 Connected Text Boxes

The typography commands are found in the **Typography** group (Fig. 4.24) on the **FORMAT** tab under **TEXT BOX TOOLS**.

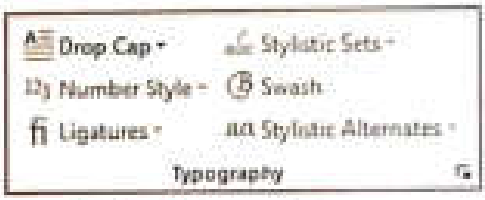


Fig. 4.24 Typography group

However, all the commands are not supported by all the fonts, except for **Drop Cap**. The others will be activated or deactivated depending on the font you choose. Let us take them up one by one.

Fig. 4.25 **Drop Cap** options

Drop Cap

Drop Cap is a text-formatting style that enlarges the first letter of the selected text. In Publisher, this feature can be used in the following manner:

1. Select the text.
2. In the **Typography** group on the **FORMAT** tab under **TEXT BOX TOOLS**, click **Drop Cap**.
3. The **Drop Cap** gallery opens (Fig. 4.25). Select a style you like.

4. Click the **Custom Drop Cap** option at the end of the list to get the **Drop Cap** dialog box.
5. Change the options in the dialog box as shown in Figure 4.26. The text will appear as shown in Figure 4.27.

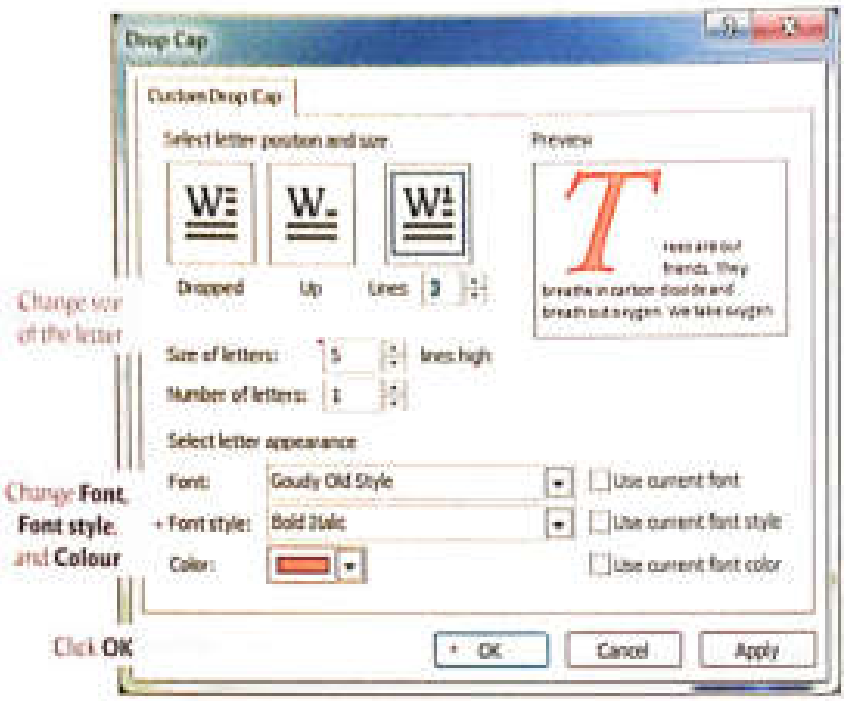


Fig. 4.26 **Drop Cap** dialog box

Fig. 4.27 Text with drop cap

Number Style

This option is used to style numbers so that they can match the formatted text. The steps for doing this are:

1. Select the numbers in the text box.
2. Click the **Number Style** option in the **Typography** group.
3. In the menu that opens, select your preferred option. Two options are shown in Fig. 4.28.

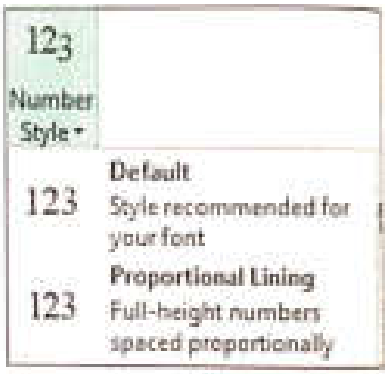


Fig. 4.28 **Number Style** options

Stylistic Sets

This option shows you a set of styles for a specific font. Select the text in the text box (Fig. 4.29), and then:

1. Click the **Stylistic Sets** option.

Fig. 4.29 Text in text box

2. In the menu that opens, select the desired style to apply to the text (Fig. 4.30).

Fig. 4.30 **Stylistic Sets** options

Swash

Some fonts may have more decorative elements for their characters, mostly in the form of patterned serifs. The **Swash** option enables these elements for the fonts. Figures 4.31 and 4.32 show the application of this option.

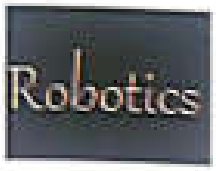


Fig. 4.31 Original Text

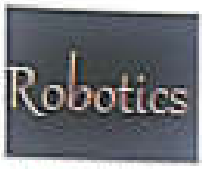


Fig. 4.32 With Swash applied

Stylistic Alternates

This option allows alternative character shapes for some fonts that you can use to give a slightly different appearance to the text.

Ligatures

Ligatures are connections between characters that seem to create a single character out of one or more characters. This makes the text appear more readable (Fig. 4.33).

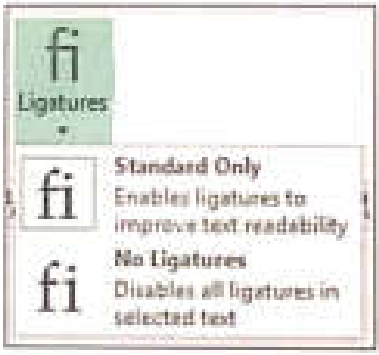
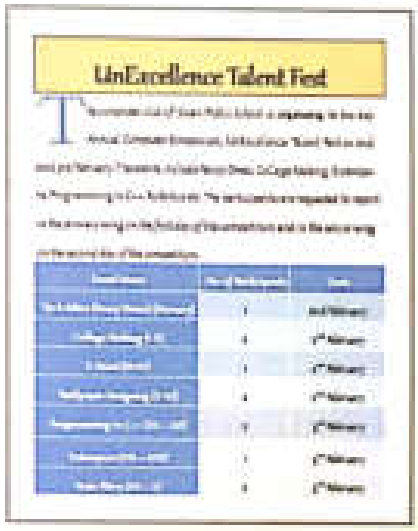


Fig. 4.33 **Ligatures** menu

PRACTICE TIME

The principal of Alsan Public School has asked Shariq to design a poster for the upcoming computer science talent competition. Shariq has created the poster shown alongside in Publisher. Can you do the same task using the typographic features in Publisher?



SOLUTION

1. Select **Start ▸ All Programs ▸ Microsoft Office 2013 ▸ Publisher 2013.** The Publisher start screen will appear.
2. Click the **Blank** thumbnail to create a new publication. If you do not see a blank thumbnail that is the size you

want, click **More Blank Page Sizes** and select your preferred size. The page will appear on the screen.

3. Insert two text boxes on the page—one for the heading and one for other details.
4. Type the text as shown in the figure alongside.
5. To insert the table:
   a. Click the **INSERT** tab.
   b. Click the **Table** button in the **Tables** group.
   c. Select **7 x 3 Table** layout. The table will be inserted. Enter the text. Notice that an additional **TABLE TOOLS** tab appears on the ribbon.
   d. Click the **DESIGN** tab.
   e. Click the **More** arrow of **Table Styles** in the **Table Formats** group and select **Table Style 27**.
6. Now select the text in the text boxes and in the table. Click the **FORMAT** tab under **TEXT BOX TOOLS** and in the **Font** group do the following:
   a. Click the **Font** drop-down menu arrow and select Gabriola.
   b. Click the **Font Size** drop-down menu arrow and select size 36 in bold for the heading, 16 for the paragraph, and 12 for the text in the table.
7. Select the text box, click the **FORMAT** tab under the **DRAWING TOOLS** tab and in the **Shape Styles** group do the following:
   a. Click **Shape Fill** and select the fill colour.
   b. Click **Shape Outline** and select the outline colour.
   c. Change the **Weight** of the lines.
8. To add typography features to the text:
   a. Select the text.
   b. Click the **FORMAT** tab under the **TEXT BOX TOOLS** tab.
   c. In the **Typography** group, click **Stylistic Sets** drop-down menu arrow and select the required style.
   d. Click **Number Style** drop-down menu arrow and select the required style.
   e. Click the **Stylistic Alternates** drop-down menu arrow and select the desired style.
   f. Click **Ligatures** drop-down menu arrow and select **Standard Only**.
9. Select the first character and click **Drop Cap**.
10. Select the desired style from the list or create your own using the **Custom Drop Cap...** command.
11. Finally, save the file and take a clean printout.

Tricky Terms

Template a pre-defined design layout that saves time while designing

Objects the elements you place in your publication

Guides They are horizontal and vertical lines that appear on your publication while editing. They help in aligning text, images, and other objects on the page.

Scratch Area the grey area around the publication page where objects can be placed before insertion in the publication page

Drop Cap a text-formatting style that enlarges the first letter of the selected text

Swash a stylish extension at the ends of some characters of certain fonts

Ligature connections between characters of a font

Memory Bytes

- Publisher 2013 is a program that allows creating professional documents such as brochure, label, card, certificate, flyer, etc.
- There are two types of guides: margin guides and customisable guides.
- When you select the text box, two tabs appear on the screen: **DRAWING TOOLS** and **TEXT BOX TOOLS**.
- The **FORMAT** tab under **TEXT BOX TOOLS** has commands related to formatting of text.
- The **FORMAT** under **DRAWING TOOLS** tab has commands related to formatting the text box.
- The **Create Link** option connects text boxes so that the text continues from one text box to the next.
- The typography features in Publisher 2013 include **Drop Cap**, **Number Style**, **Ligatures**, **Stylistic Sets**, **Swash**, and **Stylistic Alternates**.

EXERCISES

Objective Type Questions

1. Choose the correct option.

a. Which two types of rulers are present on the main screen of Publisher 2013?
i. Horizontal ii. Diagonal iii. Vertical iv. both i. and ii.

b. What are the types of guides present in Publisher 2013?
i. Margin ii. Customizable iii. Boundary iv. both i. and ii.

c. A Publisher file saved with this extension cannot be modified.
i. .pub ii. .pdf iii. .tiff iv. .doc

d. The elements in a publication are called
   i. groups ii. objects iii. a collection iv. images
e. The feature that enlarges the first letter of the selected text is
   i. Orientation ii. Drop Cap iii. Stylistic Sets iv. Link Text

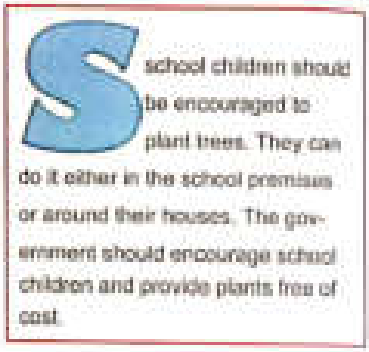
Descriptive Type Questions

1. Answer the following.

a. What is the purpose of the page navigation pane in Publisher?
b. Which are the two tabs that appear when you select a text box?
c. What do you mean by typography? Where are the commands for setting typography located?
d. How will you set a background colour for a text box?
e. What is a Swash? How is it different from ligatures?
f. Analyse the similarities and differences between the interfaces of MS Publisher and MS Word.
g. Evaluate the reasons for using MS Publisher to make a greetings card rather than MS Word.
h. Using the text formatting tools you learned about in this chapter, create the front page of a school magazine.

Application-Based Questions

a. Salaar has written a paragraph on 'Plant More Trees'. A part of it is shown here.
   i. Which typography feature has he applied to the text?
   ii. How will you apply this feature?



b. Imran has copied text in a Word 2013 document to a text box in Publisher 2013, but the content is more than the space available in the text box.
   i. What should Imran do to show the entire content on the page?
   ii. Write the steps for doing this.

c. Darwish works from home and designs greeting cards for a company. He sends the designs through the Internet to the company.
   i. Which file extension should he use for sending the files through the Internet so that they cannot be modified?
   ii. How will he insert his name and telephone number on the card?

d. Azka has been given the task to create a banner saying '**CONGRATULATIONS!**' in Publisher 2013.
   i. What should she do to see how it will look like after printing?
   ii. What should she do to print five copies of this banner?

IN THE LAB

1. The students of Alsan Public School have won a Computer Science competition that was held in Karachi. Najam, the Head boy of the school, is given the task to welcome them. He has decided to create a banner displaying 'CONGRATULATIONS! WONDER KIDS!'. Can you help Najam in this task?
2. The Computer Science teacher has asked the students of Class VI to create an advertisement each for any two items: shoes, bags, bike, car, or mobile. You may also choose two items from the list and create suitable ads. Use as many features of Publisher 2013 as possible.
3. The class teacher of Class VI, Ms. Maria, has asked the monitor of the class, Myra, to design a leaflet for the School Carnival to be held in January. Can you help the monitor in completing this task?
4. Shanila has been given the task of designing a Class Pass for students of Class VI. The pass should have the class, section, name of the class teacher, and her signature. It should mention that with one pass only two students can be allowed to go out of the class. Can you help Shanila in designing such a class pass?

GROUP PROJECT

Create a season's greetings card for someone who means a lot to you. Although this is an individual task, work together as a group, being critical without being unkind, being helpful without being overbearing, and be proud of your finished card. Enjoy delivering it! Try using as many features as you can to make it as meaningful as possible.

TEACHER'S NOTES

- A discussion could be initiated on how Publisher can be useful in designing material needed for the activities in school. Examples should be listed.
- Students should be given sufficient time to work on all the design options of a text box.
- To familiarise students with the software, students may be given tasks to design school-related calendars, banners, posters, invitation cards, magazines, etc.

Chapter 5

Graphics in Publisher 2013

You must have noticed that most of the advertisements you come across have pictures, which make them appealing. Graphics, such as **pictures**, **shapes**, **charts**, and **building blocks** are used to add a visual effect to your publication. They make the document attractive and more interesting to read.

In Publisher, the options to insert pictures and various shapes are available in the **Illustrations** group on the **INSERT** tab (Fig. 5.1).

In this Chapter

- Working with Pictures
- Scratch Area
- Working with Shapes
- Working with Building Blocks

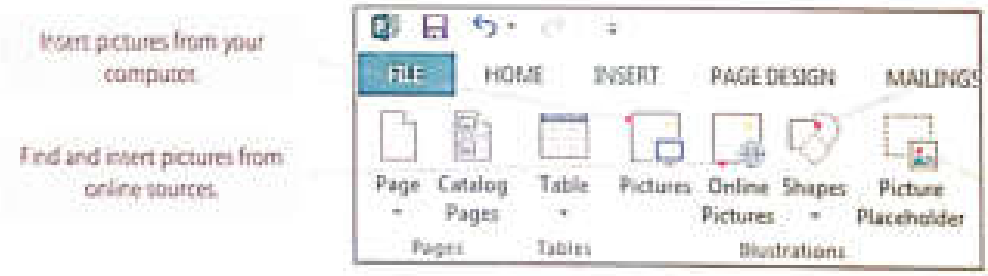


Fig. 5.1 **Illustrations** group on the **INSERT** tab

WORKING WITH PICTURES

Publisher 2013 offers an easy way to add pictures to your publication. In Publisher, pictures can be inserted from two sources:

- Pictures stored on your computer
- **Bing Image Search,** for pictures on the Internet

You will need an Internet connection for accessing pictures through option 2. Earlier the **Office.com Clip Art** search option was also provided, but that has since been removed by Microsoft.

Inserting a Picture

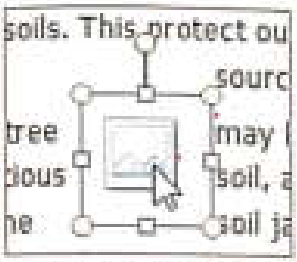


Fig. 5.2 **Picture placeholder** in the center of the page

You would recall that you have learnt how to insert pictures from your computer in Word and PowerPoint in Class V. Let us discuss the steps to insert a picture in your publication from **Bing Image Search** here. Do as follows:

1. Click **Picture Placeholder** in the **Illustrations** group on the **INSERT** tab. The placeholder gets inserted at the centre of the page (Fig. 5.2).
2. Click the placeholder icon to display the **Insert Pictures** dialog box (Fig. 5.3).
3. Click within the **Bing Image Search** text box to place the cursor in it.
4. Type the search term (let us say, Tiger) in the box and press ENTER. A gallery of pictures appears (Fig. 5.4).
5. Click the picture you want to insert and click the **Insert** button.

Fig 5.3 **Insert Pictures** dialog box

6. The picture gets inserted in the publication (Fig. 5.5).

Notice that a new **PICTURE TOOLS** tab, with the **FORMAT** tab under it, appears on the ribbon (Fig. 5.6):

Fig. 5.4 **Bing Image Search** search list

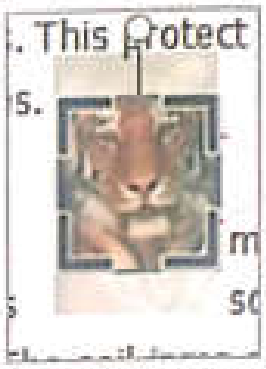


Fig. 5.5 Inserted picture in the placeholder

Fig. 5.6 **FORMAT** tab under the **PICTURE TOOLS** tab

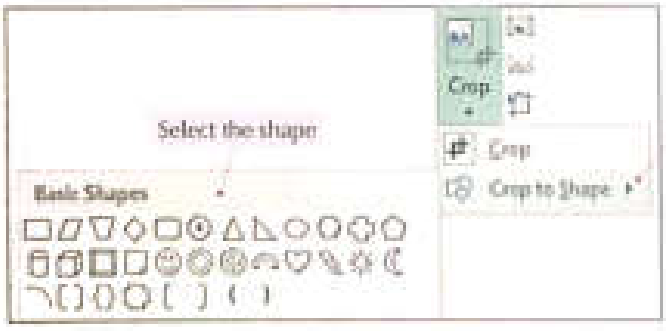
Cropping a Picture

You can crop the picture to a shape to remove its unwanted portions. The steps for doing this are as follows:

1. On the **FORMAT** tab under **PICTURE TOOLS**, click the drop-down menu arrow of the **Crop** button in the **Crop** group.
2. Select **Crop to Shape** (Fig. 5.7).
3. In the submenu that appears, select the shape in which you want to crop the image. Let us say you choose rounded rectangle. The picture will appear as in Figure 5.8.

Top Tip

Many templates have picture placeholders that provide a specific size and shape to hold the selected pictures. A picture placeholder has boundaries and a picture icon that is displayed only when you point to it. You can insert an empty picture frame to reserve space for pictures you want to add later.



Click **Crop to Shape**

Fig. 5.7 **Crop to Shape** option

Fig. 5.8 Picture cropped to rounded rectangle

Wrapping Text around a Picture

Wrapping text around a picture allows you to make the picture appear at the desired position on a page of text in Publisher. It could be to the left or right of a paragraph or between paragraphs. To wrap text do as given below:

1. Select the picture. This will open the **FORMAT** tab under **PICTURE TOOLS**.
2. In the **Arrange** group click the **Wrap Text** option.
3. Select the desired wrap option. The text will adjust based on the option you have selected (Fig. 5.9).
4. The object can be moved around until the text wraps the way you want it to. You can also select **More Layout Options** to specify more details.

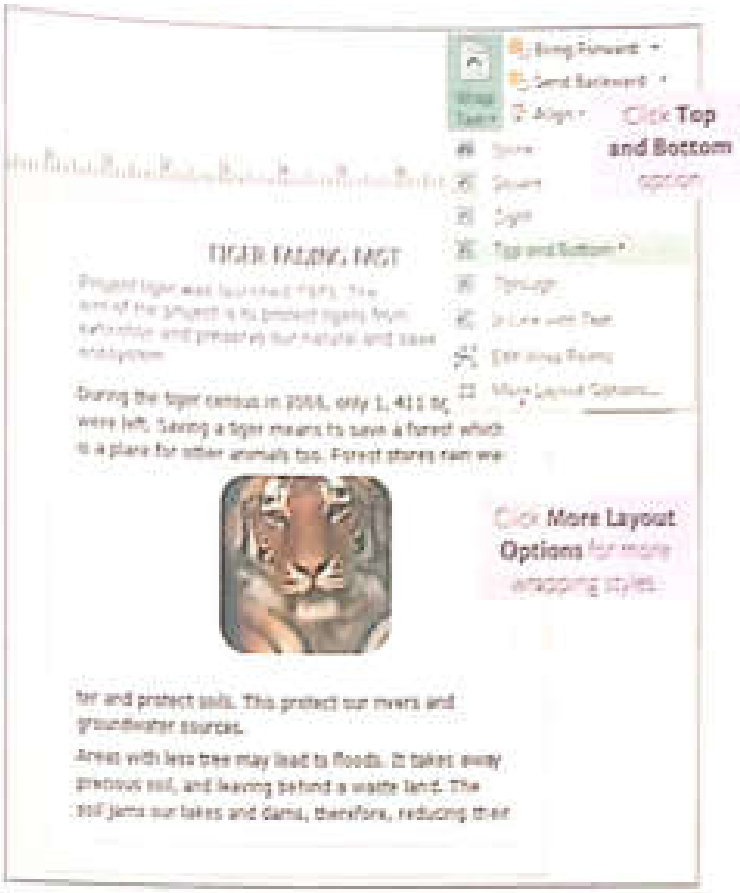


Fig. 5.9 Wrap Text **Top and Bottom** option

Moving, Aligning, and Resizing a Picture

The steps to move and align a picture or an object in Publisher are as follows:

1. Select the picture. The pointer changes to a **four-headed arrow**.
2. Drag the picture to the new location or to the scratch area (Fig. 5.10). As you move the picture, Publisher displays **visual layout guides** to help you place and align the object with respect to the other objects on the page.

Fig. 5.10 Moving a picture

Top Tip

- If you press and hold the SHIFT key while dragging, the picture moves in a straight line.
- Pressing the CTRL key while dragging creates a copy of the object.

3. **Release the mouse button** to finish moving the picture.
4. After you have moved the picture to the new location, you can align it using the visual layout guides (Fig. 5.11).

To resize a picture (Fig. 5.12):

- Click the middle sizing handles on any of the four sides to resize the picture horizontally or vertically.
- Click the corner sizing handles to resize the picture proportionally in both the horizontal and vertical directions.
- To rotate the picture, click and drag the rotation handle.

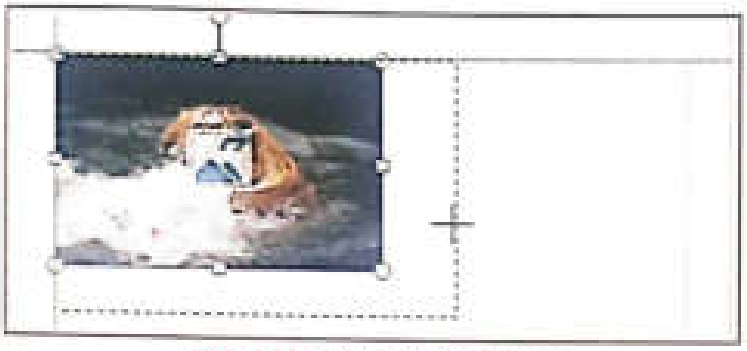


Fig. 5.11 Aligning a picture

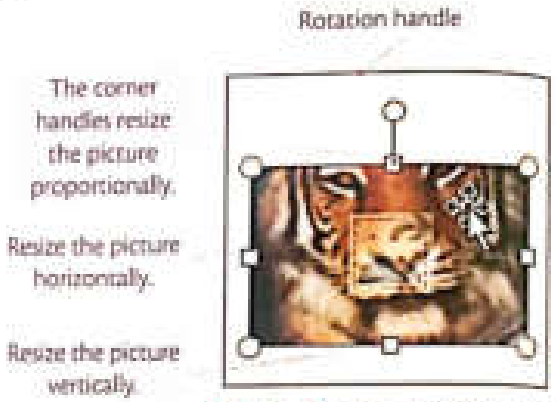


Fig. 5.12 Resizing handles

Applying a Picture Style

A picture style provides artistic effects to the picture by changing the picture shape, **border**, or by adding **picture effects**.

The **Picture Styles** group on the **FORMAT** tab under **PICTURE TOOLS** has the commands to apply a picture style. Clicking the **More** button will open the **Picture Styles** gallery (Fig. 5.13). You already know about these style options from class V. Apply your preferred picture style, border, border weight, and border colour. Compare your final image with those of your friends. Notice how the appearance of a plain image can be changed!

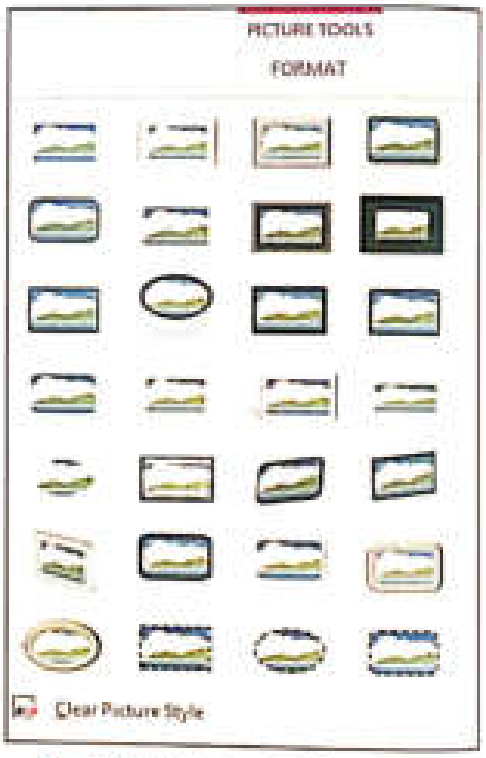


Fig. 5.13 **Picture Styles** gallery

Picture Caption

A caption is a short description or a title that accompanies a graphic, with or without a figure number. You can add a caption to the graphic using the **Caption** gallery through these steps:

1. Select the picture.
2. Click the **Caption** button in the **Picture Styles** group. The **Caption** gallery appears (Fig. 5.14). To preview the styles in the publication, point to each style option in the gallery.

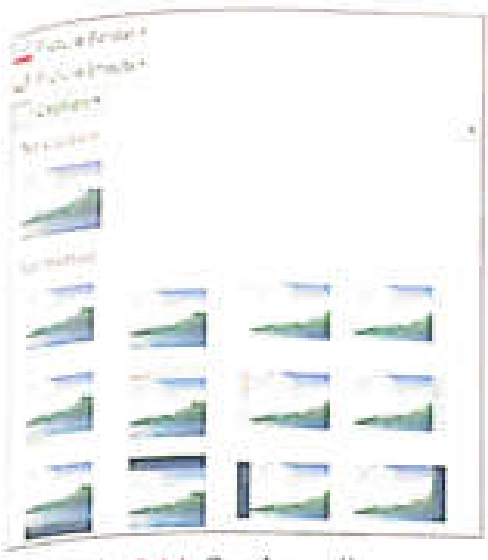


Fig. 5.14 **Caption** gallery

3. Select your preferred choice. To edit the caption text, just select it and type in the new text (Fig. 5.15).

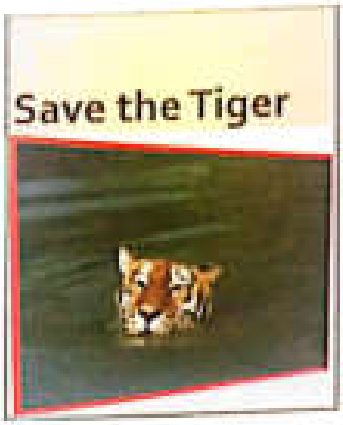


Fig. 5.15 Picture with caption

Picture as Background

To set a picture as the background of your publication, do as follows:

1. Right-click the picture and point to **Apply to Background.**
2. Select **Fill** from the submenu that appears (Fig. 5.16). The picture will appear as a background on the page (Figs. 5.17(a) & (b)).

Top Tip

If you use **Tile** as the option for the background, then multiple copies of the image will be made and arranged on the page in columns.

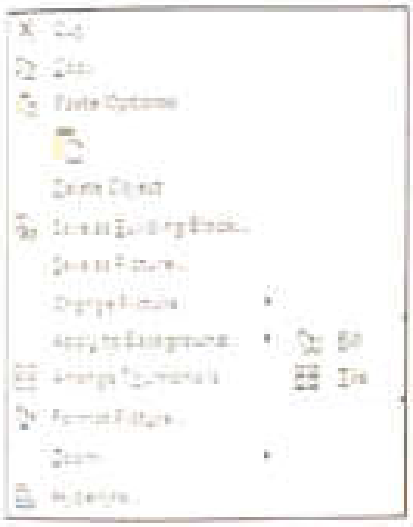


Fig. 5.16 **Fill** option of **Apply to Background**

Fig. 5.17(a) Picture fills the page as a background.

Fig. 5.17(b) Relevant text is placed on top of the background.

PRACTICE TIME

The Science teacher of Class VI has asked all the students to design a poster on the topic 'Save Tigers, Save Earth'. A sample poster is shown alongside. Can you do the same task?

SOLUTION

1. Open **Publisher 2013** and select a blank document.
2. To create a text box:
   a. On the **HOME** tab, select the **Draw Text Box** button in the **Objects** group.
   b. Click the **FORMAT** tab under **DRAWING TOOLS** and in the **Shape Styles** group, do the following:
      - Click **Shape Fill** to colour the text box with light blue colour.
      - Click **Shape Outline** to colour the border of the text box dark blue.
      - Change the weight of the text box outline to 4 pt.
3. To insert a picture in your publication:
   a. Click the **INSERT** tab.
   b. In the **Illustrations** group, click the **Online Pictures** button. The **Insert Pictures** dialog box appears.
   c. In the **Bing Image Search** text box, type **Tiger** and press ENTER.
   d. Select the required picture and click **Insert**. The picture gets inserted in the publication.
   e. You can resize the picture and change its style.
4. To insert WordArt text in your publication:
   a. Click the **INSERT** tab.
   b. In the **Text** group, click **WordArt**. The **WordArt** styles will appear.
   c. Select the style. The **Edit WordArt Text** dialog box appears.
   d. Enter the text you want in the publication and click **OK**.
      Note: This will have to be done twice: once for **Save Tigers** and once for **Save Earth**.
   e. Resize the WordArt.
5. Save and then print your publication.

SCRATCH AREA

You already know that the **scratch area** is the grey area that appears around the publication page. It can be used as a temporary holding area. If you are not sure where you want to move an item, you can drag it to the scratch area. The scratch area is saved with the publication. Therefore, the pictures in the scratch area will be there the next time you open your publication.

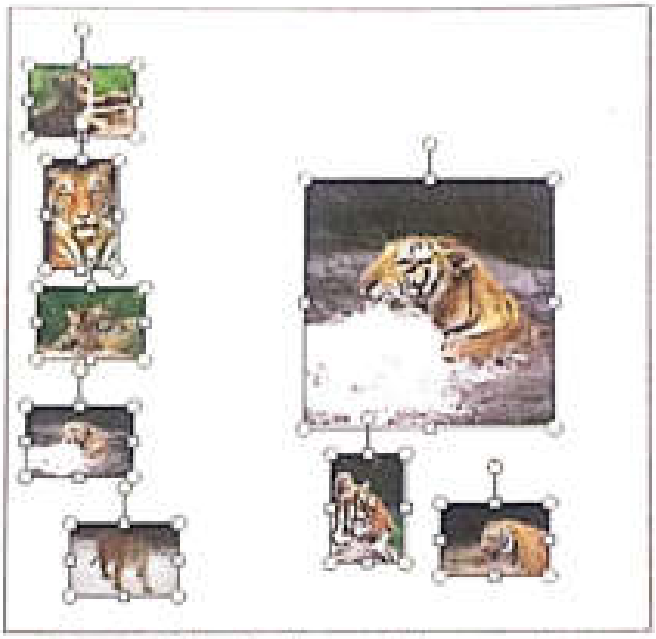


Fig 5.18 Selecting pictures in the scratch area

Selecting Multiple Objects in the Scratch Area

If you wish to select multiple objects in the scratch area, click one image, press SHIFT, and then click the other images one by one (Fig. 5.18).

Another way to select multiple objects is to draw a box around them with your mouse, keeping the left mouse button pressed. When you release the button you will see that all the images within the box have been selected.

Arranging Pictures as Thumbnails

A **thumbnail** is a graphic image in reduced size, which helps in organising pictures and to save space. To arrange the picture thumbnails of all images in the scratch area:

1. Click the **FORMAT** tab under **PICTURE TOOLS**.
2. Click the **Arrange Thumbnails** button in the **Arrange** group (Fig. 5.19).The pictures get arranged in the scratch area (Fig. 5.20).

Fig. 5.19 **Arrange Thumbnails** option

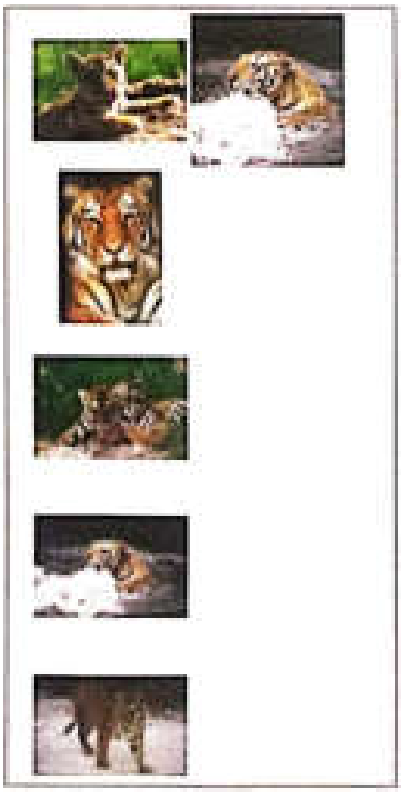


Fig. 5.20 Arranged thumbnails in the scratch area

Swapping Pictures

The picture placeholder has a placeholder icon. After the placeholder is replaced with a picture, the icon changes to a **swap** icon. Pictures in the scratch area also show swap icons. You can drag the swap icon to swap pictures, or press and

hold or right-click the swap icon to display the shortcut menu with more options.

1. In the scratch area, select the picture you want to swap with the picture in the publication. The selected picture displays the swap icon (Fig. 5.21).
2. From the scratch area, drag the swap icon of the picture towards the picture on the publication.
3. When the pink boundary is displayed, release the mouse button to swap the pictures (Fig. 5.22).

Top Tip

To swap the picture using the right button, select the picture and drag the mouse while pressing the right button. When the pink boundary is displayed, release the mouse button. The shortcut menu appears. Select the **Swap** option. The pictures will be swapped.

Fig. 5.21 **Swap** icon on the selected picture

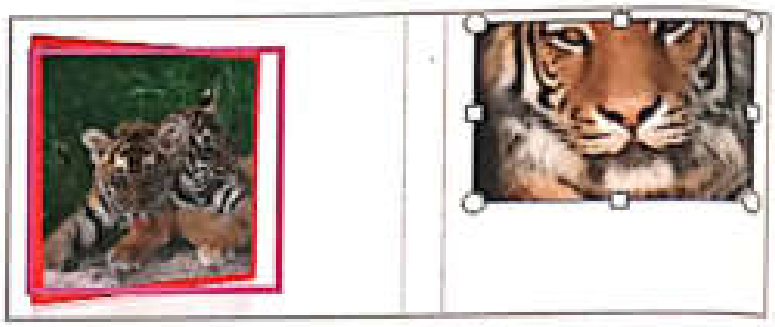


Fig. 5.22 Swapped pictures

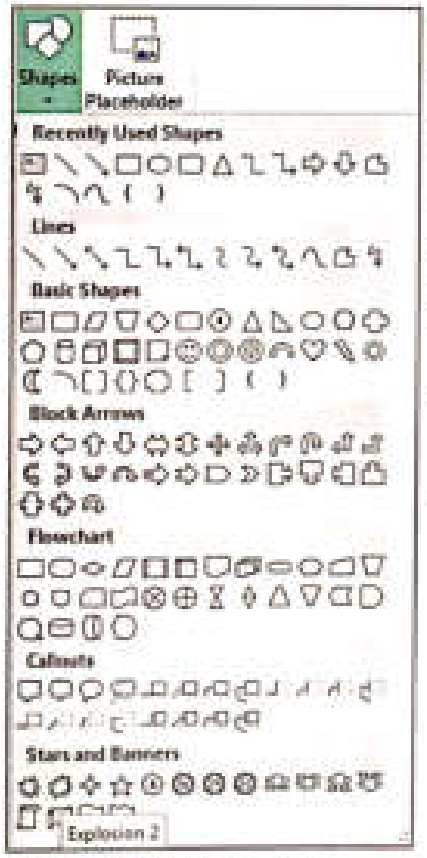


Fig. 5.23 **Shapes** gallery

WORKING WITH SHAPES

The **Shapes** collection in Publisher is the same as in Word or PowerPoint. To access the **Shapes** gallery:

1. Select the **INSERT** tab.
2. In the **Illustrations** group, click **Shapes**.
3. The **Shapes** gallery opens. Select your preferred shape (Fig. 5.23).
4. Click and drag the mouse to draw the shape of desired size. Release the mouse button (Fig. 5.24).
5. To resize the shape, click and drag the resize handles on the corners and sides of the text box until it is of the desired size, just as discussed for pictures. To rotate the shape, click and drag the rotation handle (Fig. 5.25).

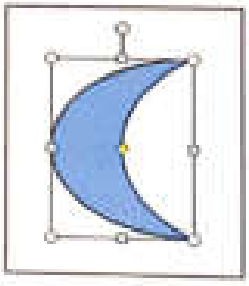


Fig. 5.24 Inserted shape

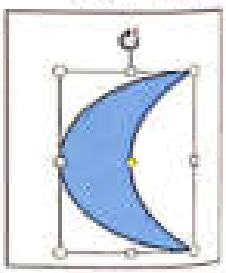


Fig. 5.25 Shape with rotation handle

6. On inserting the shape in your publication, you will notice a new **DRAWING TOOLS** tab, with the **FORMAT** tab under it (Fig. 5.26).

Fig. 5.26 **FORMAT** tab under **DRAWING TOOLS** tab

To change the shape style, in the **Shape Styles** group, click the **More** button to view the **Shape Styles** gallery. Select your desired style. The style will be applied to the shape (Fig. 5.27).

Top Tip

If you press the SHIFT key while resizing the shape, the shape will retain its proportion.

7. To fill it with colour, click the **Shape Fill** drop-down menu arrow. A menu appears showing various colours and options (Fig. 5.28). Select the desired fill colour from the list or click **More Fill Colors** to select a custom colour.

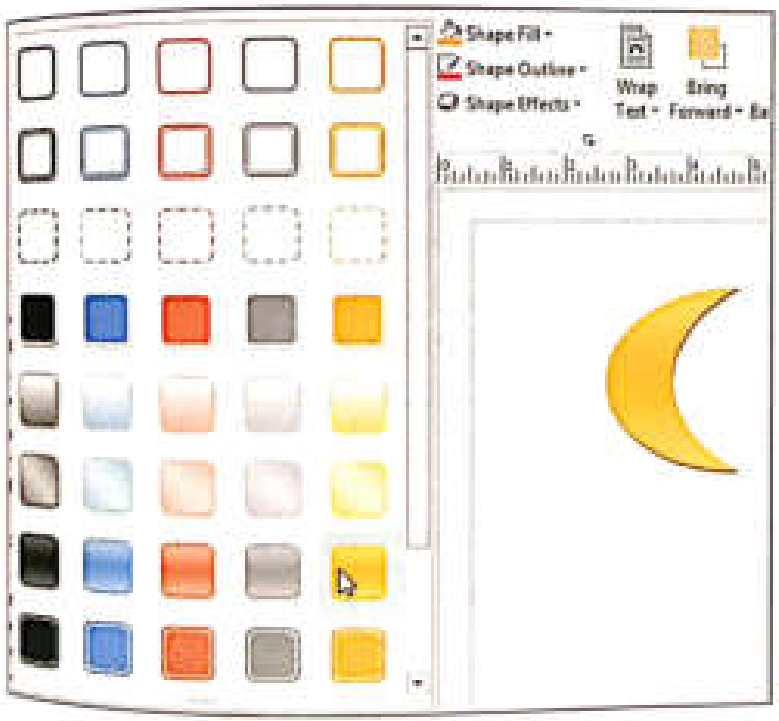


Fig. 5.27 **Shape Styles** gallery

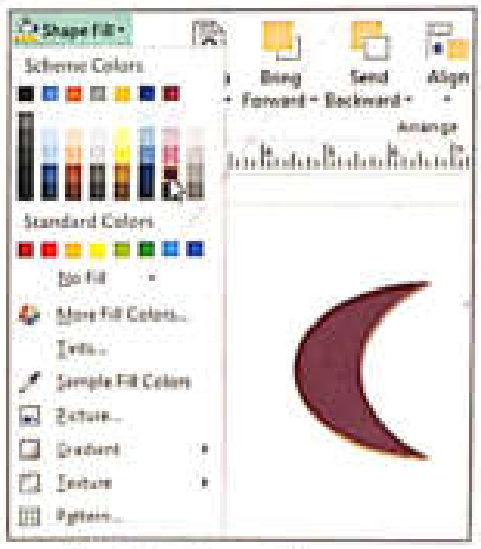


Fig. 5.28 **Shape Fill** options

8. To change the shape outline, click the drop-down menu arrow of the **Shape Outline** command. The menu that appears shows a range of colours. Select the one you want as outline colour (Fig. 5.29).

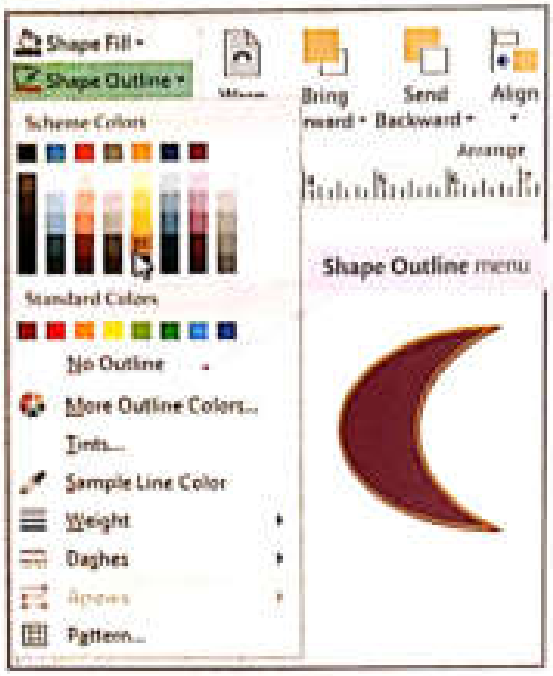


Fig. 5.29 **Shape Outline** options

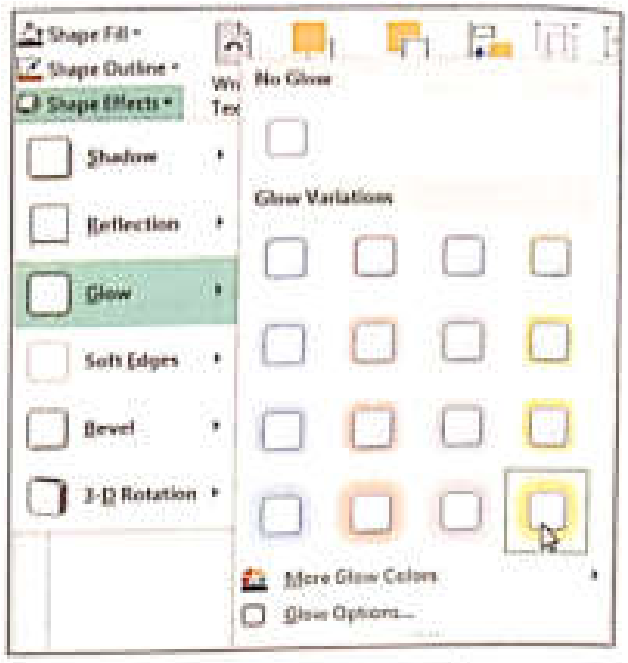


Fig. 5.30 **Shape Effects** gallery

9. Click **Weight** in the **Shape Outline** menu and choose the required thickness (width) of the outline.
10. To provide more effects to the shape, click **Shape Effects** and select the required option. Figure 5.30 shows an option under **Glow** being selected. You can further select **More Glow Colors** to choose your desired colour for the selected glow.
11. After applying all these formatting options, the shape will finally look like the one shown in Figure 5.31.

Fig. 5.31 Final shape

WORKING WITH BUILDING BLOCKS

Building Blocks are another set of objects in Publisher that usually contain a combination of text, shapes, and images. You can insert a building block in your file and modify it to your requirement.

There are four types of building blocks in Publisher:

- Page Parts
- Calendars
- Borders & Accents
- Advertisements

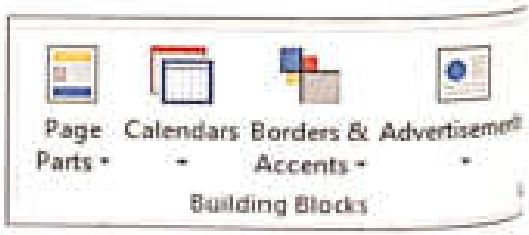


Fig. 5.32 **Building Blocks** group on the **INSERT** tab

The Building Blocks group on the **INSERT** tab contains options for each of the four types of building blocks (Fig. 5.32).

To insert a building block, click any of the options to see the corresponding gallery. Select your desired style and it will be inserted in your publication.

Let us learn briefly about each building block.

Page Parts These are placeholders with images and text (Fig. 5.33).

Calendars This is a gallery of calendar formats (Fig. 5.34).

Fig. 5.33 **Page Parts** gallery

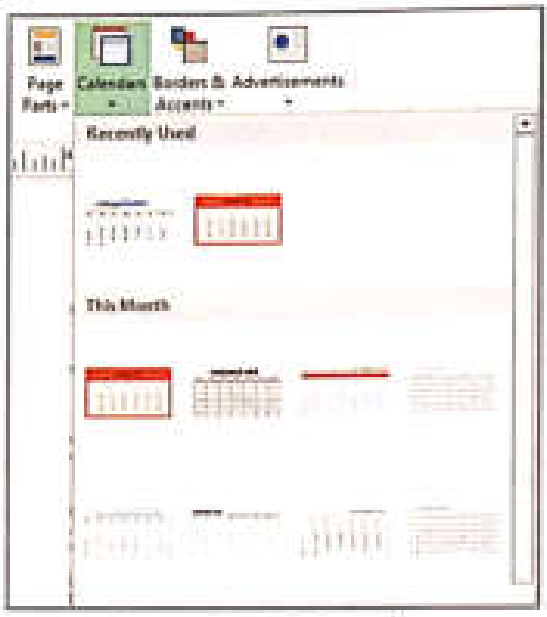


Fig. 5.34 **Calendars** gallery

Borders & Accents These are graphic elements for adding borders, frames, etc. (Fig. 5.35).

Advertisements This building block has a set of templates for advertisements with the help of which you can create your own ads (Fig. 5.36).

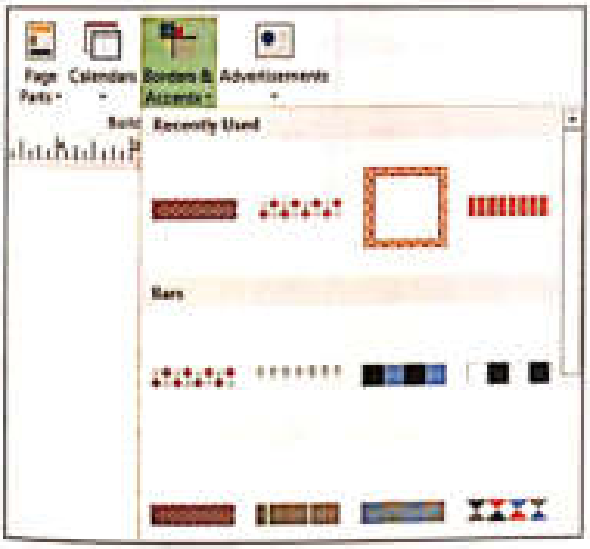


Fig. 5.35 **Borders & Accents** gallery

Fig. 5.36 **Advertisements** gallery

PRACTICE TIME

Usama's father owns a mobile shop. He is giving a festive offer on mobile phones that cost Rs. 10,000 or above. He has asked Usama to design a leaflet for the same so that it can be distributed with the daily newspaper. Can you design a leaflet similar to the one shown here?

SOLUTION

1. Open **Publisher 2013** and double-click **Blank A4 (Portrait)** to create a blank document.
2. To create a background in brown:
   a. Insert a text box using the **Draw Text Box** button in the **Objects** group on the **HOME** tab.
   b. Select the **FORMAT** tab under **DRAWING TOOLS** and in the **Shape Styles** group, do the following:
      - Click **Shape Fill** and select orangish-brown colour.
      - Click **Shape Outline** and select black colour.
   c. Now select the **FORMAT** tab under **TEXT BOX TOOLS** and in the **WordArt Styles** group click **Text Outline.** Then choose the **Weight** option and select 4½ pt.

3. To insert an attention getter:
   a. Click the **INSERT** tab. In the **Building Blocks** group, click **Advertisements**.
   b. Click the desired attention getter. It gets inserted in your publication. Drag it to the proper place and resize it.
   c. Select the text and type 'SPECIAL OFFER'.
   d. In the **Font** group on the **FORMAT** tab under **TEXT BOX TOOLS**, change the font size, if required.
4. Now to insert a border:
   a. Click the **INSERT** tab.
   b. In the **Building Blocks** group, click **Borders & Accents.**
   c. Select the required border. It gets inserted in your publication. Drag it to the proper place and resize it.

5. To insert a text box for the mobile price range having the special offer:
   a. Type the text '**Buy a mobile of Rs. 10,000/- or above and get**' in a text box.
   b. In the **Font** group on the **FORMAT** tab under **TEXT BOX TOOLS**, use the commands to format the text as follows:
      - Change the **Font** to **Calibri** and **Font Size** to **43**.
      - Select the style in **WordArt Styles** group.
      - Click **Text Fill** and select blue colour. Click **Text Outline** and select light-blue colour. Also click **Weight** and choose 1 pt for thickness of the border.
      - Now select the text '**Rs. 10,000/- or above**' again, and use **Text Fill** to colour it dark red and in the **Text Outline** menu select light red to highlight the price range.
6. To insert arrows:
   a. Click the **INSERT** tab.
   b. Click **Shapes** in the **Illustrations** group and select the Down Arrow symbol.
   c. Draw it at the proper place and resize it.
   d. Repeat steps (b) and (c) to insert two more arrows of different sizes.
7. To insert the picture of a mobile:
   a. Click the **INSERT** tab. In the **Illustrations** group, click **Online Pictures**. The **Insert Pictures** dialog box appears.
   b. In the **Bing Image Search** text box, type the keyword 'mobile' to search for the required picture and press ENTER.
   c. Select the picture you like and click the **Insert** button. The picture gets inserted in the publication. You can resize and format it as per your choice.
8. Finally to insert a text box with details of the free offer:
   a. Insert a text box using the **Draw Text Box** button in the **Objects** group on the **HOME** tab, or the **Draw Text Box** button in the **Text** group on the **INSERT** tab.
   b. Select the **FORMAT** tab under **DRAWING TOOLS** and in the **Shape Styles** group, do the following:
      - Click **Shape Fill** and select purple colour.
      - Click the **FORMAT** tab under **TEXT BOX TOOLS.** In the **Font** group, click the drop-down menu arrow of **Font Color** and select white colour.
      - To insert bullets, click the **HOME** tab and in the **Paragraph** group, click the **Bullets** button. Select a bullet style in the drop-down menu and type the text.
9. Save the file as 'Leaflet Design'.

Tricky Terms

Picture Placeholder an empty picture frame

Scratch Area It is the grey area that appears around the publication page.

Thumbnail It is a graphic image in reduced size.

Caption a short description or a title that accompanies a graphic

Building Blocks a set of objects that contain a combination of text, shapes, and images, which you can use while designing a publication

Memory Bytes

- Pictures can be inserted from two different sources–from your computer and from the Internet.
- The **Illustrations** group on the **INSERT** tab has buttons for inserting pictures and shapes in your publication.
- On inserting a picture, the **PICTURE TOOLS** tab appears on the ribbon.
- The **Wrap Text** button in the **Arrange** group has options to wrap the text around the picture.
- You can apply picture style, border, colour, width of border, and various other options to a picture.
- You can move, align, and resize a picture or an object.
- The scratch area is used as temporary holding area for text and pictures.
- The scratch area is saved with the publication.
- You can swap a picture in the scratch area with a picture in your publication.
- You can insert shapes and objects, resize them and apply formatting features such as shape style, shape fill, shape outline, and shadow effects to them.
- On inserting a shape, the **DRAWING TOOLS** tab appears on the ribbon.
- Publisher offers four types of building blocks– **Page Parts**, **Calendars**, **Borders & Accents**, and **Advertisements**.

EXERCISES

Objective Type Questions

1. Choose the correct option.

a. The tab that appears on the ribbon when you insert a shape is
i. TEXT TOOLS ii. DRAWING TOOLS iii. PICTURE TOOLS iv. all of these

b. The option in the **Illustrations** group on the **INSERT** tab that can insert a picture from your computer in your publication is
i. Pictures ii. Online Pictures iii. Picture Placeholder iv. all of these

c. The group on the **FORMAT** tab under **PICTURE TOOLS** that contains the **Arrange Thumbnails** button is
   i. Crop ii. Arrange iii. Adjust iv. Picture Styles
d. The option that arranges the text around a picture is
   i. Bring Forward ii. Bring Backward iii. Wrap Text iv. Align
e. The option in the **Picture Styles** group to add a border of 2 pt around a picture is
   i. Picture Border ii. Picture Effects iii. Picture Styles iv. Border Width

Descriptive Type Questions

1. Answer the following.

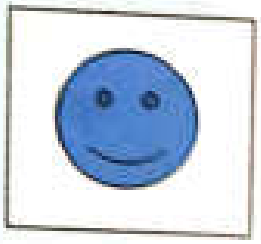
a. What are the different sources from which you can insert pictures in your publication?
b. How will you swap pictures between a publication page and the scratch area?
c. List the range of graphic options in MS Publisher. Analyse how each option can affect a presentation.
d. Using your Science textbook as an example, evaluate the different graphic features used in the book.
e. Redesign the cover of your science textbook, using at least two different graphics.

Application-Based Questions

a. Yusuf is creating a brochure for his company to promote their latest product. While creating it, he puts a number of pictures in the scratch area.
   i. What will he do to arrange the pictures as thumbnails?
   ii. How can he select all the pictures in the scratch area?

b. Label the following parts in the picture shown alongside on the left:
   i. Rotation handle
   ii. Resizing handle that resizes in both directions
   iii. Resizing handle that resizes width
   iv. Resizing handle that resizes length
   v. Swap icon

c. Rahman has inserted a picture in the publication as shown in the figure on the right. He wants to set this picture as a background on the page. What steps should he take to do so?



d. Leena wants to insert the object shown on the left in her publication.
   i. How will she do this?
   ii. What should Leena do to fill this graphic with red colour and give it a blue outline of width 2 points?

IN THE LAB

1. The class teacher of Class VI has asked the monitor to create a poster listing the Code of Conduct followed by the school. Can you help the monitor in completing the task in Publisher?
   Note: Look in your school diary for the rules to be included in the poster.
2. The Social Science teacher has given Neha the task of creating a poster encouraging 'Girl Child Education'. Can you create a suitable poster in Publisher?
3. The vice-principal of your school has asked the head girl to design a poster for the Environment Quiz to be held in school on 15th February. The prizes for the winners are: First prize–Rs. 20,000/-, Second prize–Rs. 15,000/-, and Third prize–Rs. 10,000/-. Can you help her with this task and take printouts?
4. Mohid's father owns a travel agency. He wants Mohid to create a three-fold brochure for promoting his company. One of the pages of the brochure should contain the details of one province of Pakistan to promote tourism in that area. Imagine you are Mohid and design a suitable poster.

GROUP PROJECT

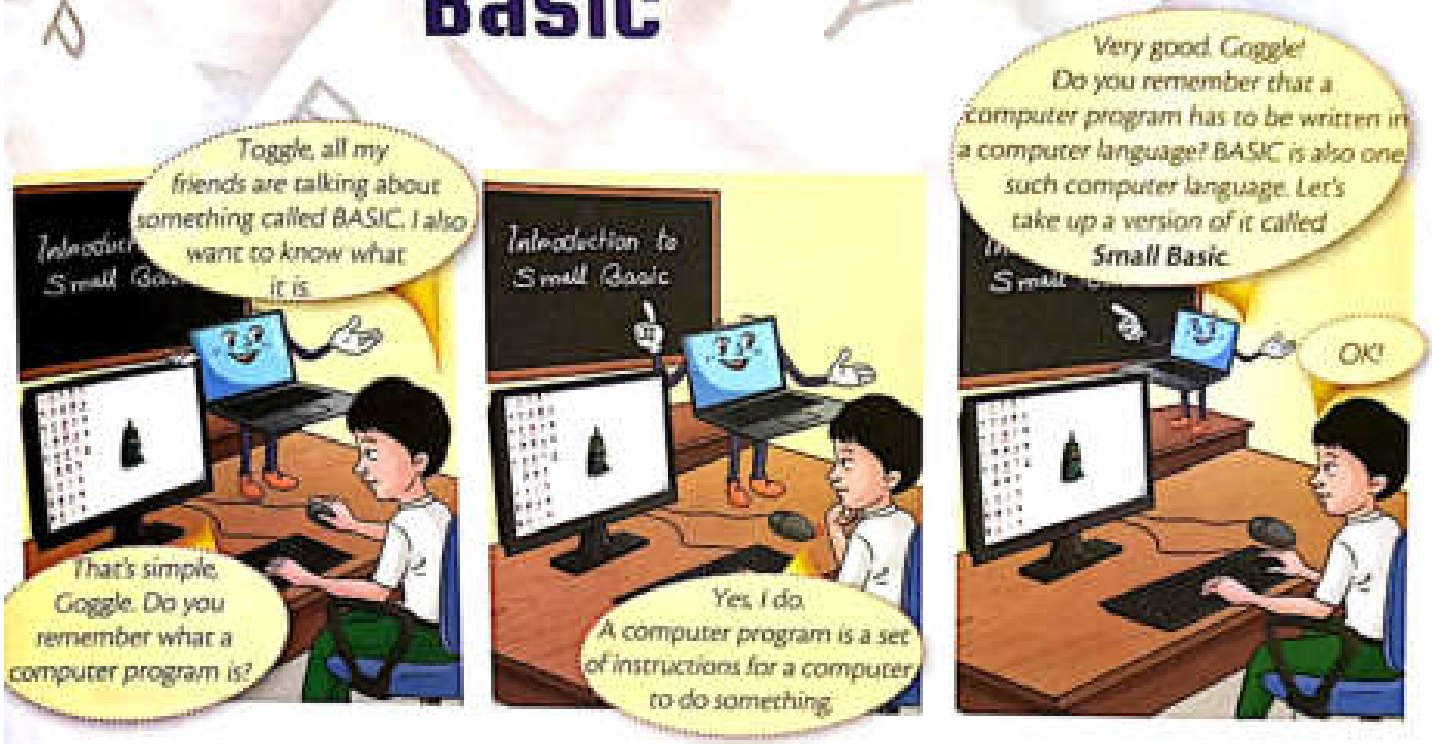
The power of graphics! As a group, select a topic that you all feel passionate about e.g. environmental issues, health issues, inequality. Design a group poster to grab people's attention to your cause by carefully using clever graphics. Sometimes not many words are needed: the images can say it all. Can you use similar graphics to produce an accompanying flyer?

TEACHER'S NOTES

- Discuss the various possibilities for designing posters, flyers, and advertisements in Publisher. Take various examples to explain what the contents for these publications should be.
- Enough time should be given to students to familiarise themselves with the various options for designing a publication.
- Demonstrate the uses of picture placeholders and the scratch area through an example.

Chapter 6

Basics of MS Small Basic



Microsoft Small Basic has been developed by Microsoft Corporation. It is one of the many versions of BASIC. BASIC stands for Beginner's All-purpose Symbolic Instruction Code. It has a user-friendly screen and is meant to teach programming to beginners. The language is simple and easy to learn, helping you in creating some simple programs.

In this Chapter

- Basics of Small Basic
- Elements of Small Basic
- Conditional Statements in Small Basic

A **program** is a set of instructions written for the computer to perform a particular task. A program is also called (a piece of) **code**. It instructs the computer what to do and how to do it. A line in a program is called a statement and every statement instructs the computer to do something.

BASICS OF SMALL BASIC

Once you have installed Small Basic on your system, you can start by clicking **Start ▸ All Programs ▸ Small Basic ▸ Microsoft Small Basic** OR double-click the Small Basic icon on the desktop. The Small Basic main screen appears (Fig. 6.1).

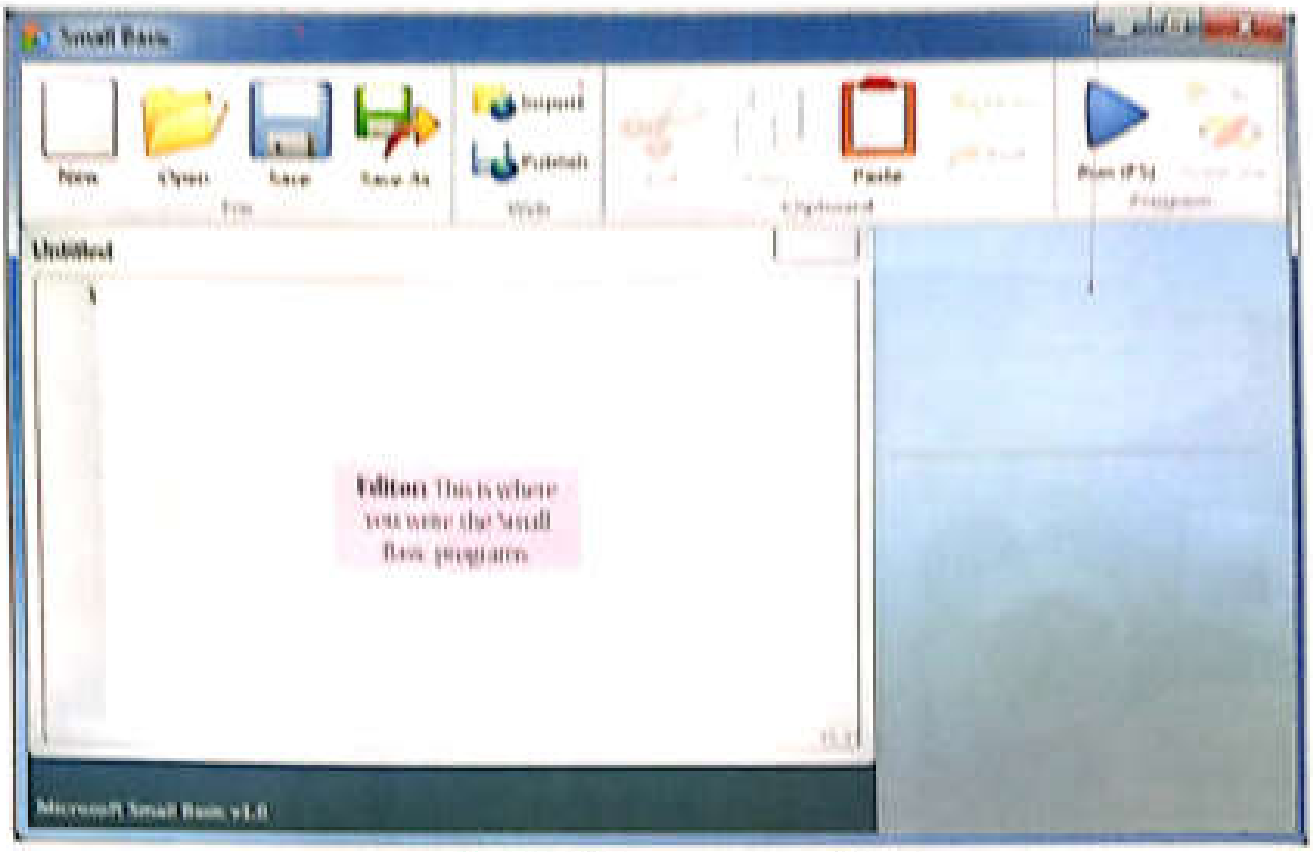


Fig. 6.1 Main screen of Small Basic

This screen has all the tools required for programming. Here, you can write the program code, run it, and **debug** it. To **debug** means to check for and remove errors in the program, if any.

Starting a New Small Basic Program

To start writing a new program in Small Basic, click in the editor pane and start typing. If, by chance, you do not see the Editor pane, click the **New** button in the **File** group on the toolbar. A blank editor will appear.

Opening a Small Basic Program

To open an already saved Small Basic program, the steps are as given below:

Click the **Open** button in the **File** group.

The **Open** dialog box appears (Fig. 6.2).

Select the drive and the folder, select the file, and click the **Open** button.

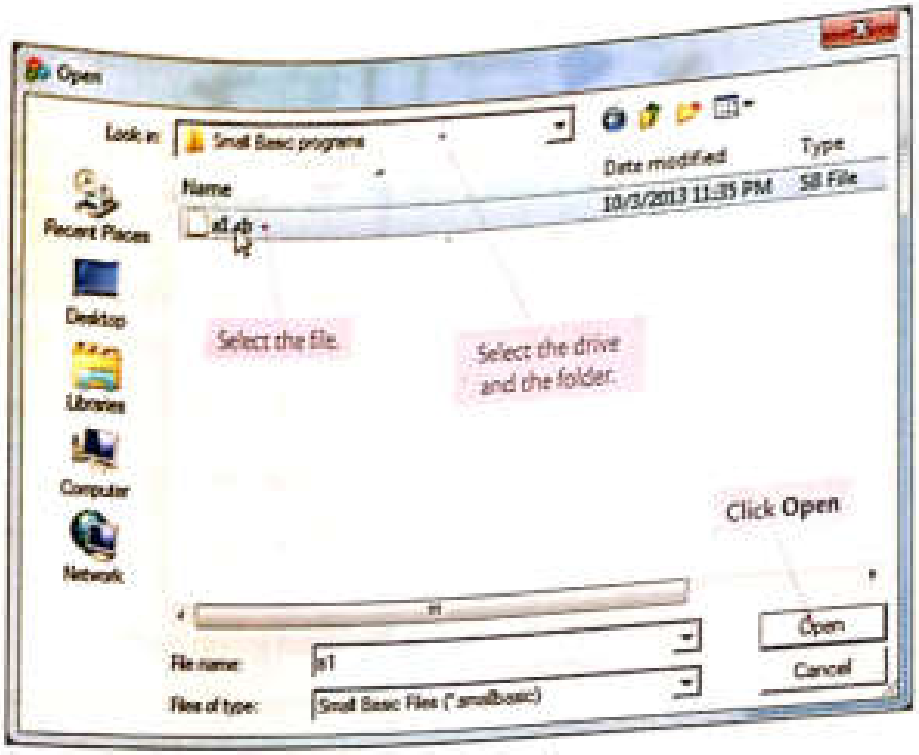


Fig. 6.2 Open dialog box

Saving a Small Basic Program

After you have created a program in Small Basic, you can save it through the steps given below:

1. There are two buttons in the toolbar to save the program: **Save** and **Save As** 
2. When you click the **Save** button for the first time, the **Save As** dialog box will appear (Fig. 6.3).
3. Select the drive and then the folder where you want to save your program.
4. Type the name of the program in the **File name** text box and click the **Save** button. A file is created with the extension .sb.

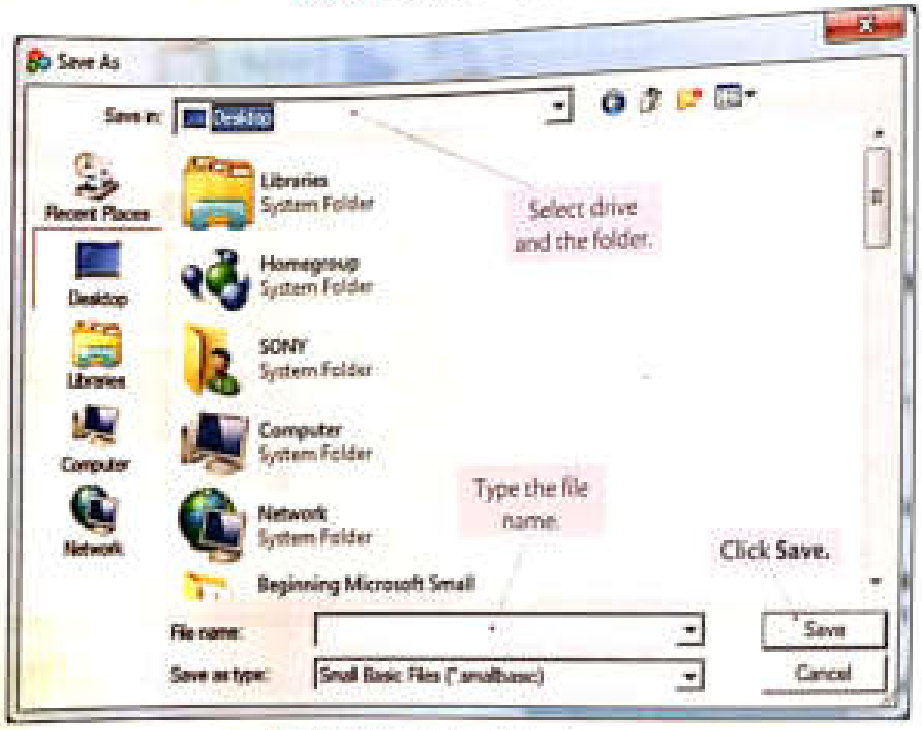


Fig. 6.3 Save As dialog box

Now, when you make changes to this program, clicking the **Save** button will automatically save the modified program with the same name in the same folder. If you want to save the modified program with a different name, use the **Save As** button.

If you try to exit Small Basic by clicking the close button without saving the program, Small Basic will pop-up a message box (Fig. 6.4) prompting you to save the program, discard the changes, or cancel the message box.

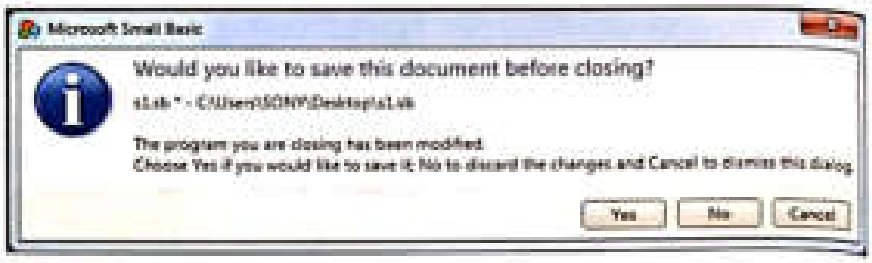
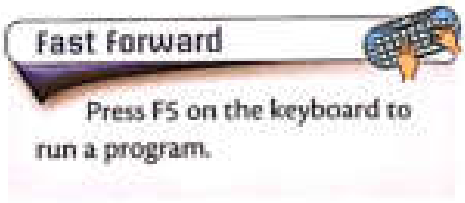


Fig. 6.4 Save message box

Executing a Small Basic Program

After writing a program, you would like to execute or run it to see its output. The steps for doing this are:



1. Click the **Run** button in the **Program** group on the toolbar.
2. The output of the program appears. To close the output window and return to the program, press any key or click the **Close** button on the upper right corner of the window.

Creating a Small Basic Program

Let us now write a simple program in Small Basic.

- In the editor pane, start typing the code shown in Figure 6.5.
- Notice that line number 1 is already present in the editor. After typing the code on the line, press the ENTER key. Line number 2 appears automatically. Similarly, you will get line numbers 3, 4, and so on.

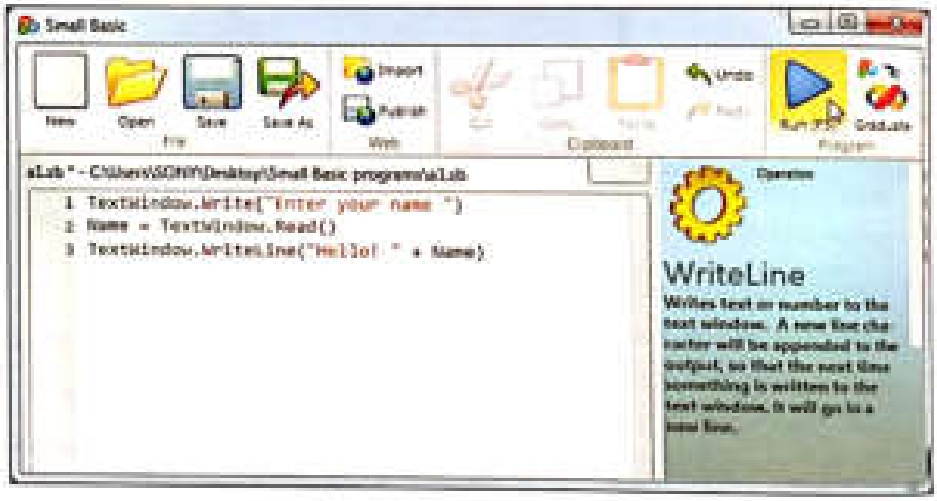


Fig. 6.5 Program in Editor

- As you type the code, the help area provides useful information. In Figure 6.5, the help area shows an explanation about the **WriteLine()** command.
- As you type the first line of code, you will notice a popup window appear (Fig. 6.6).This happens due to a feature called Intellisense. It is meant to help you insert the right command in the program. When this list appears, you can move through the list using the UP/DOWN arrow keys and make a selection by pressing ENTER.

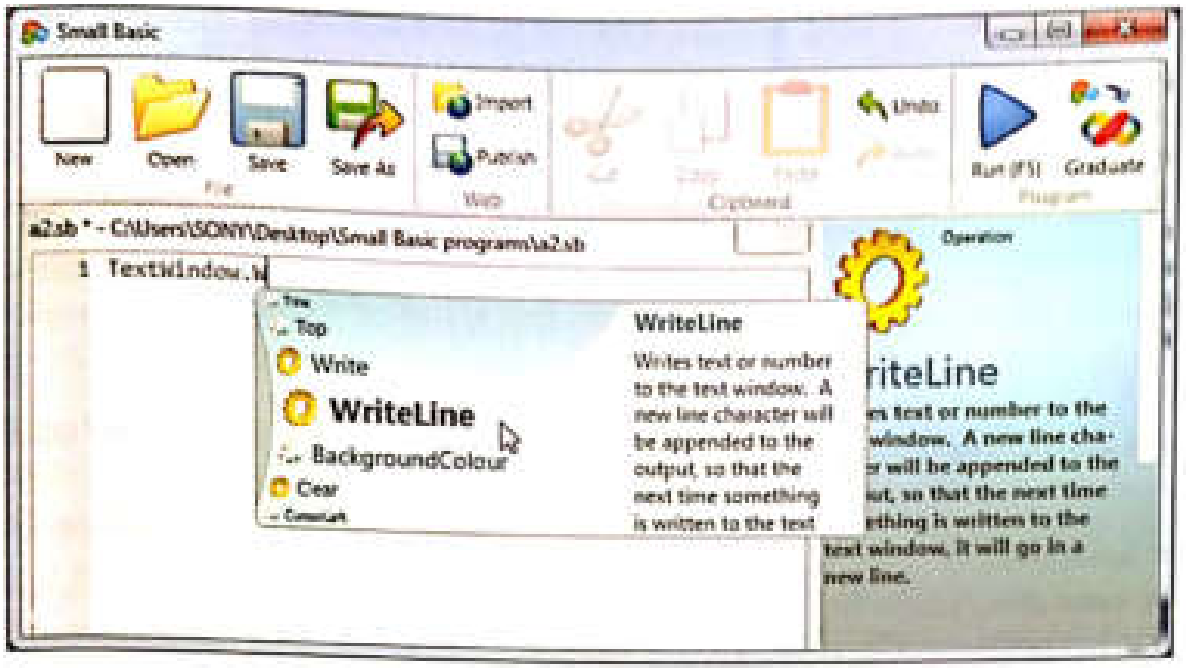


Fig. 6.6 Popup window showing intellisense feature

- Now execute the program by clicking the **Run** button. The output window appears (Fig. 6.7).
- Type in a name and press ENTER. The message (as given in the program) will appear.
- To return to the main window, press any key on the keyboard.

Fig. 6.7 Output of the program

Top Tip

- You must be familiar with the options such as Cut, Copy, Paste, Undo, and Redo. These functions can be used to make typing a long program easy.
- The editor uses different colours for comments, objects, method names, and data used by the objects. The colouring helps in identifying any mistakes made during typing.

ELEMENTS OF SMALL BASIC

You now have an idea of what a program in Small Basic looks like. But before we create more programs, let us learn more about the basic elements of a programming language.

Some Rules of Small Basic Programming

While working in Small Basic, you should remember the following points:

- All commands must be spelled correctly. For example, if you type `WriteLn` instead of `WriteLine`, an error occurs. A command is also called a **keyword**.

- A keyword is a **reserved** word, meaning it cannot be used as anything else, other than a command. All computer languages have a specific set of keywords. Small Basic has 14 reserved words.
- Small Basic is not case-sensitive, meaning it does not differentiate between upper and lower case letters. This means `WriteLine` and `writeline` are the same. But it is good practice to follow preferred case styles in programming.
- Small Basic ignores all spaces; however spaces help to make the code readable.

Constants

Constants are the data or values that cannot be changed in a program. Based on the types of data stored, a constant can be of the **numeric** or **string** type.

Numeric Constants

Numeric constants include the digits 0–9 with or without a decimal point. It can be a positive or a negative number. Addition, subtraction, multiplication, and division operations can be performed on such constants. For example, 1234, 56.43, and -12.6.

String Constants

A **string** is a sequence of characters belonging to a character set, for example 'I am in class 6'. Every computer language consists of digits, characters, and special symbols that form its character set.

In Small Basic, string constants can include numbers, letters, or special characters enclosed within double quotes. For example, "This is a string constant!", "123 Fun reading", and "+929899555555".

Variables

A program works on data–number, text, date, or picture. This data has to be stored in the computer's memory so that it can be changed or called up during program execution. A **variable** is an area in a computer's memory that has a name and that stores data temporarily. This means that you can change the data in the variable during program execution. Now, can you guess the variable used in the program in Figure 6.5? Yes, it is Name and it stores the value Sumaira Figure 6.7.

Rules for Naming Variables

You should keep the following rules in mind while naming variables:

- A variable can only include letters, numbers, and the underscore character.
- The first character must be a letter.
- It cannot be a reserved word of Small Basic.

Note:

- If a variable name consists of more than one word, the words are joined together using an uppercase letter or an underscore character.
- Variable names should be meaningful, i.e. it should identify the information stored in the variable. For example, StudentName, TotalMarks, and EmployeeSalary.

Types of Variables

The different types of variables depend on the type of information stored in them. The two main types of variables are:

- **Numeric type** This type of variable is used to represent numbers that can be used in calculations. It can be further divided into:
  - → **Integer type** It is used to represent a whole number (non-decimal number). Examples of such numbers are 56, -87, and 32450.
  - → **Floating type** It is used to represent numbers with a decimal point. Examples of such numbers are 45.67, -187.23, and 3.1415.
- **String type** This type of variable is used to represent a list of characters. It can be a name, a string of numbers, a sentence, or a paragraph. A string is always enclosed within double quotes. A few examples are "Small Basic Program", "GUI", and "2343476856".

Operators and Expressions

Operators are symbols used to perform certain tasks on variables and/or constants. There are three types of operators–**arithmetic**, **comparison**, and **logical**.

An **expression** in a program combines **operators** and **operands** (variables and constants). The expression having arithmetic operators will result in a value. The comparison and logical operators in an expression will result in a **true** or **false** value.

Arithmetic Operators

There are four arithmetic operators that can be used in Small Basic **(Table 6.1)**.

An arithmetic expression may contain **more than one operator**. In such cases, Small Basic follows an order of preference of operators for solving the expression. This order is:

1. Parentheses ( )
2. Multiplication (*) and division (/)
3. Addition (+) and subtraction (–)

Table 6.1 Arithmetic Operators

Operator	Operation	Example	Result
+	Addition	54 + 35	89
-	Subtraction	98 - 56	42
*	Multiplication	25 * 4	100
/	Division	64 / 16	4

Table 6.2 lists some examples explaining the solving order in expressions.

Table 6.2 Solving order in expressions

Expression	Explanation	Result
6 + 3 * 4	Multiplication is performed first and then addition.	18
8 * 3 / 4	As both operators have equal preference, the expression is solved from left to right. So, multiplication is performed first, followed by division.	6
12 / (2 * 3)	The expression in parentheses is solved first, followed by division.	2
34–12 + 11	As both operators have equal preference, the expression is solved from left to right. So, subtraction is performed first and then addition.	33

Comparison Operators

Comparison operators are used for making decisions. They are also called **relational operators**. The six comparison operators in Small Basic compare the values of two expressions. **Table 6.3** explains these operators taking A = 13 and B = 18, as examples.

Table 6.3 Comparison Operators

Operator	Operation	Example	Result
>	Greater than	A > B	false
<	Less than	A < B	true
>=	Greater than or equal to	A >= B	false
<=	Less than or equal to	A <=B	true
=	Equal to	A = B	false
< >	Not equal to	A < > B	true

Top Tip

The order of preferences in comparison operators is

=
>
<
<>
<=
>=

Logical operators

The **logical operators** are used to combine two or more comparison operators. There are two logical operators in Small Basic, AND and OR. The AND operator returns **true** if both the expressions are true, otherwise it returns **false**. **Table 6.4** shows how the AND operator can be used, considering A = 4.5, B = 9.7, and C = 10.3.

Table 6.4 AND Operator

Example	Result
A > B AND A <> C	false AND true = false
A <= B AND B = C	true AND false = false
A = B AND A >= C	false AND false = false
A <= B AND B < C	true AND true = true

The OR operator returns **true** even if one of the expressions is true, otherwise it returns **false**. Consider A = 5, B = 9, and C = 13 for **Table 6.5** that explains using the OR operator.

Table 6.5 OR Operator

Example	Result
A > B OR A <> C	false OR true = true
A <= B OR B = C	true OR false = true
A = B OR A >= C	false OR false = false
A <= B OR B < C	true OR true = true

String Concatenation

String concatenation means to join one string to another. The concatenation or joining operator is a plus sign (+). For example,

```
ConcatenatedString = "Learning Small Basic" + " is Fun!"
```

After execution of this statement, the variable ConcatenatedString will have the value Learning Small Basic is Fun!.

Comment

In computer programming, the comment statement is used to provide an explanation about the code. This helps the programmer, the same or any other, to understand and modify the code in the future. Comment statements are non-executable and do not give any output. They are seen only in the code.

In Small Basic, an apostrophe (') is used as the comment symbol. Anything written after the comment symbol will be ignored by the compiler when you run the program. For example,

```
'It calculates the average marks
'of the entire class
```

You can also place the comment on the same line as the statement, such as,

```
RollNo = 15 'class roll number of the student
```

Object, Property, and Method

An object is the fundamental building block of Small Basic. `TextWindow` is an object—it is a window that displays the output of a program. Small Basic has a number of such objects. Objects have both **properties** and **methods**.

A property describes the object, and

A method is an action that an object can perform. In other words, it refers to the command you give. For example, `Write()` and `WriteLine()` are methods in Small Basic.

To set the property of an object, a dot rule is used in the following manner:

```
ObjectName.PropertyName = PropertyValue
```

Where ObjectName is the object, PropertyName is the property, and PropertyValue is the value you want to assign to the property.

To type a statement using an object and a method, use this rule:

```
ObjectName.MethodName (MethodInputs)
```

Where ObjectName is the object, MethodName is the method, and MethodInputs is/are the input data needed by the method to function.

A common object used in Small Basic is the **TextWindow** object. The **WriteLine()** method is used with this object to get the output in the output window. For example,

```
TextWindow.WriteLine("Learning Small Basic is Fun!")
```

The execution of this statement will result in Learning Small Basic is Fun! on the output screen. The **WriteLine()** method automatically converts a numeric value to a string for output. You can also combine text with a numeric value by using the concatenation operator with the **WriteLine()** method. For example,

```
TotalMarks = 350
TextWindow.WriteLine ("Total Marks = " + TotalMarks)
```

Running this code will show Total Marks = 350 on the output screen.

Note: The **WriteLine()** and **Write()** methods are the same except that WriteLine( ) after printing moves the pointer to the next line while Write( ) after printing makes the pointer stay on the same line.

To read input from the user, Small Basic has two methods that can be paired with the **TextWindow** object. These methods are:

- **ReadNumber()** It allows reading numeric (both integer and floating) input.

```
ValueReturned = TextWindow.ReadNumber( )
```

- **Read()** It allows reading string value as input.

```
ValueReturned = TextWindow.Read( )
```

When the user types the requested input and presses the ENTER key, the variable ValueReturned accepts the value entered.

Math Library Functions

Small Basic provides a Math library that contains many functions to help you with mathematical calculations in programs. Some of these are discussed in **Table 6.6**.

Table 6.6 Math Library Functions

Function	Explanation	Example
Math.Max(Arg1, Arg2)	It compares two numbers and returns the greater of the two numbers.	Math.Max(89, 96) = 96
Math.Min(Arg1, Arg2)	It compares two numbers and returns the smaller of the two numbers.	Math.Min(89, 96) = 89
Math.Pi	It returns the value of Pi.	Math.Pi = 3.14159265358979
Math.Floor(Arg1)	It returns an integer that is less than or equal to the specified decimal number.	Math.Floor(35.43) = 35 Math.Floor(97.89) = 97
Math.Remainder(Arg1, Arg2)	It gives the remainder obtained when two whole numbers are divided.	Math.Remainder(20, 3) = 2 Math.Remainder(5, 2) = 1

You have now got an idea about Small Basic and the basics of programming in this language. So shall we write a few simple programs in Small Basic? Let's begin!

Example 1

Write a program that accepts a user's name and his/her age and prints them with a proper message.

```
a2asb - D:\Revised Keyboard\Book 8\X86 - Chapter 6 Small Basic\Small Basic programs\a2asb
1 TextWindow.Write("Enter your name ")
2 Name = TextWindow.Read( )
3 TextWindow.Write ("Enter your age ")
4 Age = TextWindow.ReadNumber( )
5 TextWindow.Write("Hi, " + Name + "! Just got to know you are ")
6 TextWindow.WriteLine(Age + " years old!")
```

Fig. 6.8 (a) Program code

Solution

Let us write the code shown in Figure 6.8 (a).

Run the program and enter your name and age, in the output window [Fig. 6.8 (b)]. You get the name and age with a proper message as output. Notice the blank line in the output due to line number 6 in the program code.

Fig. 6.8 (b) Program output

Example 2

Write a program in Small Basic that accepts the length and breadth of a rectangle and displays its area and perimeter.

Solution

As you can see in the code two variables, RectLength and RectBreadth have been introduced. When the user enters the values for length and breadth of the rectangle, the computer reads

the numbers entered. It then calculates the area and perimeter of the rectangle as per the following formula:

Area = RectLength x RectBreadth

Perimeter = 2 (RectLength + RectBreadth)

The area and perimeter values are then printed in the output window.

The program code and output are shown in Figure 6.9 (a) and Figure 6.9 (b) respectively.

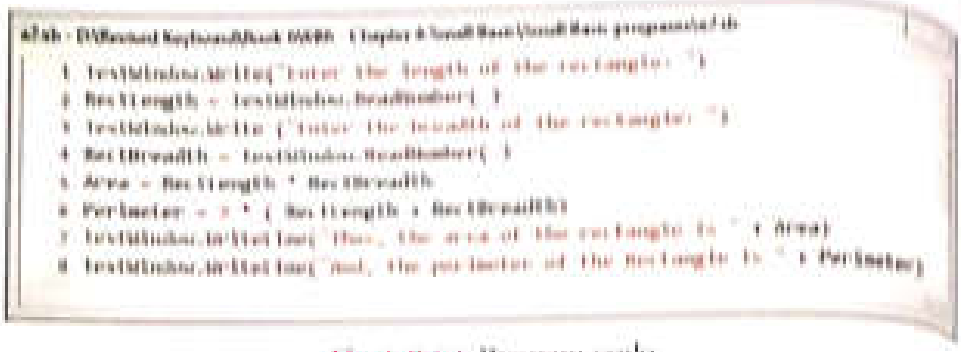


Fig. 6.9 (a) Program code

Fig. 6.9 (b) Program output

PRACTICE TIME

Deena has been asked to write a program in Small Basic to input two numbers and print both the bigger and the smaller number in the output window. What would her code look like?

SOLUTION

1. Deena has to first make the user enter two numbers, which should be read by the computer.
2. So we start with the Write ( ) and ReadNumber ( ) commands.
3. The computer has to then compare the two numbers to find out which is the bigger and the smaller of the two and then print them. For that we use the math functions, Math.Max and Math.Min. Then we have to make the computer print it in the output window, for which we use the WriteLine command.
4. See Figure 6(a) for the code. Save and press F5 to run the program. The output will appear as shown in Figure 6(b).

Fig. 6(a)

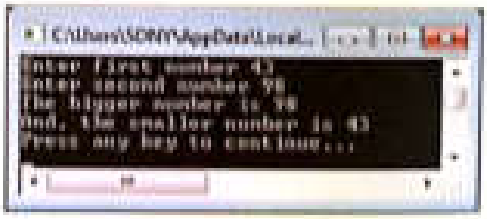


Fig. 6(b)

Statements in Small Basic

The statements in Small Basic are the **assignment**, **conditional**, and the **looping** statements.

The assignment statement (=) assigns value to a variable. Some examples are:

```
studentName = "Manahil"
employeePhone = "378-69999"
classAverage = 87.5
```

You will learn about conditional statements here, while looping statements are discussed in Class 7.

CONDITIONAL STATEMENTS IN SMALL BASIC

Sometimes, you might want a program to perform different functions under different conditions. We use **conditional statements** in such cases. The **If** statement is one such conditional statement. They are also called **branching statements**. Branching statements in a program specify an action to be taken when a condition is met. It has various formats which we will discuss one by one in the pages that follow.

If-Then Statement

The **If-Then** statement is the simplest conditional statement in Small Basic. Its syntax is:

```
If (condition) Then
(Statements to be executed if the condition is true)
EndIf
```

The words **If**, **Then**, and **EndIf** are reserved words as they have special meaning in Microsoft Small Basic. The word **If** is followed by the condition. The condition should be within parentheses. The condition is followed by the word **Then** and the statements to be executed if the condition is true. The **EndIf** word comes at the end. This tells the computer that the conditional execution is over. Between **Then** and **EndIf**, there may be more than one statement.

Example 3

To illustrate the use of the **If-Then** statement, write a program in Small Basic to enter the age and display the message stating whether the person is eligible to vote and to apply for a driving licence.

Solution

The program code can be seen in Figure 6.10(a) and its output in Figures 6.10(b) & (c).

```
1 TextWindow.Write("Enter your age ")
2 age = TextWindow.ReadNumber( )
3 If (age > 18) Then
4   TextWindow.WriteLine ("Eligible to vote")
5   TextWindow.WriteLine ("Eligible to apply for a driving licence")
6 EndIf
```

Fig. 6.10(a) Program code

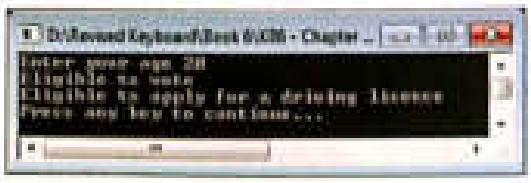


Fig. 6.10(b) Program output when age = 34

Fig. 6.10(c) Program output when age = 15

If the user enters 34, the program checks whether it is greater than 18 and displays the messages on the output screen [Fig. 6.10(b)]. If the user types 15 (less than 18), there is no message on the output screen [Fig. 6.10(c)].

Please note that you can use the **If-Then** statement multiple times in a program.

For example, here we could have added the following **If-Then** statement after Line number 5 and before **EndIf**:

```
If (age < 18) Then
TextWindow. WriteLine ("Neither eligible to vote nor to apply for a
driving licence)
```

However, there is a better option to get the same result and that is to use the **If-Then-Else** statement.

Did you Know?

Notice that the statements between **If**, **Else**, and **EndIf** are indented. Indentation is not required but it is good practice to indent the statements between two blocks. This will help you understand the structure of the program, and finding errors will become easier.

If-Then-Else Statement

The **If-Then-Else** statement goes a step further and also helps us to specify the action to be performed in case the condition results **false**. This statement can be used in the following manner:

```
If (condition) Then
   (Statements to be executed if condition is true)
Else
   (Statements to be executed if condition is false)
EndIf
```

Let us understand this conditional statement by modifying Example 3.

Example 4

Write a Small Basic program to enter the age and display appropriate messages showing whether the person is eligible to vote and to apply for a driving licence or not.

Solution

Notice the change in the program in this case. The **Else** statement is added before **EndIf** which specifies what message to display if the age entered is less than 18. The program code is shown in Figure 6.11(a).

Now, if you enter 34, the specified messages appear on the output screen [Fig. 6.11(b)], as in the previous example. If you enter 15 (value less than 18), you will see a message in this case also, as shown in Figure 6.11(c).

```
1 Textwindow.Write("Enter your age ")
2 age = Textwindow.ReadNumber()
3 If (age > 18) Then
4   Textwindow.WriteLine ("Eligible to vote")
5   Textwindow.WriteLine ("Eligible to apply for a driving license")
6 Else
7   Textwindow.WriteLine ("Neither eligible to vote nor to apply for a driving license")
8 EndIf
```

Fig. 6.11(a) Program Code

Fig. 6.11(b) Program output when age = 34

Fig. 6.11(c) Program output when age = 15

PRACTICE TIME

The Math teacher of Class VI has tasked the students with writing a program in Small Basic to find out whether a given number is divisible by 3 or not. How should they proceed?

SOLUTION

So, what we have to do here is to create a program which will first ask the user to input a number. The computer then should be made to read this number and divide it by 3 to find out whether it leaves behind a remainder. If it does not then it should display the message "It is divisible by 3" and if it does then it should display "It is not divisible by 3".

1. Now, the programming code for it will be as given in Figure 6(c). Type it out in the Editor.
2. Save the program.
3. Press F5 to run the program. The output will appear as in Figures 6(d) and 6(e).

```
1 Textwindow.Write("Enter a number ")
2 Number = Textwindow.ReadNumber()
3 a = Math.Remainder(Number, 3)
4 If (a = 0) Then
5   Textwindow.WriteLine ("It is divisible by 3")
6 Else
7   Textwindow.WriteLine ("It is not divisible by 3")
8 EndIf
```

Fig. 6(c)

Fig. 6(d) Number divisible by 3

Fig. 6(e) Number not divisible by 3

If-Then-Elseif Statement

This statement is used when you need to check a number of conditions in the program. Its syntax is:

```
If (condition 1) Then
   (Statements to be executed if condition 1 is true )
ElseIf (condition 2) Then
   (Statements to be executed if condition 1 is false and condition 2 is
   true)
ElseIf (condition 3) Then
   (Statements to be executed if condition 1 and 2 are false and condition
   3 is true)
Else
   (Statements to be executed if all conditions are false)
EndIf
```

Example 5

Create a Small Basic program to display the grade based on the marks scored by the student, according to the table given alongside:

Marks	Grade
451–500	A
401–450	B
351–400	C
301–350	D
1–300	E

Solution

This program explains the **If-Then-Elseif** statement in Small Basic. There are in all five conditions here. So the **If** statement is followed by three **Elseif** statements, then an **Else** statement, and is closed by **EndIf**. The program to calculate the grade based on the marks scored is shown in Figure 6.12(a), while the output window [Fig. 6.12(b)] displays the grade when marks scored are 360.

Fig. 6.12(b) Output window

If the user enters the input as 360, the program first checks the condition Marks > 450, which returns false. It then checks

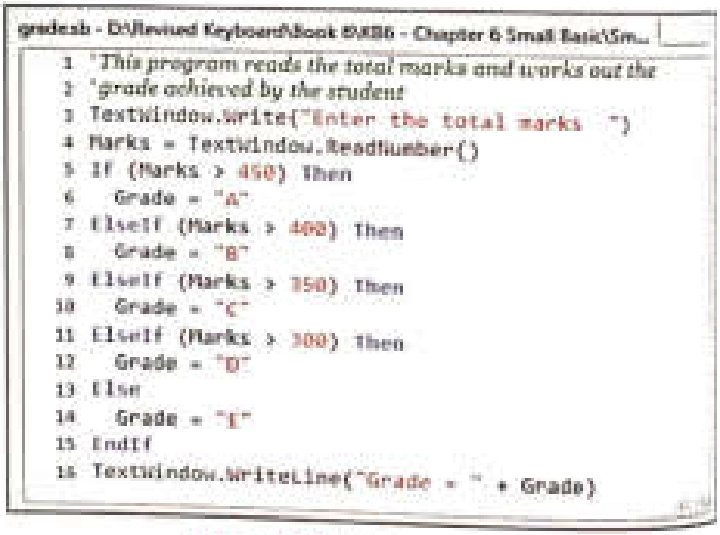


Fig. 6.12(a) Program code

the condition Marks > 400, which is again false. Then the condition Marks > 350 is verified, which returns true. The program then assigns the value 'C' to the variable Grade and exits the conditional statements by moving to the **EndIf** statement.

Tricky Terms

Program It is a sequence of instructions written to perform a particular task.

Statement an instruction in Small Basic

Keyword A word that has special meaning in Small Basic; it is also called a reserved word.

Constant a value that does not change during program execution

Variable a named area of memory used to store a value temporarily

Operator These are symbols used to perform certain tasks.

Expression It combines operands (variables and constants) and operators.

Object An object is the fundamental building block of Small Basic.

Property It is an attribute of an object.

Method A method is an action that an object can perform.

Syntax the way in which a particular statement should be written

Memory Bytes

- The Small Basic screen has all the tools to write, run, and debug your code.
- Both constants and variables can be numeric and string.
- The assignment statement assigns value to a variable.
- The four arithmetic operators are +, -, *, and /.
- The plus sign (+) is used as a concatenation operator in Small Basic.
- The comment statement is used to give explanations about the code so that modification of the code in future becomes easier.
- The comment symbol is the apostrophe (') in Small Basic.
- Small Basic has many objects. Objects have both properties and methods.
- Properties describe objects, and methods perform functions on objects.
- **TextWindow** is one object in Small Basic.
- The **WriteLine()** and **Write()** methods are used to get the output on the screen.
- The Maths library has a large number of functions for mathematical calculations.
- The two input methods are **ReadNumber()**, for reading numeric values, and **Read()**, for reading string values.
- Conditional statements are used when you want the program to perform different functions under different conditions.

EXERCISES

Objective Type Questions

1. Choose the correct option.

a. The arithmetic operator not used in Small Basic is
   i. + ii. * iii. ^ iv. /

b. The output of the arithmetic expression 6 + 5 * 2 is
   i. 16 ii. 22 iii. 20 iv. 18

c. The output of `Math.Remainder(30, 8)` is
   i. 3 ii. 6 iii. 5 iv. 4

d. The symbol used for inserting comments in a program is
   i. " ii. ' iii. * iv. ^

e. The method used to read numeric value during program execution is
   i. `Number( )` ii. `ReadNumber( )` iii. `Read( )` iv. `ReadValue( )`

Descriptive Type Questions

1. Answer the following.

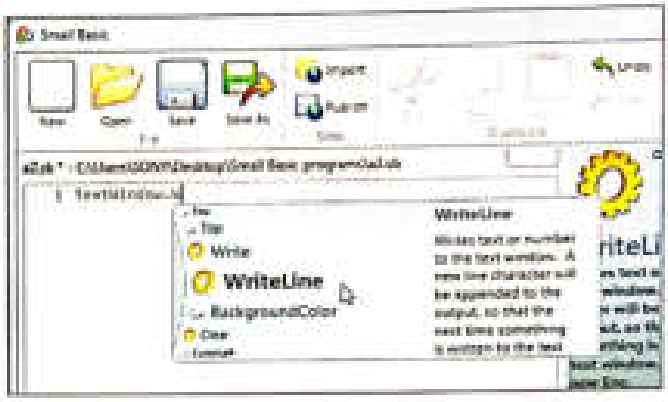
a. What are the main points to be kept in mind while working in Small Basic?
b. What are the rules for naming variables?
c. Explain the two types of variables in Small Basic.
d. How will you write a comment in a Small Basic program?
e. What is the difference between **`WriteLine()`** and **`Write()`** methods?
f. What is the order of execution of an arithmetic expression if there are more than one arithmetic operators.
g. Programmers often use conditional statements when coding. Based on what you have learned about conditional statements, evaluate the usefulness of the If-Then, If-Then-Else, and If-Then-Elself statements.
h. For each one of the examples given below, distinguish which operator would be used. Give reasons for your answer.
   - Given that Sajid(S) is 10 years old and Amir(A) is 11, analyse the statement: S >= A
   - (10*4) + 6
   - Ali (A) has 10 chocolates, Bilal (B) has 23, and Sarwat (S) has 35; analyse the statement: A>8 AND B<>S.
i. Your teacher has asked you to find out how many students, under the age of 14, bring lunchboxes from home. Write a program which collects the data and displays the desired output

Application-Based Questions

a. Sami has written a program in Small Basic as shown alongside. What will be the output of the program if the inputs are:
   i. 10 and 3
   ii. 20 and 7

```
1 TextWindow.Write("Enter first number ")
2 a = TextWindow.ReadNumber()
3 TextWindow.Write("Enter second number ")
4 b = TextWindow.ReadNumber()
5 c = a/b
6 quotient = Math.Floor(c)
7 remainder = Math.Remainder(a,b)
8 TextWindow.WriteLine("The quotient of " + a + "/" + b + " is " + quotient)
9 TextWindow.WriteLine("And, the remainder is " + remainder)
```

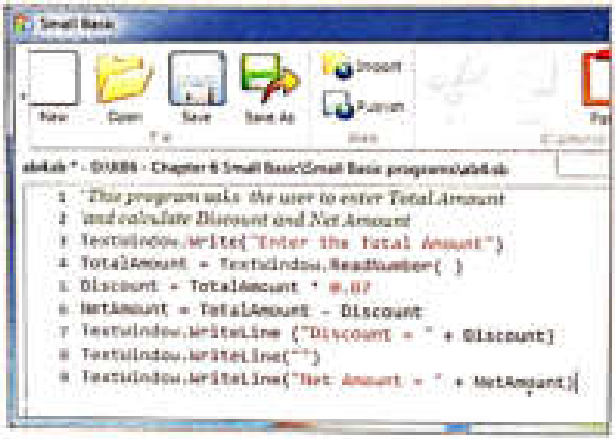
b. Sami starts writing a statement in the editor. Suddenly a pop-up window appears, as shown in the window on the right.
   i. Why does this window appear?
   ii. How will you add a command in the program using this window?



c. The Math teacher has asked the students of Class VI to write a program in Small Basic for finding the area of a triangle, a square, a rectangle and a circle. Anam is confused about which formula to use for which figure. Can you help her match the following?

i. Area of a circle	a. side * side
ii. Area of a square	b. length * breadth
iii. Area of a triangle	c. Math.Pi * radius * radius
iv. Area of a rectangle	d. ½ * breadth * height

d. A souvenir shop is giving a festival discount of 7% on all items in the shop. Rustam has written a program to enter the amount, calculate the discount, and the net amount to be paid by a customer.
   i. Write the line numbers of the comment statements.
   ii. Mention an object used in the code.
   iii. Describe the working of line number 8.
   iv. Mention two methods used in the code.



IN THE LAB

1. The Computer Science teacher has asked the students to write a program that inputs the radius of a circle and displays its area and circumference with proper messages. How should they proceed?
   Note: For the value of PI, use `Math.PI()`.

2. The Science teacher has asked Rubina to create a program that will convert a given Fahrenheit value to Celsius. Can you do the same task?
Hint: Celsius = Fahrenheit * 9 / 5 + 32

3. Saboor's father wants him to write a program to calculate simple interest, if P is the Principal amount, R is the rate of interest, and T is the time in years. Can you help him with the task?
Hint: Simple_Interest = Principal * Time * Rate of Interest / 100

4. The class teacher has asked the monitor of Class VI to write a program in Small Basic that calculates the percentage of attendance based on the number of days a student is present. Create a similar program for your class.
Hint: Percentage of Attendance of a student = Number of days a student is present / Total number of days in a month * 100

5. A local jewellery shop has announced festive discounts on purchased items based on the given table. Write a program in Small Basic that inputs the purchased amount, and calculates and displays the discount and the net amount (Purchased Amount–Discount).

Purchased Amount	Discount
50,000 to 1,00,000	1%
1,00,001 to 3,00,000	1.5%
3,00,001 to 5,00,000	2%
>5,00,000	2.5%

GROUP PROJECT:

MS Small Basic has gone through many changes over the years and has been known by different names such as BASIC, GW-BASIC, QBASIC, QuickBasic, and Visual Basic. In your group, your task is to discover the similarities and differences between these earlier versions and Small Basic. Your findings should be presented in a proper document designed in MS Publisher. This reflective research can give clues as to how quickly progress has been made and perhaps show the next step for technological evolution.

TEACHER'S NOTES

- Demonstrate how to download Small Basic from the Website http://www.smallbasic.com.
- Give appropriate examples to explain the different formats of the If statement.

Chapter 7

The Internet as a Post Office

The Internet is a worldwide network of millions of computers. It is a medium for communication, research, and exchange of information. The Internet provides various services including email, file sharing, online gaming, advertising, marketing, and many more. Email is one of its most widely used features.

In this Chapter

- Internet Terms and Addresses
- Email Services
- Information Retrieval
- Education through the Internet
- Finding People on the Internet

INTERNET TERMS AND ADDRESSES

In this chapter, you will learn about the features of email in more detail. But before we proceed further, you must understand certain terms associated with the Internet.

Terms Associated with the Internet

ISP (Internet Service Provider) An **Internet Service Provider** or **ISP** is a company that offers Internet services to individuals and corporations for a fee.

Nowadays most telephone companies are also ISPs.

Modem **Modem** is short for modulator-demodulator. It is a computer peripheral that lets users connect their computer to other computers using wired or wireless telephone connections in order to transmit and receive data.

Web Page and Web Browser A **web page** is a document written in HTML (Hypertext Markup Language). You can read HTML documents on the Internet with the help of a program called a **web browser**. A web browser reads HTML documents, converts them to a form that users can read, and displays them on a computer screen.

Website A **website** is a collection of Web pages with related information. Web pages can contain links to other places on the same web page, to web pages on the same website, or to Web pages on other Websites. They can also contain fill-in forms, photos, clickable images, audio files, and videos.

World Wide Web (WWW) The **World Wide Web**, or simply **the web**, is the world wide collection of publicly accessible web pages stored on computers connected to the Internet. It is easy to retrieve information from the web, and this has helped to popularise the Internet.

Did you Know?

The World Wide Web was developed in 1989 by Tim Berners-Lee. Earlier, users could only view material on the Web. Web 2.0 refers to newer technologies that allow two-way interaction through features like blogs, wikis, and social networking sites.

A **blog** is a personal website that is like a diary where the owner writes regularly. Most blogs allow anybody to read and comment.

Facebook and Twitter are popular **social networking sites**. Facebook helps users stay in touch with friends and family. Twitter lets users write short messages called tweets for anybody to read.

Home Page The front page or index page of any website is called the **home page**. It has links to other pages of the website. It is the page that automatically opens when a website is visited.

Uniform Resource Locator (URL) The URL is the unique address identifying a file on the web.

Internet Addresses

Every file on the Internet has a unique address. There are two types of Internet addressing: number addressing and letter addressing.

Number Addressing

In the **number addressing system**, the address is a numeric address called the Internet Protocol (IP) address. It is made up of four numbers in the range 0 to 255, joined together by periods (dots), for example, 192.12.148.73 and 131.58.97.254.

Letter Addressing

The **letter addressing system** is also called the Domain Name System (DNS). It is technically synonymous with the URL. In the letter addressing system, the address consists of letters of the alphabet. For example, **oup.com.pk** and **hotmail.com**. These addresses are also called **domain names.**

The last three letters of the domain name are important because they provide information about the kind of organisation to which the address belongs. The letter addressing system also uses two-letter country codes. Some examples of both are given below:

com	Commercial organisation	ca	Canada
edu	Educational institution	ch	Switzerland
gov	Government department	de	Germany
mil	Military	pk	Pakistan
net	Network access provider	jp	Japan
org	Organisation	uk	United Kingdom
au	Australia	us	United States

Did you Know?

When you enter the letter address in a browser, the Internet sends the information to DNS servers that translate the letter address to the corresponding IP address. This process is called DNS name resolution.

Email SERVICES

An email is an electronic message sent from one computer to another (Fig. 7.1). The message can include text, pictures, and sound. You have learnt about email service providers, and about composing and sending email messages in class 5.

Fig. 7.1 Email

Advantages of Email

Some of the advantages of using email are:

Speed Email is much quicker than normal post. A message can reach any part of the world in a fraction of a second.

Content An email message can consist of only a few lines of text or of several thousand lines. Unlike the postal service, the message is not charged by weight.

Cost There is no charge for sending and receiving email messages, even though the message travels across the world.

Receiving messages We need not be at our computer all the time to receive a message. Any message sent to us is stored safely in our email account.

Email Addresses

For computers running in a multi-user environment, each user has a unique **username** or **login name**. The username, combined with the computer's complete domain name, provides the user with a unique email address. Therefore, the two parts of an email address are the user's login name and the computer's address. The user's login name comes first and is separated from the

computer's fully qualified domain name by an @ symbol. For example, in the email address alsan_company@hotmail.com, alsan_company is the username and hotmail.com is an address on the Internet.

Features of Email

An email program usually has the features discussed below.

Email Folders

The folders are arranged on the left side of your email screen (Fig. 7.2). Some important folders are:

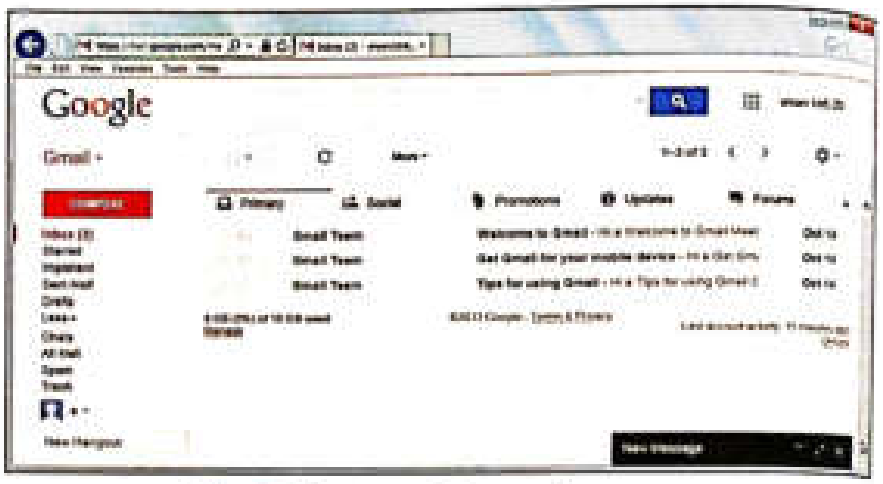


Fig. 7.2 Features of an email program

Inbox It stores the incoming email messages, showing all unread messages as highlighted. Whenever you want to check your email messages, just click **Inbox** on the left side of your email screen. The new Gmail inbox organises emails into five optional tabs: **Primary**, **Social**, **Promotions**, **Updates**, and **Forums**. These categories order your mails and make it easy to read messages of the same type at once.

Draft It stores messages that you started to write but have not yet sent.

Sent Mail It stores the messages that you have sent.

Trash It stores deleted messages.

Contacts It stores email addresses of your friends and other email contacts.

Did you Know?

hotmail.com and live.com are different domain names for Microsoft's email service.

live.com was chosen by Microsoft to show that it is part of the Windows Live collection of services and software.

Both hotmail.com and live.com have now been replaced by outlook.com.

Commands for Working with Email

The following common commands are used for working with email:

Compose This lets you create a new email message.

Reply You can reply to a message using the **Reply** command, which appears for every message that you open to read.

Forward This lets you forward a received email message to someone else.

Delete You can delete old and unwanted messages using this command.

Print You can take a printout of the message using this option.

Attachment This option allows you to attach and send files, such as a Word, Excel, or JPEG file along with the email. This option appears when you are writing a message.

How to Open an Email Account

You can follow the steps listed below to open an email account. Here, we will take up Gmail as an example of an email system.

1. Connect to the Internet and open any Web browser, say Internet Explorer.
2. Type **www.google.com.pk** in the address bar and press ENTER. The Google home page shown in Figure 7.3 appears.
3. Click **Gmail**.
4. The screen shown in Figure 7.4 appears. Click **Create An Account** to create a new Gmail account.

Fig. 7.3 **Google** home page

Fig. 7.4 Gmail **Sign in** page

5. Fill in the registration form that appears (Figs. 7.5 and 7.6).

Fig. 7.5 Gmail registration form

Fig. 7.6 Gmail registration form (continued)

6. The **Welcome** screen appears next, as shown in Figure 7.7.
7. Click **Continue to Gmail** to get the screen shown in Figure 7.8, showing the Inbox of your newly created Gmail account. The Inbox shows three mails from the Gmail team. You can click to open the mails and check their content.

Fig. 7.7 **Welcome!** screen

Fig. 7.8 **Inbox**

Composing and Sending an Email

To compose and send an email, follow these steps:

1. Click **Compose** on the left side of the Gmail window. This opens a small **New Message** window at the bottom-right side of the screen (Fig. 7.9).

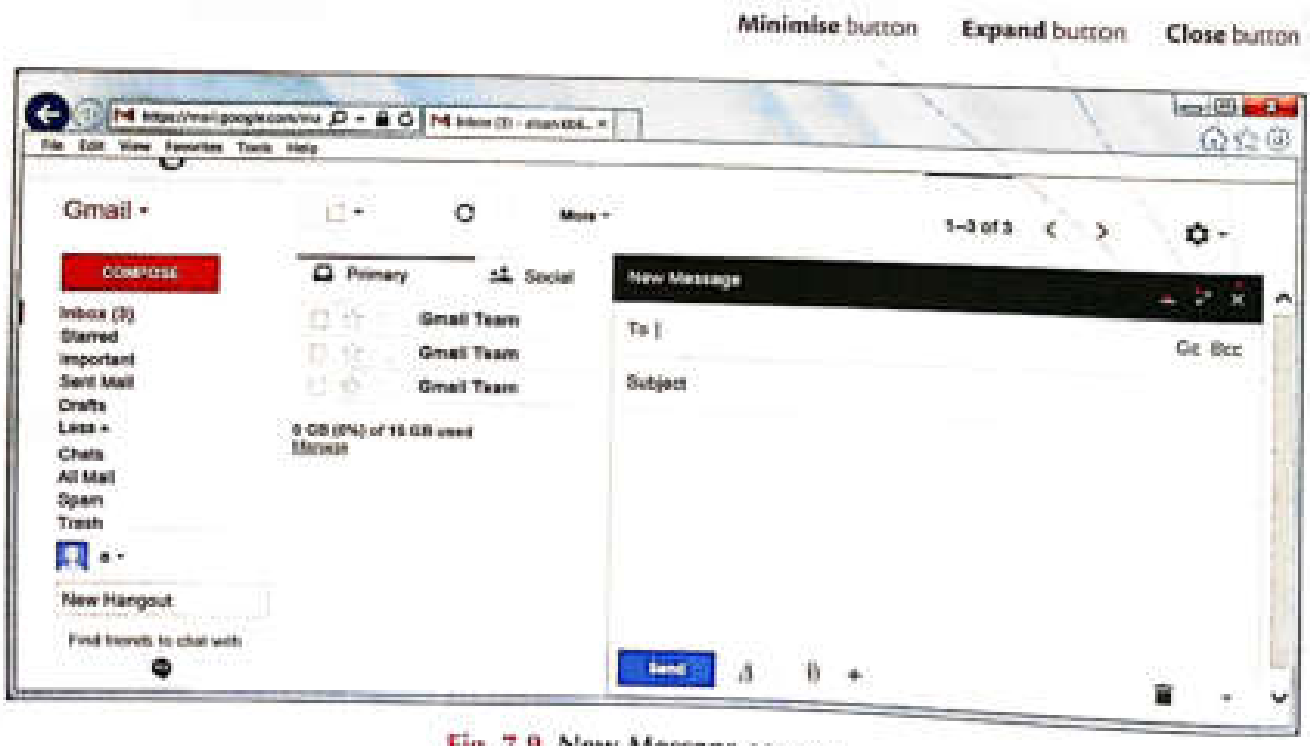


Fig. 7.9 **New Message** screen

You can use the **Minimise** button to minimise the **New Message** window, **Close** button to close the window, and **Expand** button to compose your message in full screen.

2. In the **New Message** window, do the following:

- Type the email address of the recipient(s) in the **To** box.
- If you click **Cc** or **Bcc** in the top right corner, the respective boxes will become visible (Fig. 7.10).

  Cc stands for Carbon Copy. It allows you to send the same message to two or more people at one go.

  Bcc stands for Blind Carbon Copy. It allows you to send the same message to several people without letting them know that others have also received the same mail. Type the email addresses of people you want to send **Cc**s or **Bcc**s to in to the respective boxes.

Fig. 7.10 **Cc** and **Bcc** options

- Type a short description of the message in the **Subject** box.
- Type the message in the message area.
- Click the **Text Formatting** icon to use formatting features like **font**, **font size**, **bold**, **italics**, **alignment**, and **indentation** (Fig. 7.11).
- Bring the mouse over the **plus** (+) icon to show buttons to embed photos, links, emoticons, insert files from Google Drive, and Google Calendar events (Fig. 7.12).

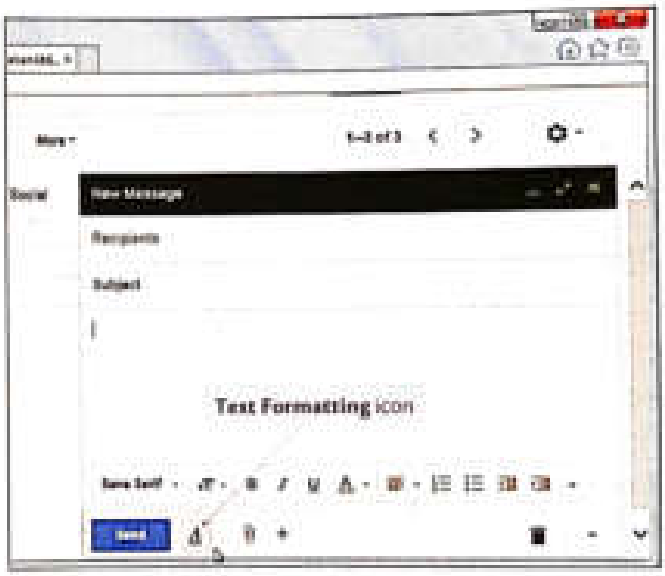


Fig. 7.11 **Text formatting** options

- To attach a file to a message, click the **Attach files** (paperclip) icon (Fig. 7.13) at the bottom of the compose window. The **Choose File to Upload** (Fig. 7.14) dialog box appears. Locate the file and click **Open**. To attach more than one file, hold down the CTRL key while selecting files.
- Click the **Trash** icon to delete a draft of the message (Fig. 7.13).

Fig. 7.12 Various **Insert** options

Fig. 7.13 **Attach Files** and **Trash** options

- Click the down arrow at the bottom right of the window to get more options like spell check, print, etc. (Fig. 7.13).
- Click **Send** when you finish typing. A copy of the sent message is stored in the **Sent Mail** folder.

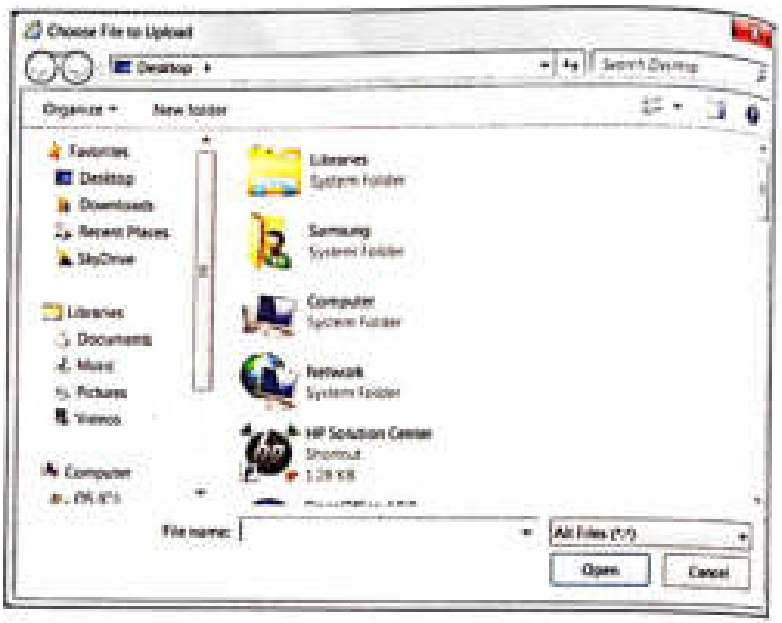


Fig. 7.14 **Choose File to Upload** dialog box

Creating Signatures

A **Signature** is text, such as your contact information, that is automatically inserted at the bottom of every message you create. Signatures are separated from the rest of the message by two hash signs. To create your email signature, follow these steps:

1. Click the **Settings** icon at the top-right corner of the Gmail window (Fig. 7.15). From the drop-down menu options, select **Settings**.
2. The **Settings** window appears. Scroll down to the **Signature** section and type the text to be used as your signature. You can also format the text using the buttons available for text formatting (Fig. 7.16).

Did you Know?

You can send messages with attachments up to 25 MB. If you want to send attachments larger than this, then you can insert a link from Google Drive.

Fig. 7.15 **Settings** option

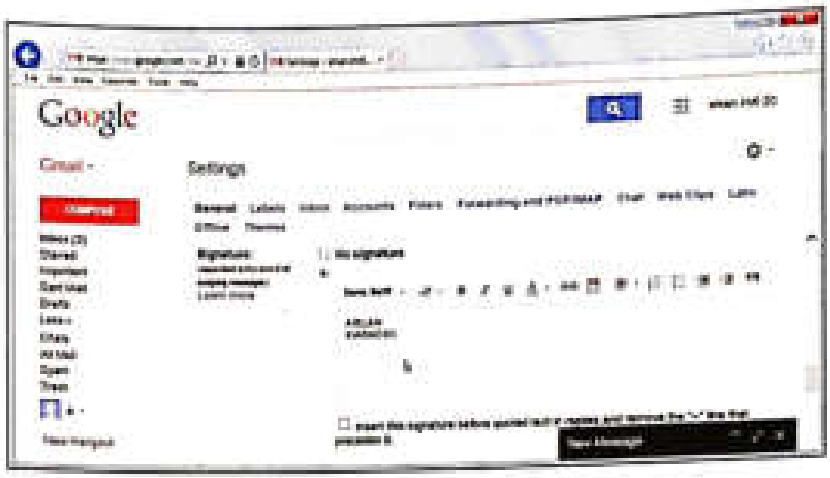


Fig. 7.16 Creating a signature

3. Click **Save Changes** at the bottom of this page.

Sign Out

Click your account name or photo to the right of the window and select the **Sign Out** option (Fig. 7.17).

It is important to close your account properly, especially when you are using a public or shared computer.

This will prevent misuse of your account by other people who will use this computer.

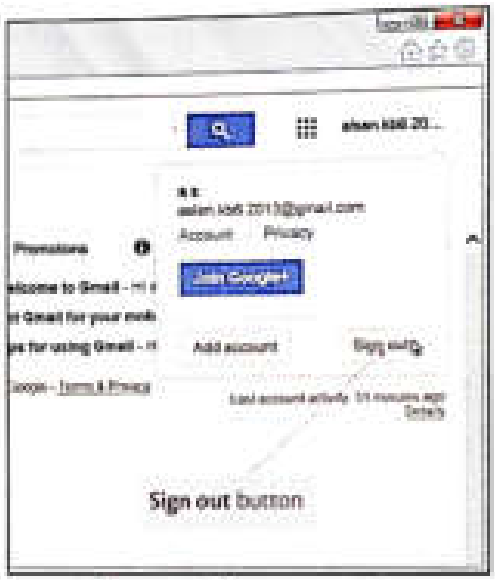


Fig. 7.17 **Sign out** option

PRACTICE TIME

The students of Class VI have been asked to submit their Science project by the end of the month. But the students have to submit the project to their teacher's email account as he wants soft copies of the project. What steps should they follow for doing this?

SOLUTION

1. Connect to the Internet.
2. Open Internet Explorer.
3. In the Address bar, type www.google.com.pk or the URL of any other email service. The Web page will appear in the browser.
4. Enter your email ID and password and click **Sign In**.
5. Click **Compose** to create a new message.
6. The **New Message/Compose** window appears.
7. Enter the email address of the teacher in **To** box.
8. Write a subject for the message.
9. Type a brief message for your teacher.
10. To send your project file as an attachment, click the **Attach Files** (paper clip) icon in the window. The **Choose File to Upload** dialog box appears. Locate the file and click **Open**.
11. Click the **Send** button at the bottom to send the message.

INFORMATION RETRIEVAL

The Internet is the most common source to retrieve information. The Internet has made it easy to access and share information, which can be in the form of text, pictures, audio, or video. Information on almost every subject is available on the Internet. Searching for information on the Internet, or exploring the Internet, is commonly referred to as surfing.

Search engines make it easier to find the information you want on the Internet.

Using Search Engines to Find Information

A **search engine** is a program that searches the web for specified keywords and returns a list of the web pages in which the keywords are found. A popular search engine is **www.google.com**.

Let us consider an example to understand how to search for information using a search engine. Suppose you want to search for information about the features of Gmail. The steps for doing this will be:

1. Connect to the internet and open a web browser.
2. Type **www.google.com** in the address bar and press ENTER. The Google home page will appear (Fig. 7.18).
3. Type Features of gmail in the search box and click the **Google Search** button.

4. A list of links to the web pages containing the search term will be displayed (Fig. 7.19). Clicking on any of the links will take you to the corresponding web page for the required information.

Fig. 7.18 Home page of **Google.com**

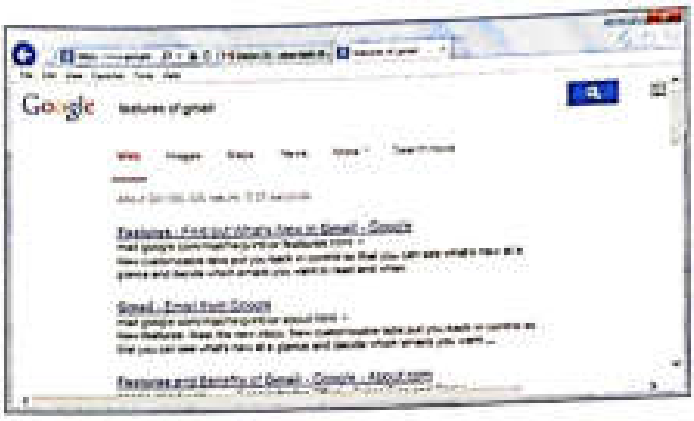


Fig. 7.19 Search results

EDUCATION THROUGH THE INTERNET

The Internet is a great tool for education. It allows people to learn about a variety of things at their own ppace.

A number of distance education courses are also offered through the Internet. Many institutions offer online coaching classes for engineering, medical, and management entrance examinations.

Fig. 7.20 Home page of **www.e-learningforkids.org**

Using the Internet, one can learn a topic, take the test, and get the results from the comfort of one's home. For example, **www.microsoft.com/learning** is one such site. A few other websites, such as, **www.bbc.co.uk/schools** and **www.e-learningforkids.org** (Fig. 7.20), offer free online education, especially for young students.

FINDING PEOPLE ON THE INTERNET

Many search engines allow you to search for people, such as old friends you have lost touch with. These are some of the websites that will help you in finding people:

- www.whowhere.com

- www.anywho.com
- www.peoplefinders.com
- www.people.yahoo.com
- www.facebook.com

Let us consider **www.anywho.com**. Type the Website address in the address bar of the web browser and click ENTER. The home page will appear (Fig. 7.21).

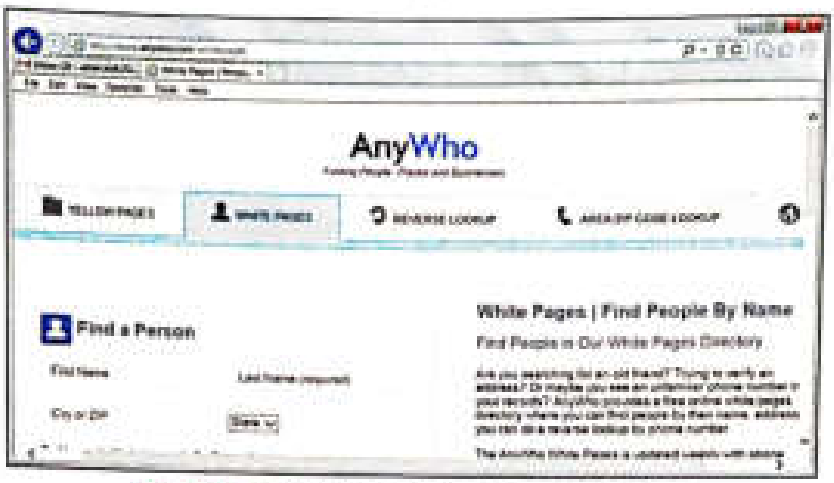


Fig. 7.21 Home page of **www.anywho.com**

Enter the information you know about the person you want to search for and click the corresponding **Find** button. The relevant information will appear on the screen.

You should not enter the computer lab with dirty footwear on. Computers are sensitive to dust and dirt, so it is important that computer labs are kept clean. Shoes and other footwear should preferably be removed at the entrance of the lab. You may go in with socks on, or use a pair of slippers specially meant for the computer lab.

Tricky Terms

Email an electronic message sent from one computer to another

Uniform Resource Locator (URL) a unique address for a Website or a web page on the Internet

Cc (Carbon Copy) to send the same message to several people at the same time

Bcc (Blind Carbon Copy) to send the same message to several people at the same time without letting them know that others have also received the same message

Surfing searching for information on the Internet or exploring the Internet

Memory Bytes

- The Internet has two types of addressing schemes—number addressing and letter addressing schemes.
- Email is quicker than ordinary mail.
- There is no charge for sending and receiving emails messages.
- You can send the same message to several people at the same time by using the **Cc** or **Bcc** options in the email.
- You can send text files, picture files, and sound files as attachments with your email messages.
- You can get a variety of information from the Internet using search engines.

EXERCISES

Objective Type Questions

1. Choose the correct option.

a. An URL stands for ..... .
   i. Unlimited Resource Learning
   ii. Uniform Resource Locator
   iii. Unlimited Resource Locator
   iv. none of these

b. Looking for information on the Internet is commonly called ..... .
   i. surfing
   ii. searching
   iii. finding
   iv. none of these

c. Which of the following can be sent with an email message?
   i. File
   ii. Picture
   iii. Voice message
   iv. all of these

d. In an email address, the two parts are separated by the ..... symbol.
   i. #
   ii. @
   iii. *
   iv. none of these

e. The country code for Pakistan is
   i. pk
   ii. pak
   iii. both i. and ii.
   iv. none of these

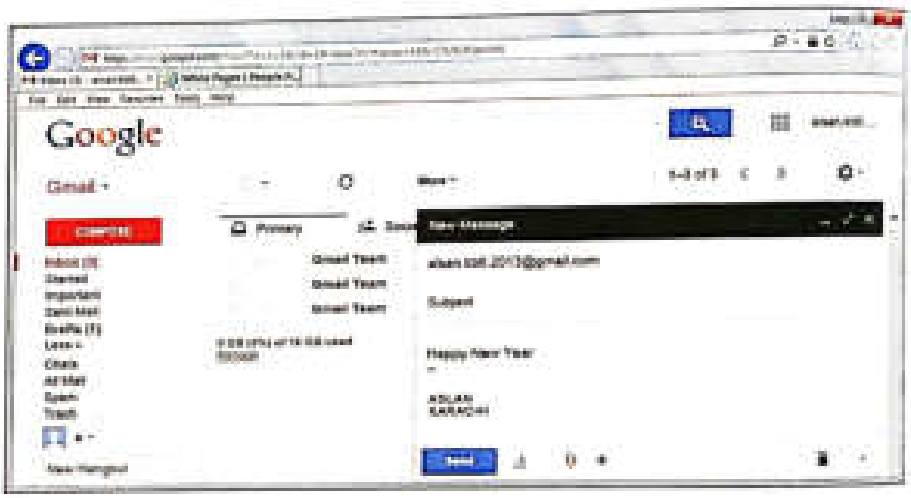
Descriptive Type Questions

1. Answer the following.

a. Give full forms of the following and explain what they stand for:
   i. .mil ii. .net iii. .jp
b. Explain the number addressing system by giving an example.
c. What are the uses of the **Sent** and the **Draft** folders?
d. How can you create a signature for your emails?
e. Analyse how the Internet has changed the way we communicate today. Give specific examples where you think the change has been beneficial to our society as a whole.
f. 'Modern research has become totally dependent on the Internet'. Do you agree or disagree? Give reasons for your response.
g. Draft a detailed email to your principal requesting secondary class students to be allowed monitored Internet access.

Application-Based Questions

a. Observe the given figure and answer the following questions:
   i. Write the email address to which the mail is being sent.
   ii. Name the option you will click to create a new message.
   iii. In which folder are the deleted messages stored?



b. Ghazanfar wants to send an email to five of his friends for inviting them to his birthday party.
   i. Which option of New Message/Compose window will he use to send the same message to his friends without letting them know that others have also received the same email?
   ii. How can he attach a picture to his email message?
   iii. Can he format the text of the message? How?
c. Tanya's father wants to send invitation letters to his friends and relatives. Tanya suggested that he could send the invitations through email but her father wants to send them through courier.
   i. Mention which method is faster.
   ii. Give two advantages of using the faster method.
d. Mr. Harmain used his office computer to send emails to his business partner, but he forgot to sign out. Mention the importance of signing out of the email account on the office computer.

IN THE LAB

1. Send an email to your friends telling them about the new features of Gmail.
2. Create a PowerPoint presentation on the topic Email and its advantages and send it as an attachment to your Computer teacher.
3. Your friend has sent you an email giving details and pictures about his trip to Gilgit-Baltistan during the first week of summer vacations. He has also requested you to send him the holiday homework of different subjects. Reply to him by giving the required details. Also, attach relevant documents if needed.

GROUP PROJECT

Working in pairs, conduct a research on the IP and DNS addressing systems. Make a PowerPoint presentation elaborating on its uses, advantages, and disadvantages. Your audience for this presentation is your fellow students so don't forget to use appropriate humour wherever possible!

TEACHER'S NOTES

- Demonstrate how to create an email account.
- Talk to the students about Internet security. Tell them to give their email address only to people they know and not to open emails received from unknown people. Tell them never to reveal their personal details in response to an email. For example, never reply to emails of the type that say you have won a lottery of a certain amount and ask you to reply with your name and telephone number.
- Talk to the students about the dramatic changes in the quantum of information available on the Internet, and how easily it can be accessed. Tell them how students had to collect information and make projects before the Internet became popular.

Chapter 8

Introduction to Flash CS3

Flash is a software package that is used for creating interactive Web pages that combine images, sounds, videos, and animations.

You can use Flash to create both drawings and animations.

In this Chapter

- Getting Started with Flash
- Drawing Modes in Flash
- Selection Tools

GETTING STARTED WITH FLASH

You can follow these steps to start Flash:

1. Click **Start**.
2. Select **All Programs ▸ Adobe Premium Design CS3 ▸ Adobe Flash CS3 Professional**.
3. The opening screen appears (Fig. 8.1).

   It shows three panes–**Open a Recent Item**, **Create New**, and **Create from Template**.

Did you Know?

The Flash software package was originally created by a company called Macromedia. But, after Adobe Incorporated acquired **Macromedia**, the new versions of Flash are now called **Adobe Flash**.

Fig. 8.1 **Flash** opening screen

4. Under **Create New**, click **Flash File (ActionScript 3.0)**. The Flash window appears, the main components of which are shown in Figure 8.2.

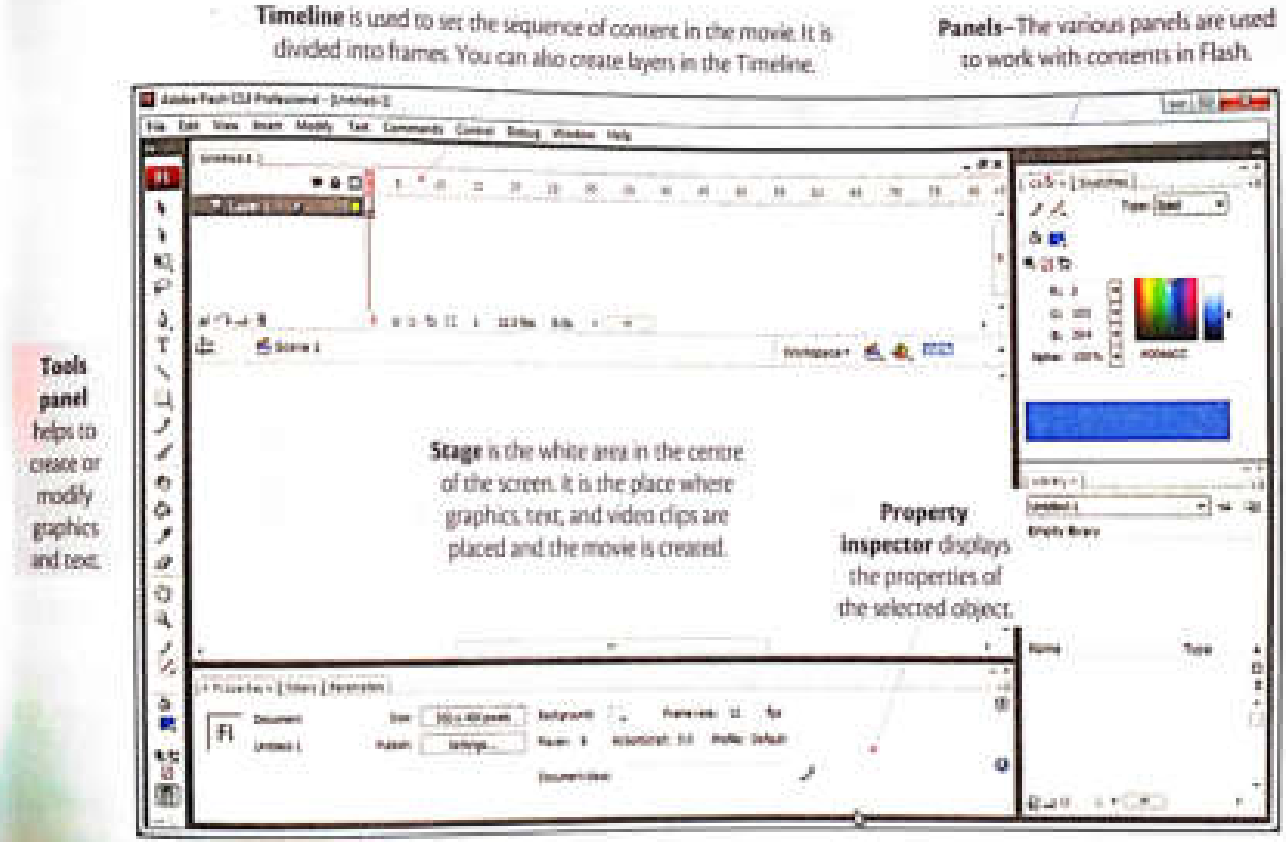


Fig. 8.2 Components of the **Flash** window

Tools Panel

The **Tools** panel is located on the far left of the window. It has tools to create or modify drawings and text. You select a tool by clicking it. Some tools have a small triangle at the bottom right corner. On clicking it, a pop-up menu appears with more related tools. When you select a tool, **tool modifiers** appear at the bottom of the **Tools** panel. These are used to set tool options.

The **Tools** panel is divided into four areas (Fig. 8.3):

- **Tools** area contains selection, drawing, and painting tools.
- **View** area contains zooming tools.
- **Colours** area contains tools for changing colours.
- **Options** area contains modifiers for the currently selected tool.

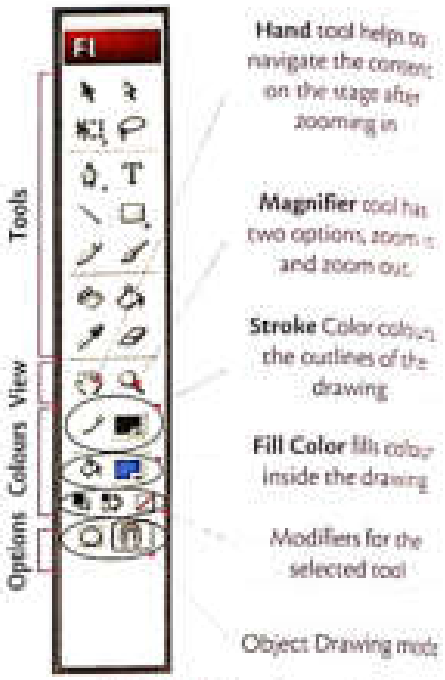


Fig. 8.3 **Tools** panel

The **Hand Tool** is used for clicking and dragging while holding down the mouse button. The **Magnifier** or **Zoom Tool** has two options–**Enlarge** or **Zoom in** allows you to view the drawing up close and **Reduce** or **Zoom Out** pulls you away from the drawing by showing it at lower magnification.

The Property Inspector

Anything you add to a Flash document is called an **object**. The **Property inspector** is the panel that displays the properties of the selected object. An object could be text, images, lines, or shapes. The list of properties displayed in this panel will vary according to the object selected. For example, if you select the **Line Tool**, the properties displayed will be colour, line thickness, and line style. Thus, you can view and change the properties as you work.

If you do not see the **Property inspector** panel in the Flash window, you can get it through these steps:

1. Select **Window** ▸ **Properties** ▸ **Properties**. The **Property inspector** panel (Fig. 8.2) appears at the bottom of the screen.
2. When you are not working with the **Property inspector**, you can minimise it. To collapse the panel, click the **Minimise** icon (Fig. 8.4).
3. To open the **Property inspector** again, click the **Maximise** icon (Fig. 8.5).

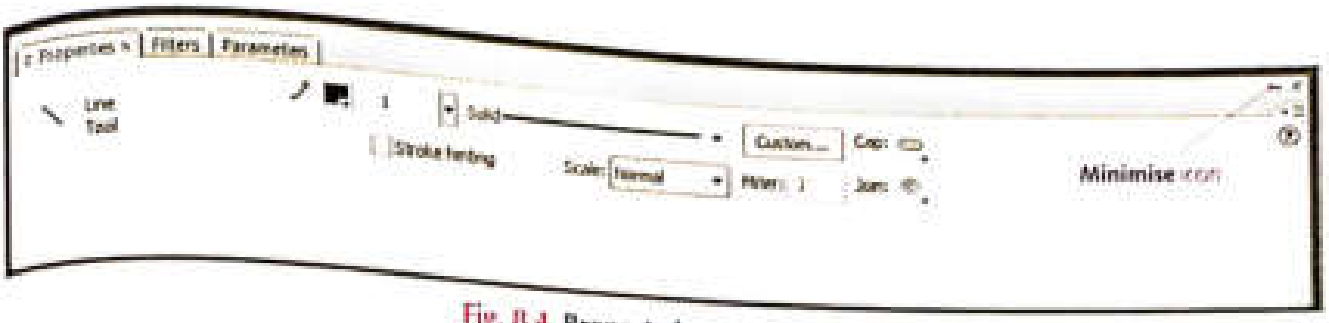


Fig. 8.4 **Property inspector** panel

Fig. 8.5 Minimised **Property inspector** panel

The Grid

The **grid** is a system of intersecting horizontal and vertical lines on the stage. By default, gridlines are not visible. The grid is helpful while creating graphics. It helps you to place and align objects at particular positions on the stage. You can change the size of the grid squares to suit your drawing. To display the grid, click **View ▸ Grid ▸ Show Grid.**

Fast Forward

Show grid	CTRL + '
Show/hide rulers	CTRL + SHIFT + ALT

Using Rulers

The Flash window can display rulers on the top and left sides of the stage. To show or hide rulers, click **View ▸ Rulers.**

The default unit for the ruler is **pixels**, which can be changed by selecting **Modify ▸ Document.** You have the option of using inches, decimal inches, points, centimeters, or millimeters in addition to pixels.

Fast Forward

New Document dialog box	Ctrl + N
Document Properties dialog box	Ctrl + J

Creating a New Flash Document

The steps to create a new Flash document are:

1. Select **File ▸ New.** The **New Document** dialog box is displayed (Fig. 8.6).

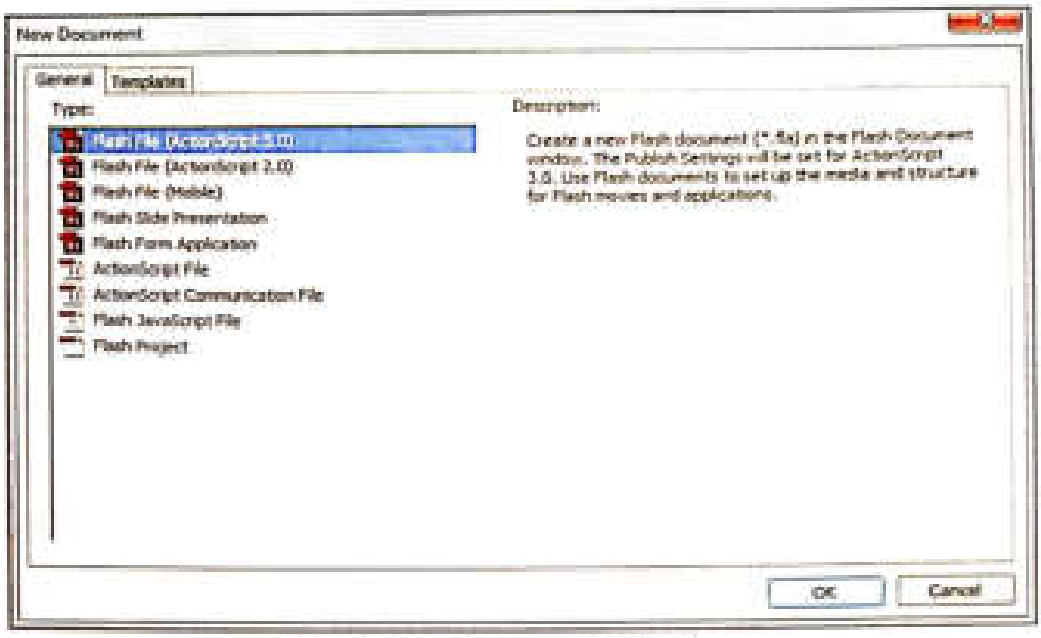


Fig. 8.6 **New Document** dialog box

2. Select **Flash File (ActionScript 3.0)** in the **Type** list and click the **OK** button.

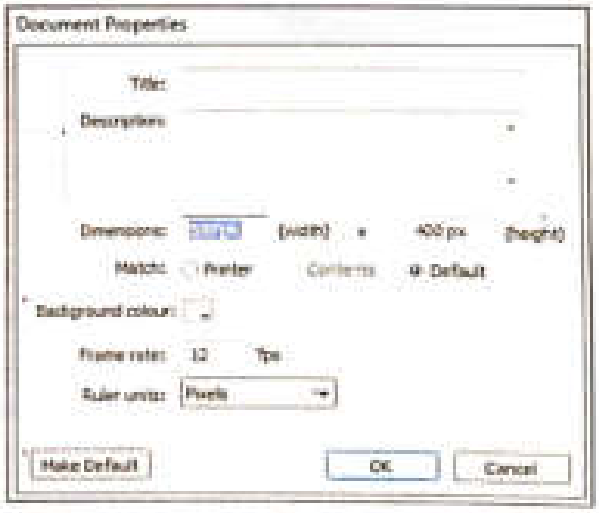
Setting Document Properties

When a new document is created, it opens with the default settings for the movie properties. You can modify the movie properties by selecting **Modify ▸ Document**. The **Document Properties** dialog box is displayed. The options are shown in Figure 8.7.

Specify the **Title** and **Description** for the movie.

Background color helps you select the colour of the stage. The default colour is white.

Make Default: The properties of the current document will be applied to all new documents if you click this.



Dimensions lets you specify the size of the stage. The default unit is pixels.

Frame rate specifies the speed of the movie in frames per second. The default frame rate is 12.

Ruler units lets you specify the units used to measure the rulers.

Fig. 8.7 **Document Properties** dialog box

Saving a Flash File

The steps to save a Flash file are:

1. Select **File ▸ Save As**. The **Save As** dialog box appears.
2. Select the drive and folder where you want to save your file.
3. Type the filename in the **File name** box.
4. Click the **Save** button. The file is saved with a .fla extension.

Did you Know?

The smallest size of the frame is 1 x 1 pixels and the largest size is 2880 x 2880 pixels. By default, the dimensions are 550 x 400 pixels.

Opening a Flash Document

The steps to open an already saved Flash document are:

1. Select **File ▸ Open**. The **Open** dialog box appears.
2. Select the drive and the folder.
3. Select the file.
4. Click the **Open** button.

Fast Forward

Open a file	Ctrl + O
Save a file	Ctrl + S

DRAWING MODES IN FLASH

Flash provides two drawing modes when you draw shapes. They are the **Merge Drawing** mode and the **Object Drawing** mode.

Shapes in Flash consist of a **stroke** or **outline** and a **fill** inside it. The stroke and the fill can be of different colours. They are considered separate objects and can be selected separately or together. Later in this chapter you will learn how to select shapes using the arrow tool.

Merge Drawing Mode

This is the **default drawing mode**. In this mode, if you overlap two shapes they merge together. The covered area of the lower object is erased.

To understand this, let us draw a rectangle and then draw a small circle of a different colour at the right-bottom corner of the rectangle. When you select the circle and move it, the portion of the rectangle that gets overlaid by the circle gets erased (Fig. 8.8).

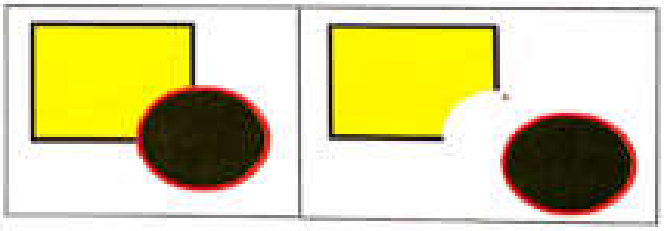


Fig. 8.8 **Merge Drawing** mode

Object Drawing Mode

This mode draws shapes as separate objects. Shapes do not merge together when you overlay them. You can move them apart without altering their appearance (Fig. 8.9). When you select a

shape that was created in **Object Drawing** mode, it is surrounded by a rectangular bounding box. You can use the **Pointer Tool** to move the object.

By default, **Object Drawing** is turned off. To switch it on, click the **Object Drawing** icon in the **Tools** panel (Fig. 8.3).

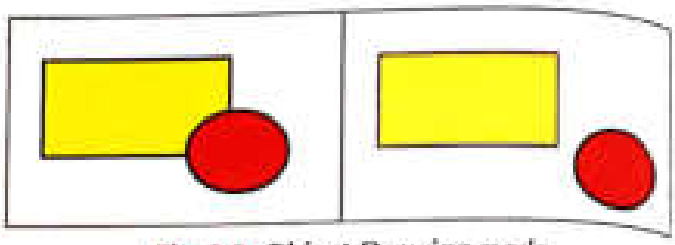


Fig. 8.9 **Object Drawing** mode

SELECTION TOOLS

The **Selection (Arrow) Tool** and the **Lasso Tool** can be used to select single or multiple objects. Let us discuss how these tools can be used in Flash CS3.

Arrow Tool

The **Arrow Tool**, also called the **Selection Tool**, is used to select single or multiple objects on the stage. Click the **Arrow Tool** in the **Tools** panel and then follow the instructions given in **Table 8.1** to select different objects.

Table 8.1 Selecting different objects with the **Arrow Tool**

To Select	What to do
Stroke, fill, text block	Click the object.
Connecting lines	Double-click one of the lines.
A filled shape and its outline	Double-click the fill.
Objects within a rectangular area	Drag a rectangle around the object(s) that you want to select.

Lasso Tool

The **Lasso Tool** is used to select irregular areas in a drawing. It is used for freehand selection, in which you move the mouse like you would move a pencil. Follow these steps to use the **Lasso Tool**:

1. Select the **Lasso Tool**.
2. Drag the cursor on the stage to specify the boundary of the selection.
3. End the selection approximately near the point where you started (Fig. 8.10).

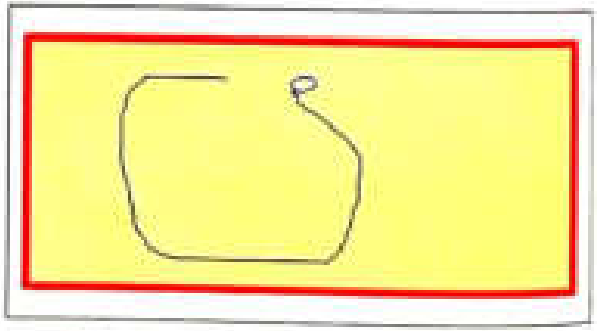


Fig. 8.10 Freehand selection with the **Lasso Tool**

To create a straight edge selection area using the **Lasso Tool**:

1. Select the **Lasso Tool**.
2. Click the **Polygon Mode** modifier in the options area of the **Tools** panel.
3. Click on the stage to set the starting point.
4. Click at the point where you want the first line to end.
5. Continue setting end points for other line segments (Fig. 8.11).
6. Double-click to close the selection area.

In the next chapter we will learn more about the drawing tools provided in Flash CS3.

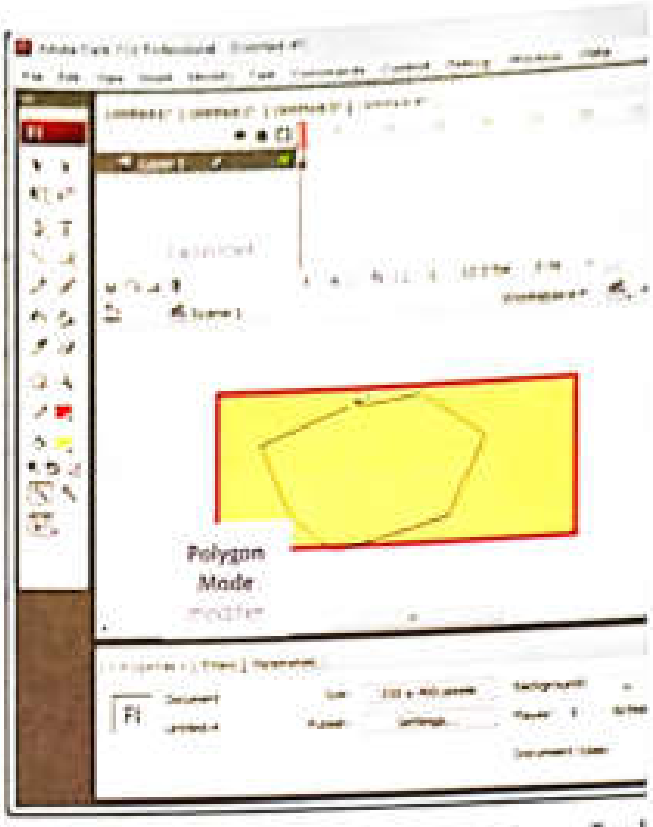


Fig. 8.11 Straight edge selection with the **Lasso Tool**

Tricky Terms

Timeline the panel in a Flash window used to set the sequence of the movie

Property Inspector a panel that allows you to view and change the properties of the selected object

Grid the intersecting horizontal and vertical lines on the stage that help you in the placement of graphics on the stage

Memory Bytes

- Flash is a software used for creating animations and interactive web pages.
- **The Tools** panel contains tools that can be used to create or modify graphics and text.
- **The Stage** is the white rectangular area displayed in the center of the screen where the movie is created.
- The **Property inspector** displays and helps to set the common properties of the selected tool or object on the stage.

- You can set the properties of a movie using the **Document Properties** dialog box.
- Flash provides two drawing modes—**Merge Drawing** mode and **Object Drawing** mode.
- **Merge Drawing** mode erases the overlapped area of the underlying object and the two objects merge.
- **Object Drawing** mode considers overlaid objects as separate.
- The **Arrow Tool** and the **Lasso Tool** help you select single or multiple objects on the stage.

EXERCISES

Objective Type Questions

1. Choose the correct option.

a. Which option allows you to view the drawing at a greater magnification level?
i. Zoom In ii. Zoom Out iii. Hand Tool iv. none of these

b. The default frame rate is
i. 11 ii. 12 iii. 13 iv. none of these

c. The menu under which the **Save As** option is available is
i. View ii. File iii. Modify iv. none of these

d. It is the panel that displays the properties of the selected object
i. Property inspector ii. Timeline iii. Tools panel iv. none of these

e. Which of the following options are available in the **Document Properties** dialog box?
i. Title ii. Background iii. Frame Rate iv. all of these

Descriptive Type Questions

1. Answer the following.

a. What is a grid? How is it useful in Flash?
b. Write the steps to save a file in Flash CS3.
c. How can you open an already saved file in Flash?
d. Find out the names of four video games which have been created using Flash. Do they vary in style even though they each use Flash? Give examples to illustrate your answer.
e. Compare the graphics tools in MS Publisher with those in Flash CS 3. What are the similarities and differences? Why do you think there is a need for a separate software?
f. Create a new Flash CS 3 document and draw a series of six shapes such as a square, circle, triangle to create a unique geometric abstract shape.

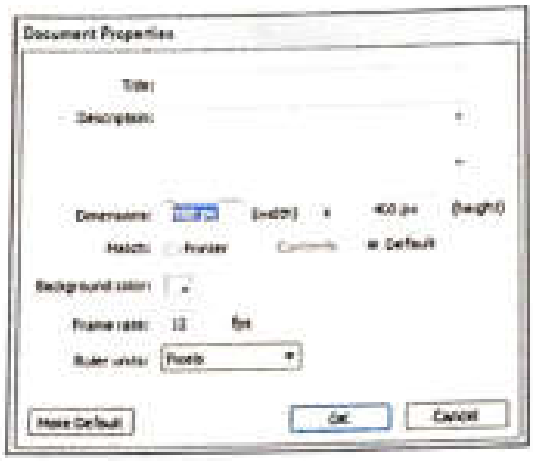
Application-Based Questions

a. Kiran observed that there is a small triangle at the bottom-right corner of the **Rectangle Tool**.

   i. What does this small triangle indicate?

   ii. Name any other tool that has a small triangle at the bottom-right corner.

b. Observe the dialog box shown on the right and answer the following questions:



   i. Name the menu and the option to get this dialog box.

   ii. What are the dimensions of the stage set at?

   iii. What frame rate has been selected for the movie?

   iv. Identify the ruler unit selected for the movie. What is the default ruler unit in Flash CS3?

c. The **Tools** panel of Flash CS3 is shown on the left. Answer the following questions in relation to this.

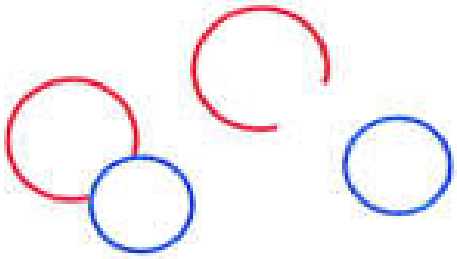
   i. Name the two options of the **Magnifier Tool**.

   ii. Also write the use of these options.

   iii. Identify the stroke and fill colours selected in the **Tools** panel.

   iv. Which tool will you use to select irregular areas on the stage?

d. Arshia wanted to draw two circles, but the circles got overlapped by mistake. When she tries to separate the circles, she observes that a part of the upper circle gets erased as shown in the figure.



   i. Which drawing mode was selected in Flash?

   ii. Name the drawing mode that Arshia should have used.

IN THE LAB

1. Start Flash CS3 and familiarize yourself with the following components of the Flash window:
   a. Tools panel b. Timeline c. Stage d. Property inspector

2. Create a new document in Flash CS3 and then do the following:
   a. Change the background colour to yellow. b. Show/hide the rulers.
   c. Change the ruler units to inches. d. Show/hide the grid.

3. Open any image in Flash and then try to select the different parts of that image using the Lasso Tool.

4. Create a new document in Flash and draw a blue rectangle overlapping a green circle. Now try to move the rectangle to another position. Notice what happens. Which drawing mode is on in this case? Now, select the other drawing mode and try to do the same thing.

GROUP PROJECT

Your challenge is to try to explain, at your school's function, that how Flash CS 3 operates. Work in groups to prepare a PowerPoint presentation on Flash CS 3, remembering at all times who your target audience is. Use lots of illustrations and examples to make your PowerPoint interesting as well as informative.

TEACHER'S NOTES

- Demonstrate to the students how to start Flash CS3.
- Explain through examples the uses of the different components of the Flash window.
- Demonstrate the differences between the **Object Drawing** mode and the **Merge Drawing** mode.

Chapter 9

Drawing Tools in Flash CS3

In the last chapter, you learnt about the components of the Flash window, setting document properties, drawing modes, and selection tools. In this chapter, you will be introduced to the tools used for creating and modifying objects in Flash CS3.

In this Chapter

- Drawing Tools
- Reshaping Lines and Shapes

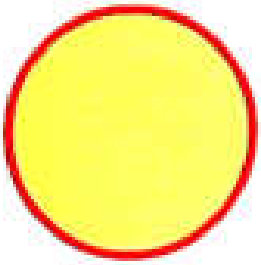


Fig. 9.1 A circle with different stroke and fill colours

As discussed earlier, each shape can consist of an outline, called the stroke or line, and a fill, which is the inside of the shape. Flash allows you to choose the colours for the stroke and the fill. Figure 9.1 shows a circle with stroke colour red and fill colour yellow. Flash allows you to select the stroke and the fill separately.

In Figure 9.2, the stroke and the fill of the figure have been separated. Now we have two images.

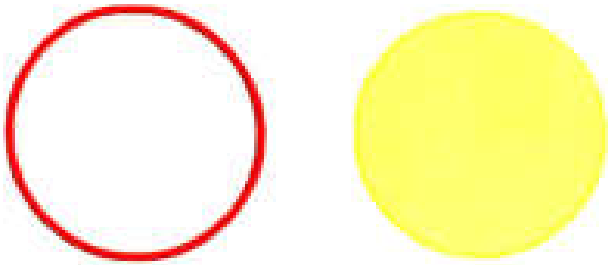


Fig. 9.2 Stroke and fill separated

DRAWING TOOLS

Before you create animations, you first need to create different types of graphics. These graphics can range from the very basic to highly complex shapes and lines.

Top Tip

- To select a fill or a stroke, click the Arrow Tool and then click the fill or stroke as required.
- To separate the fill from the stroke, select the fill or the stroke and drag it away.

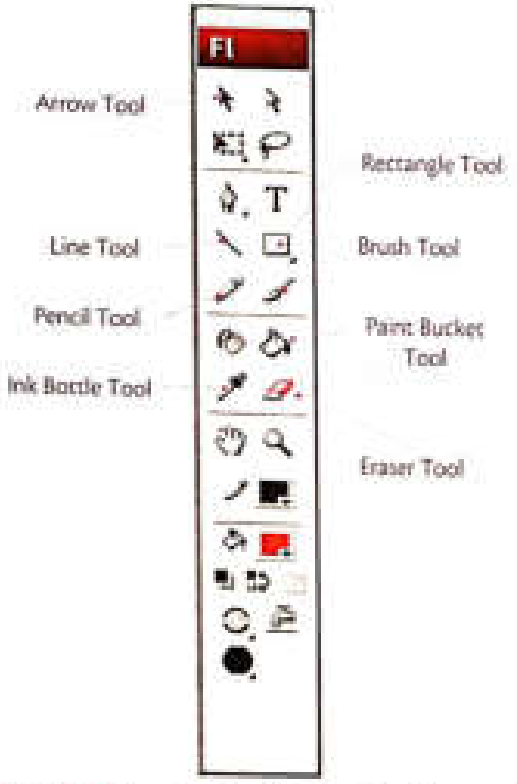


Fig. 9.3 Drawing tools in the **Tools** panel

All this is possible with the use of the drawing tools in Flash. Figure 9.3 shows you all the available drawing tools in Flash CS3. In this chapter you will learn about some of them.

Line Tool

This tool is used to draw straight lines. The steps to use this tool are:

1. Select the **Line Tool** in the **Tools** panel.
2. In the **Property inspector** panel, choose the **Stroke Color** and the **Stroke Style**. Set the line thickness by typing a number in the **Stroke Height** box or clicking on the arrow next to it and moving the slider (Fig. 9.4).
3. Click on the stage and drag to draw the line.

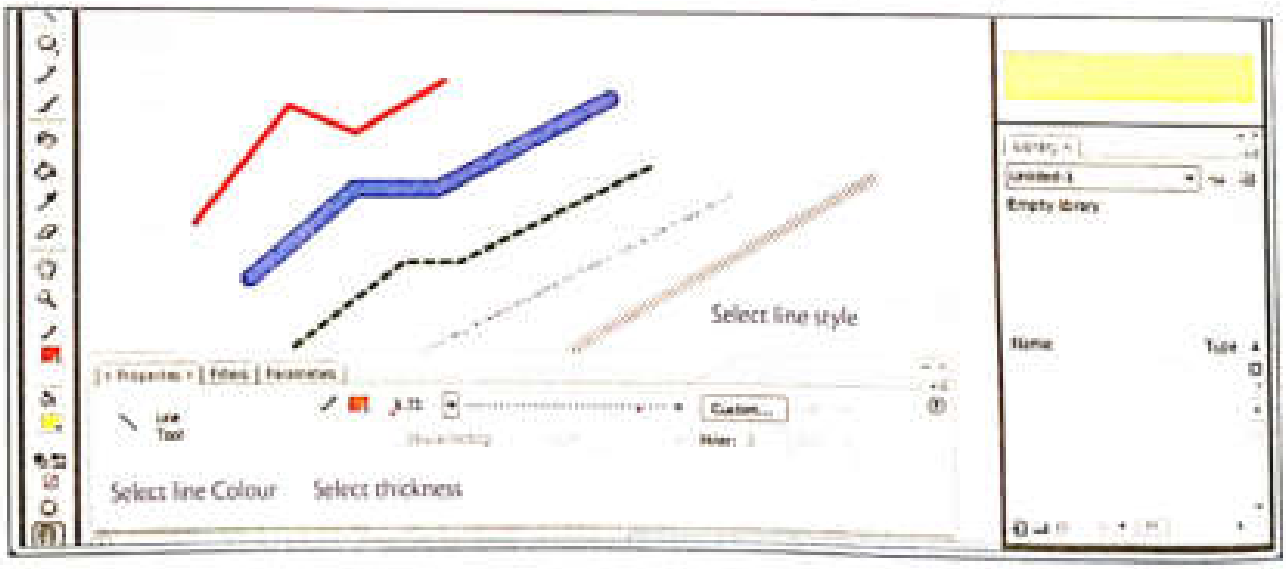


Fig. 9.4 Using the **Line Tool**

Drawing Rectangles and Ovals

The **Rectangle Tool** (Fig. 9.3) menu can be used to draw simple rectangles and ovals. On clicking the arrow at the lower-right side of the tool, Flash provides you with various options regarding the tool, as shown in Figure 9.5.

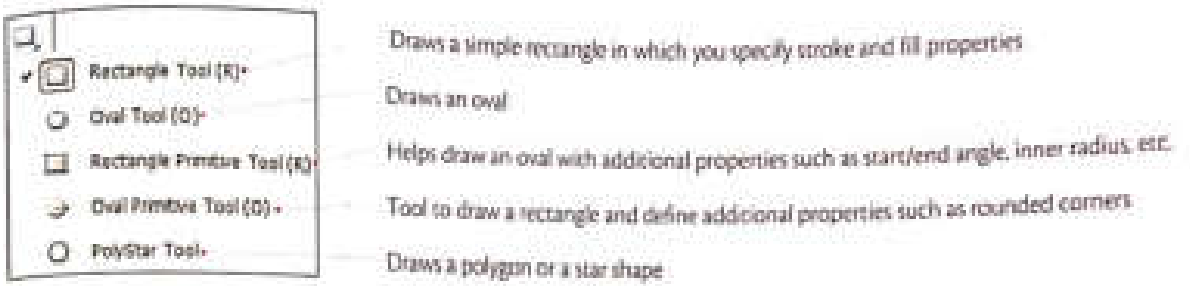


Fig. 9.5 Drop-down menu of the **Rectangle Tool**

Rectangle tool

The **Rectangle Tool** is used to create simple rectangular or square shapes. The steps for doing this are as follows:

1. Select the **Rectangle Tool**.
2. From the **Property inspector** panel, select the stroke colour and the fill colour. Also select a thickness for the line and a line style.
3. Click and drag to draw a rectangle (Fig. 9.6).
4. You can also change the radius of the corners of the rectangle in the **Property inspector**. There are four slider

Top Tip

You can also select the stroke colour and the fill colour from the colour section of the **Tools** panel.

Top Tip

To draw a square using the **Rectangle Tool**, keep the SHIFT key pressed while dragging.

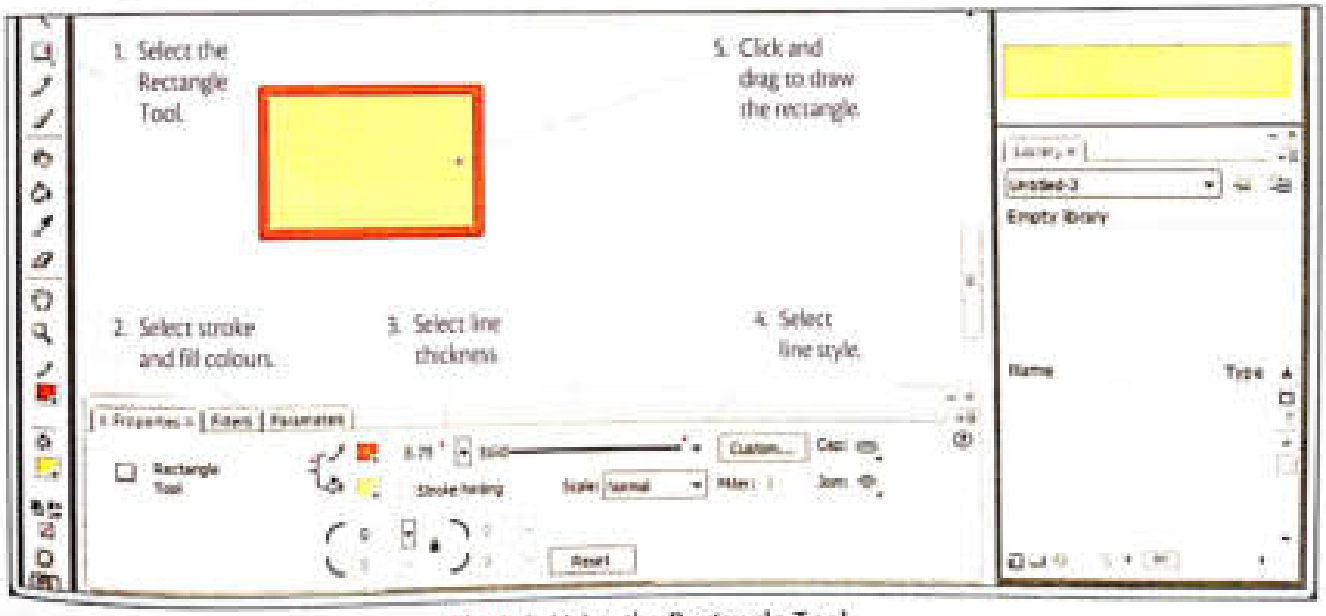


Fig. 9.6 Using the **Rectangle Tool**

4. To draw a part of a circle, you can specify the start angle, the end angle, and the inner radius. A sample circle can be seen in Figure 9.11. Then click and drag to draw the shape.

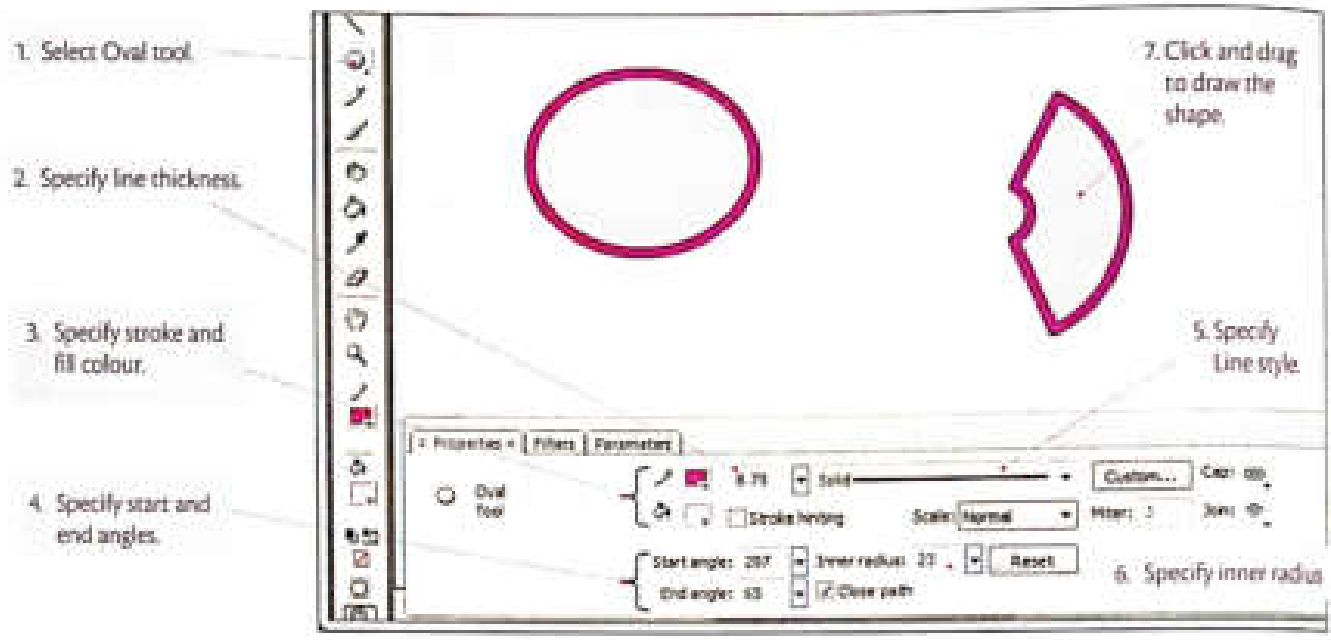


Fig. 9.11 Properties for the **Oval Tool**

Oval Primitive tool

When you draw an oval or a circle using the **Oval Tool**, you cannot change the start angle, the end angle, or the inner radius after drawing the shape. But this can be done if you draw a circle or oval using the **Primitive Oval Tool**. The steps to use this tool are:

1. Select the **Oval Primitive Tool** (Fig. 9.5). Click and drag to draw a simple oval or circle.
2. Now, in the **Property inspector** panel set the properties—start angle, end angle, and the inner radius (Fig. 9.12). Notice the change in the circle.

Drawing Polygons and Stars

The **Polystar Tool** is used to draw polygons or stars. You can select this tool from the drop-down menu of the **Rectangle Tool** (Fig. 9.5). You can modify the polystar shape in terms of the number of sides of the polygon, or the number of points on the star. The depth of the star points can also be modified. The steps to draw a polygon or star are as given below:

1. Select the **PolyStar Tool**.
2. In the **Property inspector**, select the stroke and the fill attributes.
3. Click the **Options** button in the **Property inspector**. The **Tool Settings** dialog box appears (Fig. 9.13).

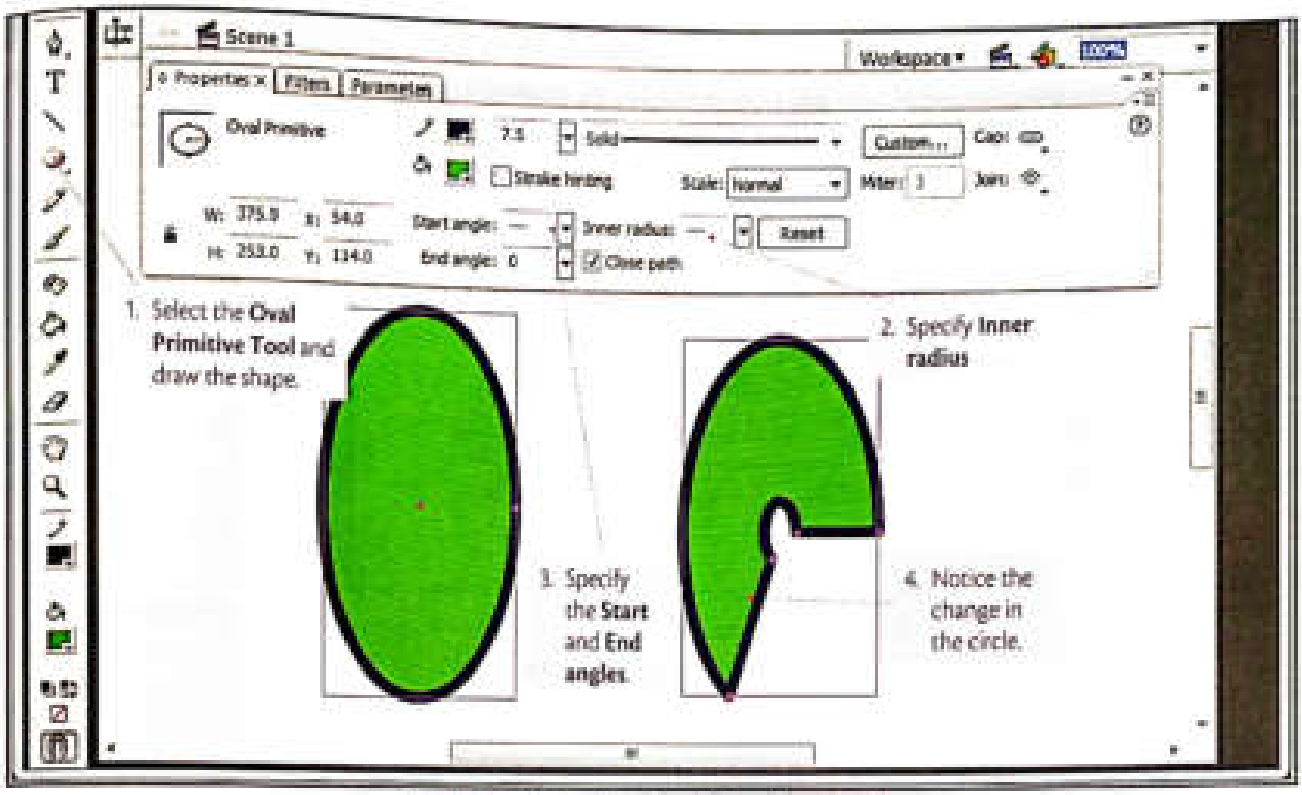


Fig. 9.12 Using the **Oval Primitive Tool**

a. Select polygon or star for **Style**.

b. Specify **Number of Sides** between 3 and 32. For polygons it is the number of sides while for stars it indicates the number of points.

c. **Star point size** specifies the depth of the star points. Enter a number between 0 and 1 for this value. A number closer to 0 creates deeper points. For drawing a polygon, do not change the setting.

d. Click **OK** to close the dialog box.

Fig. 9.13 **Tool Settings** dialog box

4. Click on the stage and drag to draw the shape (Fig. 9.14).

Drawing with the Pencil Tool

This tool is used to draw lines and shapes just like you would using your pencil or pen. The steps to draw with the **Pencil Tool** are:

1. Select the **Pencil Tool**.
2. In the **Property inspector**, select stroke colour, line thickness, and style.
3. When this tool is selected, its modifier is displayed in the lower area of the **Tools** panel. Clicking on the modifier icon shows the following three options (Fig. 9.15):

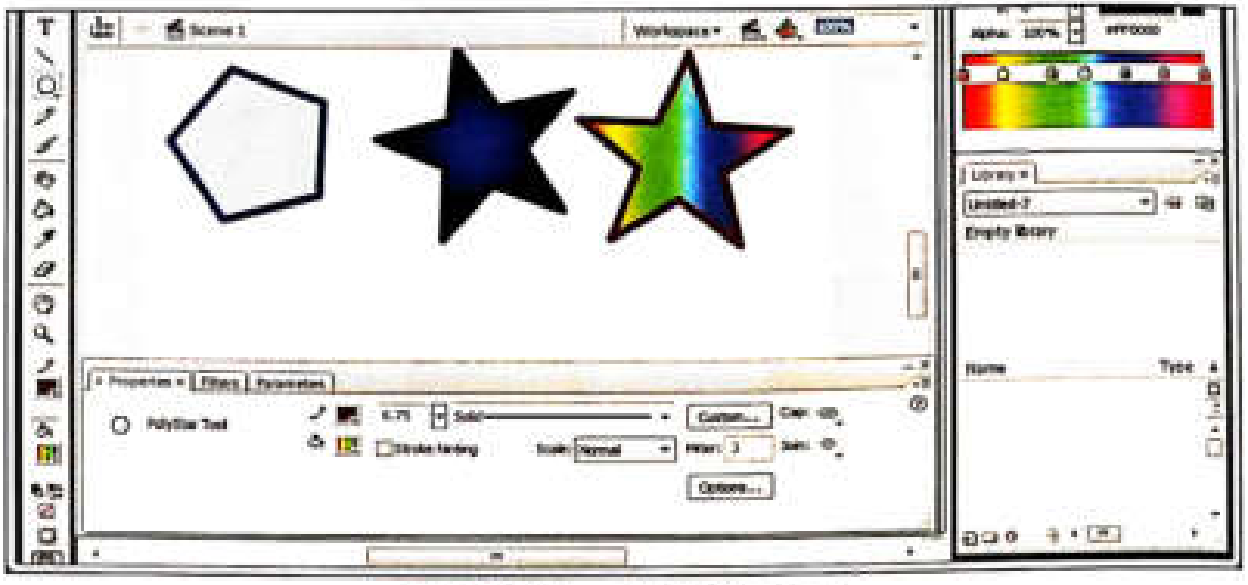


Fig. 9.14 Using the **PolyStar Tool**

Straighten Select this option to draw straight lines.

Smooth Select this option to draw smooth, curved lines.

Ink Select this option to draw freehand lines with no modification.

4. Select the desired option.
5. Click and drag to draw the line.

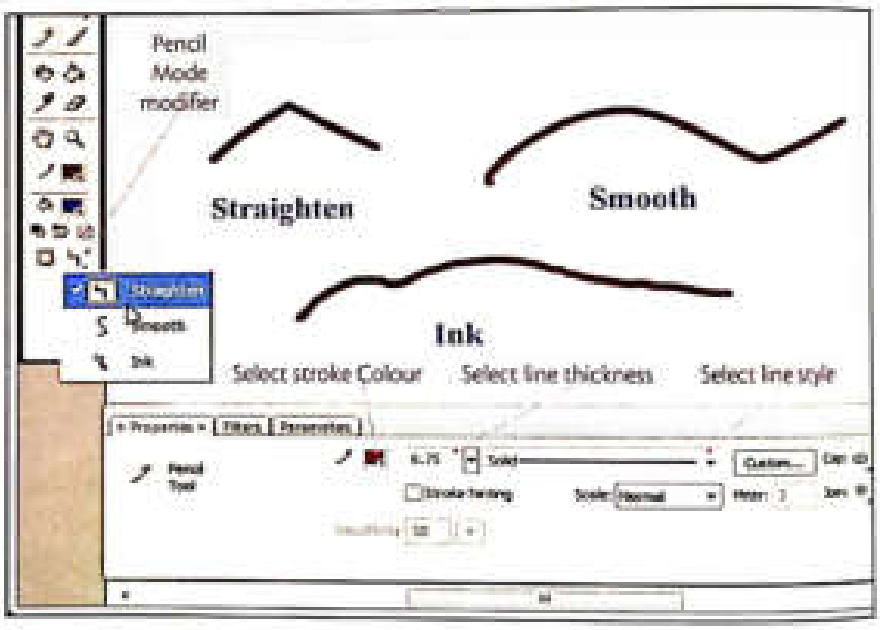


Fig. 9.15 Lines drawn with different **Pencil Tool** modifiers

Top Tip

You can also create your own stroke style by clicking the **Custom** button in the Property inspector.

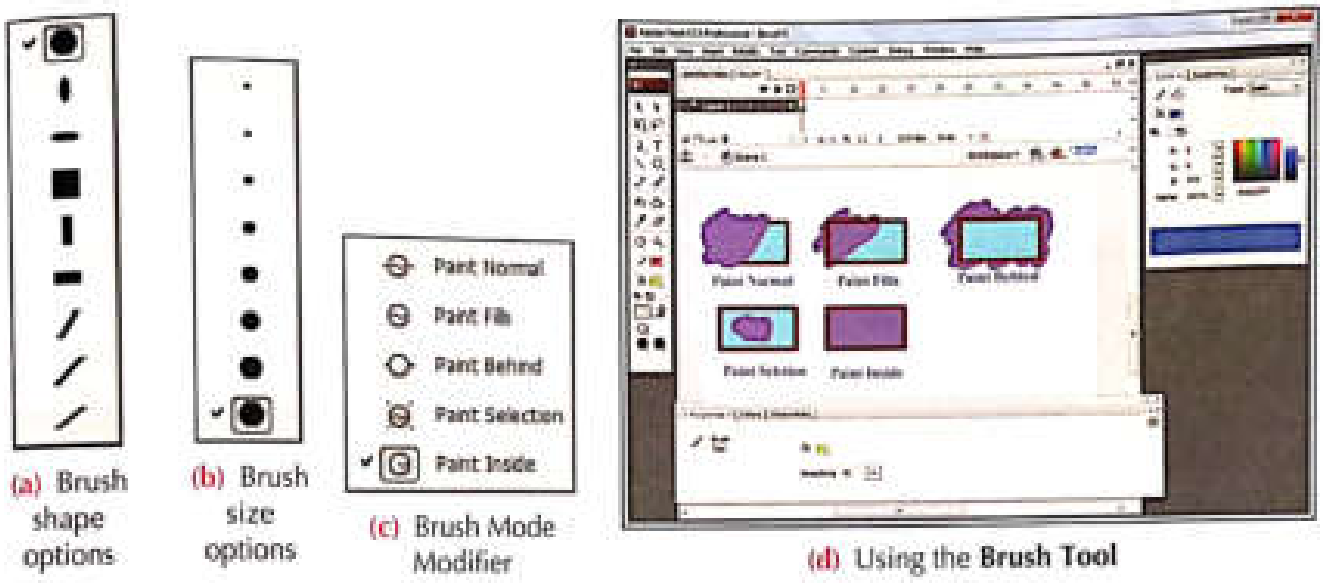
Painting with the Brush tool

The **Brush Tool** is used to paint with brush-like strokes. It is similar to the **Pencil Tool** as both can be used to create shapes. The difference between these two tools is that the **Brush Tool** is

used to paint fills whereas the **Pencil Tool** is used to draw strokes. The **Brush Tool** can also be used to create special effects such as calligraphic effects. You can also change the brush shape and size.

The steps to paint using this tool are:

1. Select the **Brush Tool**.
2. Select the fill colour from the **Property inspector**.
3. Click the **Brush Mode Modifier** in the **Tools** panel and select a painting mode. You can also select the desired brush shape and size [Figs. 9.16(a-c)].
4. Drag the mouse pointer on the stage to apply a brush stroke [Fig. 9.16(d)].



(a) Brush shape options (b) Brush size options (c) Brush Mode Modifier (d) Using the **Brush Tool**

Fig. 9.16 **Brush Tool**

Paint Bucket Tool

This tool is used to fill enclosed areas with solid colours and gradients. You can also fill empty areas and change the colour of already painted areas using the **Paint Bucket Tool**. This tool also fills areas that are not entirely closed. The tool provides a modifier that allows you to close gaps.

The steps to use this tool are:

1. Select the **Paint Bucket Tool**.
2. Select the fill colour in the **Property inspector**.
3. Click the drop-down menu arrow of the **Gap Size** modifier and choose a gap size option to close the gap in the shape (Fig. 9.17).
4. Click inside the shape to fill it with colour.

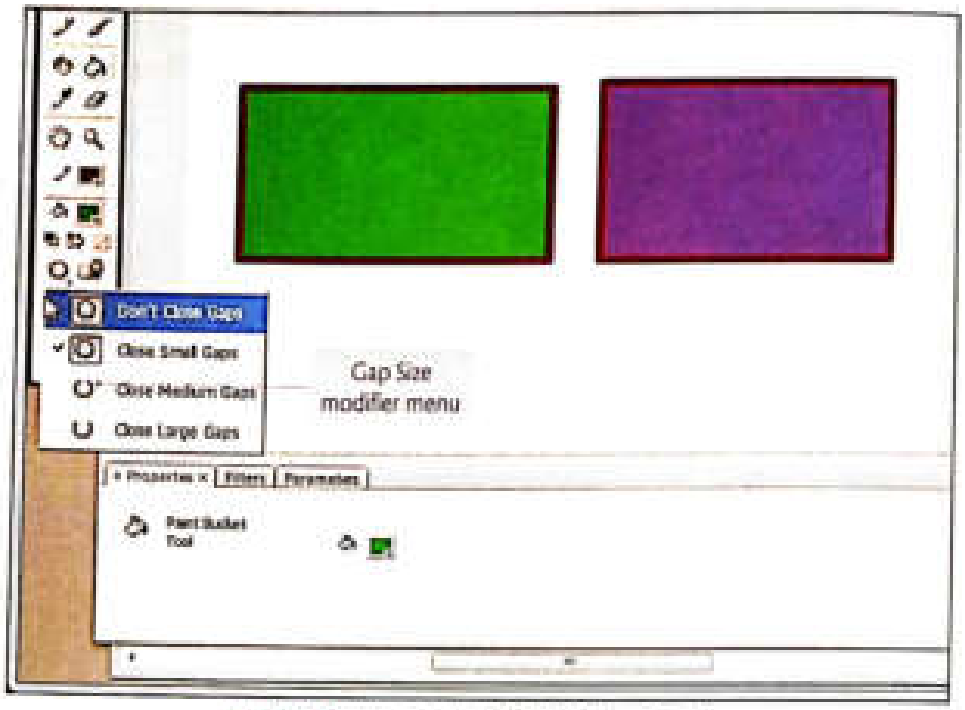


Fig. 9.17 Using the **Paint Bucket Tool**

Filling Shapes with Gradient Fill

Gradients are colours created by mixing two or more colours. Flash provides some default gradient colours that appear at the bottom of the colour palette. To apply the gradient, follow these steps:

1. Click the **Paint Bucket Tool**.
2. Select a gradient colour from the colour palette (Fig. 9.18).
3. Click inside the shape.

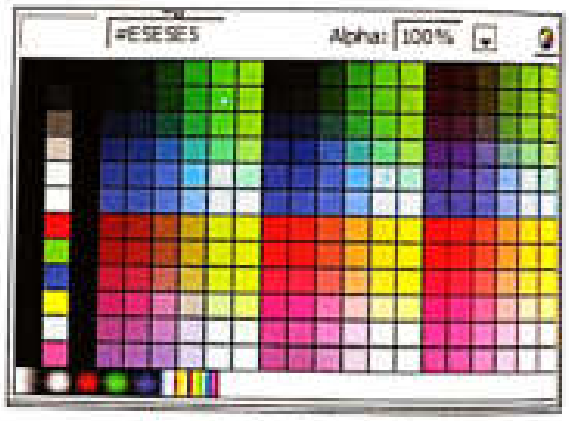


Fig. 9.18 Colour Palette

Creating a New Gradient

A new gradient can be created through the following steps:

1. Select **Window** ▸ **Colour**. The **Colour** panel appears.
2. Click the drop-down menu arrow of the **Type** box and select a gradient style (Fig. 9.19). You can select a **Linear** or a **Radial** gradient. A linear gradient creates a gradient that shades from the starting point to the end point in a straight line. A radial gradient creates a gradient that shades from the starting point to the end point in a circular pattern.
3. Click the colour markers you want to change. The colour palette appears.

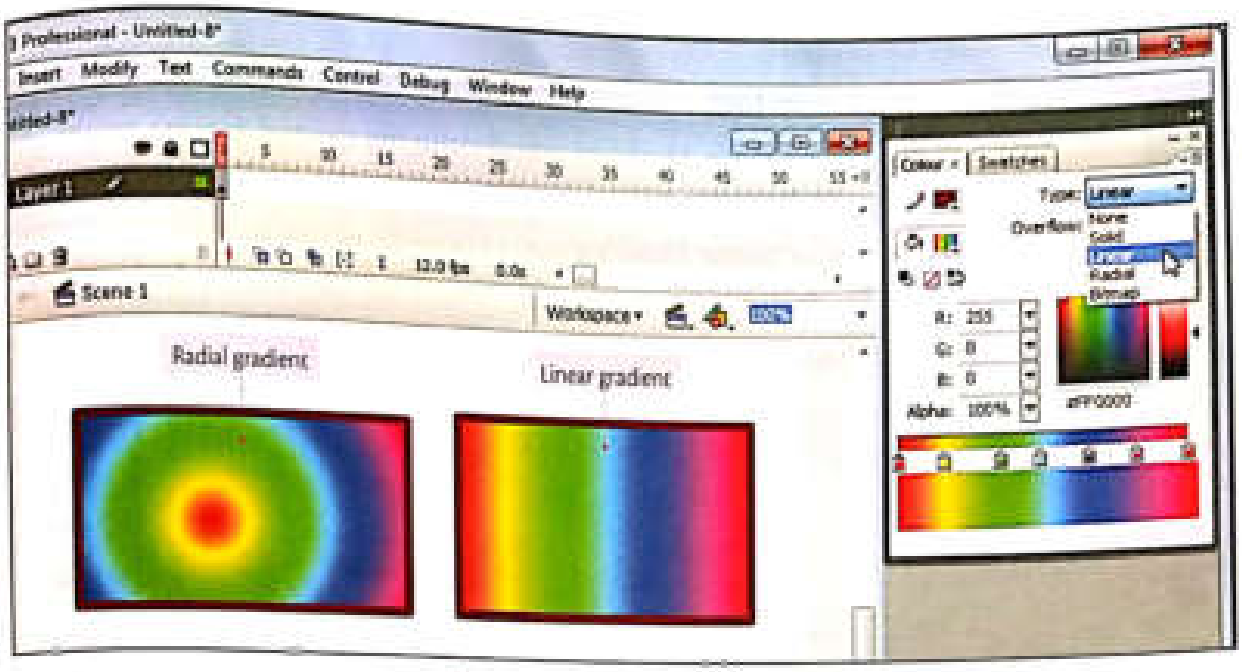


Fig. 9.19 Different Gradients

4. Select a colour. You can also click and shift the colour marker left or right on the gradient bar to adjust the gradient.
5. To add another colour marker, click below the gradient bar. To remove a colour marker, drag it off the bar.
6. You can continue creating the gradient effect by adding colour markers and assigning colours to them.

Using the Ink Bottle Tool

This tool is used to change the colour, style, and thickness of the existing lines. The steps are:

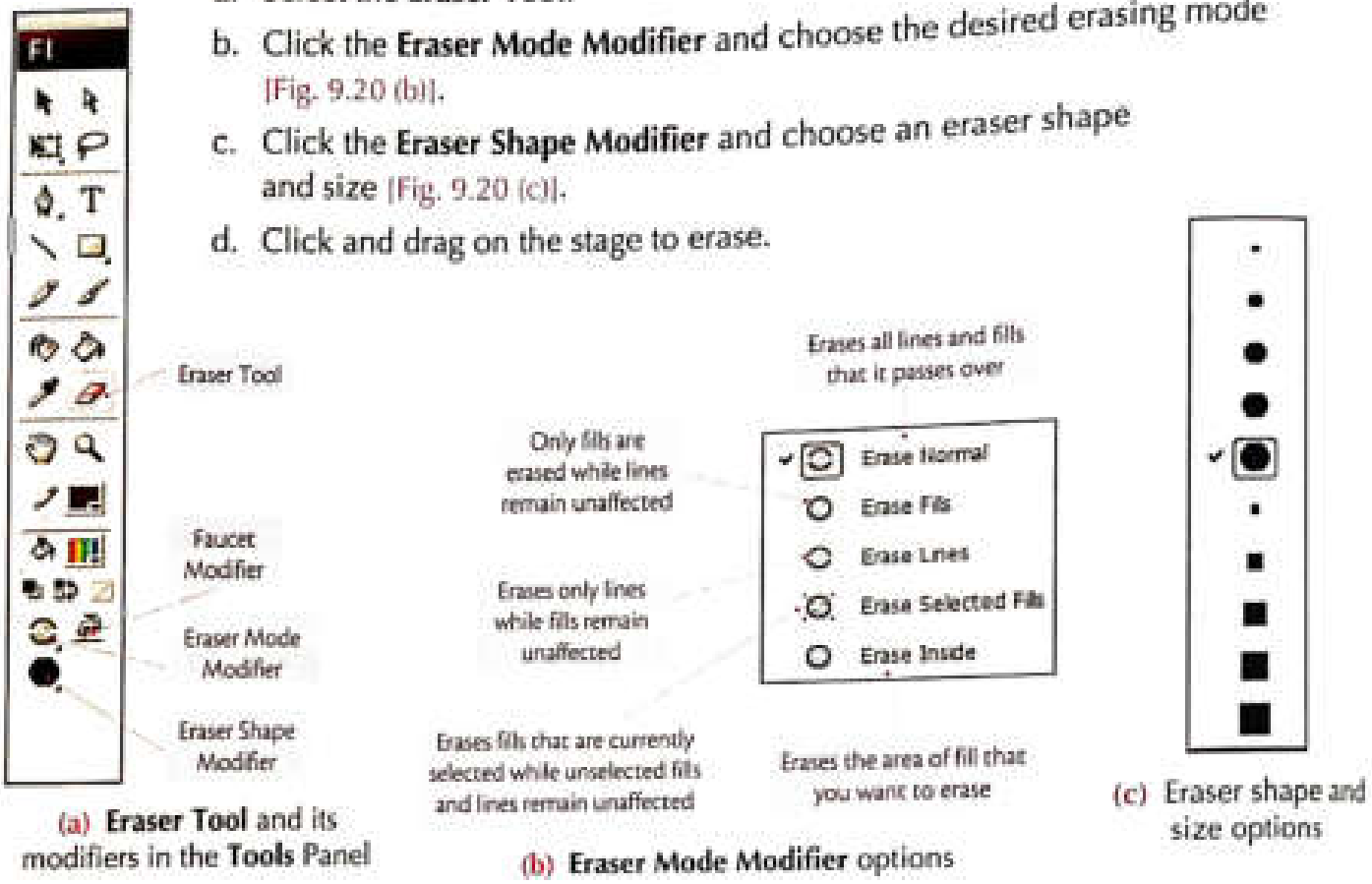
1. Select the **Ink Bottle Tool.**
2. Select a stroke colour, style, and width in the **Property inspector.**
3. Click on the line to which you want to apply the stroke modification.

Using the Eraser Tool

This tool is used to erase lines and fills. You can customise it to erase only lines, only fills, or only selected fills.

1. To delete everything on the stage, double-click the **Eraser Tool.**
2. To delete strokes or filled areas:
   a. Select the **Eraser Tool** and then click **Faucet Modifier** in the **Tools** panel [Fig. 9.20 (a)].
   b. Click the stroke or filled area you want to delete.

3. To delete by dragging:
   a. Select the **Eraser Tool**.
   b. Click the **Eraser Mode Modifier** and choose the desired erasing mode [Fig. 9.20 (b)].
   c. Click the **Eraser Shape Modifier** and choose an eraser shape and size [Fig. 9.20 (c)].
   d. Click and drag on the stage to erase.



(a) **Eraser Tool** and its modifiers in the **Tools** Panel

(b) **Eraser Mode Modifier** options

(c) Eraser shape and size options

Fig. 9.20 **Eraser Tool**

RESHAPING LINES AND SHAPES

With the help of the **Arrow Tool**, you can reshape lines and shapes. The steps to do this are:

1. Draw a rectangle on the stage.
2. Select the **Arrow Tool**.
3. Make sure that no line of the rectangle is selected. Now, position the mouse pointer near a line. The mouse pointer changes to show how the line can be reshaped [Fig. 9.21].
4. Click and drag to reshape [Fig. 9.21 (c)]. Release the mouse button.

Top Tip

You cannot reshape the shapes drawn using the **Rectangle Primitive Tool** and the **Oval Primitive Tool**, and drawings created in the **Object Drawing** mode.

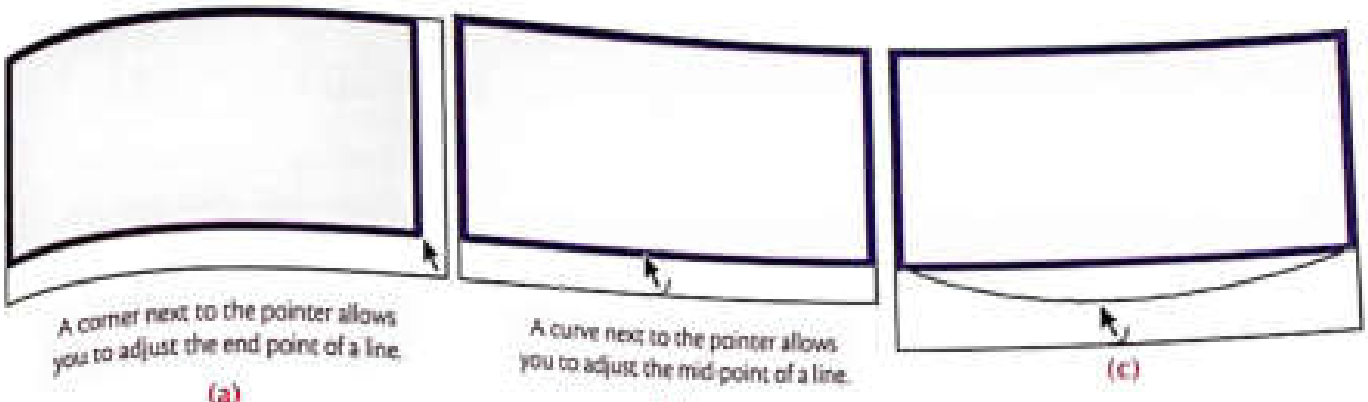


Fig. 9.21 Pointer shapes (a–b) and reshaping (c)

PRACTICE TIME

As part of the weekly practical session, the Computer Science teacher has asked the students of Class VI to create the given scene using various tools in Flash. What steps would you follow to create the same drawing?

SOLUTION

The given drawing can be created in the following manner:

1. To draw the inner and the outer rectangle for the hut:
   a. Select the **Rectangle Tool**.
   b. In the **Property inspector**, select the line colour, thickness, style, and the fill colour.
   c. Click and drag to draw the rectangle.
2. To draw the lines for the upper part of the hut:
   a. Click the **Line Tool**.
   b. In the **Property inspector**, select the line colour, thickness, and style.
   c. Click and drag to draw the lines.
3. To fill colours in the hut:
   a. Select the **Brush Tool**
   b. Select the desired colours, brush size, and shape.
   c. From the **Brush Mode modifier**, select the option **Fill Inside**.
   d. Click and drag to fill the hut with colour.
4. To draw stars in the triangular portion of the hut:
   a. Click the triangle icon at the lower-right corner of the **Rectangle Tool** and select the **Polystar Tool**.

b. Select the stroke and fill colours.
c. In the **Property inspector**, click the **Options** button. The **Tool Settings** dialog box appears.
d. In **Style**, select the option Star.
e. Specify the **Number of Sides**.
f. For **Star point size**, enter a number between 0 and 1.
g. Click **OK** to close the dialog box.
h. Click and drag to draw the shapes.

5. To draw the flower shape:
   a. Draw a star shape.
   b. Click the **Arrow Tool**.
   c. Make sure that no line is selected. Bring the mouse pointer near a line. A curve appears below the mouse pointer.
   d. Click and drag to reshape the line and then release the mouse button. Do this for all the other lines of the star shape.
6. To draw the stem and the leaves:
   a. Select the **Pencil Tool**.
   b. Set a stroke colour, style, and height in the **Property Inspector**. When you select the **Pencil Tool** you will use a modifier in the **Options** area of the **Tools** panel.
   c. Choose the **Smooth** option.
   d. Click and drag the mouse to draw the stem and the leaves.
7. To paint colour behind the hut:
   a. Click the **Brush Tool**.
   b. Select the fill colour.
   c. Click the **Brush Mode modifier** and select the option **Paint Behind**.
   d. Click and drag to paint behind the hut.

Tricky Terms

Stroke the outline of a shape

Fill the inside of a shape

Gradient colour created by mixing two or more colours

Memory Bytes

- The **Tools** panel in Flash CS3 provides various tools for drawing different shapes.
- Each shape can consist of a stroke (outline) and/or a fill.

- The **Line Tool** is used to create straight lines.
- The **Rectangle Tool** and the **Oval Tool** help you to create basic geometric shapes. Simply click the tool, select the stroke and fill colours, and then click and drag to draw the shape.
- The **Primitive Rectangle Tool** and the **Primitive Oval Tool** let you specify the corner radii of rectangles and the start angle, end angle, and inner radius of ovals using the **Property inspector**.
- The **PolyStar Tool** is used to draw polygons or star shapes.
- The **Pencil Tool** is used to draw lines and shapes just like you would using your pencil. You can modify the tool to draw straight or smooth lines.
- The **Brush Tool** is used to paint with brush-like strokes.
- Flash provides the **Paint Bucket Tool** to fill enclosed areas with solid colours or gradients.
- You can apply gradients to both the stroke and the fill colours.
- The **Ink Bottle Tool** is used to change the colour, style, and thickness of the existing lines.
- You can customise the **Eraser Tool** to erase only lines, only fills, or only selected fills.
- You can use the **Arrow Tool** to reshape lines and shapes.

EXERCISES

Objective Type Questions

1. **Choose the correct option.**

a. Which of the following options are available in the **Property inspector** when you select the **Line Tool**?

i. Stroke Colour ii. Stroke style iii. Stroke height iv. all of these

b. Each shape consists of a

i. fill ii. stroke iii. both i. and ii. iv. none of these

c. When you draw an oval or a circle using the ..... tool, you cannot change the start angle, end angle, or inner radius after drawing the shape.

i. Oval ii. Primitive Oval iii. both i. and ii. iv. none of these

d. The **Radial** gradient option creates a gradient that shades from the starting point to the end point in a ..... pattern.

i. straight line ii. circular iii. solid iv. none of these

e. Which key will you press while dragging to draw a perfect square using the **Rectangle Tool**?

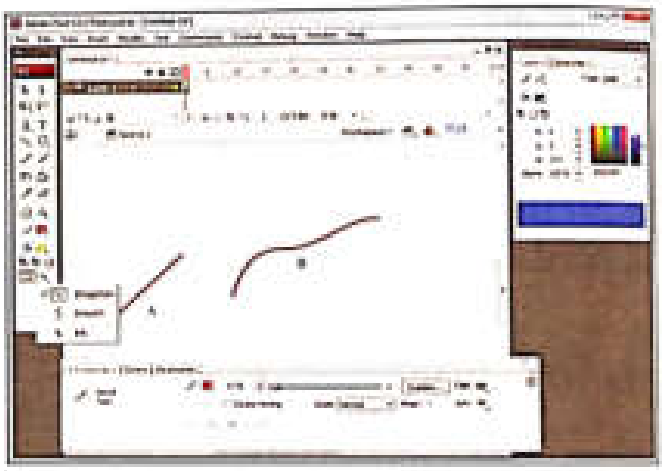
i. CTRL ii. SHIFT iii. ALT iv. none of these

Descriptive Type Questions

1. **Answer the following.**
   a. Name any two modifiers of the **Eraser Tool**.
   b. Differentiate between the **Rectangle Tool** and the **Primitive Rectangle Tool**.
   c. Write steps to create a new gradient colour.
   d. Evaluate the following statement, 'Application software such as Flash CS 3 have replaced the artist's palette'.
   e. Why do you think that the 'property inspector panel' is necessary while working on a Flash document?

Application-Based Questions

a. Observe the given figure on the right and answer the following questions:
   i. Which tool is selected in the figure?
   ii. Name the modifier that has been used to draw line A.
   iii. Name the modifier that has been used to draw line B.
   iv. Which modifier will you use to draw lines without any modifications?



b. Dania has to create a cartoon character using tools available in Flash CS3. Which tool will she use for the following purposes?
   i. Paint freely on the stage
   ii. Draw a square
   iii. Fill with gradient inside the shape

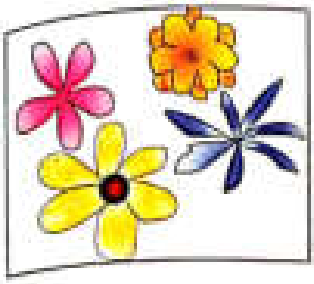
c. Observe the figure given alongside and answer the questions:
   i. Name the panel shown in the figure.
   ii. Which type of gradient has been selected in the figure?

d. Asiya has drawn a graphic on the Stage. Which Eraser Mode modifier will she use for the following purposes?
   i. Erase only lines leaving the fills unaffected
   ii. Erase all lines and fills that it passes over
   iii. Erase only fills leaving the lines unaffected

e. Create a picture of one of the following using Flash CS 3:
   - the sunset over the ocean
   - a city scene with many buildings
   - a hut on a mountain

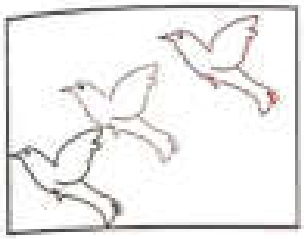
IN THE LAB

1. Little Tinku wants to paint his pillow cover. Using the tools available in Flash CS3, can you draw a pillow cover with a picture on it which Tinku can copy? One example is given alongside.



2. Rasheeda loves flowers. She has decided to paint a few flowers using the tools available in Flash CS3. Her effort is shown alongside. Can you draw the same graphic?

3. Javeria wants to design a New Year greeting card for his teacher. Help her design the card shown alongside using the drawing tools available in Flash CS3.



4. Haneen has to participate in a painting competition on Independence Day. She has decided to draw the given sketch showing three birds. Which tools can she use to draw this figure? Also, help her colour the birds and write a quotation suiting the occasion.

GROUP PROJECT

Conduct research to discover alternatives to Flash CS 3. List at least two of them and find out how each one works. Make an advertisement using MS Publisher for these two software programmes, and then send it as an attachment to your teacher.

TEACHER'S NOTES

- Demonstrate how to create a new gradient, explaining the difference between linear and radial gradients.
- Show the students how to use various brush modes, options available while working with the Pencil Tool, and the other tools.
- Encourage children to be creative and use the Flash tools to experiment with different kinds of design elements.

Chapter 10

Creating Animations in Flash CS3

You have learnt about quite a few of the drawing tools in Flash CS3 in chapter 9. In this chapter, you will learn how to create simple animations. For this, you need to learn about symbols, the timeline, and frames.

A frame is the basic unit of any movie. A movie is a series of frames with pictures on them. The picture on each successive frame is slightly different from the previous one. When the frames are displayed rapidly, you get an **animation**. The timeline helps you control and organise frames.

In this Chapter

- Creating Symbols
- Understanding the Timeline
- Creating Animations: Frame-by-Frame Animation, Motion Tweening, Shape Tweening

CREATING SYMBOLS

A **symbol** is a graphic image, animation, or button that is stored along with a movie. It can be inserted in the movie as many times as you want, i.e., symbols are reusable graphics. An **instance** is an occurrence of a symbol. Each time you insert a symbol in a movie, you create an instance of that symbol.

Flash stores symbols in folders called libraries. The use of symbols helps to keep the file size small, as a particular symbol is stored only once even if it is used many times in the movie.

Converting a Drawing into a Symbol

The steps to convert an existing drawing into a symbol are:

1. Select the **Arrow (Selection) Tool**.
2. Draw a selection area around the object on the Stage to select it.
3. Select **Modify ▶ Convert to Symbol** (Fig. 10.1). The **Convert to Symbol** dialog box appears (Fig. 10.2).
   a. Type a **Name** for the symbol.

Fig. 10.1 Modify menu

Fig. 10.2 **Convert to Symbol** dialog box

   b. **Type** of symbol can be a **Movie clip**, a **Button**, or a **Graphic**. Choose **Graphic**.
   c. Click **OK**. The symbol now gets added to the Library panel.

To insert an instance of the symbol in the movie, you can follow these steps:

1. Select **Window ▶ Library** to open the Library panel. You will see the symbol you created.
2. Click and drag it onto the Stage. This inserts one instance of the symbol. Use the same process to get multiple instances of the symbol (Fig. 10.3). You can resize, rotate, or move a particular instance without affecting the others.

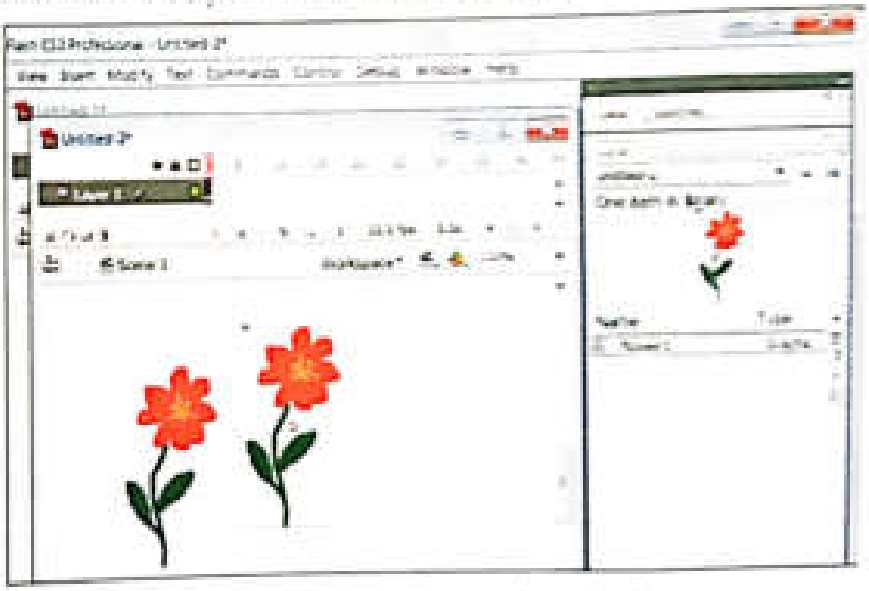


Fig. 10.3 Inserting an instance from the library

UNDERSTANDING THE TIMELINE

Before creating animations, you should be familiar with the **Timeline** window. The Timeline is the area where you work with frames to organise and control the content and animation of your movie. The main components of the **Timeline** window are shown in Figure 10.4.

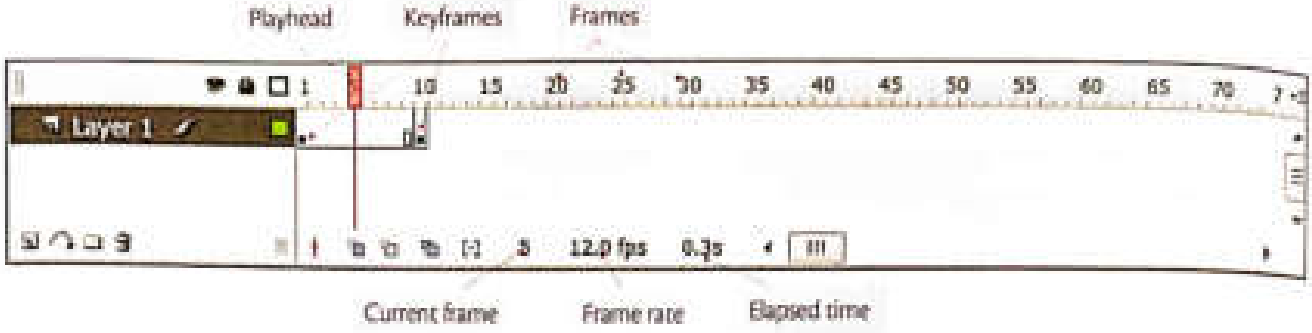


Fig. 10.4 Timeline window

The red rectangle with a vertical line is called the **playhead**. It indicates the current frame on the Stage and the current status of the movie. As the movie plays, the playhead moves from left to right through the **Timeline**. The **frame rate** shows the number of frames per second that your animation will play.

Frames and Keyframes

Frames contain the content of the movie. This content is displayed one frame at a time while you play the movie. They are represented as a series of vertical rectangles on top of the Timeline. Every fifth frame has a light-grey fill and is marked with a frame number, which is written at the top of the Timeline.

The black dots shown in Figure 10.4 represent **keyframes**. A **keyframe** is a critical point in the animation, where an object appears or changes, or begins or ends an action such as fading, moving, etc.

At the bottom of the Timeline window, you can see three numbers. The leftmost number represents the current frame. In Figure 10.4, the fifth frame is the current frame. The next number represents the frame rate, i.e., the number of frames per second that the movie is playing. In Figure 10.4, the frame rate is 12 fps, i.e., the movie is playing at 12 frames per second. The third number represents the time elapsed.

Inserting a Frame or Keyframe

The steps to insert a **frame** or **keyframe** are:

1. In the **Timeline** window, click on a rectangular placeholder where you want to insert a frame or a keyframe.

Inserting a frame **F5**

Inserting a keyframe **F6**

8. To play the movie:
   a. Click on the first frame in the **Timeline** window.
   b. Select **Control ▶ Play**.

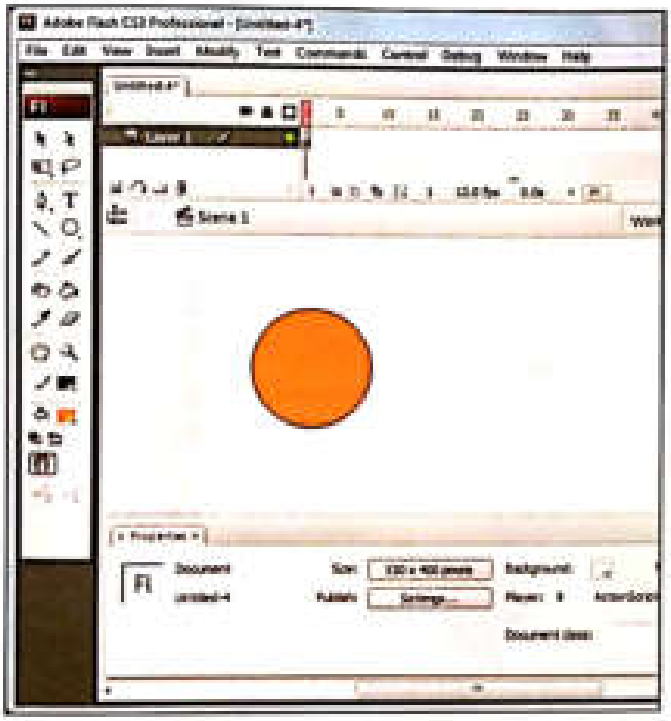


Fig. 10.7(a) Drawing a circle in frame 1

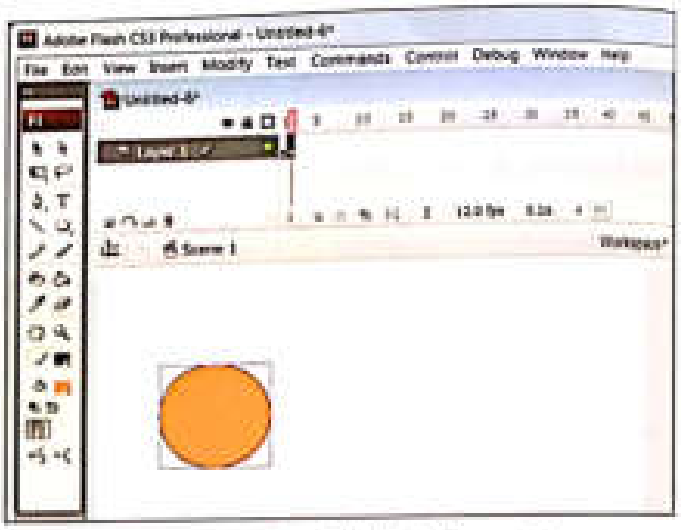


Fig. 10.7(b) Circle in frame 2

Motion Tweening

Tweening makes it very easy to create animations. In tweened animations, you only specify the first and the last keyframes. Flash automatically fills in the frames between the two. In **motion tweening**, you specify the initial and the end positions of an object. Flash CS3 fills the frames in between to make the object move between the two positions. Before you implement motion tween on an object, you have to convert the object into a symbol.

Let us consider an example to understand tweened animation.

1. Draw the picture of an aeroplane at the top-right corner of the Stage in frame 1 [Fig. 10.8(a)].
2. Convert the aeroplane into a symbol. Name the symbol as aeroplane. You will see a blue square around the graphic.
3. Select frame number 20 in the Timeline window and insert a keyframe by pressing **F6** or selecting **Insert ▶ Timeline ▶ Keyframe**.
4. Notice that all frames from 2 to 19 are now grey in colour. Frame 20 has a grey fill with a black dot, indicating that it is a keyframe.

5. Select frame 20. Select the aeroplane and move it to the bottom-left corner of the Stage [Fig. 10.8(b)].

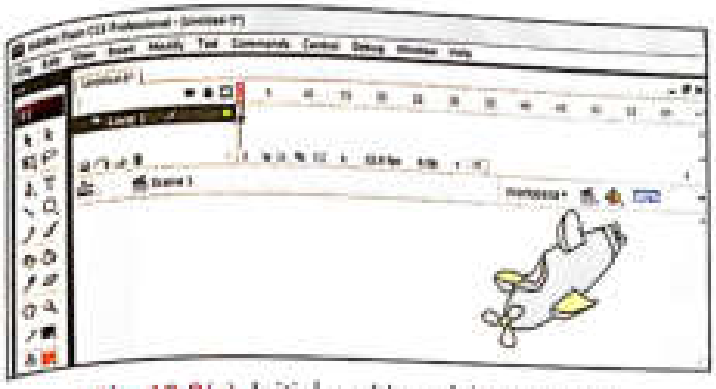


Fig. 10.8(a) Initial position of the aeroplane

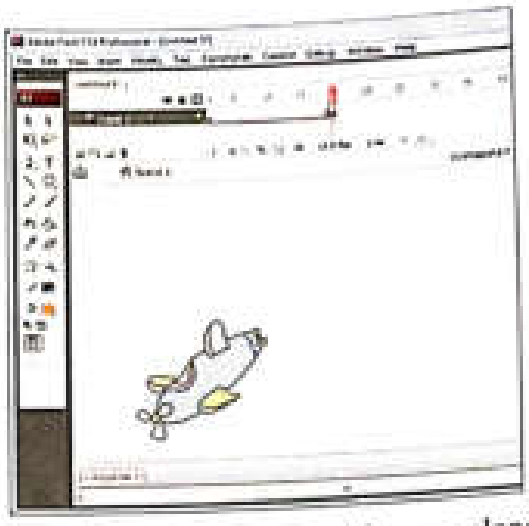


Fig. 10.8(b) Final position of the aeroplane

6. Select any frame between 1 and 20. With the cursor in the grey area, right-click and select **Create Motion Tween** from the context menu [Fig. 10.8(c)]. Notice the change in the Timeline window [Fig. 10.8(d)]. A light-purple colour with a solid arrow appears between the keyframes.
7. Play the movie. You will see the aeroplane move from the top-right corner to the bottom-left corner of the Stage.

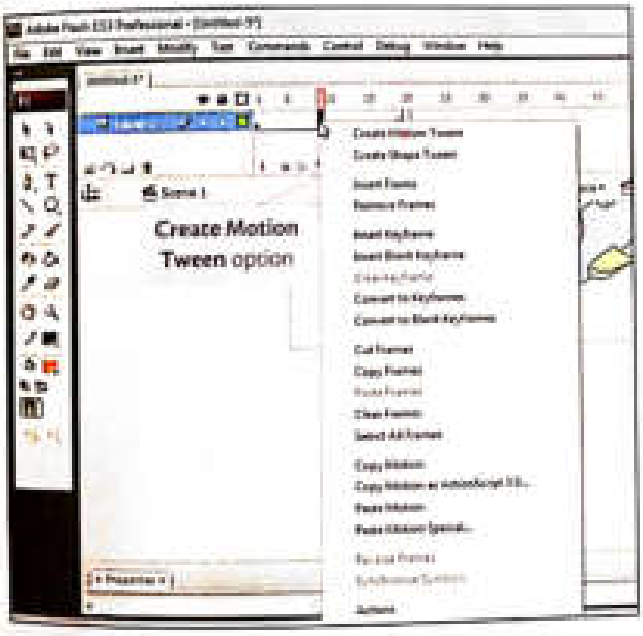


Fig. 10.8(c) **Create Motion Tween** option in the context menu

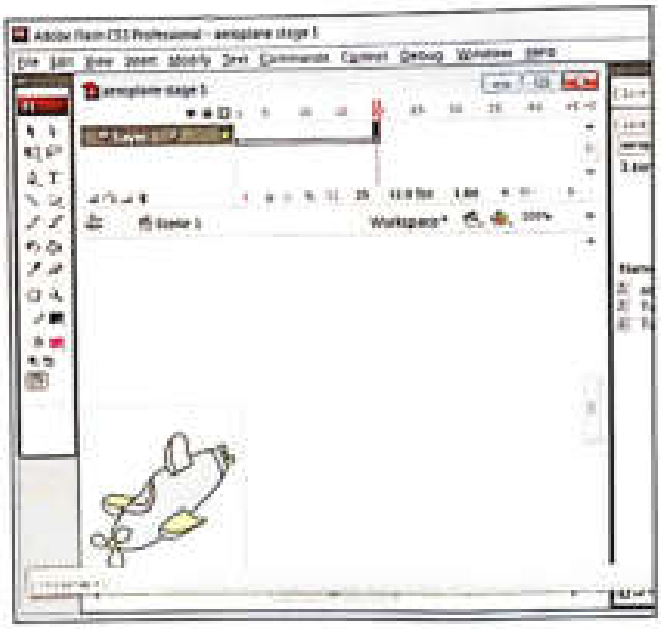


Fig. 10.8(d) Creating motion tween

PRACTICE TIME

Anas has been asked by his Computer Science teacher to create an animation to move a car from one position to another using motion tweening. Could you help him with the steps to do so?

SOLUTION

1. Draw or import a picture of a car at the bottom-left corner of the stage in frame 1.
2. Convert the shape into a symbol. Give the symbol the name, **car**.
3. Select frame 40 in the **Timeline** window and insert a keyframe by pressing F6 or selecting **Insert ▸ Timeline ▸ Keyframe**.
4. Notice that all the frames from 2 to 39 are now in grey colour. Frame 40 has a grey fill with a black dot, indicating that it is a keyframe.
5. Select frame 40. Select the car and move it to the bottom-right corner of the Stage.
6. Select any frame between 1 and 40. With the cursor in the grey area, right-click and select **Create Motion Tween** from the context menu.
7. Notice the change in the **Timeline** window. A light-purple colour with a solid arrow appears between the keyframes.
8. Play the movie. You will see the car move from the bottom-left corner to the bottom-right corner of the Stage.

Shape Tweening

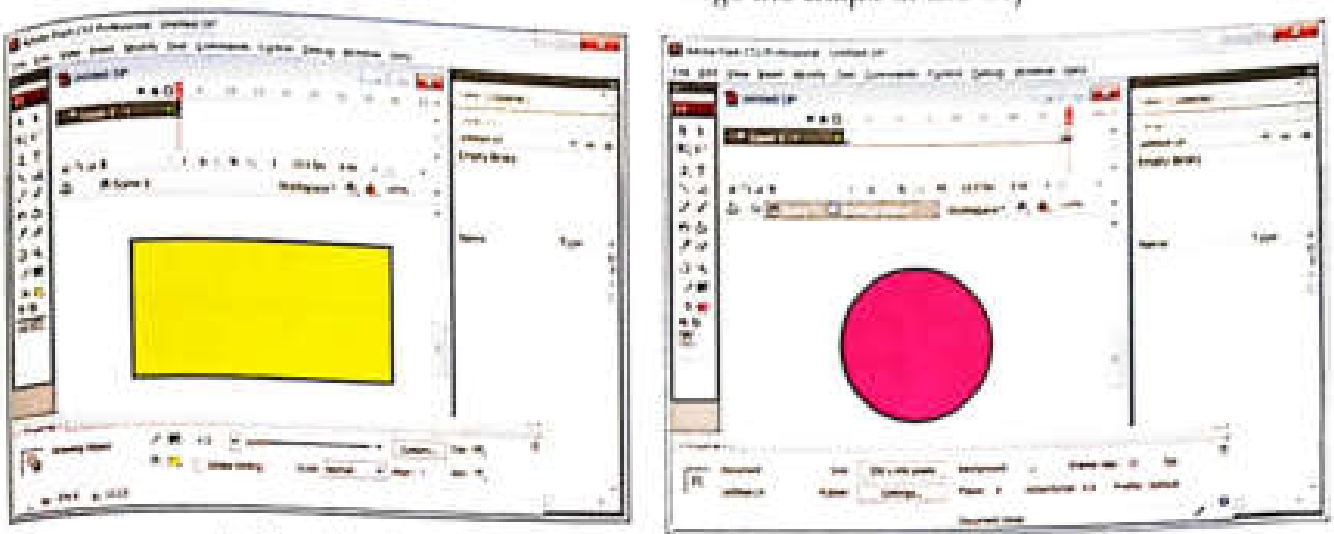
Shape tweening makes a drawing change into another drawing. Shape tweening does not work on symbols. So do not convert the drawing object into a symbol when you want to use shape tweening.

Let us consider an example to understand shape tweening:

1. Select the first frame and draw an object, for example, as given in Figure 10.9(a).
2. Select frame 40 in the **Timeline** window and insert a keyframe.

3. While still on frame 40, select the drawing object and delete it. Draw a different object, say a circle [Fig. 10.9(b)], or

use the **Arrow Tool** to reshape the lines and change the shape of the object.



(a) First drawing

(b) Second drawing

Fig. 10.9 Shape tweening transforms one drawing into another

4. Click any frame between 1 and 40. In the **Property inspector** panel, select **Shape** from the **Tween** drop-down list [Fig. 10.9(c)].

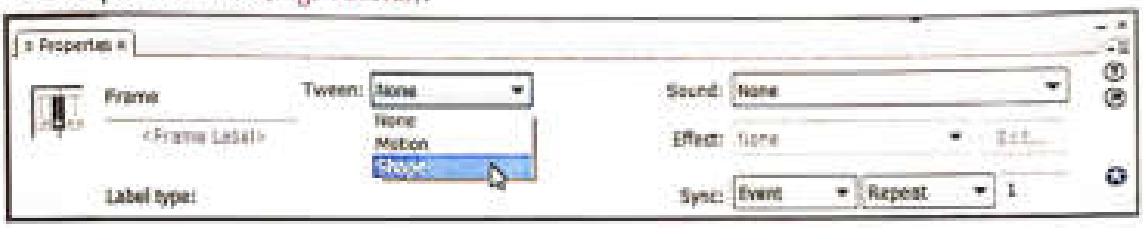


Fig. 10.9(c) Choose **Shape** tweening

Notice the change in the Timeline window [Fig. 10.9(d)].

A light-green colour with a solid arrow appears between frames 1 and 40.

Also note that the drawing that appears on the Stage is a mix of the two shapes.

Play the movie. In this case, you will see the rectangle change into a circle.

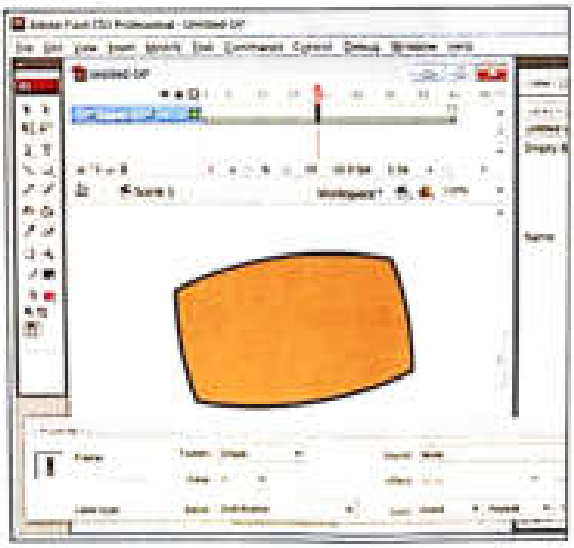


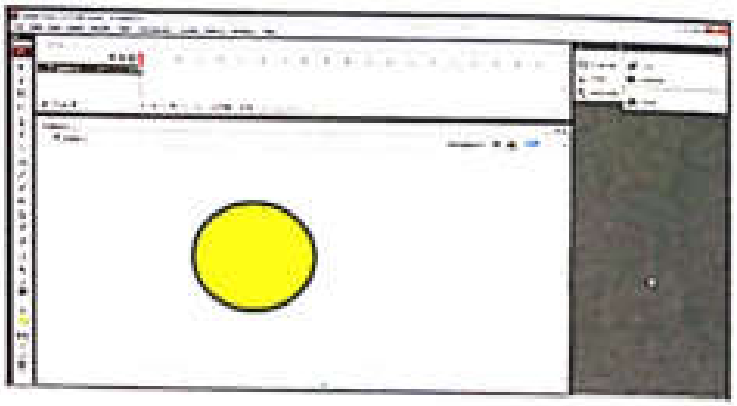
Fig. 10.9(d) After selecting Shape tweening

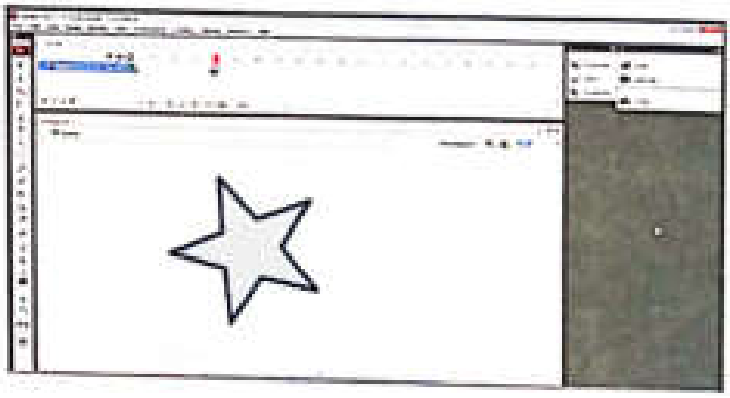
PRACTICE TIME

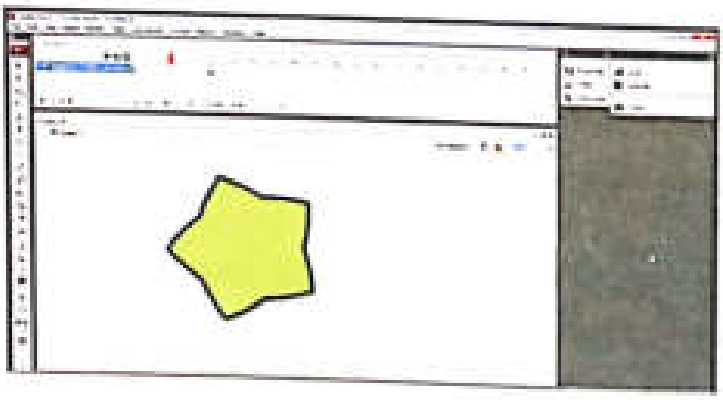
Anaya has been assigned by her Computer Science teacher to create an animation in which she has to change an oval to a star and then change the star back to an oval. How should she proceed?

SOLUTION

1. Select the first frame in the **Timeline**.
2. Select the **Oval Tool**. Then select the stroke colour and the fill colour.
3. Draw an oval shape on the Stage.
4. Select frame 20 in the **Timeline** and insert a **Blank Keyframe** by pressing F7 or by selecting **Insert ▸ Timeline ▸ Blank Keyframe**.
5. Draw a star shape on the Stage. You can also change the stroke colour and fill colour.
6. Click on any frame between 1 and 20 in the **Timeline**. Right-click and select the **Create Shape Tween** option from the context menu.
7. Again select frame 40 in the Timeline and insert a blank keyframe by pressing F7.
8. Copy the oval shape from Frame 1 to Frame 40.
9. Right-click on any frame between 20 and 40 and select **Create Shape Tween** option from the context menu.
10. Select Frame 1 in the Timeline and press Enter to play the movie.







Tricky Terms

Frame a basic unit of a Flash movie

Symbol a graphic image, animation, or button that is stored with a movie

Instance an occurrence of a symbol

Library a folder in Flash CS3 that stores symbols

Keyframe a critical point in the animation, where an object appears or changes, or begins or ends an action

Frame-by-Frame Animation an animation created by manually changing the contents of each frame

Tweened Animation an animation in which you specify the first and the last keyframes and Flash CS3 automatically fills in the frames between them

Memory Bytes

- A symbol can be created by converting a drawing into a symbol, which is then stored in the movie library. We can add multiple instances of the symbol to the movie.
- To create an animation in Flash, we can use frame-by-frame animation or tweened animation. The two types of tweened animations are motion tweening and shape tweening.
- For motion-tweening, drawings must be converted into symbols.
- Shape-tweening can be used to make a drawing transform into another drawing.
- Shape-tweening does not work on symbols.

EXERCISES

Objective Type Questions

1. **Choose the correct option.**

a. For ..... tweening, the drawing object has to be converted into symbol.
i. motion ii. shape iii. both i. and ii. iv. none of these

b. Using symbols keeps the file size ..... .
i. same ii. small iii. large iv. none of these

c. Symbols are stored in a folder called ..... .
i. Symbol ii. Mixer iii. Library iv. none of these

d. A ..... is a graphic image, animation, or button that is stored with a movie.
i. symbol ii. shape iii. tweening iv. none of these

e. To insert a frame, select **Insert** ▸ ..... ▸ **Frame.**

i. Insert Frame ii. Timeline iii. New Frame iv. none of these

Descriptive Type Questions

1. Answer the following.

a. How can you identify a keyframe in the Timeline? Write keyboard shortcuts to insert a frame and a keyframe.

b. How would you delete frames 5 to 10?

c. How can you convert a robot shape drawn on the Stage to a man?

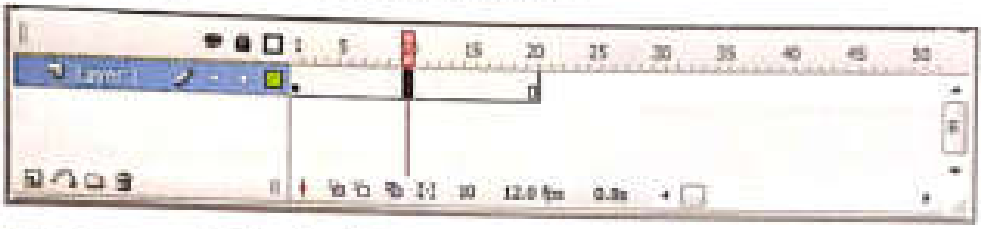
d. Mention two points that should be kept in mind while creating a motion tween.

e. Evaluate the user-friendliness of Flash CS 3.

f. Create an animation of your choice in Flash CS 3 which uses as many of the tools as you know about so far.

Application-Based Questions

a. Observe the following figure and answer the questions:



i. Identify the component of the Flash CS3 window shown in the figure.

ii. Identify the keyframes in the figure.

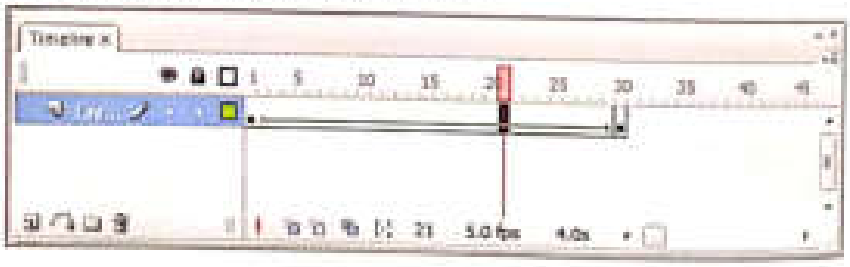
iii. What is the frame rate?

b. Darim has created a simple animation in Flash. Look at the screenshot given alongside and answer the following questions:

i. Identify the type of tweening he has applied to create the animation.

ii. What is the elapsed time shown in the Timeline?

iii. Mention the current frame.



c. Observe the given dialog box and answer the given questions:

i. Write the keyboard shortcut to get this dialog box.

ii. What type of symbol is being created?

iii. Name the menu that has the option to get this dialog box.

d. Maheen has to create an animation to change a rectangle to a bird.
   i. What type of tweening should she apply to create this animation?
   ii. Should she convert the rectangle shape to a symbol for this animation?

   iii. When she applies the tweening, the frames in the Timeline will be covered with which colour?

IN THE LAB

1. Draw a scenery and convert it into a symbol, and use it as a background in an animation where a bird is flying from one tree to another.
2. Draw a boat and create an animation to make the boat move from the top-left corner to the bottom-right corner of the Stage on a river flowing in the same direction.
3. Use shape-tweening to create an animation in which the shape of a circle turns into a cat.
4. Create an animation in which a star shape appears at different positions at different times on the Stage. Use the frame-by-frame animation method.

GROUP PROJECT

Develop your very own video! Using FLASH CS3 create your own animation. Remember to keep it simple. All the best video makers have to start somewhere! For inspiration, you could research the biographies of famous filmmakers and see how they started out. Not many will have started in school...so you are getting a great opportunity to learn and explore new ways of being creative.

TEACHER'S NOTES

- Help the students to understand what the Timeline is and how it is used.
- Demonstrate all the three methods of creating animations.
- Tell the students that they have received just a small taste of Flash and animation. Encourage them to discover that Flash CS3 has many features and to explore the many possibilities of Flash.

KEYBOARD SHORTCUTS

Copy	CTRL + C	Expand/collapse **Property inspector**	CTRL + F3
Paste	CTRL + V	Show grid	CTRL + '
Cut	CTRL + X	Show/hide rulers	CTRL + SHIFT + ALT
Undo	CTRL + Z	**New Document** dialog box	Ctrl + N
Redo	CTRL + Y	**Document Properties** dialog box	Ctrl + J
Select All	CTRL + A	Open file	Ctrl + O
Open Font dialog box	CTRL + D	Save file	Ctrl + S
Left Align	CTRL + L	Convert to symbol	F8
Center Align	CTRL + E	Library panel	CTRL+ L
Right Align	CTRL + R	Inserting a frame	F5
Justify	CTRL + J	Inserting a keyframe	F6
Print	CTRL + P	Play a movie	ENTER
To write data in multiple lines in the same cell	ALT + Enter		
Run a program	F5		

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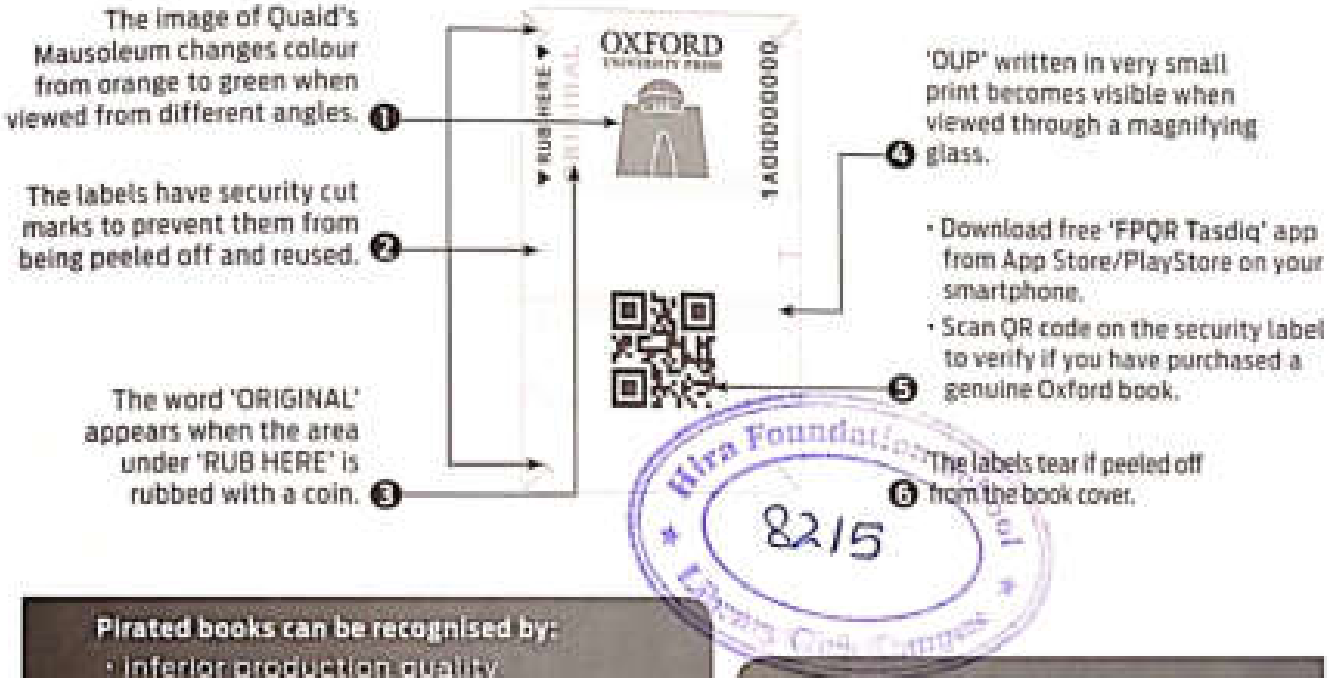

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