KEY FEATURES

Latest Trending Technologies
Incorporates chapters on trending technologies

Additional Annexures
Information and updates about the latest topics in the field of computers

Project Work
Cross-curricular projects integrating knowledge, principles, and values of various disciplines

Online Links
To access more information on the given topics

Group Discussion
To help the students understand the topics in an interactive manner

Brain Developer & Worksheets
For self assessment of the concepts learnt

Incorporates NEP 2019 Guidelines in Activities and Projects

Life Skills and Values   Art Integration   Interdisciplinary

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CONTENTS

COMPUTER LANGUAGES

Language is a medium to express our views and feelings. To communicate with a computer, we need a language that it understands. For every action, a computer has to be given instructions accordingly.

> A **Program** is a set of instructions that tells the computer what to do.

> The process of writing specific instructions in a computer language is called **Programming**. Each programming language has its own specific rules. The programming languages have developed considerably, due to the ease and ability of the programmers to write powerful application programs.

The development of computer languages has been classified into the following categories:

Computer Languages

| Machine Language | Assembly Language | High-level Language | Fourth-generation Language |
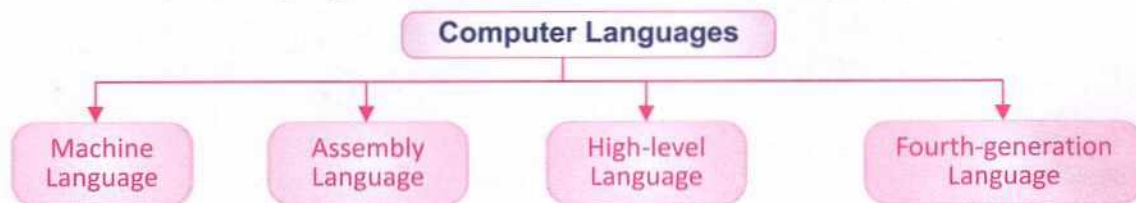
MACHINE LANGUAGE (FIRST GENERATION)

It is the only language that a computer understands. It is expressed in binary form, i.e., '0' and '1' where 0 means 'Off' state and 1 means 'On' state.

Machine language has the advantage of having very high speed and low memory utilisation.

But understanding and learning machine language is a tough and time-consuming process. It is very difficult to write and debug programs written in machine language. The programs written in machine language are machine-dependent. That is why Machine language is also regarded as a **Low-level Language** (LLL). A machine language program written for one computer may or may not run on another computer. Because of this, very few people opt for specialisation in machine language.

Figure 1.1: First Generation Computer

ASSEMBLY LANGUAGE (SECOND GENERATION)

This language uses mnemonic codes or symbols in place of 0 and 1. For example, if the operation code for add is 0010 in the binary language, it can be directly written as 'ADD' in assembly language, as Assembly language uses symbolic codes. Hence, it is easier to work with Assembly language than binary language.

Since a computer can only understand machine language, so assembly language programs have to be converted

into machine language. Translator programs known as **Assemblers** were developed to convert the assembly language program into machine language.

A program written in assembly language is called the **Source program**, whereas, the program converted into machine language by the assembler is called the **Object program** or **Object code**.

Figure 1.2: Second Generation Computer

Like machine language, assembly language is also machine-dependent and programming in this language is quite time-consuming. Thus, it is also regarded as a Low-level Language (LLL).

HIGH-LEVEL LANGUAGE (THIRD GENERATION)

The restrictions in the usage of machine and assembly languages prompted people to develop a language with the following features:

➢ Simple and user friendly language

➢ Language that is machine-independent

Owing to the above mentioned features, it became easy to learn and use the computer languages. A large number of people started writing computer programs using these languages. It is also known as **High-level Language** (HLL). High-level language is quite similar to the English language. Basic, C, C++, Java, etc., are some of the very popular examples of high-level languages.

Figure 1.3: Third Generation Computer

High-level language programs need to be translated into machine language by using the **Translator programs**. There are two types of translator programs, which are as follows:

INTERPRETER

This translator program is used to convert a high-level language program into machine language. An interpreter translates a program written in high-level language into a low-level language program line by line. It executes the instructions and then repeats the procedure for the remaining instructions. If any errors are found, they are to be removed immediately. As the converted form is not stored anywhere, so it has to be generated at the time of the execution of a program. The interpreter programs are preferred for beginners and slow in their execution speed.

Example Imagine that the French President visits India on an official tour. So, in order to understand each other, both the French President and the Indian Prime Minister would require an **interpreter** to translate the French language into the English language and vice versa. Similarly, in computers, interpreters are required to convert high-level language programs to machine-level language programs.

COMPILER

Compiler is a translator program, which is used to convert a high-level language program into machine language. It translates the whole program at once, i.e., it generates the object code for the program along with the list of errors. The execution speed of a compiler is faster as compared to an interpreter.

FOURTH GENERATION LANGUAGE (4GL)

Fourth generation languages are more similar to human languages than their previous versions. They are a combination of many languages with the following features:

Figure 1.4:
Fourth Generation Computer

> Highly user-friendly and independent of any operating system.

> Very high speed of execution. Designed to reduce the level of programming efforts.

> Minimum efforts from the user to obtain any information.

> Designed to reduce the overall time it takes to develop software and the cost of software development. In 4GL, the user has to specify only the required output they want, while the computer determines the sequence of instructions that will accomplish those results.

LANGUAGE	FEATURES
MACHINE	> Uses binary codes to depict operators and data > Machine-dependent > The only language directly understood by a computer
ASSEMBLY	> Uses mnemonic codes or symbols instead of binary numbers > Machine-dependent > Has to be converted into machine language by translator programs (Assemblers)
HIGH-LEVEL	> Uses English words and Mathematical operators > Machine-independent > Has to be converted into machine language by translator programs (Interpreters and Compilers)
4GL	> Machine-independent; minimal user skills required to obtain results > Application development tool

RECAP

> Programming is the process of writing specific instructions in a computer language.
> Machine language is the only language that a computer understands.
> Syntax are the rules governing the formation of statements in a programming language.
> An interpreter translates line by line, whereas a compiler translates the whole program at once.
> An Assembler is a program used to convert the mnemonic codes into their machine language equivalents.

SECTION - A

A. Fill in the blanks.

1. A... is a set of instructions, which tells the computer what to do.

2. The development of computer languages can be classified into... categories.

3. The .... language consists of binary numbers, i.e., 0 and 1.

4. .... convert the assembly language program into machine language.

5. .... language uses simple English words and Mathematical operators.

6. .... language uses mnemonic codes or symbols.

7. .... are the rules governing the formation of statements in a programming language.

8. In binary language, 0 means .... and 1 means .... state.

HINTS	• Machine	• Syntax	• Assembly	• Assemblers	• Four	• Program
	• High Level	• On	• Off			

B. State True or False.

1. Machine language is the only language that a computer understands.

2. Assembly language is regarded as the first generation language.

3. Each programming language has its own specific rules.

4. A Compiler converts a high level language program into machine language, line by line.

5. High-level language program has to be converted into machine language by translator programs.

6. FORTRAN language was designed for business users.

7. Programming is the process of writing specific instructions in a computer language.

8. Machine language uses mnemonic codes.

C. Application-based questions.

1. Kapil's aunt was a computer programmer during the third generation of computer language. Which type of language did she use back then?

_____

2. Sumit is trying his hand at Java programming, but he does not know which type of language it is. Help him understand the type of language Java is.

_____

A. Multiple-choice questions.

1. A program written in the assembly language is called ....

   a. Assembler   b. Source Program   c. Object Program

2. An .... converts a high-level language program into machine language, line by line.

   a. Assembler   b. Compiler   c. Interpreter

3. The program converted into machine language by the translator is called ....

   a. Source Program   b. Object Program   c. Assembler

4. The term software was first used by ....

   a. John McCarthy   b. John W. Tukey   c. John von Neumann

B. Answer the following questions.

1. What do you mean by Machine language?

   ....

   ....

2. How is Assembly language different from Machine language?

   ....

   ....

   ....

3. What are the features of a high-level language?

   ....

   ....

   ....

   ....

4. Differentiate between an interpreter and a compiler.

   ....

   ....

   ....

   ....

5. List any three characteristics of fourth-generation languages.

   ....

   ....

   ....

ACTIVITY SECTION

Perfection Through Practice

➤ Open Word 2016. Set Page Margins 1.25" from all slides, Line spacing to Double. Type the given text.

CHARACTER

Character is the sum total of a person's values, beliefs, and personality. It is reflected in our behaviour and actions. It needs to be preserved more than the richest jewel in the world. To be a winner, you need to develop the right character.

One's character is a combination of integrity, selflessness, understanding, courage, loyalty, and respect.

➤ Apply Heading 1 style to the Title - CHARACTER. Set the font colour to red.

➤ Select the paragraphs and apply border to them. Make change in the line style, colour, and width.

➤ Set the text font size to 14. Apply WordArt style on the first word 'Character'. Insert an online picture and save the file. Observe the effects.

GROUP DISCUSSION

For Concept Clarity

Conduct a group discussion on the topic : **Development of Computer Languages**.

PROJECT WORK

Using Creativity

The term Artificial Intelligence (AI) has become a buzzword in the field of computer science. Search more about AI with the help of the internet, newspaper, and computer magazines. Make a PowerPoint presentation on the topic: **Development of Artificial Intelligence**.

ONLINE LINKS

Looking For More

To know briefly about the generation of computer languages, visit the website:

http://www.slideshare.net/hashgeneration/computer-languagesppt

MORE ON WINDOWS

Windows 10 is the latest and most secured version of Windows, introduced by Microsoft with advanced and much improved features. It is easy-to-use and provides user-friendly environment. You get more security features and ongoing updates in Windows 10, to help safeguard against current and future threats. Due to its amazing features, it is gaining popularity, day by day. In the previous class, you learnt about some of its unique features like, Cortana–the Search tool, Snap assist, the Windows store a bundle of Universal apps, etc. In this chapter, you will be introduced with some more innovative tools that help to get things done fast.

⯈ NEW FEATURES OF WINDOWS 10

Windows 10 is loaded with multi-tasking tools: A custom start menu, live tiles, snap assist, task view, and virtual desktops to keep you organised, focused, and ready for anything. A few distinctive features are as follows:

MORE PERSONAL

You can enjoy Windows 10 like a personal digital assistant. It is the best Windows as yet for gaming and providing features that enable your device and phone to remain in synchronisation.

CONTINUUM

The new feature Continuum in Windows 10 helps the operating system to work better with devices that support both mouse and keyboard, and touch input. For convertible devices, there are two modes: Tablet and desktop. When you wish to use Tablet mode:

Figure 2.1: Accessing Tablet Mode

➤ Click on the **Notification** icon 🔲 present on the Notification area of the taskbar.

➤ This will open the 'Action Center Pane' on the right side of the desktop.

➤ Click on the **Tablet Mode** button 🔲 placed at the bottom of the Action Center Pane.

Figure 2.2: Tablet Mode

In Tablet mode, the Start menu opens in full screen alongwith the currently active window, if any. Apart from that, Tablet Mode maximises all the apps, removes your taskbar icons, and leaves only essential notification tray items. The taskbar in 'Tablet Mode' displays only the Start button, back arrow, Search icon, and the Task View button. Windows 10 automatically changes to this mode, if it detects that there is no keyboard attached.

TASK VIEW

Task View is another interesting feature of Windows 10 that enables you to organise the applications running on your computer. You can create multiple desktops and view all of them together by clicking on the **Task View** button 🔲 located on the taskbar. When all the desktops are in view, you can also drag-and-drop an app from one desktop to another.
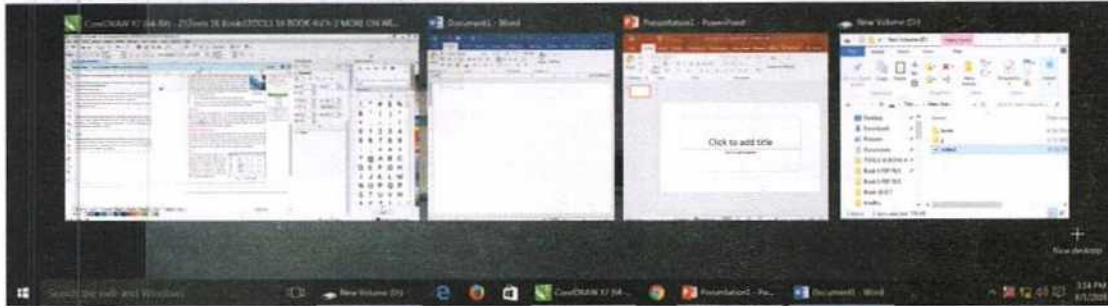

Figure 2.3: **Task View Pane**

SEARCHING MADE EASIER

Windows 10 has the most enhanced and powerful search tool 'Cortana', which answers all the questions that you ask, either in text or verbally but, for that you need a microphone to talk. Here are certain things that Cortana does for you. It can play music, games, set alarms and reminders, take notes, send emails, create and manage lists, and find files, places, and information, open any app on your system, and browse the web to respond to your query.

Figure 2.4: **Activating Cortana**

To turn Cortana on:

➤ Click on the Search Box on the taskbar, followed by another click on the **Gear** icon 🔘 on the left side of the displayed menu. A Settings menu will appear in the right pane.

➤ Turn Cortana On by moving the slider to the right 🔵 in the Settings menu. Cortana will start gathering information about you.

➤ Once activated, it becomes visible on the taskbar as can be seen in the as shown in Figure 2.5.

➤ You can also activate Cortana by giving a voice command 'Hey Cortana', if you have a microphone attached to your computer.

Figure 2.5: **Cortana Activated**

EDGE

The Windows 10 browser, 'Edge', enables you to conduct a safe and quick search on the internet. It also provides a reading mode that opens a web page, displaying only the text and hiding all other distractions, such as graphics, images, etc. You can also save your articles and annotate the web page directly through Edge.
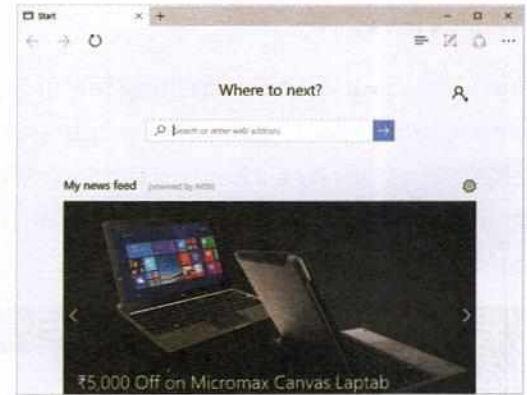

Figure 2.6: Microsoft Edge Browser

Figure 2.7: Action Center

ACTION CENTER

The New Notification Center of Windows 10, displays alerts for your device and all the apps in a slide-out pane on the right side of the desktop. The upper part of the pane displays Tips and App notifications, whereas, the lower part displays a series of **Quick Action** buttons. These buttons enable you to perform actions, such as adjusting the screen brightness, turning bluetooth on or off, and switching to Tablet mode. Along with the notifications, security tips, alarms, reminders, etc. are also displayed in the Action Center.

NOTE Quick Actions are a set of tiles that gives access to frequently-used settings and tasks.

Figure 2.8: Windows Hello

WINDOWS HELLO

Windows Hello is Microsoft's new built-in biometric security system for Windows 10. It allows you to sign in to your system using data, like fingerprint, face, or iris recognition. Biometric logins are secure, fast, and easy to create. Windows Hello requires appropriate hardware devices to be connected to the system for its proper working.

⯈ CREATING A NEW DESKTOP

In Windows 10, you can create multiple desktops for organising different sets of applications. To create a new desktop, follow the given steps:

➤ Click on the **Task View** button ▢ located on the taskbar. The Task View Pane opens and displays the preview of all the open windows.

➤ Click on the **New desktop** button ⊞ placed at the bottom-right corner of the Task View Pane. A new desktop thumbnail named 'Desktop 2' appears.

➤ Click on the thumbnail to view the newly created desktop. It is a replica of Desktop 1 but doesn't display the applications opened in Desktop 1. You can open the apps that you want to use on this desktop. You can group

the desktop windows by opening similar kind of apps in one desktop.

➤ Click on the **Task View** button again to switch between desktops.

MOVING APPS BETWEEN DESKTOPS

Follow the given steps to move an app from one desktop to another.

➤ Open the Task View pane by clicking on the **Task View** button ▣ . Place the mouse pointer over the desktop thumbnail.

➤ It will display the thumbnails of all the opened apps. Right-click on the app that is to be moved and select the **Move to** option.

➤ This will display the Desktop list that you have created. Choose the desktop to which you want to move the app.

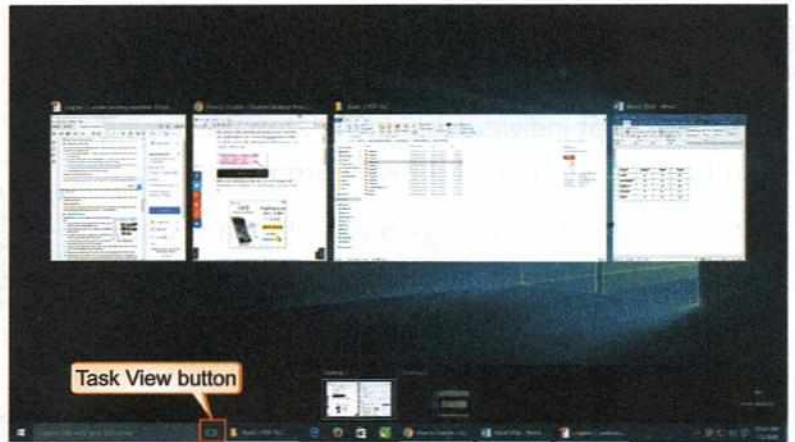💡 You can also drag and drop an application window from one desktop to another.

Task View button

Figure 2.9: **Creating a New Desktop**

CLOSING A DESKTOP

To close a desktop, open the Task View pane and place the mouse pointer on the desktop you want to close. Click on the **Close** button ✕ present in the upper-right corner of the desktop thumbnail to close the desktop.

➢ UTILITIES OF WINDOWS 10

Windows 10 provides many utility programs for day-to-day applications and entertainment. For example, Windows Media Player, Disk Cleanup, Steps Recorder, Character Map, Notepad, Shape Collector, Math Input Panel, etc.

WINDOWS MEDIA PLAYER

Windows media player runs and organises the digital media files (both audio and video) available in the computer memory. You can listen to the radio stations from all over the world if the internet connection is available. This software allows you to play, copy and create CDs/DVDs, and copy music and video to portable devices.
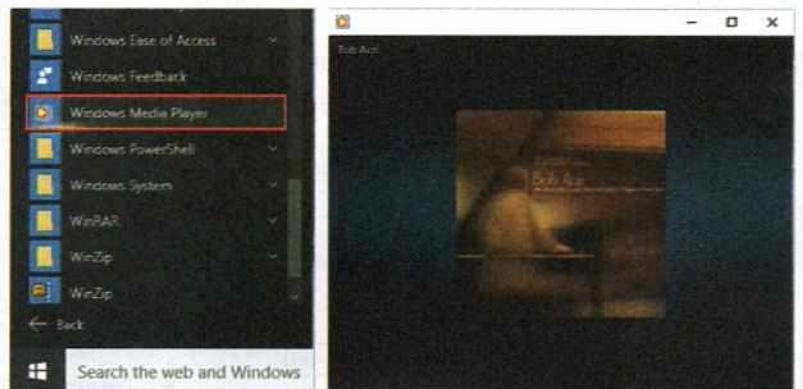

Figure 2.10: **Windows Media Player**

RIP (Copy) CD to Your Computer

You can copy songs from your favourite music CDs/DVDs onto your computers with **Windows Media Player**. When you rip music, you are actually copying songs from a CD to computer. After the songs have been copied on to your computer, you can use Windows Media Player to play and organise the songs, create play lists, and copy music to a portable device.

- Click on the **Start** button and then choose **Windows Media Player** from the list.

- Insert an audio CD/DVD in the CD/DVD drive. You will see a list of songs stored on the CD/DVD in the Windows Media Player.

- Uncheck the check box next to any song that you do not want to rip. You can use the check box at the top of the list either to select or clear check boxes at once.

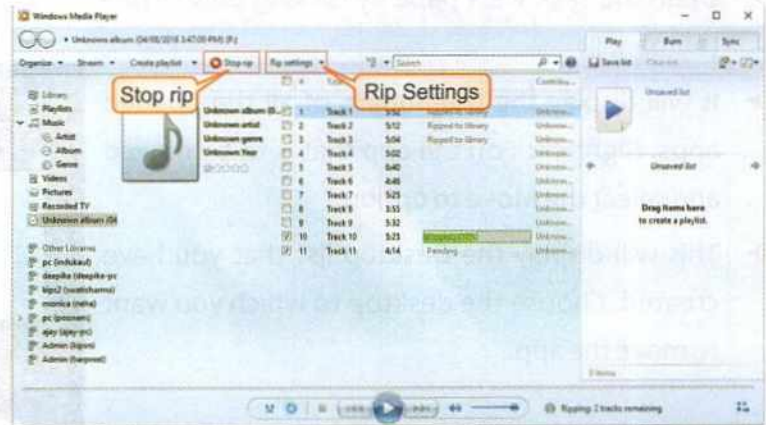- When you are done with the selection process, click on the **Rip CD** button.

- The ripping process will start and you can see the Rip status of individual songs. To stop the ripping process at any point, click on the **Stop rip** button.

- Click on the **Rip settings** button if you want to change the format, audio quality of ripped music files, or you can keep the default Windows Media format settings.

Figure 2.11: Ripping an Audio CD

- The songs are ripped to the Music folder contained in **This PC** folder.

- After the songs have been ripped, go to the Music Folder to play them.

> You can also burn a CD/DVD using software, like Nero, Express Burn, etc.

Copying Data to CD/DVD (Burning a CD/DVD)

Saving important information on a CD/DVD is as easy as saving on hard disk. You can create your own CD/DVD by selecting a folder of software or media files and dragging it to CD/DVD icon in **This PC** folder.

- Insert a blank CD/DVD in the CD/DVD drive of your computer.

- The **Burn a Disc** dialog box appears. Mention the CD/DVD name in **Disc title:** text box, select the option **With a CD/DVD Player** and click on **Next**.

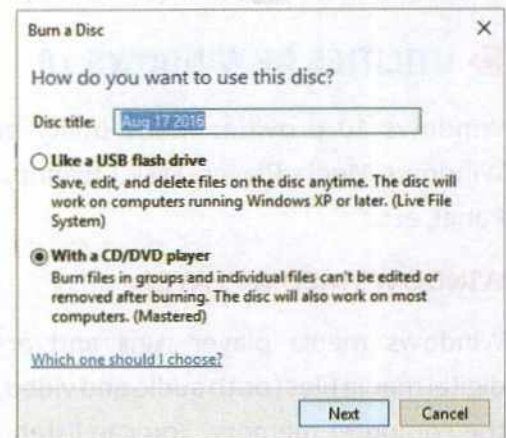- An empty disk folder opens. Drag the files that you want to burn into this folder.

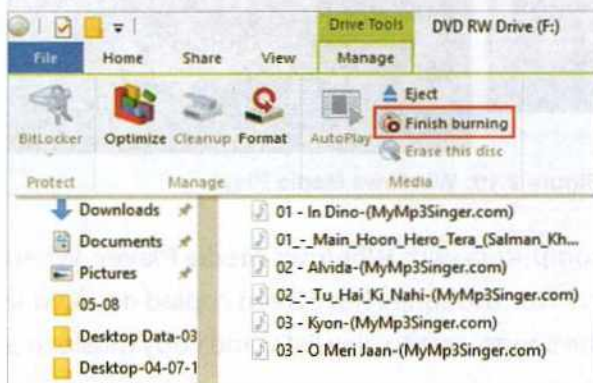**Figure 2.12: Burn a Disc Dialog Box**

Figure 2.13: Finish burning Option

- Click on the **Finish burning** option under the **Manage** tab.

- Again, a Burn to disc dialog box appears. Click on the **Next** button.

- Windows Media Player will open. Click on the **Start burn** button placed under the **Burn** tab.

- The songs will get burned to the disc.

PLAYING A MOVIE USING VLC MEDIA PLAYER

VLC Media Player is an easy-to-use application. It is used to play almost all types of audio and video files. To play music using VLC, follow the given steps:

➤ Click on **Start** > scroll down to **VideoLAN** > **VLC media player**. The **VLC media player** window appears. It displays various commands that control VLC.
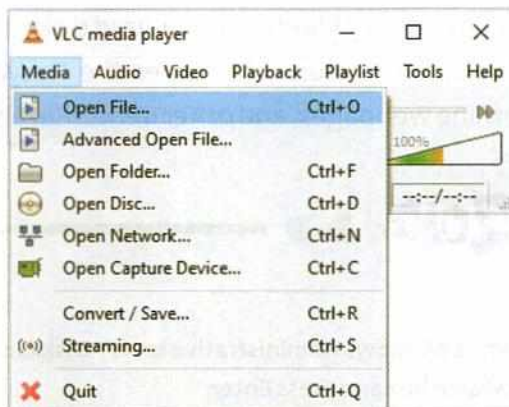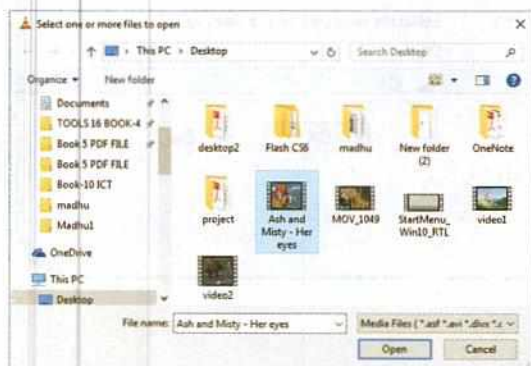

Figure 2.14: Selecting Open File Option

Figure 2.15: Selecting a File

➤ Select the **Media** tab and click on **Open File**. The **Select one or more files to open** dialog box appears. Select the audio/video file(s) that you want to play and click on the **Open** button.

➤ With VLC player, you can also create a playlist that is basically a list of all your favourite songs or videos. To do so, click on **Tools** > **Playlist**. The Playlist dialog box appears. Click on the **Add to Playlist** button ✚ followed by **Add file** option. The **Open** dialog box appears. Browse the files and click on the **Enqueue** option. In this way, you can add the desired files to the playlist.

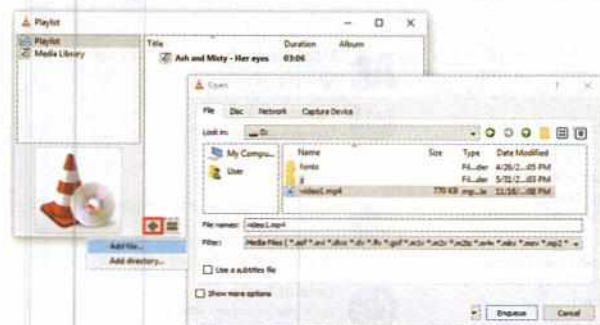**Figure 2.16: Creating a Playlist**

Figure 2.17: Adding Files to Playlist

➤ After arranging the list, close the **Playlist** dialog box and click on the **Play** button. You can also rearrange or repeat the songs in the playlist by clicking on the appropriate options.

➤ Simply right-click on the file and select **Open With** option and then selecting **VLC media player** from the sub-list.

DISK CLEANUP

If you want to remove some unnecessary files from your hard disk to free up the disk space and help your computer run faster, you can use Disk Cleanup feature. It empties the Recycle bin, removes the temporary internet files, downloaded program files, offline webpages, and other items that are not being used for a long time.

ACTIVITY ZONE

USING DISK CLEANUP

➤ Click on **Start** > scroll down to **Windows Administrative tools** > **Disk Cleanup**. Or

➤ Type **Disk cleanup** in the Search box and press **Enter**.

➤ The **Disk Cleanup : Drive Selection** dialog box will open, asking you to select the drive.

➤ Now, click on the drop-down arrow and select the drive that you want to cleanup. Click **OK**.

➤ This function will search and display the unnecessary files, which can be safely deleted.

➤ Select the file(s) that you want to remove, and click **OK**.

Disk Cleanup : Drive Selection ✕

Select the drive you want to clean up.
Drives:
(C:)

OK   Exit
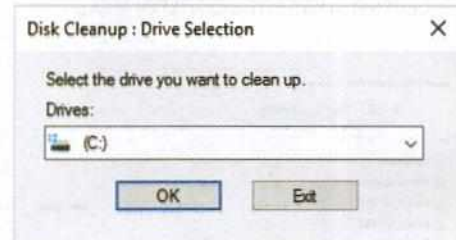
WORKING WITH THE CONTROL PANEL

Control Panel is a system folder, using which we can make changes in the appearance and current settings of the Windows. These may include:

➤ Appearance and Personalisation of the desktop

➤ Hardware and Software Setup and Configuration

➤ System and Security

➤ Networking and the internet

➤ User Accounts and Family Safety

➤ Setting Clock, Language, and Region

These settings control nearly everything regarding Windows appearance, internal settings, and personalisation. They allow you to customise Windows, the way you want.

You can open Control Panel in the following way:

➤ Click on the **Start** > scroll down to **Windows System**. Select **Control Panel** from the displayed sub-list.

Or

Type 'Control Panel' in the Search box and press **Enter**.

Control Panel — □ ✕

← → ˅ ↑ 🖳 > Control Panel   ˅ ↻   Search Control Panel 🔍

Adjust your computer's settings   View by: Category ▾

System and Security
Review your computer's status
Save backup copies of your files with File History
Backup and Restore (Windows 7)
Find and fix problems

Network and Internet
View network status and tasks
Choose homegroup and sharing options

Hardware and Sound
View devices and printers
Add a device

Programs
Uninstall a program

User Accounts
Change account type

Appearance and Personalization
Change the theme
Adjust screen resolution

Clock, Language, and Region
Add a language
Change input methods
Change date, time, or number formats

Ease of Access
Let Windows suggest settings
Optimize visual display

Figure 2.18: View of Control Panel

CHANGING DATE AND TIME

To change a computer's date and time:

➤ Click on the **Date and Time** option in **Control Panel**. The **Date and Time** dialog box will appear.

➤ By default the **Date and Time** tab is selected.

To Change Date

➤ Click on the **Change date and time** button. The **Date and Time Settings** dialog box will appear.

➤ Select the current day in the displayed calendar. You can change the month using the forward/backward arrow buttons present on the calendar.

Figure 2.19: Changing Date and Time

To Change Time

➤ To change the hour, select the hour in the text box located below the clock.

➤ Click on the spin arrows to increase or decrease the hours as desired. Similarly, you can change the minutes and seconds. Click **OK**. The Date and Time settings of the system will change accordingly.

FONTS

Different styles of writing characters/text in a specific size are known as **Fonts**. Some of the popular fonts are Arial, Calibri, Verdana, Times New Roman, etc. Font settings are used to change the display of text on the screen, as well as on paper, while printing. You can use Control Panel to view fonts, add new fonts, or delete existing fonts.

Figure 2.20: Date and Time Settings

Let us see an example here:

➤ Click on the **Fonts** option in **Control Panel**. The **Fonts** window appears.

➤ To view the sample of a font, double-click on any given font.

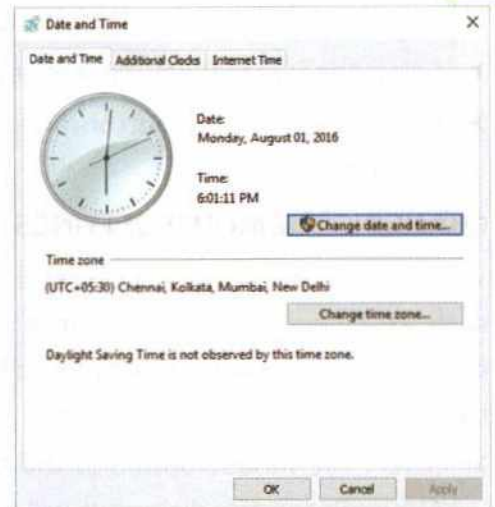**Figure 2.21:** Selecting Fonts Category
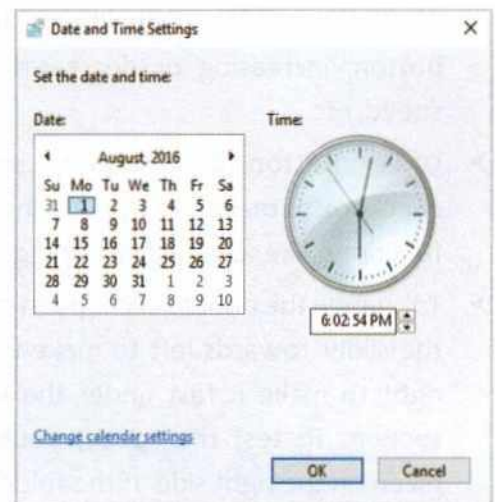
To add new font(s) to the font list, follow the given procedure:

➤ Open **This PC** folder by double-clicking its icon on the desktop.

➤ Select the appropriate drive and then open the folder that contains the new fonts.

➤ Select the font that you want to add and drag it to the **Fonts** window. The new font will be added in the list of existing fonts. You can also Copy and Paste the desired font in the **Fonts** window.

You can also delete the existing font. To do so:

➤ Select the font that you want to delete.

➤ Click on the **Delete** button present above the font thumbnails.

CHANGING THE MOUSE SETTINGS

You can customise the mouse settings in various ways, such as changing the appearance of mouse pointer, changing the functions of the mouse buttons, or altering the scroll speed of the mouse wheel.

➤ Select the **Mouse** option in the **Control Panel**. The **Mouse Properties** dialog box will appear.

➤ The **Buttons** tab is selected by default. It provides options to change the settings of mouse buttons like swapping the functionality of the left and right button, increasing or decreasing the double click speed, etc.

➤ Under **Button configuration** section, select the checkbox to make use of the right button for primary functions, like selecting and dragging.

➤ To change the double-click speed of your mouse, drag the slider towards left to make it slow and towards right to make it fast under the **Double-click speed** section. To test the speed, double-click the folder given on the right side. If the folder does not open or close, try using a slower setting.
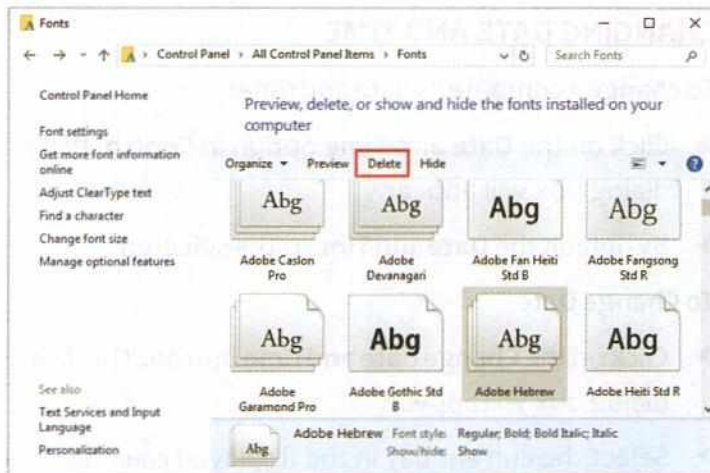
Figure 2.22: Inserting/Deleting Font in Fonts Window

Figure 2.23: Selecting Mouse Option

➤ To change the appearance of your mouse pointer, click on the **Pointers** tab. Here you can change the size, colour, and shape of your mouse pointers.

➤ To change the pointer image, click the Scheme drop-down list and choose any mouse pointer scheme. You can also change pointer images for particular functions like Normal Select, Busy, etc. To do so, click the pointer function in the **Customize** section and then click on the **Browse** button. Double-click on any file name and observe the change.

➤ Click on the **Apply** button to incorporate the change or click on **Use Default** button to return to the default setting.

➤ You can also adjust the speed of your mouse pointer by clicking on the **Pointer Options** tab and dragging the speed slider present in the **Motion** section.

Figure 2.24: Mouse Properties Dialog Box

➤ Drag the slider from slow to fast under the **Motion** section.

➤ Click on the **Apply** button and then click **OK**.

REPLACING DOUBLE CLICK WITH SINGLE CLICK

Windows has a feature to replace double-click setting of a mouse with single-click to open any file/program. Follow these simple steps and forget the practice of double-clicking the mouse forever.

➤ Click on the **File Explorer Options** in the Control panel. The **File Explorer Options** dialog box appears as shown in Figure 2.25. Turn on the **Single-click to open an item** option present under **Click items as follows** section.

➤ From the Single-click sub-options, prefer to turn on **'Underline icon titles only when I point at them'** option.

➤ Click on **Apply** and then click **OK**.

Enjoy the experience of working with single-click now. Remember, to select any item from a list, you just have to place the mouse-pointer there. The item would be highlighted. To open any program/document, just click on it.

Figure 2.25: File Explorer Options Dialog Box

POWER SAVING MODES

Sleep Mode

Sleep is a power saving state wherein a computer does not turn off completely. In this state, monitor and hard disk are turned off, all the open documents and applications are put in RAM, and system draws a small amount of power. It allows a computer to quickly resume full-power operation when you start working again. Sleep mode is useful if you want to stop working for short time.

Follow these steps to put your computer in Sleep mode:

Figure 2.26: Power Options Properties

➤ Click on the **Power Options** in Control Panel.

➤ Click on the **Change plan settings** option next to the **Power saver** radio button.

➤ Choose the duration of two minutes from the drop-down list of the **Put the computer to sleep** option. Click on the **Save Changes** button.

Hibernate Mode

Hibernation is a state in which a computer shuts down to save power but it first saves all the open documents and running applications in the memory on hard disk. When you restart the computer, your desktop is restored exactly as you left it.
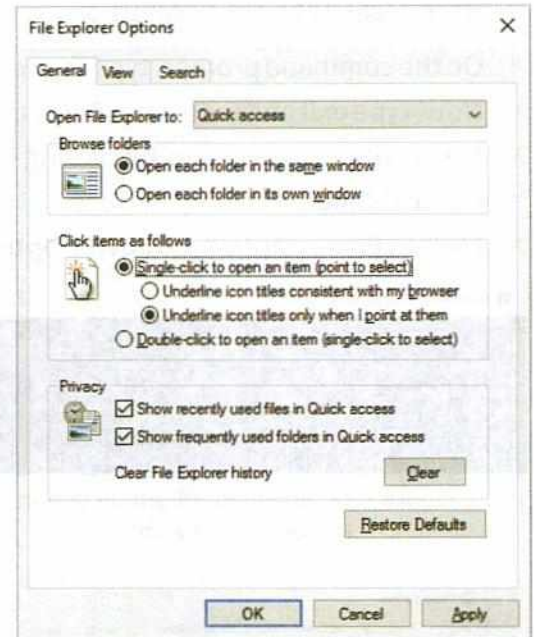
Enabling Hibernation

➤ Right-click on the **Start** button 🪟 or Press the **Windows key** 🪟 + **X**. A 'Power User' menu appears. Select **Command Prompt (Admin)** and click on the **Yes** button in the **User Account Control** dialog box.

➤ On the command prompt, type the command: **powercfg/h on** and press **Enter** key.

➤ Now, type **exit** and then press **Enter** to close this window.

➤ Now, open Control Panel by clicking on the **Start** > scroll down to **Windows System**> **Control Panel**.

➤ Click on **Power Options**. A **Power Options** dialog box appears.

Figure 2.28: Enabling Hibernate option in Command Prompt

Figure 2.27: Power User Windows

➤ Click on the **Choose what the power buttons do** option present on the left side and then click on **Change settings that are currently unavailable** option.

➤ Now, under **Shutdown settings**, click on the **Hibernate** checkbox and then click on the **Save Changes** tab.
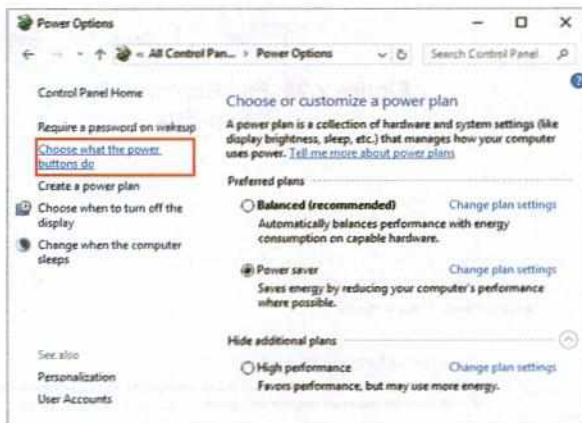
Figure 2.29: Changing the Power button setting

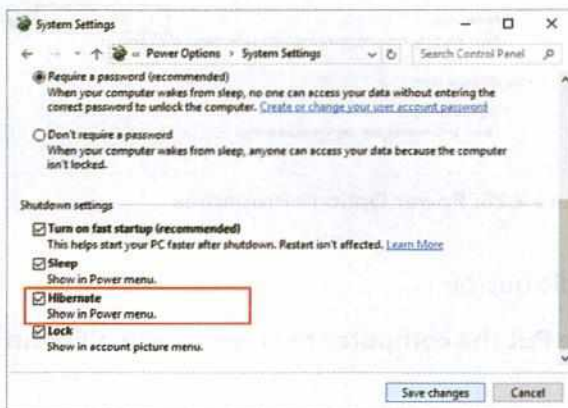**Figure 2.30: Enabling Hibernate Option**

Now, you will have **Hibernate** option as a part of the **Power button** in the **Start** menu.
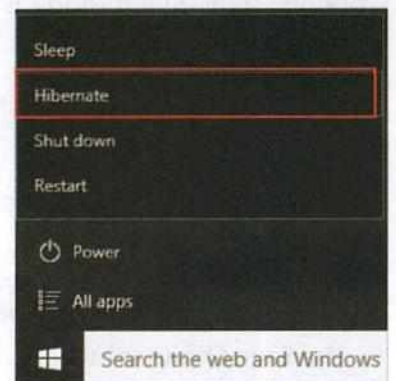

Figure 2.31: The Hibernate option

> Click on the **Start** button and then click on the **Power** button. Select the desired option from the displayed list, such as **Restart, Sleep, Hibernate, Shutdown,** etc., to put the computer into the selected mode.

RECAP

➤ Windows 10 is the latest and most secured version of Windows. It was introduced by Microsoft with advanced and much improved features.

➤ The new feature Continuum in Windows 10 helps the operating system work better with devices that support both mouse and keyboard and touch input.

➤ The Windows 10 browser, Edge, enables you to conduct a safe and quick search on the internet.

➤ Utilities are additional programs of Windows.

➤ Microsoft Windows Media Player runs and organises digital media files.

➤ Ripping means copying data from a CD to computer.

➤ Disk Cleanup empties the Recycle bin, removes the temporary internet files, downloades program files, offline webpages, and other items that are not being used for a long time.

BRAIN DEVELOPER

SECTION - A

A. Fill in the blanks.

1. Microsoft Windows Media Player is used to run and .... digital media files on a computer.

2. Ripping refers to .... songs from a CD/DVD to a computer.

3. Different styles of writing characters/text in a specific size are known as ....

4. .... is used to remove the unnecessary files from a computer hard disk.

5. .... allows you to change Windows 10 into a touch-friendly interface called 'Tablet Mode'.

HINTS • Disk Cleanup   • Continuum   • Copying   • Fonts   • Organize

B. State True or False.

1. You can drag and drop an app from one desktop to another in the Task View pane.

2. Windows 10 automatically changes to Tablet mode if it detects that there is no keyboard attached.

3. The reading mode of Microsoft Edge opens a web page with only the pictures displayed.

4. Windows Hello enables you to perform quick actions such as adjusting the screen brightness.

5. Burning a CD and ripping a CD are two entirely different operations.

C. Application-based questions.

1. Sia wants to burn her favorite songs on a CD/DVD. Which utility program should she use?

....

2. Kriti wants to make her system more secure through biometric login. Which feature of Windows 10 can help her so?

....

SECTION - B

A. Multiple-choice questions.

1. You can customise the mouse settings by selecting the .... option in the Control Panel.

   a. File Explorer   b. Mouse   c. Devices and Printers

2. The .... displays alerts for your device and all the apps in a slide-out pane on the right side of the desktop.

   a. Tablet Mode   b. Action Center   c. Task View

3. .... is a new feature in Windows 10, which enables you to organise the applications running on your computer.

   a. Task View   b. Action Center   c. Cortana

B. Answer the following questions.

1. What do you understand by Windows Media Player?

....

....

2. Differentiate between ripping and burning features.

....

....

3. What is the utility of Windows Hello?

....

....

4. How will you create a new desktop?

....

....

5. How is Disk Cleanup useful?

....

....

ACTIVITY SECTION

A. COPY AN AUDIO CD/DVD TO YOUR COMPUTER

> Select **Start** > scroll down to **Windows Media Player**.
> Insert an audio CD/DVD into the CD/DVD drive.
> In Windows Media Player, you will see a list of songs present on your CD.
> Clear the check boxes next to the song that you do not want to copy.
> After this, click on the **Rip CD/DVD** button.
> Click on the **Rip Settings** button to make changes in the audio quality, format, etc.

B. CREATING A NEW DESKTOP

> Click on the **Task View** button located on the taskbar.
> In the Task View pane, click on the **New desktop** button located on the bottom-right corner. A new desktop icon named Desktop 2 will appear on the bottom.
> Click on the Desktop 2 icon to open it. Open the applications Word 2016 and PowerPoint 2016 in Desktop 2.
> Move the PowerPoint window from Desktop 2 to Desktop 1.

GROUP DISCUSSION   For Concept Clarity

Divide the students in two groups and conduct a group discussion on the topic:

Impact of Windows 10 on the Windows Ecosystem

PROJECT WORK   Using Creativity

Collect information about any five **Utilities of Windows 10** and create a presentation by showing your creativity.

ONLINE LINKS   Looking For More

To know more about the features of Windows 10, visit the following sites:
> https://www.microsoft.com/en-in/windows/features
> https://support.microsoft.com/en-us/products/windows?os=windows-10

ENHANCING A PRESENTATION

LEARNING IN THIS CHAPTER

- Applying Animation effects
- Adding Transition effects
- Inserting sound and video clips

- Using Action Buttons
- Importing data from Word
- Sharing presentation online

PowerPoint 2016 provides various tools and features to enhance the appearance of a presentation. These special effects assist you in making your presentation attractive, effective, engaging, and professional. The use of special effects creates a greater impact on the audience.

► APPLYING ANIMATION EFFECTS

The ability to move objects, like text, graphics, charts, logos, etc. on the slide is called **Animation**.

Animation is quite beneficial when you wish to focus on important points. It also controls the sequence of the flow of information and helps in making information more impressive. Besides giving visual effects to your presentation, you can also sizzle up your slide objects–the text, pictures, shapes, tables, SmartArt graphics, etc. by applying sound effects.

Follow the given steps to apply animation effects to the slide objects:

> Open any presentation. Select the object that you want to animate.

> Click on the **Animations** tab and select the **Add Animation** button present in the **Advanced Animation** group. A drop-down menu will appear with four different categories of animation effects, which are as follows:

Figure 3.1: Animation Task Pane

1. ENTRANCE: As the name suggests, these effects decide the manner in which an object enters into a slide during the slide show. These effects make an object fade gradually into focus, fly onto the slide from an edge, bounce into view and so on.

2. EMPHASIS: These effects determine how the objects on the slide draw attention to themselves during the slide show. These effects make an object shrink or grow in size, change colour, or spin on its center, etc.

3. EXIT: These effects control the manner in which the object exits from the slide during the slide show. Some of these effects are: Disappear, Fade, Fly out, Float out, Split, etc.

4. MOTION PATHS: You can use these effects to make an object move up or down, left or right, or in a star or circular pattern, etc. These effects enable objects to move from one position to another on a slide and on the specified path during the slide show.

To view more animation effects of each category, select the desired option available at the bottom of the **Add**

Animation drop-down menu. You can also click the **More** drop-down arrow in the **Animations** group to select an object's animation effect.

You can add more than one animation effects to the same object or can apply the same animation effect to multiple objects by using the options in **Animation** group.

➤ Choose the desired animation effect from the displayed menu. After applying an animation effect to an object or a text, you will notice that a numbered tag appears adjacent to the object on a slide pane.

➤ You can also specify when an animation should be played by clicking on the drop down button of the **Start** box in the **Timing** group and selecting any one of the displayed options:

   ➤ **On Click** – To start the animation after a mouse click

   ➤ **With Previous** – To start the animation at the same time as the previous animation effect in the list

   ➤ **After Previous** – To start the animation effect immediately after the previous effect in the list finishes

➤ To specify or set the timing of the effects, use **Duration** box available in the **Timing** group. It helps you to change and control the speed of animation effect.

➤ Likewise, you can set the delay time before the animation begins by using the **Delay** box.

➤ You can also use **Reorder Animation** buttons to change the order in which the animation effects appear.

➤ Click on the **Preview** button in the **Preview** group to view the effects applied on the current slide.

ADDING TRANSITION EFFECTS

Transition effects appear when one slide changes to other during Slide Show view. You can apply transition effects to a single slide as well as to all the slides. Follow these steps to add transition effects:

➤ Select the slide on which you want to apply a transition. Click on the **Transitions** tab.

➤ **Transition to This Slide** group appears on the Ribbon displaying multiple transition effects.

➤ Click on the **More** drop-down arrow to display all the transition effects. Select any transition effect from the displayed choices. The current slide will display a preview of the selected effect.

➤ Select the **Effect Options** in the **Transitions to This Slide** group to choose any effect from the displayed list. For some transitions like **Curtains, Prestige,** this option remains deactivated.

Figure 3.2: Adding Transition

➤ Click on the drop-down arrow of the **Sound** option in the **Timing** group and select any sound effect of your choice. Click on the **Preview** button and observe its effect.

➤ Specify the transition timing by entering the number of seconds or minutes in the **Duration** box in the **Timing** group. Select the **On Mouse Click** checkbox if you want to advance the slide by clicking the mouse.

➤ Click on the **After** checkbox if you want the slide to advance automatically to the next one after a certain period of time. You can specify the slide advance timings in the spin box.

➤ Click on the **Apply To All** button to apply the selected effects on all the slides, otherwise, those effects will be applied on the current slide only.

➤ Open the **Slide Show** tab, and click on the **From Beginning** button. The presentation will start from the beginning along with all the applied transition effects.

> You can also apply transition effects in **Slide Sorter View**. Open the **Transitions** tab and select the desired slide
> transition effect.

⟫ INSERTING SOUND CLIPS

Music or sound effects can add a completely new dimension to any presentation. You can add sound in the form of background music or special effects to give importance to specific content.

Sound files can be added from the files stored on your computer or on a CD/DVD. You can even record your own narration or comment and then edit the audio to customise it for your presentation.

ADDING SOUND FROM A FILE

➤ Select the slide to add sound.
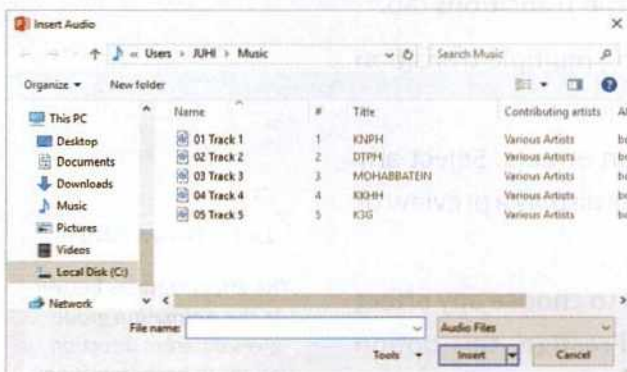
➤ Select the **Insert** tab and click on the **Audio** drop-down arrow in the **Media** group. Choose the **Audio on My PC** option from the menu.

➤ The **Insert Audio** dialog box will appear.

➤ Locate the audio folder on your computer and select the required file. Click on the **Insert** button.

➤ The audio file will be added to the slide indicated by a

Figure 3.3: Insert Audio Dialog Box

Speaker icon ▓ on the slide. Two additional tabs namely, **Format** and **Playback**, appear under the **Audio Tools** tab on the Ribbon.

➤ On the **Playback** tab, in the **Audio Options** group, select either **Automatically** or **On Click** option from the drop-down list of the **Start** field.

➤ The **Automatically** option will start the sound automatically as soon as the slide appears in Slide Show view. Whereas, the **On Click** option will play the sound only when you click the left mouse button.

➤ To play sound, click on the **Speaker** icon. The **Play/Pause** tab appears right below the speaker icon.

> 💡 To continuously play a sound clip, select the **Loop until Stopped** checkbox in the **Audio Options** group on the **Playback** tab.

RECORD AUDIO NARRATION

To add your own audio to the slide, first you will have to record it. While recording your sound, it is essential to connect a microphone that is compatible with your computer. Let us do it practically.

➤ Select the slide to insert the recorded sound.

➤ Click on the **Audio** drop-down arrow in the **Media** group on the **Insert** tab.

➤ Choose the **Record Audio** option from the drop-down menu.

➤ The **Record Sound** dialog box appears. Type a name for the audio recording if you want.
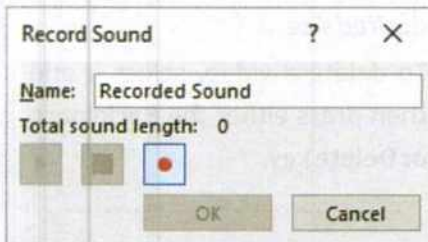
Figure 3.4: Record Sound Dialog Box

➤ Click on the **Record** button to start recording. When you have finished recording, click on the **Stop** button. You can use the **Play** button to listen to the recorded sound.

➤ When you are done, click **OK**. The **Audio clip** icon 🔊 appears on the slide denoting that the audio file has been embedded in the slide.

Figure 3.5: Slide Show Playing the Recorded Sound

➤ Observe that, on selecting the **Audio clip** icon , the **Audio Tools** tab, which includes the **Format** and **Playback** tabs; appears on the ribbon. You can also see the audio playback controls displayed on the slide.

➤ INSERTING VIDEO CLIPS

Video clips add liveliness to the presentation. PowerPoint allows you to insert a video onto a slide and play it during your presentation. This is a wonderful feature to make your presentation more engaging for the audience.

➤ Select the **Insert** tab. Click on the **Video** drop-down arrow in the **Media** group and select the **Video on My PC** option.

➤ The **Insert Video** dialog box appears on the screen. Locate and select the desired video file, then click on the **Insert** option.

➤ The **Format** and **Playback** tabs appear under the **Video Tools** tab on the ribbon. You can format the inserted video by clicking on the **Format** tab and selecting various formatting options from it.

➤ Click on the **Play** button present either below the Video clip or at the extreme left of the ribbon. The video will start playing. The timeline next to the **Play** button will begin to advance. Click anywhere on the timeline to jump to any part of the video.

Figure 3.6: Inserting Video Clip

➤ In **PowerPoint 2016**, you can also embed videos from websites, like www.youtube.com into your presentation.

➤ You can resize a video by clicking and dragging the corner sizing handles until the video is of the desired size.

➤ To delete a video, select it and then press either the **Backspace** or **Delete** key.

➤ USING ACTION BUTTONS

In PowerPoint, you have the facility to link to a web page, email address, file, slide in the same presentation or in a different presentation. This can be done by using Hyperlinks and Action buttons.

Action buttons are built-in shapes, which you can add to a presentation and set a link to another slide, play a sound, or perform some other action. You can also assign actions to Clip Art, Pictures, or the text in SmartArt graphic. When one clicks or hovers the mouse pointer on the button, the selected action will occur.

➤ Open an existing presentation. Select the **Insert** tab and click on the **Shapes** command in the **Illustrations** group. Select the desired action button from the **Action Buttons** category, present at the bottom of the displayed list in

the drop-down menu.

➤ For example, click the **Action Button: Go to End** option. The mouse pointer will change into '+' shape.

➤ Click and drag the mouse diagonally. As soon as the mouse button is released, the **Action Settings** dialog box will appear containing two tabs namely **Mouse Click** and **Mouse Over.**

➤ By default, **Mouse Click** tab is activated. The **Mouse Click** tab makes the action button perform its action only when it is clicked, whereas, the **Mouse Over** tab will make the action button perform its action when you move the mouse over it.

Figure 3.7: Selecting Action Buttons

Let's Discuss

Transition
vs
Animation

Let's Know More

A **Hyperlink** is a connection from one slide to another presentation or any other file or any website/web page. It can be applied on text or objects, such as pictures, shapes, etc.

➤ In the **Action on click** section of the **Mouse Click** tab, select **Hyperlink to:** radio button, then click the drop-down arrow and choose any option from the menu. For example, Previous slide, First Slide, or Last Slide, etc. To link to a file created in another program click on **Other File** from the **Hyperlink to:** list.

➤ Select the **Play sound** checkbox if you want a sound to play when an action button is clicked. Choose any sound, either from the drop-down menu or select **Other Sound** option; to use a sound file present on your computer. Click **OK.**

Figure 3.8: Action Settings Dialog Box

Know the Fact

To print a slide with the default settings, click on the **Print** option 🖨 in the **File** tab menu.

➤ Now, press **F5** to view the slide show. Click on the **Action Button** during the slide show and observe the action.

Let's Know More

Action buttons should not be inserted on master slides. You can insert an action button on a slide, if required.

IMPORTING DATA FROM WORD

PowerPoint provides the facility to import data from other applications like Word, Excel, etc., and use it in the presentation. Importing data saves your time and efforts. Follow the given steps to import data from Word file:

➤ Click on the **Start > scroll down to > Word 2016**.

➤ Create a new document. Select the **View** tab, then click on the **Outline** button in the **Views** group.

➤ Type the text as shown in the Figure 3.9. Now click on **Close Outline View** button to return to the **Print Layout View**.
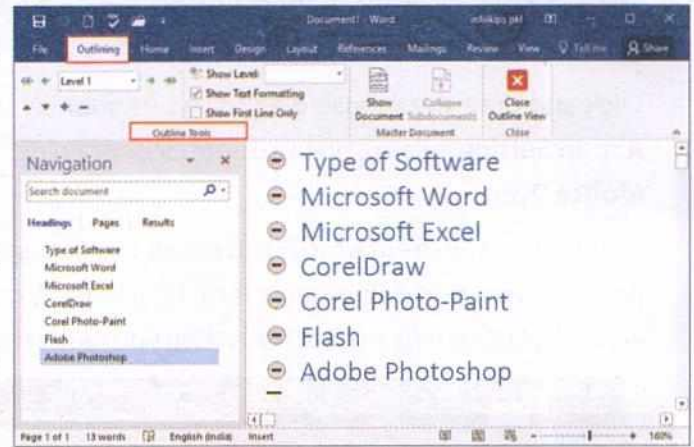
Figure 3.9: Importing Data from Word
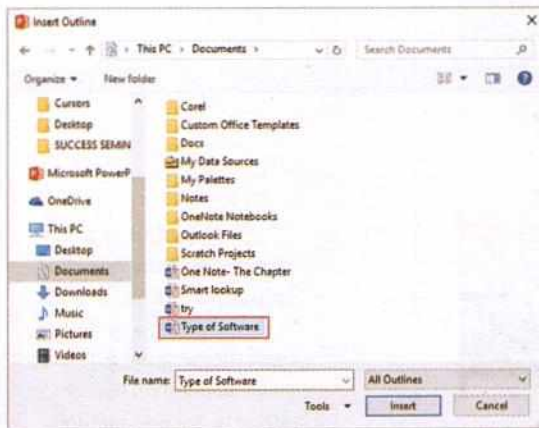
Figure 3.10: Insert Outline Dialog Box

➤ Select "Types of Software" and apply **Heading 1** from **Styles** group on the **Home** tab.

➤ Select "Microsoft Word" and choose **Heading 2**.

➤ Select "Microsoft Excel" and apply **Heading 3**.

➤ Similarly, apply **Heading 1** on "Corel Draw" and **Heading 2** on "Corel Photo-Paint", "Flash" and "Adobe Photoshop".

➤ Save the file with the name "Types of software" and exit from Microsoft Word.

➤ Start PowerPoint and open any existing presentation. Click on the **View** tab and select the **Slide Sorter** button.

➤ Now, click on the **New Slide** drop-down menu on the **Home** tab. Select the **Slides from Outline** option.

➤ The **Insert Outline** dialog box will appear. Browse the location of the Word file–"Types of software".

➤ Select the file and click on the **Open button**.

➤ Observe that two new slides will get inserted and display the text in a style, which you have applied.
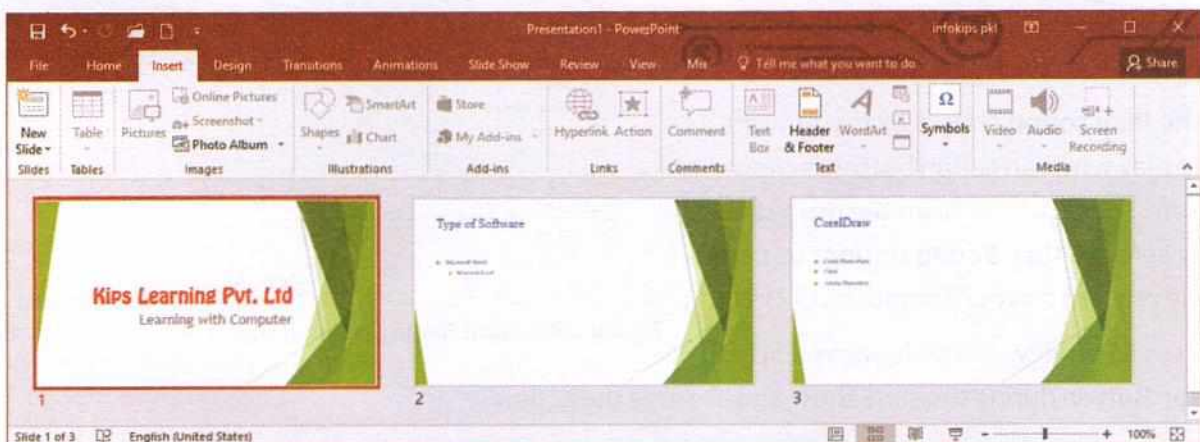

Figure 3.11: Importing Data from Microsoft Word to Microsoft PowerPoint

In PowerPoint 2013, you can apply transition effects and animation using the **TRANSITIONS** and **ANIMATIONS** tab in the same way as you do in PowerPoint 2016.

SHARING A PRESENTATION ONLINE

> Open a presentation that you want to share, and click on the **Share** button [ₐ Share] present on the top-right corner of the ribbon.

> PowerPoint will prompt the option **Save to Cloud** if you have not saved your presentation yet. Choose the location **OneDrive - Personal** ☁ to save your presentation.

Figure 3.12: Saving a file on Cloud

Figure 3.13: Selecting the Location-OneDrive-Personal

> Once your presentation is saved to the shared location, click on the **Share with People** option from the **Share** window.

> The **Share** task pane will appear in the presentation window. In the text field under **Invite people**, enter the email address of the person you would like to share with or select the email address from the Address book if the contact is already saved.

> Select the option **Can edit** if you want the other person to work on the presentation simultaneously, otherwise select **Can view** option, below the **Invite people** list. Now, click on the **Share** button.
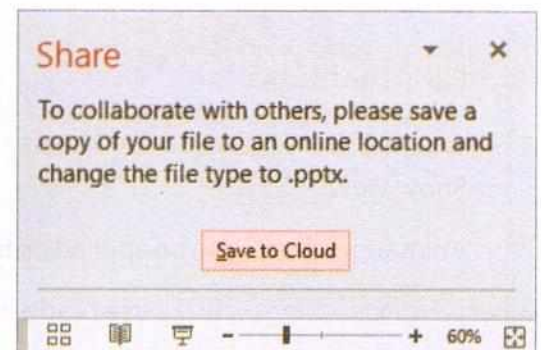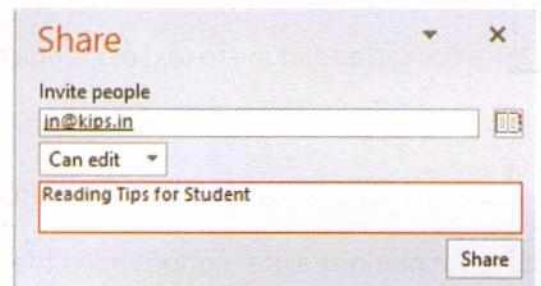

Figure 3.14: Inviting People

RECAP

> The ability to move objects, like text, graphics, charts, logos etc., on the slide is called Animation.

> Transition effects appear when one slide changes to other during Slide Show view.

> Music or sound effects can add a completely new dimension to any presentation. You can add sound in the form of background music or special effects to give importance to specific content.

> Video clips add liveliness to the presentation. PowerPoint allows you to insert a video onto a slide and play it during presentation.

> Action buttons are built-in button shapes that can be added to a presentation and set to link to another slide, play a sound, or perform some other action.

> PowerPoint has the facility to import data from other applications, like Word, Excel, etc., and use it in the presentation.

SECTION - A

A. Fill in the blanks.

1. .... are the special effects that you see when one slide changes to another in Slide Show View.

2. Animation effects can be applied on both .... and .... on a slide.

3. .... is a ready-made button for defining hyperlink on a slide.

4. It is essential to connect a .... to the computer while recording your sound.

5. .... button is present on the Start Slide Show group.

6. .... checkbox is used to continuously play a sound clip.

HINTS
- Action Button
- Objects
- Microphone
- Text
- Transitions
- Loop until Stopped
- From Beginning

B. State True or False.

1. Action Buttons can be used to link any other application to the current slide.

2. You can add sound to text or graphics in a presentation.

3. Video clips can be added to a slide by selecting the Home tab.

4. You cannot add more than one animation to the same object.

5. Animation Painter option copies the animation from one object and applies it to another.

6. Audio command is present on the View tab.

7. The speaker icon on a slide cannot be moved or resized.

C. Application-based questions.

1. Kabir's teacher has asked him to create a presentation, in which every slide is linked to its succeeding slide. Which feature should he use to accomplish the task?

....

2. Priya has made a presentation on 'Child Labour—A Curse' with twenty slides in it. She wants to import some data from a Microsoft Word file. How can she do it?

....

A. Multiple-choice questions.

1. Which shortcut key is used to make a duplicate of the slide?

   a. Ctrl + D   b. Ctrl + M   c. Ctrl + G

2. .... effects can be added to objects on a slide.

   a. Animation   b. Transition   c. Sound

3. The recorded sound files are saved with extension ....

   a. .midi   b. .wma   c. .wav

4. Which symbol indicates the type of effect used for text and objects in a slide?

   a. ⭐   b. (%)   c. (?)

B. Answer the following questions.

1. What do you understand by Animation? How is it helpful in a presentation?

   ....

   ....

   ....

   ....

2. What do you mean by Transition?

   ....

   ....

   ....

3. How will you insert your own sound in a presentation?

   ....

   ....

   ....

   ....

4. What is an Action Button? Why is it used it in a slide?

   ....

   ....

   ....

> Open **PowerPoint 2016** application.

> Prepare your slide as shown in the Figure 1.

> Insert a new slide, i.e., 'Title and Content' slide.

> Type the text as shown in the Figure 2.

> Save your presentation with the name, 'Keys To Success'. Move to the first slide by using the **Page Up** key.

> Apply the required design by choosing **Theme** from the **Design** tab.

Figure 1

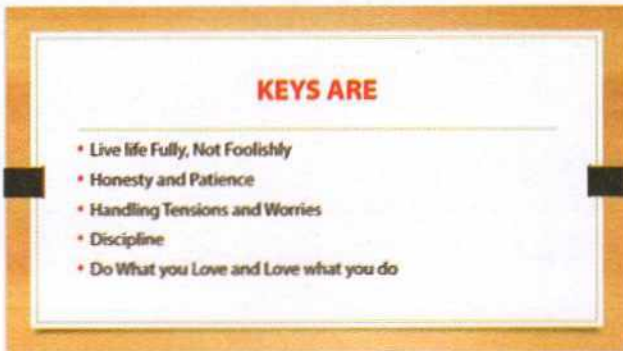> Apply the formatting effects, like Font, Font Size, Font Color, etc., to the text.

Figure 2

> Click on the **Transitions** tab and go to the **Transition to This Slide** group. Choose the **Peel Off** effect from the displayed choices.

> In the **Timing** group, deselect the **On Mouse Click** checkbox. Click on the **After** checkbox and specify "00.05.00" seconds in the box.

> Move to the next slide using the **Page Down** key. Apply **Dissolve** effect and set its time duration for "00.05.00" seconds.

> Click on the **Animations** tab > **Add Animation** option.

> Select the **More Emphasis Effects** option from the drop-down list.

> The **Add Emphasis Effect** dialog box appears. In the **Moderate** section, select **Color Pulse** option. Click **OK**.

> Now click the **Preview** button in the **Preview** group on the **Animations** tab to view the effect.

> Open Word 2016 and type the data given in the **Outline** view.

> Follow the heading styles according to the steps given in the chapter under the heading, "Importing Data From Word".

> Save the file by specifying the name 'Employee Details' and exit from the **Word** application.
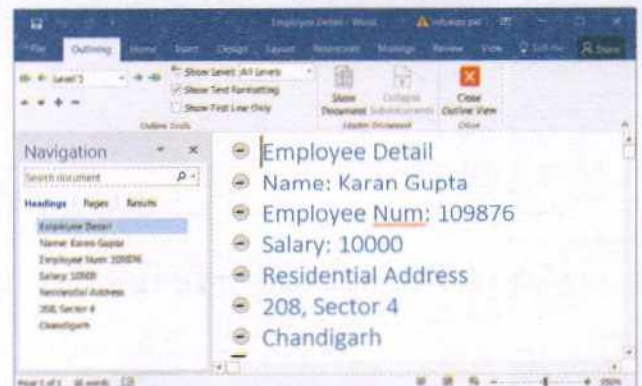
Figure 3

- Switch back to PowerPoint and open the existing presentation. Click on the **View > Slide Sorter** button. Click on the **New Slide** drop-down menu.

- Browse the Word file and click on **Insert**. The new slides get inserted and display the text in a style which is being applied.

- Save the presentation once again. View the presentation in **Slide Show** mode and observe the effects.

- Start the **PowerPoint 2016** application and open the presentation, 'Keys To Success'.

- Insert a new **Title Slide** by clicking on the **New Slide** button. Type the contents as shown in the given image.

- Select the word, 'GOALS' and change the Font to Cooper Black, Font Size - 60 and Font Color - Red.

- Similarly, change the formatting effects of the paragraph.

- Select the desired animation from the **Animations** tab.

- Now, insert an **Action Button** on the slide and link it with the **Previous Slide**.

- Insert sound clip from a file into your slide by selecting the **Insert > Audio > Audio on My PC**.

- Select the required sound from the **Insert Audio** dialog box and click on **Insert**. Click on the **Play/Pause** button to listen to the audio clip.

- Now, insert a new blank slide in your presentation and insert a video clip on the slide.

- Save the presentation and press **F5** to run the presentation.

GOALS

✓ To achieve happiness, we should make certain that we are never without an important goal.

✓ The world makes way for the man who knows where he is going.

Ralph Emerson

GROUP DISCUSSION   For Concept Clarity

Conduct a group discussion on the topic:
Difference between Animation and Transition Effects

PROJECT WORK   Using Creativity

Make a presentation of twenty slides on the topic: **Diversity in India**. This presentation should depict the history, culture, festivals, food, languages, etc., of our country. Apply all the formatting effects you have learnt. Apply beautiful themes to your slides. Add different transition and animation effects to your presentation. Make use of Action Buttons wherever possible.

MICROSOFT EXCEL 2016

LEARNING IN THIS CHAPTER

- Selecting cells
- Entering numbers as Text/Date and Time
- Changing cell contents, Using Undo and Redo features
- Inserting and deleting cells, columns/rows
- Copying and moving data
- Using Auto Fill and Flash Fill feature

In the previous class, you were introduced to one of the most popular spreadsheet software, i.e., Excel 2016. It is widely used to process complicated mathematical calculations and also allows you to store, organise, and analyse the data. You also learnt about its basic features, like how to enter data, perform calculations, save the workbook, etc.

In this chapter, we will discuss the various ways to select and enter data, modify the cell contents, insert or delete cells/columns/rows using Auto Fill and Flash Fill feature in MS Excel 2016.

❯ SELECTING CELLS

We often need to select a group of cells to perform various operations, such as copying, moving, inserting, or deleting. Selection can be made in any of the following ways:

To Select	Action
A row/column	Click the row/column heading
Entire worksheet	Press **Ctrl+A** or click the **Select All** button located on the top of the first row heading
Adjacent rows/ columns	Select the first row/column, then hold down the **Shift** key while you select the last row/column
Non adjacent rows/ columns	Click the row/column, then hold down the **Ctrl** key while you select the other rows/columns for selection.

❯ ENTERING NUMBERS AS TEXT

If a number is entered in the format, such as **01481**, Excel will drop the leading '0'. To preserve the leading 0, required in case of telephone area codes, roll number, etc, type an **apostrophe** before the number, like this : **'01481**.

The data is now treated as text and displayed in the same format as it has been entered.

Typically, formulae will treat the entry as a 0 and functions will ignore it.
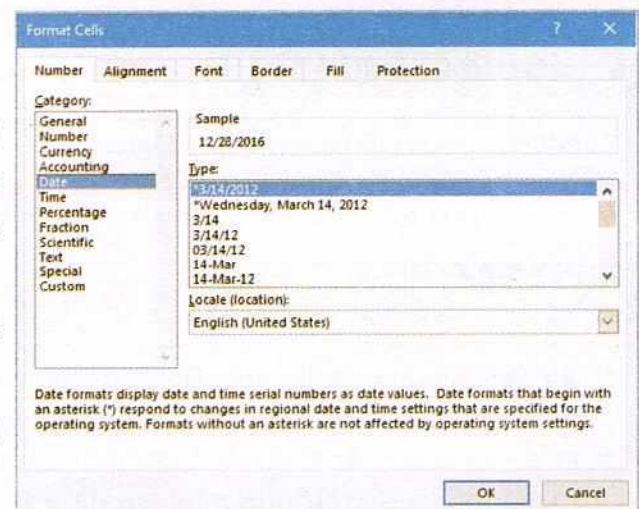
Figure 4.1: Format Cells Dialog Box

ENTERING DATE AND TIME

Select the cell and type the date and time. You can separate the date elements with a **slash (/)** or a **hypen (-)** or use a format, such as 11 October 2019. Excel recognises and supports a variety of date formats.

To display the entered date in a different format, select the cell containing the date. Click on the **Format** drop-down button in the **Cells** group on the **Home** tab and select the **Format Cells** option. In the **Format Cells** dialog box, choose any desired format of date by clicking on the **Date** option in the **Category** list on the **Number** tab. Similarly, you can choose different time format by clicking on the **Time** option in the **Category** list.

CHANGING CELL CONTENTS

The characters and numbers typed in a worksheet can be seen both in a cell as well as on the Formula Bar. Enter the contents and press either the **Enter** key or **Enter** button on the Formula Bar to accept the entry.

When you type in the new data in the cell, the two buttons **Cancel** ☒ and **Enter** ☑ present on the left of the Formula Bar become active. Cell contents can be modified in two ways:

➤ Replacing cell contents

➤ Using Edit mode

REPLACING CELL CONTENTS

➤ You can edit the cell contents directly and replace them with a new entry.

➤ Open a new worksheet and type in the data as shown in Figure 4.2.

➤ Select the cell for example **D6**, whose content has to be changed.

➤ Now, type **65** in that cell and press the Enter key.

➤ Note that the previous value **56** is replaced with **65**.

➤ Similarly, try to change the contents of the other cells.

USING EDIT MODE

➤ Select the cell **D6**. Double-click on the cell.

➤ The insertion point will blink within the cell.
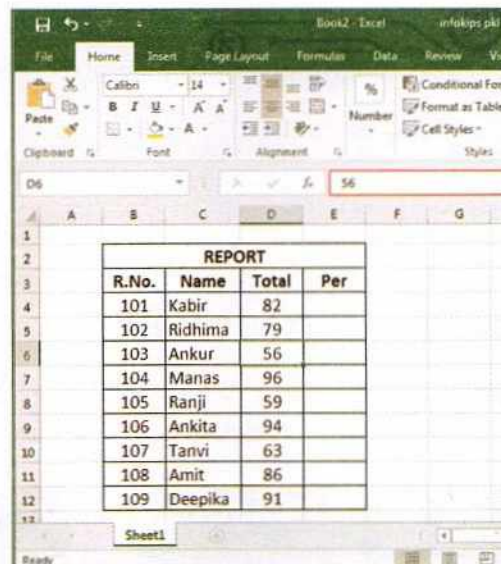
Figure 4.2: Replacing the Cell Contents

Figure 4.3: Editing the Cell Contents

> Note that the **Edit** mode is indicated on the left side of the **Status bar**. Position the pointer at the desired place and change the contents.

> Press the **Enter** key. The changes will be entered in the current cell.

> Note that the **Edit** mode indicator changes to **Ready** mode.

We can also edit the cell contents in the following ways:

> Select the cell and then click on the Formula Bar. Move the pointer to the position where you want to insert characters. Now, make the required modifications in the Formula Bar.

> Turn on the **Overtype** mode by double-clicking the cell. When Overtype mode is turned on, the cursor changes to a blinking bar and the character to the right of the blinking bar gets highlighted. Press the **Insert** key from the keyboard. Start typing in the cell. The existing characters will get replaced with the new characters you type in.

> **NOTE**
> You can change the cell contents by pressing F2 key after selecting the cell. The cursor will blink at the end of the cell content.

⋙ USING UNDO AND REDO FEATURE

> After making modifications in a cell, you may wish to cancel the changes and retrieve the previous data. To undo the last action(s) performed, use the **Undo** button ↺ on the **Quick Access Toolbar**.

> The **Redo** command is used to quickly repeat the last action(s) that you have undone using **Undo** command. To do so, click on the **Redo** button ↻ on the **Quick Access Toolbar**.
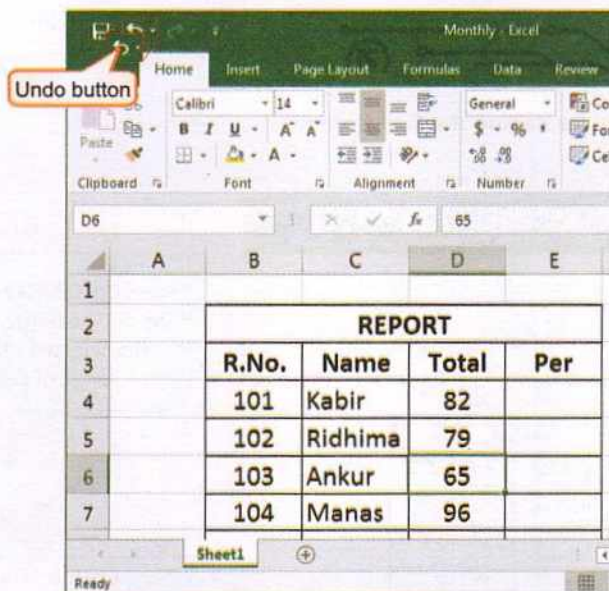
Figure 4.4: Using Undo Button
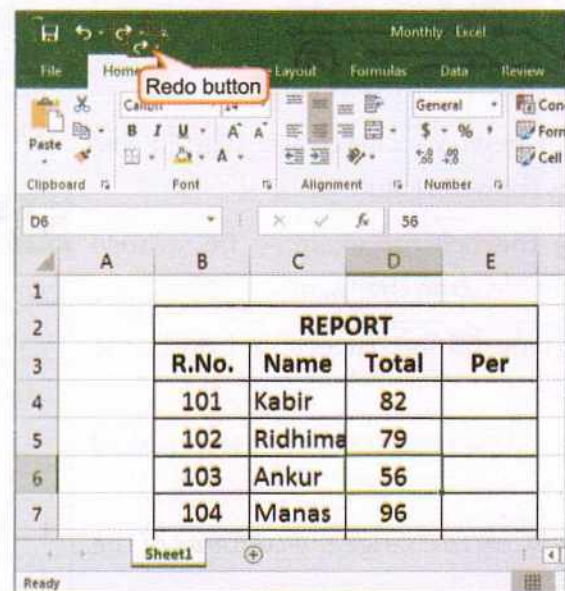
Figure 4.5: Using Redo Button

Let's Know More

> To clear the contents of the cell, select the cell. Click on the **Clear** button in the **Editing** group on the **Home** tab. Select **Clear Contents** option.
> You can also clear the contents of the cells by selecting the content and then pressing the **Delete** key.

> You can use the shortcut keys **Ctrl+Z** for **Undo** and **Ctrl+Y** for **Redo** actions.
> Some actions cannot be undone, such as clicking any command on the **File** tab menu. If the command or the action cannot be undone, the **Undo** button changes into **Can't Undo**.
> Some actions, such as using a function in a cell cannot be repeated. If the command or action cannot be repeated, the **Redo** button changes into **Can't Repeat**.

INSERTING CELLS, COLUMNS AND ROWS

At times, while entering data, you may miss out certain enteries. In such situations, you may have to insert some cells, columns, or rows in the worksheet to accommodate the new data.

Let us learn how it can be done.

INSERTING BLANK CELLS

There are two ways to insert blank cells.

> Select the range of cells where you want to insert the blank cells. You should select the same number of cells as you want to insert in the spreadsheet.

Figure 4.6: Selecting Insert Cells option

Figure 4.7: Insert Dialog Box

Shift cells right: Moves the selected cell(s) towards right.
Shift cells down: Moves the selected cell(s) down by one row.
Entire row: Moves the complete row down by one row.
Entire column: Moves the entire column towards right.

Quick View

The key combination **Ctrl + −** displays the **Delete** dialog box to delete the selected cells.

Quick View

You can minimise a workbook window to an icon by pressing **Ctrl + F9** key combination. **Ctrl + F10** maximises or restores the selected workbook window.

> Now, right-click on the range and select the Insert option.   Or

Select the **Insert** button in the **Cells** group on the **Home** tab. Click on the **Insert Cells** option from the drop-down list.

> In both the cases, you will get the **Insert** dialog box. There are four different options to choose within the dialog box as displayed in Figure 4.7. Select the desired option and click on **OK**.

INSERTING A COLUMN/ROW

> Select the column or cell to the left of which a new column is to be inserted. Here, we have selected column 'E'.

Let's Know More

To insert a blank column/row, right click on the cell and select the **Insert** option from the pop-up menu and select the desired option from the Insert dialog box.

➤ Click on the drop-down arrow of the **Insert** button in the **Cells** group on the **Home** tab and choose the **Insert Sheet Columns** option. Excel inserts a blank column to the left of column 'E' and shifts the entries of column 'E' to 'F'.
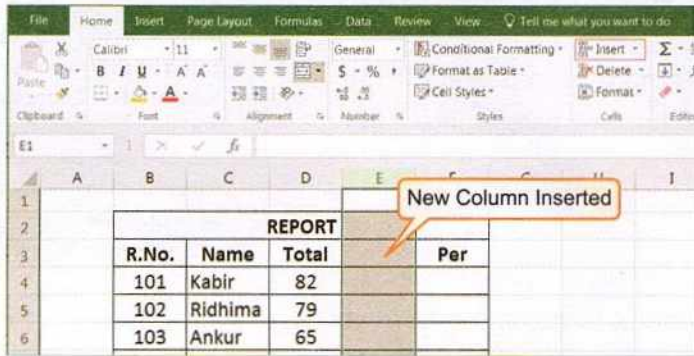

Figure 4.8: **Inserting a Column**

Figure 4.9: **Inserting a Row**

NOTE
You can insert a row in the same way as you insert a column. Select the row or a cell above which a new row is to be inserted and choose **Insert Sheet Rows** from the options of **Insert** drop-down menu.

➤ DELETING CELLS, COLUMNS, AND ROWS

DELETING CELLS

➤ Select the range of cells to be deleted.

➤ On the **Home** tab, click on the drop-down arrow of the **Delete** button and select the **Delete Cells** option.

➤ The Delete dialog box appears displaying four options. Choose the appropriate option and observe the change.

DELETING COLUMNS/ROWS

➤ Select the column to be deleted by clicking on its header.

➤ Click on the **Delete** drop-down menu in the **Cells** group
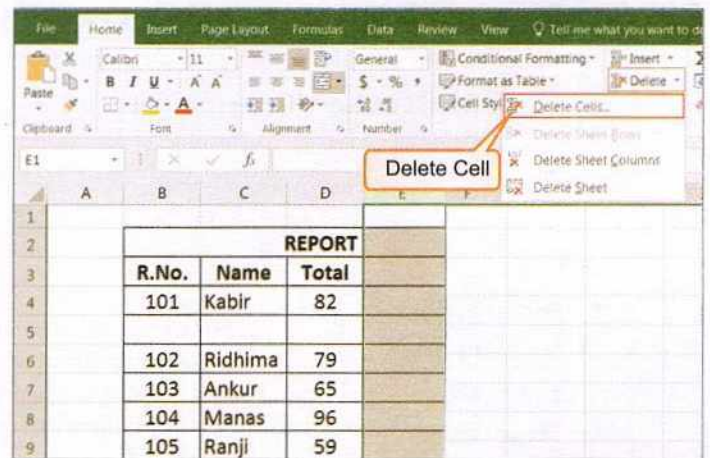
Figure 4.10: **Deleting Cells**

on the **Home** tab and select the **Delete Sheet Columns** option. Or

Right-click on the header of the selected column and choose **Delete** option.

NOTE
You can delete a row in the same way as you delete a column, i.e., by clicking on the row header and choosing **Delete Sheet Rows** from the options of **Delete** drop-down button. Or

Right-click on the row header and choose the **Delete** option.
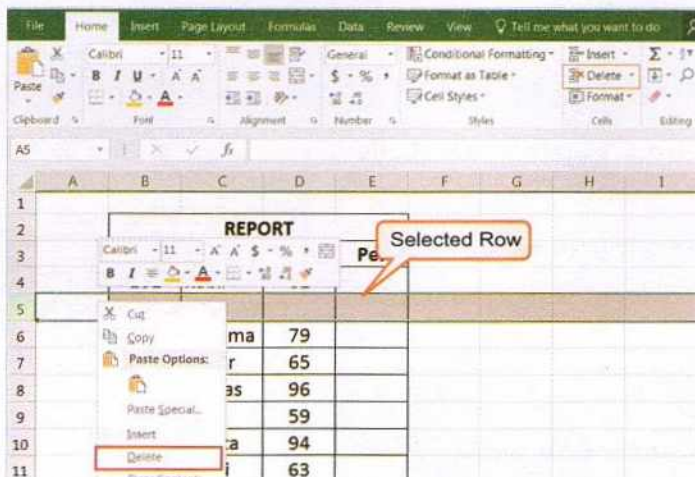
Figure 4.11: **Selecting Row to be Deleted**

> ➤ To insert multiple columns/rows/cells, select the same number of columns/rows/cells that you want to insert.
> ➤ To insert non-adjacent columns, hold down the **Ctrl** key while you select non-adjacent columns.

CHANGING ROW HEIGHT AND COLUMN WIDTH

In Excel, you can adjust the row height and column width of the worksheet as per the requirement. The default value for row height and column width is 15 points and 8.43 points, respectively.

TO CHANGE THE ROW HEIGHT

➤ Select the row.

➤ Click on the drop-down arrow of the **Format** button in the **Cells** group on the **Home tab**.

➤ Click on the **Row Height** option.

➤ The **Row Height** dialog box appears. Enter the desired value and click **OK**.

➤ The change will be reflected on the selected row.
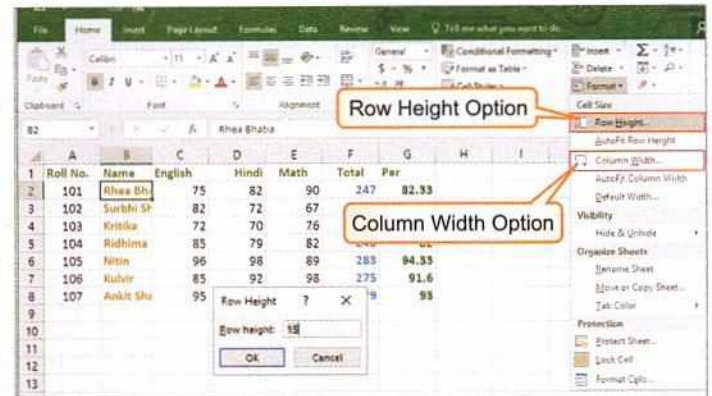
Figure 4.12: **Changing Row Height and Column Width**

TO CHANGE THE COLUMN WIDTH

➤ Select the column.

➤ On the **Home** tab, click on the drop-down arrow of the **Format** button. From the displayed list of options, click on **Column Width**.

➤ The **Column Width** dialog box appears. Enter the desired value and click **OK**. Observe the change on the selected column.
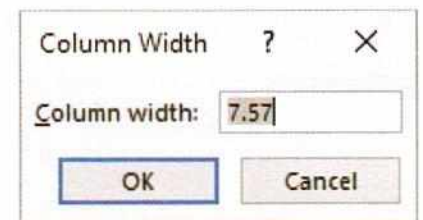
COPYING AND MOVING DATA

Copying refers to duplicating data, i.e., text, numbers, formulae, either in the same worksheet or a different one. Moving refers to changing the position of the data either in the same worksheet or different one. The moved or copied data is stored temporarily in a location in computer memory called **Clipboard**. To move or copy data, use the Cut, Copy, and Paste commands.

COPYING AND PASTING DATA

➤ Select the cell or a range of cells that you want to copy. Let us say **B4:D4**.

➤ Click on the **Copy** button in the **Clipboard** group. The dashed line will appear around the selected cells.

➤ Select the destination cell, let us say **F6** and click on the **Paste** button in the **Clipboard** group. The text will be copied to the new location.

Figure 4.13: **Copying the Range of Cells**

Learning Computers with **KiPs** 45

➤ If you want to paste the same data repeatedly, you need to click on the **Paste** button in different cells.

MOVING DATA AROUND

Sometimes, you find that the placement of data is not appropriate. You need not delete or retype it. Excel allows you to move data around the worksheet.

Using Drag and Drop Method

➤ Select a cell or range of cells. Position the mouse pointer at the edge of the selected cells.

➤ Notice that the pointer changes from a white cross symbol to a move pointer symbol ✛

➤ Drag the selected cell or a range of cells to a new destination and release the mouse button. The data will be moved to a new location.
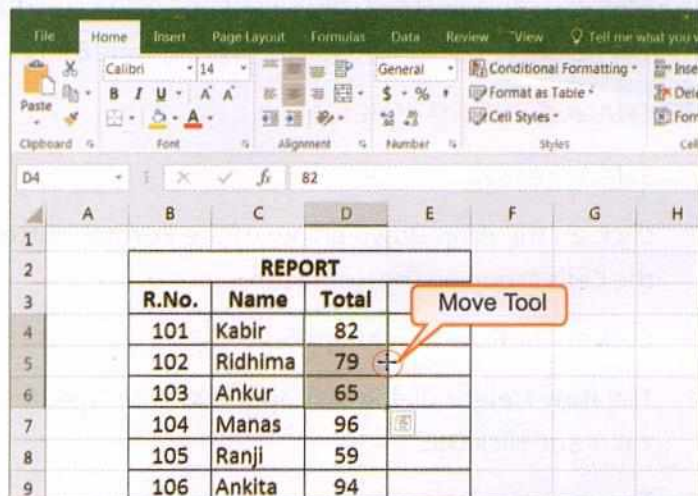
Figure 4.14: Using Drag and Drop Method

➤ We can also move the data by using the Shortcut menu. Right-click on the cell to open Shortcut menu and select the **Cut** command. Now, select the destination cell, right-click on it and choose **Paste** option.

➤ The shortcut keys to perform **Cut, Copy,** and **Paste** operations are **Ctrl+X, Ctrl+C,** and **Ctrl+V,** respectively.

➤ You can also move the data by selecting the **Cut** 📋 and **Paste** 📋 button in the **Clipboard** group.

⟩ USING AUTO FILL AND FLASH FILL FEATURE

Excel provides two wonderful features, Auto Fill and Flash Fill, to enter data quickly in a worksheet, instead of entering it manually.

AUTO FILL

The **Auto Fill** is the easiest method to fill data automatically in the worksheet cells.

➤ Type 'January' in cell **B1.**

➤ Position the pointer at the lower right corner of the cell.

➤ The mouse pointer changes into a black "+" cross symbol.

➤ Hold down the left mouse button and drag the fill handle up to cell **B5.** Release the button.

➤ The months **February** to **May** would appear in the cells **B2** to **B5.**
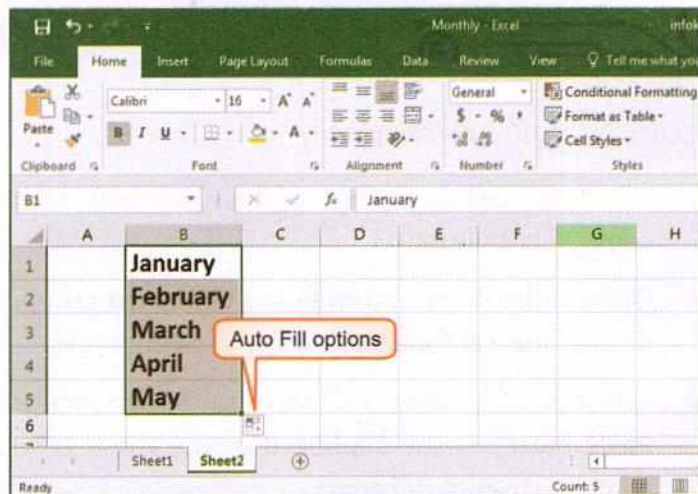
Figure 4.15: Using Auto Fill Feature

FLASH FILL

Flash Fill, introduced in Excel 2013, is a time-saving feature, which identifies the data fill pattern that you use frequently in a worksheet and then fills the remaining series, accordingly. Let us try it practically.

> Make two columns, **NAMES** and **INITIALS** in the Excel sheet.

> Fill the data in **NAMES** column as given in figure 4.16.

> The **INITIALS** column should have data that is a combination of the first characters of the First name and Last name, e.g., RK for Ravi Kumar.

> Type RK in the **INITIALS** column and press **Enter** key.

> Click on the **Fill** drop-down arrow present on the **Home** tab in the **Editing** group and select the **Flash Fill** option. You can also use the shortcut key **Ctrl + E.**

> The initials of rest of the entries will be automatically added in the remaining cells of the INITIALS column.
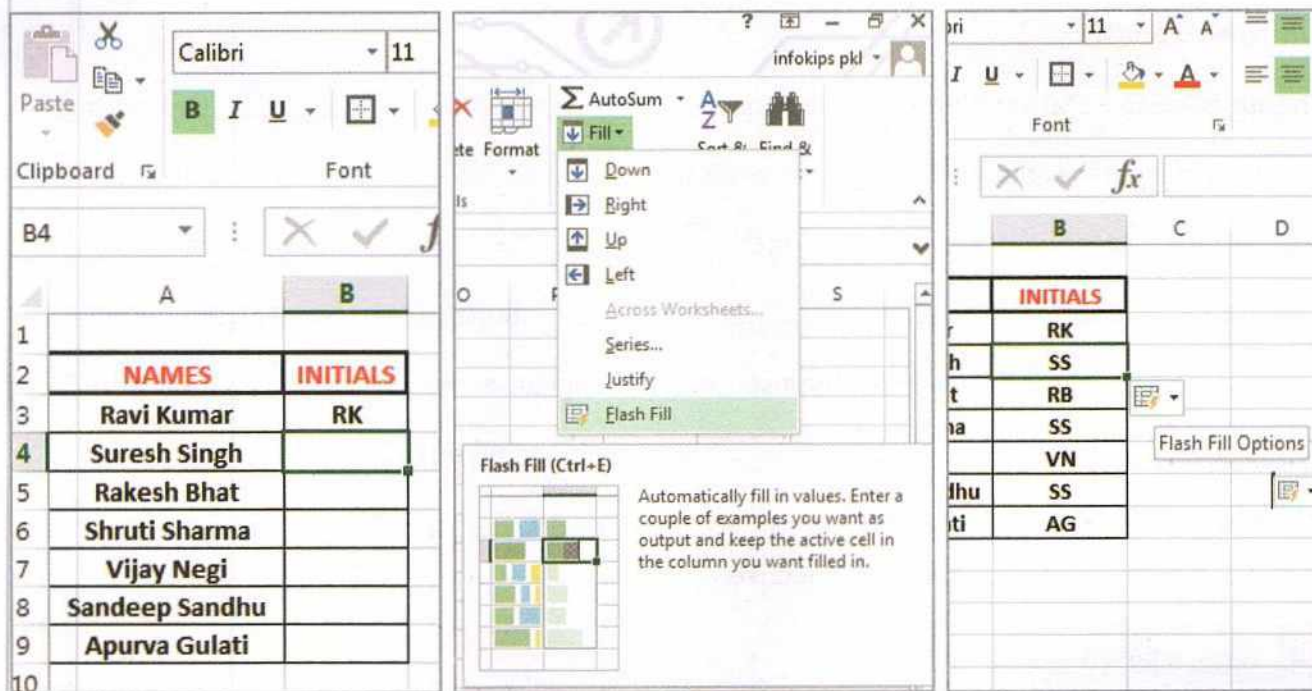
Figure 4.16: Using Flash Fill

Excel 2013

All the above explained features, like Inserting and Deleting cells, rows and columns, Moving and Copying the data, Auto Fill, and Flash Fill work in the same manner in Excel 2013, as they work in Excel 2016.

RECAP

> To make the entry of digits as text, you have to begin the entry with an apostrophe (').
> The appearance of Date and Time on a worksheet depends on the date format applied to the cell.
> You can edit the cell contents directly and replace them with a new entry.
> The Overtype mode can be turned on by double-clicking the cell and pressing the Insert key.
> The cell contents can also be modified by using F2 key.
> The shortcut keys to perform Cut, Copy, and Paste operations are Ctrl + X, Ctrl+C, and Ctrl + V, respectively.
> Auto Fill is the easiest method to fill data in cells automatically.
> Flash Fill is a time-saving feature, which identifies the data fill pattern that you use frequently in a worksheet and then fills the remaining series accordingly.

BRAIN DEVELOPER

SECTION - A

A. Fill in the blanks.

1. The appearance of Date and Time on a worksheet depends on the .... applied to the cell.

2. To repeat most of the commands or actions, press the .... function key.

3. You can minimise the worksheet by pressing the .... key combination.

4. The .... and .... buttons are present on the Formula Bar.

5. When you use F2 key for modification, the insertion point appears at the .... of the cell content.

6. To copy the data, the .... key combination can be used.

7. The default value for column width and row height in a worksheet are .... and .... points, respectively.

HINTS	• Enter	• Ctrl + C	• 15	• F4	• Format
	• Ctrl + F9	• 8.43	• End	• Cancel	

B. State True or False.

1. Copying refers to placing data from one place to another.

2. Ctrl + A key combination is used to select a row.

3. Auto Fill is a feature to copy data simply by dragging the fill handle to the cells to be filled in.

4. To turn on Overtype mode, press the Insert key from the keyboard. ☐

5. Copy, Cut, and Paste buttons are present in the Font group. ☐

6. To insert a new column in Excel sheet, select Add button on the Insert tab. ☐

7. The shortcut key for Flash Fill is Shift +E. ☐

C. Application-based questions.

1. Ritu has created progress reports of the students of her class in Excel 2016. But she has forgot to add an important column in the table. Suggest the option that will help her insert a new column without disturbing the existing table settings.

   ....

2. Surabhi was assigned the task to write a series of numbers from 1....10 without using keyboard. Help her complete the assignment.

   ....

SECTION - B

A. Multiple-choice questions.

1. The .... function key is used to change the cell contents of a selected cell.

   a. F5   b. F4   c. F2

2. Ctrl+ V key combination is used to .... the cell contents.

   a. Undo   b. Paste   c. Cut

3. When you finish editing within a cell, the Excel returns to ....mode.

   a. Edit   b. Finish   c. Ready

4. To select a range, hold down the .... key and click on adjacent cells.

   a. Shift   b. Ctrl   c. Alt

5. .... is the shortcut key to undo the last action.

   a. Ctrl+Z   b. Ctrl+Y   c. Ctrl+X

6. The .... key combination can be used to apply outline border around the selected cell.

   a. Ctrl + Shift + F9   b. Ctrl + Shift + 7   c. Ctrl + G

7. The... key combination is used to select an entire worksheet.

   a. Ctrl + A   b. Ctrl + C   c. Shift + A

B.   Answer the following questions.

1.   How will you make modification in the cell contents using Edit mode?

2.   Explain the two methods to insert a column in a worksheet.

3.   What is the function of Undo and Redo commands?

4.   How will you select a range of non-adjacent cells in a worksheet?

5.   How will you move data in a worksheet using the dragging method?

6.   Explain any two methods for copying data.

7.   What is Auto Fill feature? How can it be applied?

8. How can you change the row height and column width in a worksheet?

....

....

....

9. What is Flash Fill? Explain with the help of an example.

....

....

....

C. You have been asked to plan a friend's birthday party. Create a spreadsheet to make an estimate of the expenditure.

	A	B	C	D
1	PARTY EXPENSE			
2	Number of guests	75		
3	Item	Unit	Cost	Total Cost
4	Buffet	75	120	
5	Hall decoration			500
6	Return gifts	69	20	
7	Disco stage			1000
8	Hall charges	1	5000	
9			Total Expense	

1. State the formula that would be used in the following cells:

   D4 ....

   D6 ....

   D9 ....

2. Write down the address of the cell that contains the Total number of guests.

   ....

3. Write down the cell address that contains the cost of the Hall charges.

   ....

4. Which mode is displayed on the Status bar when you make changes in a cell?

   ....

ACTIVITY SECTION

➤ Open Microsoft Excel. Enter the given data in a worksheet.

	A	B	C	D
1	Employees information			
2				
3	Name	Designation	Department	Salary
4	Asna	Manager	Marketing	25000
5	Arshia	Sales Executive	Marketing	15000
6	Kiran	Store Keeper	Production	10000
7	Sonali	Worker	Marketing	8000
8	Mithu	Asst. Manager	Marketing	18000
9	Rachel	Worker	Production	8000
10	Chandan	Typist	Computer	9000
11	Jai	Comp. Operator	Computer	9000
12	Arica	Sales Executive	Marketing	12000
13	Payal	Sales Executive	Marketing	12000

➤ Save the assignment using the **Save** button on the **Quick Access Toolbar**. Specify a file name for it.

➤ Insert a row after row 12 and enter the following data: Karan, Managing Director, Marketing, and 50000 in the newly inserted row.

➤ Insert a column before the 'Salary' field and enter the heading - 'Phone No'. Enter the phone numbers of the employees in this newly added column.

➤ Activate the cell **A6** and change its content to 'Rohit'.

➤ Change the cell content to 'Production' in cell **C7** by using Edit mode.

➤ Copy the contents of cell **B11** and paste it in cell **B8** using **Ctrl+C** and **Ctrl+V** key combinations, respectively.

➤ Insert a column before column A. Type the heading 'Sr. No' in cell **A3**.

➤ Type 1 and 2 in cell **A4** and **A5**. Fill the rest of the entries using the **Auto Fill** feature.

➤ Save the file using **Ctrl + S** key combination.

Conduct group discussions on the given topics:

➤ **Various ways of Selecting Cells**

➤ **Different ways of Inserting and Deleting Columns and Rows**

You are a member of the cultural club of your school. Next week there is an Inter-House Declamation Contest, which has been categorised in two groups. Each house should have two participants in each group. The teacher has asked you to create the evaluation sheets for judges with the following fields:

	A	B	C	D	E	F	G	H	I	J	K
	NAME	INITIALS	HOUSE	INTRODUCTION (5)	CONTENTS (5)	PRONUNCIATION (5)	PAUSES (5)	CONFIDENCE (5)	MODULATION (5)	CLOSING (5)	TOTAL
5	Aman Raina	AR	Lotus								
6	Preeti Dogra	PD	Rose								
7	Anu Kaul	AK	Lily								
8	Rohit Mahajan	RM	Jasmine								
9	Sonal Gupta	SG	Rose								
10	Sheetal Sharma	SS	Jasmine								
11	Ritesh Verma	RV	Lotus								
12	Mohit Chawla	MC	Lily								

INTER HOUSE DECLAMATION CONTEST

> Prepare the sheet by applying the required formatting effects as shown in the image.

> Insert one more field, 'Body Language', between 'Pauses' and 'Confidence'.

> Assign 5 marks for the field 'Body Language'.

> Set the column width and row height to 15 points and 30 points, respectively.

> Calculate the 'Total' by adding up the marks of all the fields. (Use **Quick Analysis** Tool)

> Make use of **Flash Fill** to fill up the 'Initials' column.

To know more about Microsoft Excel, visit the site:

www.gcflearnfree.org/excel2016/1

FORMULAS AND FUNCTIONS

One of the important attributes of Excel is its ability to perform calculations using either formula or function. In this chapter, you will learn the basics of formulas and functions and how can they be used in different scenarios.

Formulas are the user-defined instructions to perform calculations, whereas, **functions** are the pre-defined or in-built formulas that come with Excel.

WORKING WITH FORMULAS

Formulas are used to perform calculations involving addition, subtraction, division, and multiplication. A formula establishes a relationship between two or more cells. It is an expression that can include cell addresses, numbers, arithmetic operators, and parenthesis. Using it, you can perform simple as well as complex calculations.

Formula must begin with equal to (=) symbol, followed by cell references and operators. It may contain a few or all the below-mentioned elements.

References : A cell or range of cells that you want to include in your calculation

Operators : Symbols (+,-,*,^,%,$,#, etc.) that specify the operation to be performed

Constants : Numbers or text values that do not change

Functions : Predefined formulas in Excel

ELEMENTS OF FORMULAS IN EXCEL
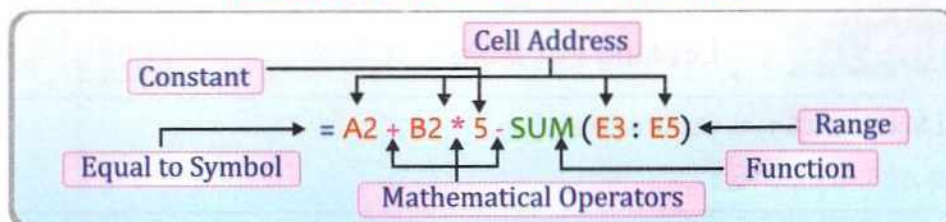
USING A BASIC FORMULA

Basic formula involves only one type of operator in it. Let us use it to calculate the sum of the numbers in **B4, B5, ... B9** and display the result in **B11**.

Follow the steps:

- Click on the cell **B11** (where you want to display the result) and type = sign.

- Click on the cell **B4**. A dashed border called marquee will appear around it. Its address will appear in the cell **B11**

and **Formula bar**. This method of clicking on the cell to add its reference to a formula is called **Pointing**. The Status bar will display the status of **Point**.

➤ Now, type the **+** symbol.

➤ Repeat the above steps till **B9** or type: **=B4+B5+B6+B7+B8+B9** in **B11**. Observe the different colour borders that appear around these cells.

➤ Press the Enter key. Cell **B11** will display the total of all the values from **B4** to **B9**.

Figure 5.1: Using Basic Formula

USING COMPOUND FORMULA

Compound formula is used when more than one operator is required to perform calculation. Let us use it to calculate the Simple Interest by using the formula 'P * R * T/100'. Enter the data as shown in Figure 5.2. Follow the given steps:

➤ Click on the cell **B6** and type **=**.

➤ Click on the cell **B2**. The cell address of **B2** appears in the cell **B6**.

➤ Again type the symbol ***** and click on the cell **B3**.

➤ Type the symbol ***** in **B6** and click on the cell **B4**. Now, type the symbol **'/'** followed by 100 in the cell **B6** and press the Enter key. The cell **B6** displays the calculated Simple Interest.

➤ Note that the result appears in the cell, but the actual formula is visible on the Formula bar.

Figure 5.2: Using Compound Formula

USING A RANGE IN FORMULA

You can assign multiple cells to a formula by creating a range. By using range you can save a lot of time. For example, if you want to calculate the sum of multiple columns or rows, it is always better to define a range.

➤ Type the data as shown in Figure 5.3. Click on the cell **B11** and type the formula **=SUM (B4:B9)**. Here, SUM is a built-in function of Excel that helps in adding up the numbers.

Figure 5.3: Using Range in Formula

➤ Press the **Enter** key. The sum value will be displayed in the cell **B11**.

➤ Similarly, you can calculate the sum in the cell **C11** by using the above-mentioned steps.

⟩ USING FORMULA ON TEXT

You can also perform addition on character and string data type. Except for addition, other operations, like subtraction, multiplication, division, etc., are not allowed on the string data type. The ampersand symbol (&) is used to perform addition. Addition of two or more text values is called **Concatenation**. Let us understand this with the help of an example:

➤ Enter any string type value in cells **A1** and **B1**, say **Kips** in **A1** and **India** in **B1**.

➤ Enter the formula = "Kips"&"India" in cell **C1** and press the Enter key.

➤ It will display **KipsIndia** in cell **C1**.

Figure 5.4: Using Formula on Text

> **NOTE**
>
> In the Formula bar, type the text within double quotes in order to create a text value. If you want to leave a blank space after each word, then leave a space before closing the double inverted commas.
> For example: " I "&" Love "&" Computer "
> I Love Computer

⟩ TYPES OF CELL REFERENCES

The cell address in a formula is known as the **cell reference**. With the help of references, you can find the values or data in a worksheet that you want to use in formula. There are three types of cell references:

RELATIVE REFERENCE

When you create a formula, references to a cell or ranges are usually based on the position relative to the cell. When you copy the formula to the other cells, the reference cell automatically gets changed. For example, if the formula in **A3** is =A1+A2 and you copy the formula from **A3** to **B3**, Excel automatically changes the reference to match the location of cells, i.e., =**B1+B2**. Let us learn it practically.

➤ Select the cell **B11**, in which formula =**SUM(B4:B9)** is written. Click on the **Copy** button 📋 present in the **Clipboard** group on the **Home** tab.

➤ Now, select **C11** and click on the **Paste** button 📋 .

➤ Observe that the cell reference in **C11** changes automatically from **B4:B9** to **C4:C9**.

Figure 5.5: Using Relative Reference

> **NOTE**
>
> You can also calculate the sum of the range by using the **Auto Fill** handle '+'. Select the cell **B11** and using the **Auto Fill** handle drag it to **C11**. The sum of the range **C4:C9** will be reflected in the cell **C11**.

ABSOLUTE REFERENCE

Absolute reference is used when we do not want to change the address of the cell while copying the formula to another cell. To use absolute reference in a formula, you need to add dollar ($) sign before the column and row number.

For example =$A$1+$A$2

Let us calculate the incentive amount at the rate of 10% on monthly sales.

➤ Type **10%** in cell **D1**.

➤ Now click on the cell **D4**.

➤ Type =**B4*$D$1** and press the Enter key.

➤ The cell **D4** displays the value **100**. The first cell address **B4** has no dollar sign, so it is relative reference and the second cell address is fully absolute. Therefore, when the data of the cell is copied, the first cell reference changes accordingly in the new location, but the second one remains the same i.e., **$D$1**.

➤ Now, copy the formula by dragging the mouse pointer to the rest of the cells.

Figure 5.6: Using Absolute Reference

MIXED REFERENCE

It is a combination of Relative and Absolute reference. In this type of reference, either the row or column has to remain fixed. **$A1 + A$2** is an example of Mixed Reference. Let us use this method to calculate the Actual Expenses:

➤ Type **50** in cell **D2**. Click on the cell **E4**.

➤ Type=**$C4-D$2**. Press the Enter key.

➤ You can further calculate the Actual Expenses for the other cells by dragging the mouse pointer to the desired range when it changes to the cross (+) symbol.

Figure 5.7: Using Mixed Reference

⊋ CIRCULAR REFERENCE

A circular reference occurs when a formula in a cell refers to its own cell value directly or indirectly.

For example, if you enter the formula =**A1+A2*3**

Figure 5.8: Using Circular Reference

in cell **A2**, you are making the formula to refer to its own cell value, which is not possible. A warning, as shown in the figure given below, will be displayed in such a case. As soon as you click on the **OK** button of the warning dialog box, 0 will be returned in the cell containing formula. The Status bar will also notify you that circular reference is found in the workbook and the address of that cell will be displayed on it.

Microsoft Excel

⚠️ There are one or more circular references where a formula refers to its own cell either directly or indirectly. This might cause them to calculate incorrectly.
Try removing or changing these references, or moving the formulas to different cells.

[OK]   [Help]
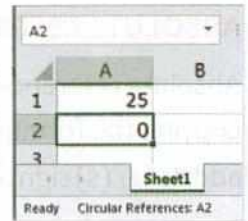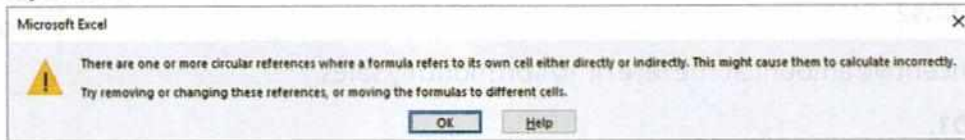
CELL REFERENCE OF ANOTHER WORKSHEET

You can use the cell reference of one worksheet in another worksheet. This can be done in two ways.

USING COPY-PASTE OPTION

➤ Click on the **New sheet** button ⊕ present to the right of the **Sheet1** tab at the bottom of the screen. A new worksheet with the name **Sheet2** will be added. Now, enter the data as shown in Figure 5.9.

➤ Click on the **Sheet1** tab. Now, click on cell **B11** where the 'SUM' function is used.

➤ Copy the formula using **Ctrl+C**.

➤ Click on the **Sheet2** tab. Click on the cell **B11**. Now, paste the formula using **Ctrl+V**. The cell will display the result of the formula, i.e., the summation of the cell values.

Figure 5.9: Using Copy and Paste Option

USING SHEET REFERENCE

In this method, we use sheet number, exclamation mark, and cell address to refer to a cell of a particular worksheet. For example, by writing **Sheet1! D4**, you are referring to the cell **D4** of **Sheet1**. Now, try to use this method to calculate the total salary.

Figure 5.10: Using Sheet Reference

➤ Click on the cell **C4** of **Sheet2**.

➤ Type **=B4+Sheet1!D4** in it and press Enter. This will add the 'Incentive Amount' present in the cell **D4** of **Sheet1** with the 'Salary' present in cell **B4** of **Sheet2**.

➤ You can further calculate the total salary for the other cells by dragging the mouse pointer to the rest of the cells when it changes to the cross symbol.

RENAMING A WORKSHEET

By default, the worksheets in a workbook are named as Sheet1, Sheet2, and so on. You can rename a worksheet in order to make it more relevant for the users/readers. Usually, a worksheet is named based on the type of data it is holding. For example, if a worksheet contains daily attendance, you can name it as Attendance. Let us do it practically.

- Right-click on the 'Sheet2' tab in the worksheet.

- A shortcut menu will appear. Click on the **Rename** option.

- The Sheet tab gets highlighted. Assign a new name for the sheet by typing on it, say, 'KIPS' and press Enter.

- Note that the name of the Sheet2 gets changed to 'KIPS'.
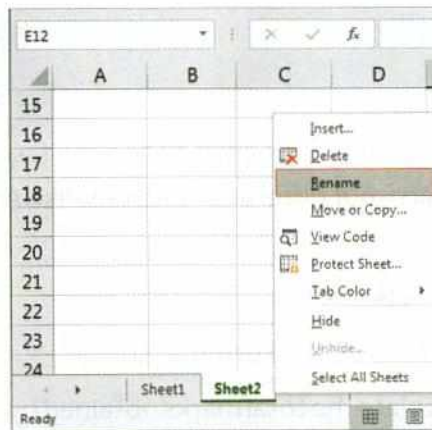
Figure 5.11: Renaming a Sheet Tab

CHANGING COLOUR OF A SHEET TAB

- Right-click on any Sheet tab and select **Tab Color** option from the shortcut menu.

- Select any colour from the displayed choices and observe the change.

Figure 5.12: Changing Sheet Colour

FUNCTIONS

Functions are the pre-designed formulas in Excel to perform both simple and complex calculations. Functions save time and eliminate the chance to write wrong formulas. They accept Arguments and return Values.

Arguments contain the information that you want to calculate. They are the input values to functions. The values are given within parenthesis. Arguments can be numbers, text, etc., and are enclosed within parenthesis.

Functions begin with the equal to (=) sign followed by the function name and then the list of arguments separated by comma within the parenthesis.

For example, =Function name(argument1, argument2...)
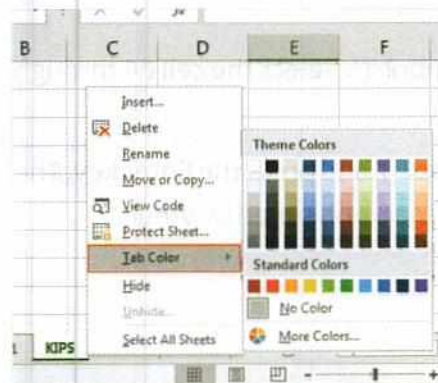
Figure 5.13: Applying Tab Color

RULES TO ENTER A FUNCTION

- All Excel functions must begin with = sign.

- Function name must be a valid Excel name. For example, SUM, AVERAGE.

- Function name must be followed by an opening and closing parenthesis.

- Arguments are enclosed in the parenthesis. For example, =SUM (A1:A5).
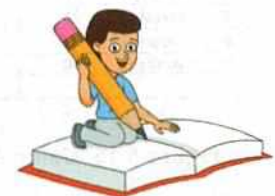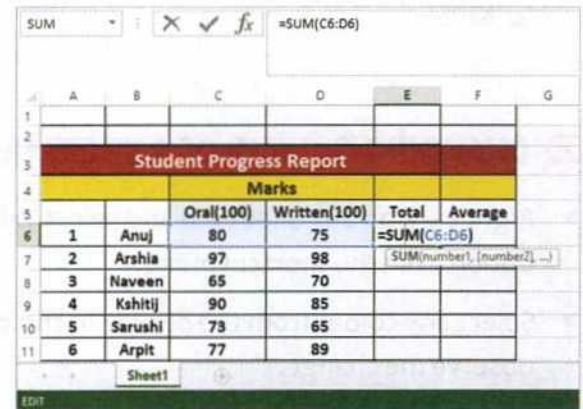
COMMON FUNCTIONS

AUTOSUM

The **AutoSum** option, besides being the common and the fastest way to find out the total of the given numbers in a range, can also be used to carry out different functions, like Average, Count, Max, Min, etc. You can find this option at two places.

➤ In the **Editing** group on the **Home** tab

➤ In the **Function Library** group on the **Formula** tab

Let us use this feature to calculate the total marks obtained by 'Anuj'.

➤ Click on the cell **E6** where you want to place the total marks.

➤ Click on the **AutoSum** option present in the **Editing** group on the **Home** tab.

➤ A dashed border appears around **C6** through **D6** and Excel automatically enters the formula (that uses the **SUM** function) in the cell **E6**. Now, press Enter. The cell **E6** will display the result.
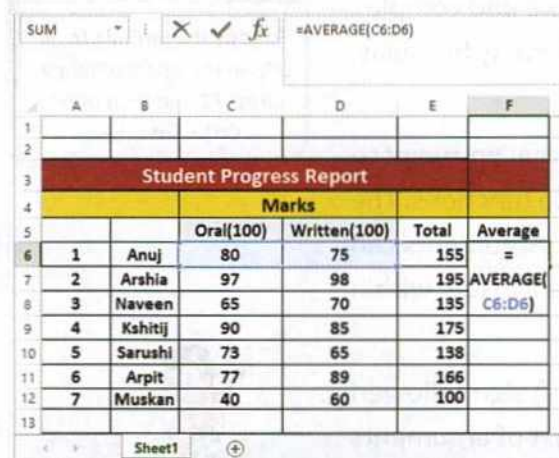
Figure 5.14: Using Sum Function

AVERAGE ( )

The **Average** function returns the average of the range values. The arguments can be a range of cells, simply numbers, or numbers along with cell reference(s). Using the worksheet shown in Figure 5.15, let us calculate the average of marks obtained by 'Anuj'.
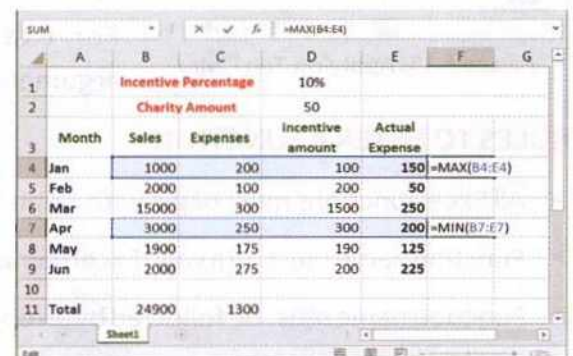
Figure 5.15: Using Average Function

➤ Click on the cell where you want to place the average of values, let us say **F6**.

➤ Type the equal to sign (=) followed by the name of the function, i.e, **AVERAGE**.

➤ Put the opening parenthesis symbol '('. Select the cell C6 through D6 to define the range of the cells.

➤ Put the closing parenthesis symbol ')' and press the Enter key. The cell **F6** will display the average of marks obtained by 'Anuj'.

MAX ( )

Max function is used to find the largest value in the given range.

➤ Click on the cell **F4** and type **=MAX(B4:E4)** and press the Enter key.

➤ The maximum value in the range **B4:E4** will be displayed in the cell **F4**.

Similarly, **Min()** and **Count()** function can be applied to a range of cells.

Figure 5.16: Using Max and Min Function

> We can also carry out the above functions using the **AutoSum** feature. To do so, select the cell wherein you want to display the output of the functions. Click on the drop-down arrow of the **AutoSum** option and choose the desired function from the displayed list.

> Another amazing way to perform quick calculation is by using the **Quick Analysis** Tool. It helps you to implement functions, such as Sum, Average, Count, etc. To use this tool:
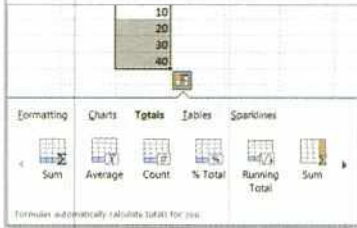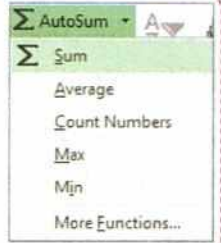
> > Select the range of cells on which you want to apply the function.

> > Click the **Quick Analysis** button present at the bottom-right corner of the selection.

> > Select **Totals** from the displayed list of tools and choose the desired function.

TODAY ()

The **Today** function is used to display the current date.

> Type **=TODAY()** in the cell and press the Enter key.

> The **TODAY()** function will display the current date in the selected cell.

Excel 2013

The above mentioned functions are also available in Excel 2013.

Similarly, you can insert the current day, month, and year in a cell.

To display the values in number form:

> For month: **=MONTH(TODAY())**   > For year: **=YEAR(TODAY())**   > For day: **=DAY(TODAY())**

To display the values in text form:

> For month: **=TEXT(TODAY(),"MMMM")**

> For day: **=TEXT(TODAY(),"DDDD")**

> For year: **=TEXT(TODAY(),"YYYY")**

S.No.	Functions	Purpose
1.	SUM(range)	Gives the sum of a range
2.	AVERAGE(range)	Finds the average of a range
3.	ODD(number)	Returns the number rounded up to the nearest odd integer
4.	INT(number)	Rounds a number to the nearest integer
5.	Product(range):	Multiplies the values in a range of cells
6.	ROUND(number, num_digit)	Rounds a number to the specified digits
7.	EXP(number)	Returns (natural logarithm) raised to the power of a number
8.	SQRT(number)	Returns a square root
9.	POWER(number, power)	Returns the result of a number raised to some power
10.	MOD(number, divisor)	Returns the remainder after a number is divided by the divisor

➤ FUNCTION LIBRARY

There are many functions defined in Excel and it is beyond the capacity of a person to remember the name and functionality of each one of them. To overcome it, Excel has clubbed all the functions in the **Function Library** group of

Formulas tab. Here, the worksheet functions are categorised by their functionality, like **Math and Trig, Text, Date & Time,** etc. You can click a category to browse its functions.

Let us discuss two common functions in the **Math & Trig** category : **LCM** and **GCD**.

LCM()

The **LCM** function returns the least common multiple of integers. The least common multiple is the smallest positive integer that is a multiple of all the numbers supplied as arguments. Let us use this function:

Figure 5.17: Using Math & Trig Function

➤ Open a new worksheet.

➤ Enter three integers in cells **A1, A2,** and **A3**.

➤ Now, select the cell **A4** where the LCM of these numbers will be displayed.
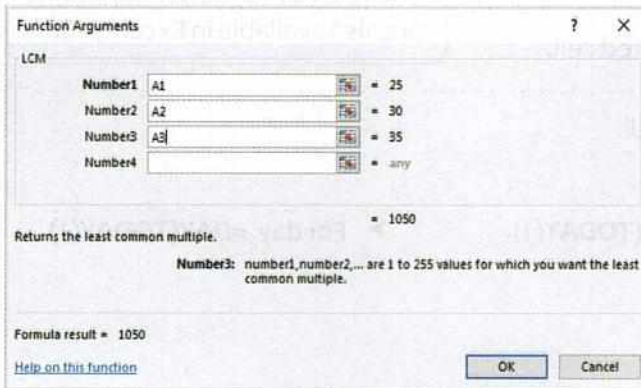
Figure 5.18: Calculating LCM of Three Numbers

➤ Click on the **Math & Trig** drop-down button in the **Function Library** on the **Formulas** tab and choose **LCM** from the displayed list of options.

➤ The **Function Arguments** dialog box appears. Type the cell addresses in the respective text boxes, i.e., A1, A2, A3 in the **Number1, Number2,** and **Number3** text boxes, respectively. Note that the result of the formula appears near the bottom of the dialog box.

➤ Click **OK**. The output will appear in the cell **A4**.

GCD()

The **GCD** function calculates the **greatest common divisor** or **highest common factor** of two or more integers. The greatest common divisor is the largest positive integer that divides the numbers without a remainder. Let us calculate the GCD of three numbers.
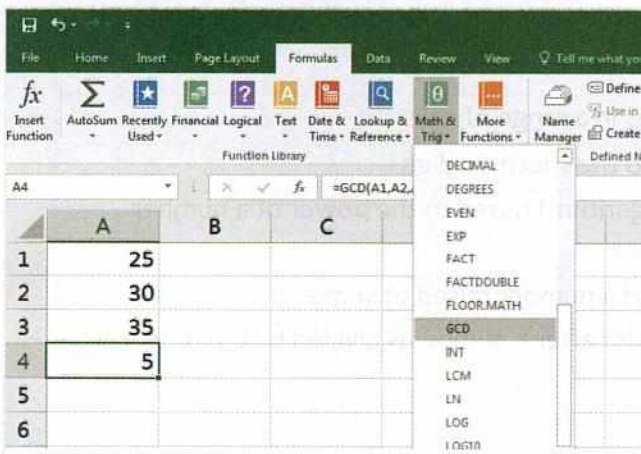
Figure 5.19: Calculating GCD of Three Numbers

➤ Enter three integers in cells **A1, A2,** and **A3**.

➤ Now, select the cell **A4** where the GCD of these numbers will be displayed.

➤ Click on the **Math & Trig** drop-down button in the **Function Library** on the **Formulas** tab and choose **GCD** from the displayed list of options.

➤ The **Function Arguments** dialog box appears. Type **A1, A2,** and **A3** in Number1, Number2, and Number3 text boxes, respectively. Observe that the result of the formula appears near the bottom of the dialog box.

➤ Click **OK**. The output will appear in the cell A4.

➤ THE INSERT FUNCTION

The **Insert** Function is one of the options in the Function Library group that helps us in creating a formula. Let us explore this option.
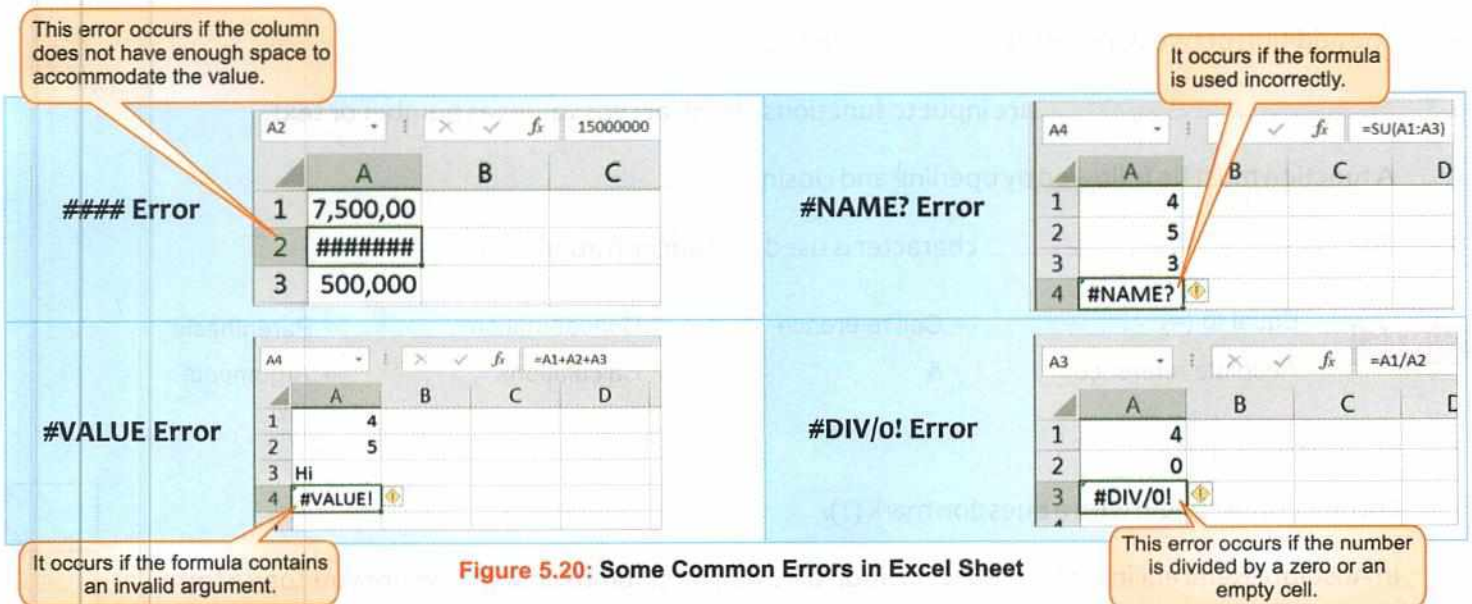
➤ Click on the cell in which you want to enter a formula.

➤ Click the **Insert Function** button fx present on the **Formulas** tab. Or

➤ Click on the **Insert Function** (fx) button present on the Formula bar.

➤ Either of these will launch the **Insert Function** dialog box and an equal to sign (=) will be placed in the cell.

➤ In the **Insert Function** dialog box, you can search for a function by typing a brief description of what you want to do in the **Search for a function** text box, in case you do not remember the name of the function.

For example, "add numbers" returns **Sum** function.

➤ In the **Or select a category** text box, you can select the category of the function, like Math & Trig for GCD function. If you are not familiar with the categories, you can select 'All', which will display an alphabetic list of all the functions in the **Select a function** list box.

➤ Select the desired function from the displayed list and then click OK.

➤ This will open the **Function Arguments** dialog box, wherein you will enter the cell references or values and then click **OK** to get the result of the selected function.

➤ FORMULA ERRORS

In Microsoft Excel, if any formula is entered incorrectly, then Excel displays an error message rather than the proper value. It also assists you in identifying and fixing the problem. Some of the common errors along with their possible reasons are listed as follows:

Figure 5.20: Some Common Errors in Excel Sheet

RECAP

➤ Formulas are used to perform calculations involving addition, subtraction, division, and multiplication. It is an expression that can include cell addresses, numbers, arithmetic operators, and parenthesis.

➤ The cell address in the formula is known as cell reference. There are three types of cell references: Relative, Absolute, and Mixed.

➤ Circular reference occurs when a formula in a cell, refers to its own cell, directly or indirectly.

➤ You can assign multiple cells to a formula by creating a reference or range.

➤ Functions are pre-designed formulas in Excel to perform both simple and complex calculations.

➤ The Insert Function is one of the options in the Function Library group, which helps us in creating a formula.

➤ In Microsoft Excel, if any formula is entered incorrectly, then Excel displays an error message instead of the value and assists you in identifying and fixing the problem.

BRAIN DEVELOPER

SECTION - A

A. Fill in the blanks.

1. Formulas are used to perform ....

2. A formula always begins with an .... sign.

3. The cell address in a formula is also called ....

4. The cell address in a formula that does not change on copying, is considered as ....

5. The addition of two or more text values is called ....

6. .... are input to functions, which accept values as number or text.

7. A function must be followed by opening and closing ....

8. The .... character is used for concentration of strings.

HINTS	• Equal to (=)	• Cell reference	• Concatenation	• Parenthesis
	• Absolute reference	• &	• Calculations	• Arguments

B. State True or False.

1. Formulas must begin with a question mark (?).

2. In Absolute Referencing, the relative position of rows and columns changes where you copy a formula.

3. A combined Reference is a type of cell reference. ☐

4. In Absolute Referencing, '$' sign is used before the cell co-ordinates. ☐

5. A range can be used in a formula. ☐

6. A Sheet tab cannot be renamed. ☐

7. The SUM function is used to find sum of values. ☐

8. The error #VALUE occurs if the number is divided by a zero. ☐

C. Application-based questions.

1. A Sports teacher has measured the height of the students in a class. Saumya has been given the assignment to find the maximum and minimum height from the collected data. Suggest the function that she should use to accomplish the task.

   ....

2. Ms Priya and her friends got a raise of 10% in their salaries. Find the total amount if their present salary is ₹15,000. Calculate the salary by using the formula.

   ....

SECTION - B

A. Multiple-choice questions.

1. To use the Sheet reference, which address is appropriate out of the following options?

   a. D4! Sheet1   b. Sheet1, D4   c. Sheet1! D4

2. Which key combination is used to get the sum of the values of the adjacent cells?

   a. Shift + S   b. Ctrl + '   c. Alt + =

3. Which function finds the largest number in a range?

   a. Average ()   b. Count ()   c. Max ()

4. Which function returns the remainder after a number is divided by the divisor?

   a. MOD   b. POWER   c. SUM

5. Which of the given cell references can be used in a relative reference?

   a. $D6   b. A3   c. A$1

6. Which function is used to count the number of numeric values in a range?

   a. Count()   b. SUM()   c. COUNTNUMBERS()

B. Answer the following questions.

1. What is a Formula? Explain with the help of an example.

2. What is Cell Reference? Mention its types.

3. Mention the two ways of entering a cell reference in a formula. Explain the difference between them.

4. What do you know about Absolute Reference? Explain with the help of an example.

5. Explain the utility of Function Library.

6. Explain Circular Reference with the help of an example.

7. What do you mean by Function? Name some of the Functions.

8. What are the rules to enter a Function?

ACTIVITY SECTION

Using Formulae and Functions

➤ Open Microsoft Excel. Type the contents in Excel worksheet as given in the image.

➤ Save the worksheet using the **Save** option. Now, click on the cell **B7** and type the formula **=B6*$B$17** and press the **Enter** key.

➤ Click on the cell **C7**. Type the formula **=C6*$B$17** and press Enter. Similarly, calculate 'Sales Revenue' for **Q3** and **Q4**.

➤ Click on the cell **B8** and type the formula **=B6*$B$18**. Press Enter. Copy this formula in **C8, D8,** and **E8**.

➤ Select the cell **B9** and type the formula **=B7 - B8**. Press Enter. Copy the formula to the cells **C9, D9** and **E9**.

	A	B	C	D	E	F
1		SALES INFORMATION				
2						
3						
4	Month	Q1	Q2	Q3	Q4	Total
5						
6	Unit Sold	3,592	4,390	3,192	4,789	
7	Sales Revenue					
8	Cost of Sales					
9	Gross Margin					
10	Salesforce Expense	8,000	6,000	9,000	10,000	
11	Advertising Expense	10,000	10,000	10,000	10,000	
12	Overhead Expense	21,552	26,340	19,152	28,734	
13	Total Expenses					
14						
15	Product Profit					
16						
17	Product Price	40.00				
18	Product Cost	25.00				

➤ Select the cell **B13**, type **=SUM (B10:B12)** and press Enter. Similarly, calculate the 'Total Expenses' for **Q2, Q3,** and **Q4**.

➤ To calculate the profit, click on the cell **B15** and type the formula **=B9 - B13**. Press Enter. Similarly, calculate the formula for **Q2, Q3,** and **Q4**.

➤ Click on the cell **F6** and type the formula **=SUM (B6:E6)**. Press **Enter**. Copy the formula to rest of the cells, i.e., **F7 to F15**. Save the file once again and close the application.

Conduct a group discussion on the topic: **Function and Formula**

Create a worksheet in which you would maintain your **Monthly Expenses on Stationery**. It must have the following headings: S.No., Commodity, Price, Quantity. Find the total for each heading by using the formulas learnt in this chapter.

To know more about the Formulas and Functions in Excel 2016:
https://support.office.com/en-us/article/Overview-of-formulas-in-Excel-2016-for-Windows-907031c1-81c4-4356-ae34-e774f85b9b2d

WORKSHEET

Chapters 1-5

A. Fill in the blanks.

1. .... was the first interactive computer game.

2. .... allows you to change Windows 10 into a touch-friendly interface called 'Tablet Mode'.

3. .... is a ready-made button for defining hyperlink on a slide.

4. .... extension is assigned to a recorded file.

5. .... reference occurs when a formula in a cell refers to its own cell value directly or indirectly.

HINTS • Circular   • Action button   • Spacewar   • Continuum   • .wav

B. State True or False.

1. You can drag and drop an app from one desktop to another in the Task View pane.

2. Video clips can be added to a slide by selecting the Home tab.

3. To enter or modify a formula in a cell, you can also press F2 key.

4. In Absolute Reference, the hash(#) sign is added before the cell address.

5. Today() is used to display the current date.

C. Complete the following shortcut commands in Excel 2016.

To select the entire worksheet	Ctrl + ...
To apply outline border around the selected cell	Ctrl + ... + 7
To enter data in multiple lines in the same cell	.... + Enter
To get the total of the adjacent cells	Alt + ...

D. Identify and name the Animation category.

1. Effects that decide the manner in which an object enters into a slide during the slide show.

2. Effects that control the manner in which an object exits from the slide during the slide show.

3. Effects that determine how the objects on the slide draw attention to themselves during the slide show.

4. Effects that enable the objects to move from one position to another on a slide and on the specified path during the slide show.

WORKSHEET

Chapters 1-5

A. Choose the best answer:

1. The term software was first used by ....

   a. John McCarthy   b. John W. Tukey   c. John von Newmann

2. The recorded sound files are saved with the extension... .

   a. .midi   b. .wma   c. .wav

3. To remove the animation effect, click on the object and select .... in the Animations group.

   a. None   b. No Image   c. Audio Tool

4. Which function returns the remainder after a number is divided by the divisor?

   a. MOD   b. POWER   c. SUM

B. Answer in one word.

1. Name the translator program that converts a high level language program into machine language, line by line. ....

2. Name the biometric security system for Window10 that uses fingerprint, face, or iris recognition to sign-in to the system. ....

3. What is the process of copying data from a CD/DVD to a computer known as? ....

4. Which rule does Excel follow to evaluate the mathematical expressions? ....

C. Answer the following questions.

1. How is Assembly Language different from Machine Language?

   ....

   ....

2. What is the utility of Windows Hello?

   ....

   ....

3. What do you understand by Animation? How is it helpful in a presentation?

   ....

   ....

4. What is Circular Reference? Give an example.

   ....

   ....

LOG ON TO ANIMATE CC

WHAT IS ANIMATE?

Animate is a software package that allows the users to create interactive animations. Using Animate, one can combine images, audio, video, and other effects to create animations. Originally, it was designed to create animations to be displayed on web pages. Animate is now commonly used to create games, cartoons, websites, photo galleries, and much more. The animations and graphics created in Animate can be scaled to any size without compromising on the clarity or quality.

HOW TO START?

To start Animate, follow these steps:

> Click on the **Start** button> **Adobe Animate CC.**

Start Button **Adobe Animate CC.**

> The **Adobe Animate CC** welcome screen appears.

> The screen displays four panes: Open Recent Item, Create New, Introduction, and Learn.

> All the common tasks like creating a new document, opening recently used files, and using pre-built templates can be done using this screen.

> Under the **Create New** section, select **Action Script 3.0**. A new blank file will open in Animate window.

Figure 6.1: The Opening Screen of Animate

THE ANIMATE WORKSPACE

MENU BAR: The Menu bar contains controls for common functions and commands, such as opening, editing, and saving files, etc.

THE STAGE: This is the rectangular workspace area where you place your contents and create your drawings or movies. By default, the Stage size in Animate is **550 x 400** pixels.

THE TOOLS PANEL: It contains a set of tools to draw, paint, select, and modify objects in the workspace.

THE PROPERTIES PANEL: The **Properties panel** displays various properties of the selected object (text, symbol, image, or shape). It is generally used for changing the settings like Stage size, ruler unit, background colour of the Stage, and frame rate. It is also named as **Property inspector**.

If the **Properties panel** is not visible, then you can select the **Window > Properties** option.
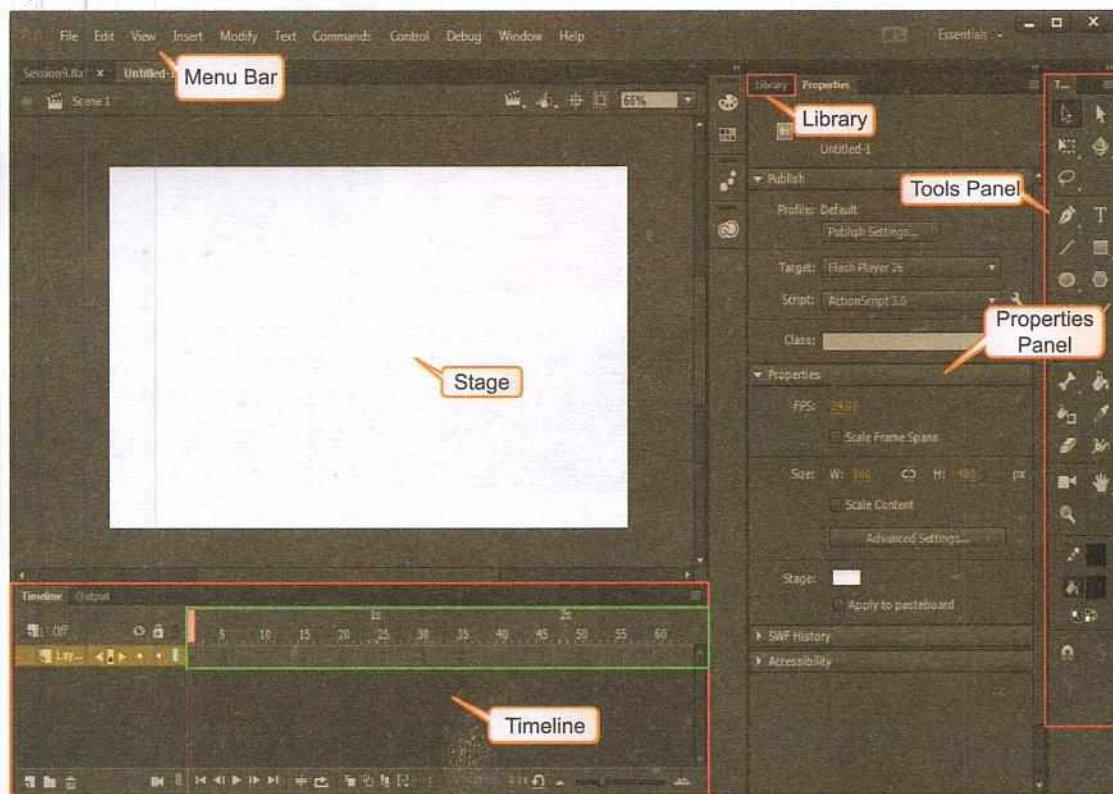
Figure 6.2: **The Animate Workspace**

TIMELINE: The Timeline is a window at the bottom of the Stage. It is divided into frames. It is the area where one controls the sequencing and timings of graphics and the other elements of a movie.

USING THE TOOLS PANEL

The **Tools panel** consists of many tools that help in drawing, colouring, and modifying an object. With the help of tools, we can create shapes like rectangle, circle, line, or any other object. Most of the Animate tools work similar to the tools present in Microsoft Paint.

Figure 6.3: **The Tools Panel**

THE DRAWING TOOLS

Rectangle Tool

This tool is used to create square and rectangular shapes. This tool has an option that can be set to draw a rounded rectangle.

➤ Select the **Rectangle Tool** ▣.

➤ Select the Stroke color, Fill color, Stroke size, Style, and Scale from the **Property inspector**.

➤ Hold and drag the mouse pointer on the Stage. As the rectangular shape is created, release the left mouse button.

➤ To draw a rounded rectangle, specify the corner radius under the **Rectangle Options** section in the **Properties panel**. You can either specify the numeric value or use the **Corner radius control slider** to change the value for all the corners.
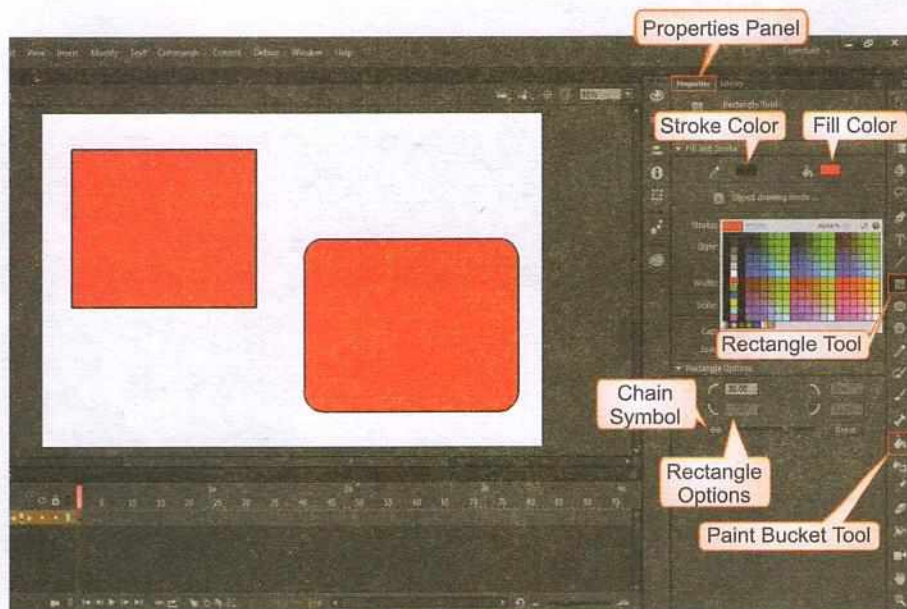
Figure 6.4: Using the Rectangle Tool

➤ Now, click and draw a rectangle on the Stage. You will get a rounded rectangle with the specified corner settings.

NOTE

If the chain symbol 🔗, placed left to the **Corner radius control slider** is connected, you can lock the corner radius controls to one control, i.e., by setting the radius in one box, you can set the same radius for all the corners. If you want to specify different radius for each corner, unlock the chain symbol and enter a different numeric value in each box.

Tips

➤ You can also draw other shapes like oval, polystar, etc., on the Stage by choosing the desired tool from the Toolbox.

➤ After drawing the rounded rectangle shape, you cannot modify the radius. However, Animate CC provides you with the **Rectangle Primitive Tool** to solve this problem. Likewise, using the **Oval Primitive Tool** you can modify the start angle, end angle, and inner radius on the oval.

PolyStar Tool

This tool is used to draw polygons or stars.

➤ Select the **PolyStar Tool** ⬠ from the **Toolbox**.

➤ In the **Property Inspector,** click on the **Options** button under the **Tool Settings** option. You will get the **Tool Settings** dialog box. Click on the drop-down list of **Style** option and select the **Star** style.

➤ Enter the value that ranges from 3 to 32 in the **Number of Sides** text box.
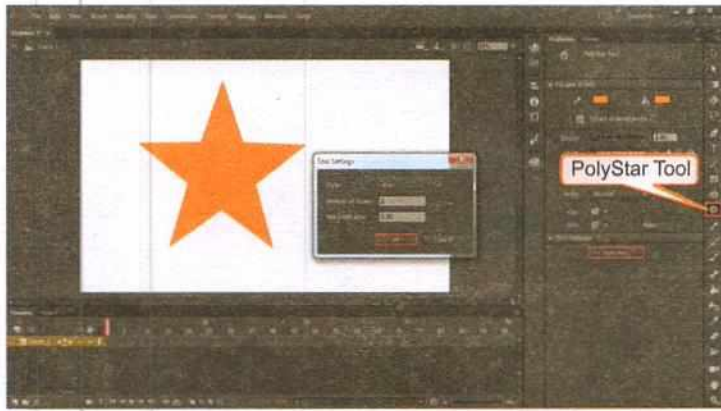
Figure 6.5: Drawing a Star Using PolyStar Tool

➤ For the **Star point size**, enter the number between 0 and 1 to specify the depth of the star points. A number closer to 0 creates deeper points. For drawing a polygon, you do not need to change these settings.

➤ Click **OK** to close the **Tool Settings** dialog box.

➤ Click and drag the pointer on the Stage to draw a star.

➤ Similarly, you can draw a polygon by selecting **Polygon** option in the **Style** text box.

Line Tool

The **Line Tool** ✏ works exactly the same way as the Line tool in any graphics software. We can use the Line tool to draw straight lines.

➤ Click on the **Line Tool** ✏.

➤ In the **Property inspector**, select the stroke color, line thickness, line style, or width profile as needed.

➤ Move the pointer to the Stage.

➤ Click and drag it in the direction where you want to draw a line.

➤ Release the mouse button. You will get a line on the Stage.
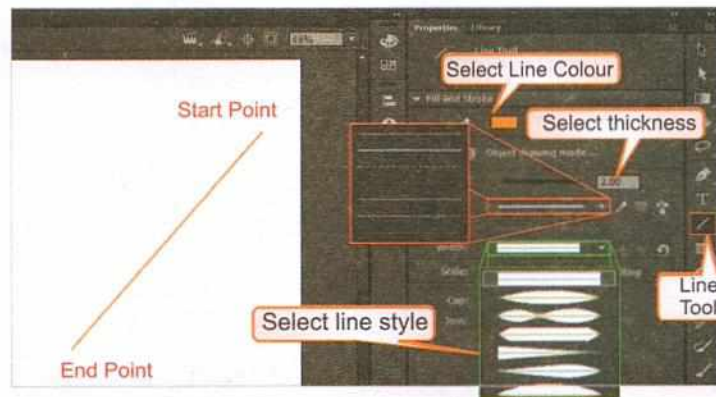
Figure 6.6: Property Inspector

Curving

You can turn a straight line into a curve with the **Selection Tool** 🔳.

➤ After drawing a line, click on the **Selection Tool** 🔳. (Make sure the line is not selected).

➤ Move the pointer on the line. When the pointer changes to arrow with

Figure 6.7: Drawing a Curve

curve symbol ✎, click and drag the line to draw a curve.

➤ Release the mouse button when the curve is made.

Pen Tool

Although the tool symbol looks like an ordinary pen, it works in quite a bit different manner. This tool is used to draw precise paths in the form of straight lines or smooth flowing curves. You can also adjust the angle and length of the straight segments, and the slope of curved segments afterwards.
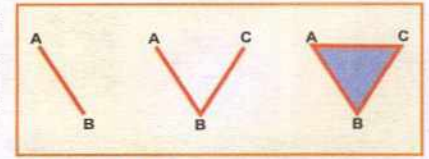
Figure 6.8: Using the Pen Tool

➤ Select the **Pen Tool** 🖋.

➤ Click on the Stage to define the anchor point A.

➤ Click to create the second anchor point B at a distance.

(a) **To complete an open path**, double-click the last point.

(b) **To close a path**, keep the **Pen Tool** 🖋 over the first anchor point. A small circle appears next to the pen tip when it is placed correctly. Click to close the path. Animate automatically fills the path once it becomes a closed outline.
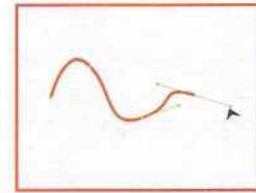
Figure 6.9: Open Path   **Figure 6.10: To Close a Path**

Pencil Tool

It is a freehand drawing tool. You can draw freeform lines and shapes in the same way as you would use a real pencil to draw any figure on the canvas. This tool has three different modifiers: Straighten, Smooth, and Ink.

(a) **Straighten:** The default modifier is Straighten. It automatically straightens the line drawn by the **Pencil Tool**.

(b) **Smooth:** Select this option to draw smooth, curved lines.

(c) **Ink:** This option helps to draw freehand lines with no modification.
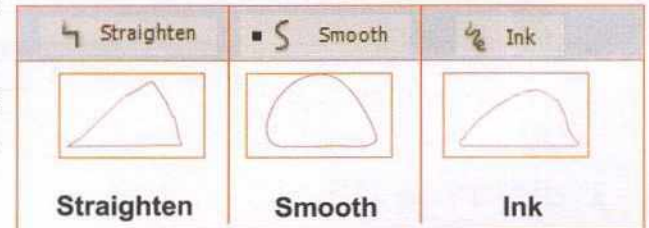
Figure 6.11: Three Modes of Pencil Tool

➤ Select the **Pencil Tool** ✏ and choose the desired option.

➤ Select the stroke color, stroke height (thickness), style, and width profile from the **Property inspector** and draw the line.

Brush Tool

It can be used just like a brush on a canvas. You can paint any shape with the desired colour using the **Brush Tool** 🖌. You can specify the brush mode, brush size, and brush shape modifiers that appear at the bottom of the toolbox when you select the **Brush Tool**. Using the Brush Mode modifier, you can choose to specify different areas to be painted using the **Brush Tool**. The various options available with **Brush Tool** are as follows:

🔄	Paint Normal	Allows you to paint over lines and fills	🖌
🔄	Paint Fills	Allows you to fill an empty area leaving lines unaffected	🖌
🔄	Paint Behind	Allows you to paint blank area of the Stage leaving lines and fills unaffected	🖌

⟳	Paint Selection	Applies a new fill colour only to the selected filled areas	
⟲	Paint Inside	Allows you to paint only the fill areas and never allows to paint outside the lines	

Text Tool

This tool is used to insert text on the Stage. You can set various text attributes like font family, style, and size when text is inserted.

➤ Select the **Text Tool** T.

➤ Change the Font Family, Style, Size, and Colour, etc., from the **Properties panel**.

➤ Move the mouse pointer on the Stage and start typing.

➤ You can also create a fixed width text box for horizontal text. To do so, simply drag the Text tool to draw a rectangular area. As you type, the words are wrapped according to the width of the text box.
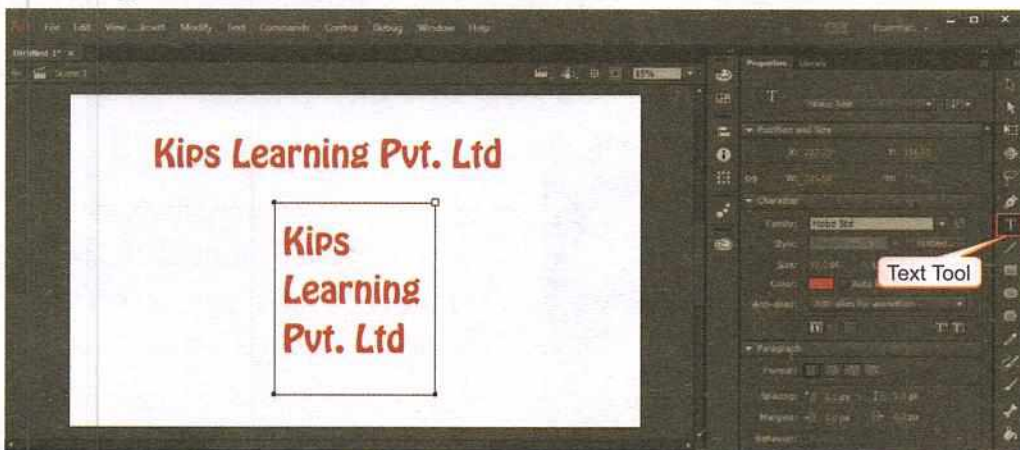
Figure 6.12: **Using Text Tool**

THE SELECTION TOOLS

The four important tools used for making selection in Animate are **Selection Tool, Lasso Tool, Polygon Tool**, and **Magic Wand**.

Selection Tools

Selection Tool

The **Selection Tool** is used to select a single or multiple objects on the Stage. There are different ways to select different portions of an object.

➤ To select a stroke, fill, text block, or group, select the **Selection Tool** 🡕 and click on the object.

➤ To select a filled shape and its stroked outline, double-click the fill.

You can also select the filled shape(s) and its outline(s) by dragging to enclose the object(s) within a rectangular selection marquee.

Lasso Tool

This is a free hand selection tool. We can use this tool to select irregular shaped areas of a drawing or part of an object. This tool has three options.

- Click on the **Lasso Tool** ⬭.
- Move the pointer on the Stage area. It changes to Lasso shape.
- Click and drag the **Lasso Tool** around the object to specify the boundary of the selection. End the selection approximately from where you started.
- Release the mouse button and observe the selection.
- Drag the selected anchor point (or anchor points) to create the desired path.
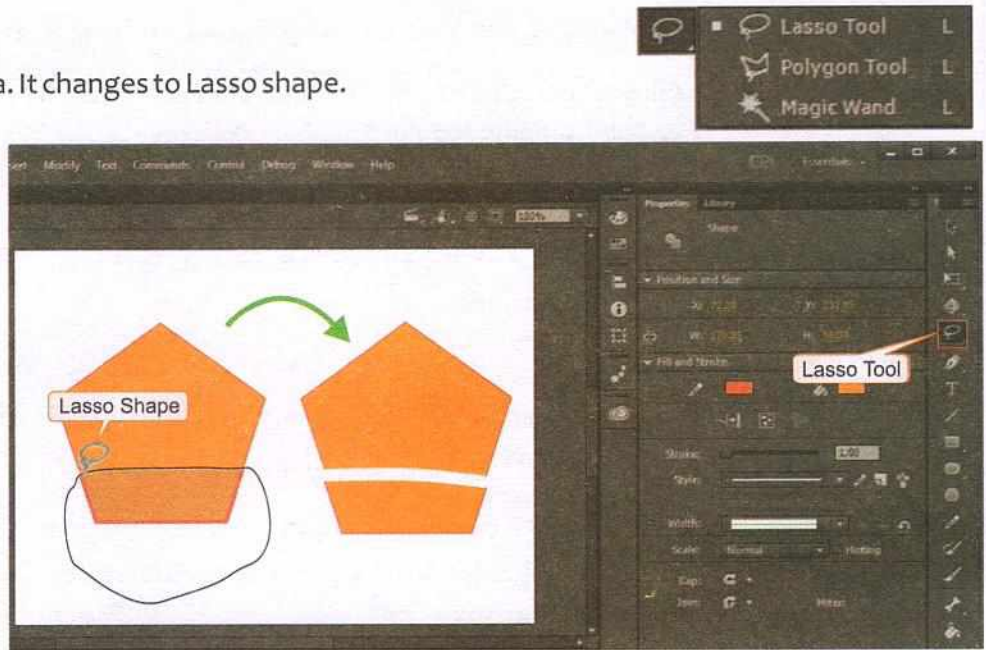
Figure 6.13: **Using the Lasso Tool**

Polygon Tool

This tool also helps to make freehand selections, but its contour is made up of straight segments.
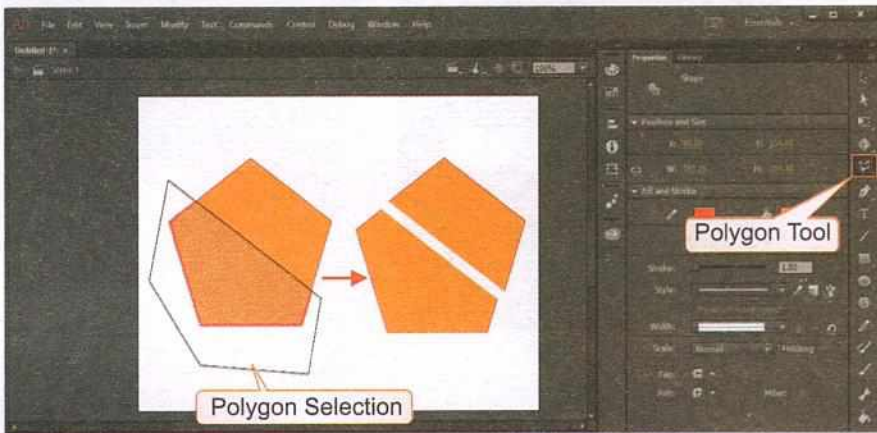
Figure 6.14: **Using the Polygon Tool**

- Click on the **Polygon Tool** 〽.
- Move the pointer on the Stage and click once near the object. Click at the position where you want the first straight segment to end.
- Keep clicking to set the next end points of the subsequent segments until you reach your selection.
- Close the selection by clicking near the starting point.

Magic Wand Tool

It is used to select the adjacent areas of a bitmap graphic that contains the same colours.

- Click on the **Magic Wand Tool** ✦.
- Click on any part of the image. All the adjacent areas of the pixels having the same colour will be selected as shown in Figure 6.15.

Figure 6.15: **Using the Magic Wand Tool**

Subselection Tool

This tool is used to select and move points of an object or edit paths between the adjacent points.

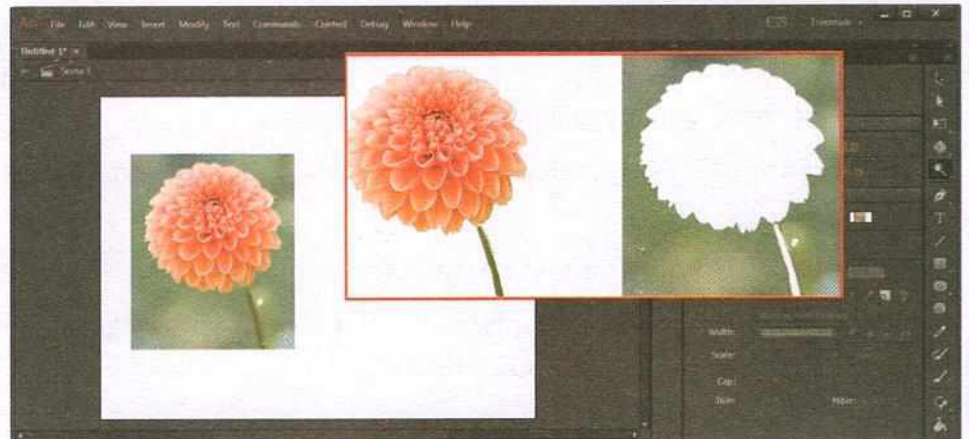➤ Select the **Subselection Tool** ▸ and click on the line or shape outline. This reveals the points and paths that form the shape.

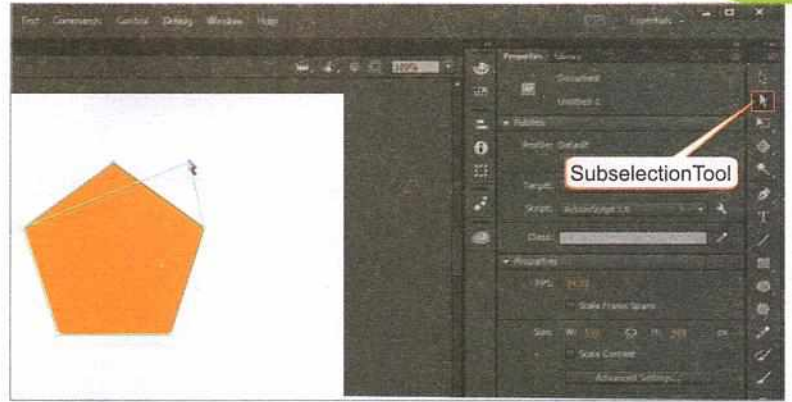➤ When an anchor point is selected, it changes from a hollow dot to a solid dot.

Figure 6.16: Using the Subselection Tool

TRANSFORMING OBJECTS

In Animate, the **Pen Tool** provides different variants that can be used to add new anchor points between existing points, remove an anchor point, or convert a curve point to a corner point. These options help in transforming one shape to another.

Let us understand it with the help of an example.

➤ Select the **PolyStar Tool** ▣ from the **Tools panel** and draw a star on the stage.

➤ Choose the **Pen Tool** 🖋 and click on the star outline. It will display the various anchor points by which this shape has been formed.

Figure 6.17: Displaying Anchor Points

➤ Click on the drop-down arrow present at the lower-right corner of the **Pen Tool** and select the **Add Anchor Point Tool** from the displayed list. A plus sign (+) appears next to the **Pen Tool** 🖋. Click at the position where you want to add an anchor point.

➤ Now, select the **Subselection Tool** and drag the different anchor points to modify the shape as shown in Figure 6.18.

➤ You can convert a curve anchor point to a corner point with hard angles by selecting the **Convert Anchor Point Tool** from the variants of the **Pen Tool** and clicking on the desired point. However, if you want to convert a corner point to a curved one, click and drag the point.

Figure 6.18: Modifying the Shape Using Anchor Points

THE COLOURING TOOLS

Paint Bucket Tool

The Paint Bucket Tool is used to fill the enclosed areas of an object with colours, in a single click. This tool is also used to fill the areas that are not completely closed. You can change the colour of already painted areas with the help of this tool. It also provides modifiers that allow you to close gaps in shape outlines.
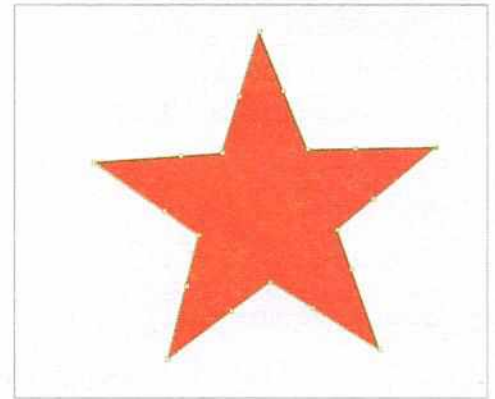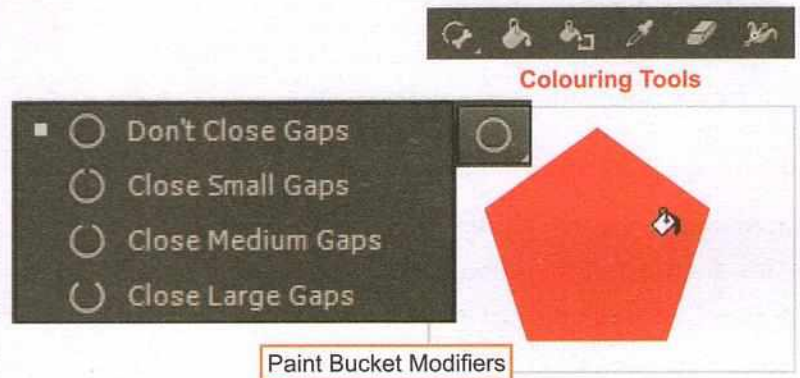

Figure 6.19: Using Paint Bucket Tool

To fill colour in an object, follow these steps:

> Select the **Paint Bucket Tool** .
> Click on the **Fill Color** button . The **Color** palette appears. You can also select the **Fill Color** option from the **Properties panel**.
> Select any colour of your choice. Click on the drop-down arrow of the **Gap Size** modifier and choose a gap option to close the gap in the shape.
> Click inside the object to fill it with colour.

Ink Bottle Tool

It is used to change the stroke color, width, and style of lines or shape outlines.

> Select the **Ink Bottle Tool** .
> Choose the stroke color, width, and style of line or shape outline in the **Properties panel**.
> Click on the line of the drawn object to apply a different property to the stroke.

Figure 6.20: Using Ink Bottle Tool

Eraser Tool

This tool helps you to erase unwanted lines and fills of an object from the Stage. When you click on the Eraser tool, it displays three modifiers: **Eraser Mode**, **Faucet**, and **Eraser Shape** modifier.

> Select the **Eraser Tool** .
> Click on the **Eraser Mode** modifier and select the required eraser.
> Click and drag it on the object to erase.
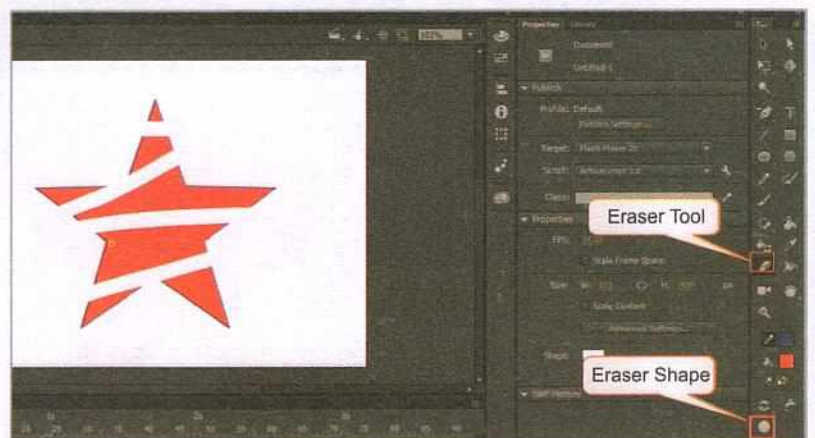
Figure 6.21: Using Eraser Tool

Figure 6.22: **Eraser Mode Modifiers**

The different Eraser Mode modifiers are as follows:

⟳	Erase Normal	Erases all lines and fills of an object wherever the Eraser Tool is dragged
⟳	Erase Fills	Erases only the filled areas of an object while the outlines remain unaffected
⟳	Erase Lines	Erases only strokes without affecting the files
⟳	Erase Selected Fills	Helps in erasing fills of the selected part of an object without affecting the strokes
⟳	Erase Inside	Erases only the area of fill part of an object without affecting the strokes

Width Tool

This tool is used to decorate a stroke by adding multiple widths in it. The decorated stroke can be saved as Width Profile that can be applied to the other strokes.

➤ Draw a stroke using the **Line Tool** ⟋.

➤ Select the **Width Tool** from the **Tools Panel**.

➤ Drag and hover the mouse on the stroke. You will notice that the mouse pointer changes to ▸₊ sign.

➤ Now, click on the Width Point that you want to move and drag the mouse pointer to the outward/inward direction.

➤ Observe the change in stroke.
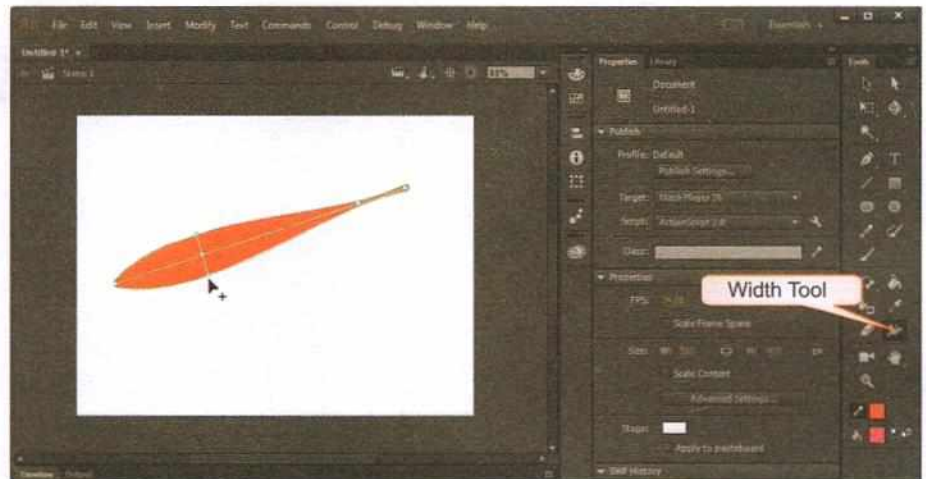
Figure 6.23: **Using width Tool**

⟫ FRAME BY FRAME TECHNIQUE

Animations in Animate are created with the help of frames. **Frames** in Animate can be defined as the little rectangular cells, which appear on the Timeline. Frames are used to control and organise the content of your movie. Objects in the timeline are placed in the order as you want them to appear in the movie.

Keyframes are the special types of frames where you can define change in the object for an animation like position, colour, shape, etc.
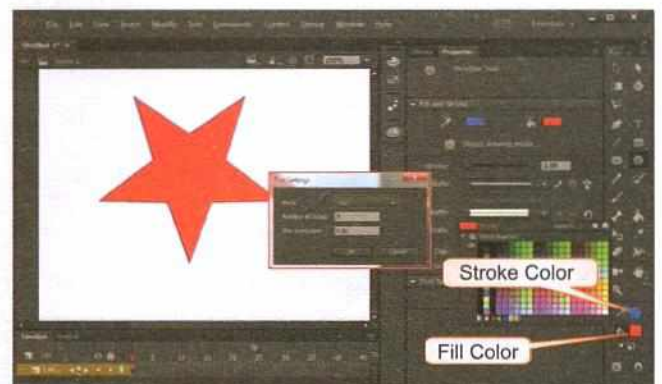
Figure 6.24: **Drawing A Star**

In the Frame by Frame animation, you create the image in every frame. Let us add some art work for the document:
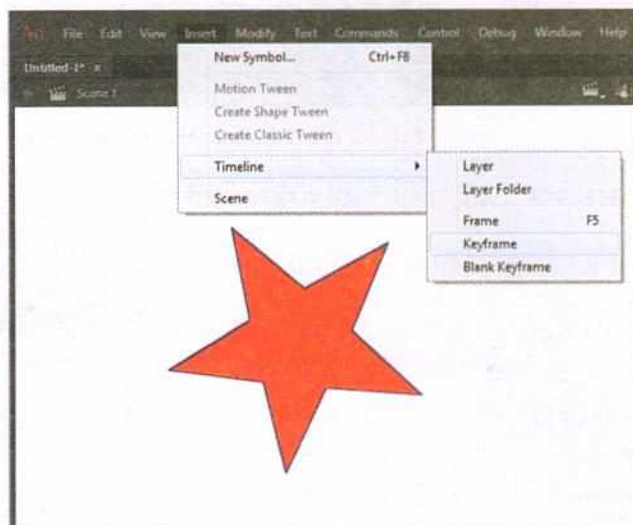
Figure 6.25: **Inserting a Keyframe**

DRAWING A STAR

It is important to understand that each image drawn in Animate consists of a stroke (an outline) and/or a fill.

➤ Select any colour choice from the **Stroke Color**.

➤ Select red colour from the **Fill Color** box.

➤ Select the **Polystar Tool** and draw a star as explained previously while describing the **Polystar Tool**.

ANIMATING AN OBJECT

Let us animate the star that you have drawn across the stage.

➤ Click on the keyframe dot in **Layer_1**. The animation will begin from this particular frame.

➤ Now, select the second frame in the Timeline.

➤ Click on the **Insert > Timeline > Keyframe**. This will insert a keyframe in **Frame 2** with a copy of the star.

➤ Using the **Selection Tool**, make a slight change in the position of the star towards the right side of the stage. Change its colour to orange using the **Fill Color** option.

Figure 6.26: **Inserting a Keyframe in Frame 5 Using F6**

➤ Click the third frame of the Timeline and press **F6** to insert a keyframe in it.

➤ Shift the star slightly to the right side of the stage and change its colour to sky blue.

➤ Click the fourth frame of the Timeline and press **F6** again.

➤ Shift the star towards right and change its colour to yellow.

➤ Continue to insert keyframes by repeating the above-mentioned steps till you reach the tenth frame.

➤ Preview the animation by clicking on the **Control > Test Movie > In Animate**.
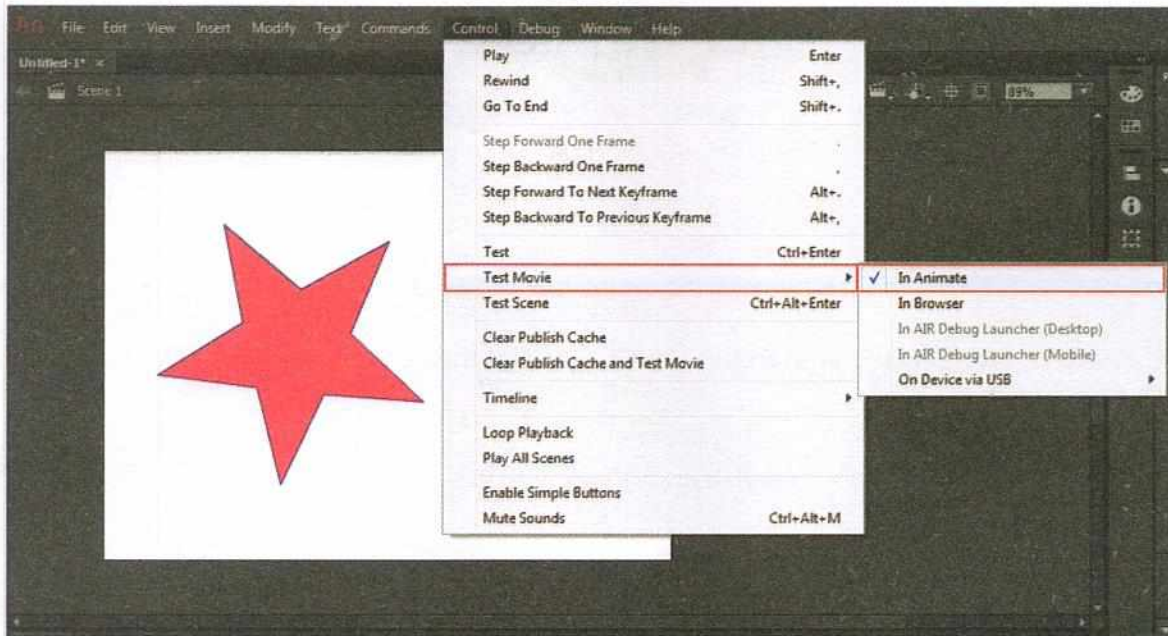
Figure 6.27: Animation Previewing Option

RECAP

➤ Adobe Animate CC is a software package that allows the users to create interactive animations.

➤ The Stage is a rectangular workspace area where you place your contents, create drawings, or movies.

➤ The Timeline is a window at the bottom of the stage. It is divided into frames. It is the area where one controls the sequencing and timings of graphics and the other elements of a movie.

➤ The Tools Panel consists of many tools that help in drawing, colouring, and modifying an object.

➤ The Selection Tools are used to select a single or multiple objects on the stage.

➤ The Pencil Tool is a freehand drawing tool.

➤ The Ink Bottle Tool is used to change the colour, width, or style of the strokes.

➤ The Paint Bucket Tool is used to fill the enclosed areas of an object with a single-click.

➤ The Eraser Tool helps you to erase unwanted lines and fills of an object from the Stage.

➤ Frames are the little rectangular cells that appear on the Timeline and help in creating animations in Animate CC.

SECTION - A

A. Fill in the blanks.

1. .... is the area where you create your drawings.

2. .... is the area that is used to control the sequencing and timimg of graphics and the other elements of a movie.

3. The .... tool is used to draw a star with five sides.

4. The .... option can also be used to modify the document settings.

5. .... is the default mode of the Pencil Tool when it is selected.

6. Using .... tool, you can modify the start and end angle of an oval.

HINTS   • Modify > Document   • Stage   • Timeline   • Oval Primitive   • PolyStar   • Straighten

B. State True or False.

1. The PolyStar Tool is used to draw polygon and star shapes.

2. The Text Tool is used to insert text on the Stage.

3. To change the style of lines, select the Style option in the Properties panel.

4. The Ink Bottle Tool is used to change the fill colour.

5. The Shortcut key for Pencil Tool is P.

6. To quickly delete everything from the Stage, double-click on the Eraser Tool.

C. Application-based questions.

1. Sumit has to make a greeting card. He wants to draw flowers on it. Which tool should he use?

    ....

2. Kartik has drawn a beautiful scenery. He wants to colour it but he does not know how to do it. Suggest the right option to do so.

    ....

A.   Multiple-choice questions.

1.   Which of the following modifier of the Brush Tool allows you to paint the blank area of the stage, leaving lines, and fills unaffected ?

a. Paint Normal   b. Paint Selection   c. Paint Behind

2.   The..function key is used to insert a keyframe.

a. F5   b. F6   c. F7

3.   The.. tool is used to draw precise paths, straight lines, or smooth flowing curves.

a. Pencil   b. Brush   c. Pen

4.   .... key combination is used to break apart the text into individual letters.

a. Ctrl+B   b. Ctrl+V   c. Ctrl+G

B.   Write the function of the following tools briefly.

1.   ....

2.   ....

3.   ....

C.   Answer the following questions.

1.   What is Animate? What are the main parts of Animate working environment?

....

....

....

2.   What is the difference between Paint Bucket and Ink Bottle Tool?

....

....

....

3.   Name the three modes of Pencil Tool.

....

4.   What are the options of the Eraser Mode modifier? Explain any two briefly.

....

....

....

....

5. What are Keyframes?

....

....

LAB SESSION — Perfection Through Practice

Follow the instructions to create the given scenery and animate the objects using Frame by Frame technique:

➤ Select the **Rectangle Tool**. Choose Sky Blue as the **Fill Color** from the **Property inspector** and draw a rectangle on the top, depicting the sky.

➤ Using **Pencil Tool** and white as the **Stroke Color**, draw the clouds as shown in the figure. Select the **Paint Bucket Tool** and fill color in the clouds.

➤ Again select the **Pencil Tool** and draw the hills, river, and the grass. Fill colours in them using the **Paint Bucket Tool**.

➤ To draw Hut, Sun, and Boat, use the **Drawing Tools**. Fill colour in these objects using the **Paint Bucket Tool**.

➤ After completing the drawing, click on the second frame in the Timeline and press **F6** to insert a keyframe.

➤ Select the Sun using the **Selection Tool** and move it a little to the right side. Likewise, select the boat and make a slight change in its position.

➤ Click the third frame of the Timeline and press **F6** again.

➤ Shift the Sun and Boat a little more towards the right side of the Stage.

➤ Repeat the steps and keep on adding new keyframes with slight change in the position of both the objects till they reach to the right most edge of the Stage.

➤ Play the movie by pressing the **Ctrl + Enter** key combination.

GROUP DISCUSSION — For Concept Clarity

Discuss the following topics with the students:

➤ **Types of Selection Tools**

➤ **Difference between Paint Bucket Tool and Ink Bottle Tool**

WORKING WITH ANIMATE CC

LEARNING IN THIS CHAPTER

- Symbols and Animation
- How to create a Symbol?
- Using Animation
- Create a Motion Tween

- Shape Tween
- Motion Guide
- Classic Motion Guide
- How to paint Stylish Strokes on the stage

SYMBOLS AND ANIMATION

A symbol is a reusable object for static images or animation. It is either created in Animate with the help of drawing tools or imported from other sources.

Animate stores symbols in its Library. When you place a symbol on the Stage, you create an instance of that symbol.

Instance is a copy of the original symbol. The size, colour, shape, and position of an instance can be altered without affecting the original symbol.

Symbols reduce the file size and simplify the editing process of a movie. If you modify the original symbol, it will change all the instances. There are mainly three types of symbols available in Animate.

➤ **Movie Clip**　　　➤ **Button**　　　➤ **Graphic**

HOW TO CREATE A SYMBOL?

To create a symbol, follow these steps:

➤ Draw a train on the Stage, as shown in Figure 7.1, by using the **Rectangle Tool** ▣ , **Oval Tool** ◯ , and **Pencil Tool** ✎ from the **Tools** panel.

➤ Choose the **Selection Tool** and drag the mouse pointer on the Stage to enclose the train within a rectangular selection marquee.

➤ Choose **Modify > Convert to Symbol**.

Figure 7.1: Drawing a Train

➤ You will get a **Convert to Symbol** dialog box. Choose **Graphic** from the **Type** drop-down list.

➤ Specify the symbol's name – 'G-Train' in the **Name** text box and click **OK**. Your new symbol is now added in the **Library** panel.
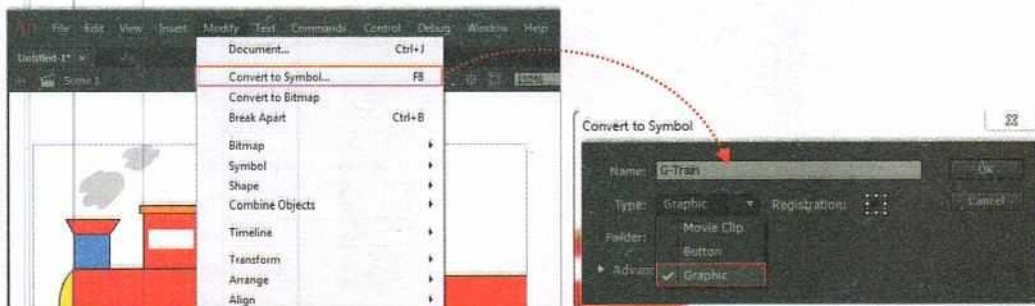
Figure 7.2: Converting the Train object into a symbol

> Notice that the Train symbol appears enclosed inside a blue bounding box with a small hollow circle in the middle.

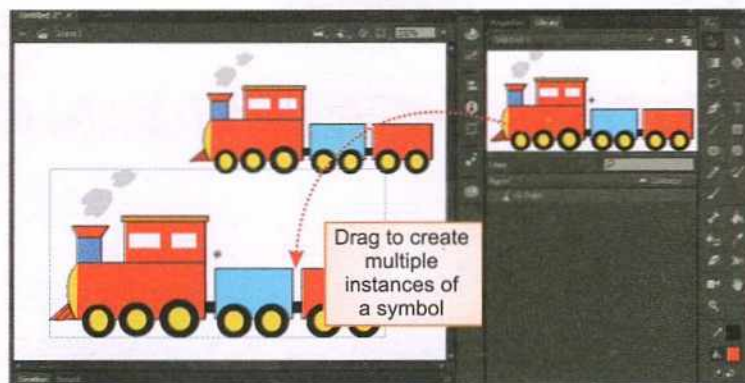> Click on the **Library panel** tab to view the symbol and its name.

Drag to create multiple instances of a symbol

Figure 7.3: Creating multiple instances of a symbol

> An **instance** of the symbol appears on the Stage. You can create multiple instances of the same symbol by dragging the symbol from the **Library panel** to the Stage.

> To make changes to the name, size, colour effects, or actions of a particular instance, select the instance and open the **Property inspector** on the right side. Any change that you make, affects only the instance and not the symbol.

> You can also make changes directly to the symbol within the **Library panel**. Right click on the symbol's name in the **Library panel** and select the **Edit** option from the Context menu or double-click the symbol's icon in the **Library panel** or on the Stage. The Symbol Editing window will open. Select the front part of the train using the **Selection Tool** and change its colour to Orange. Note that the changes made directly to a symbol are applied to all instances of that symbol. After making the desired changes, exit from the symbol's Edit mode by clicking on **Scene 1** or the **Back** button ◄ present on the Edit bar above the stage.

Back Button

Editing symbol

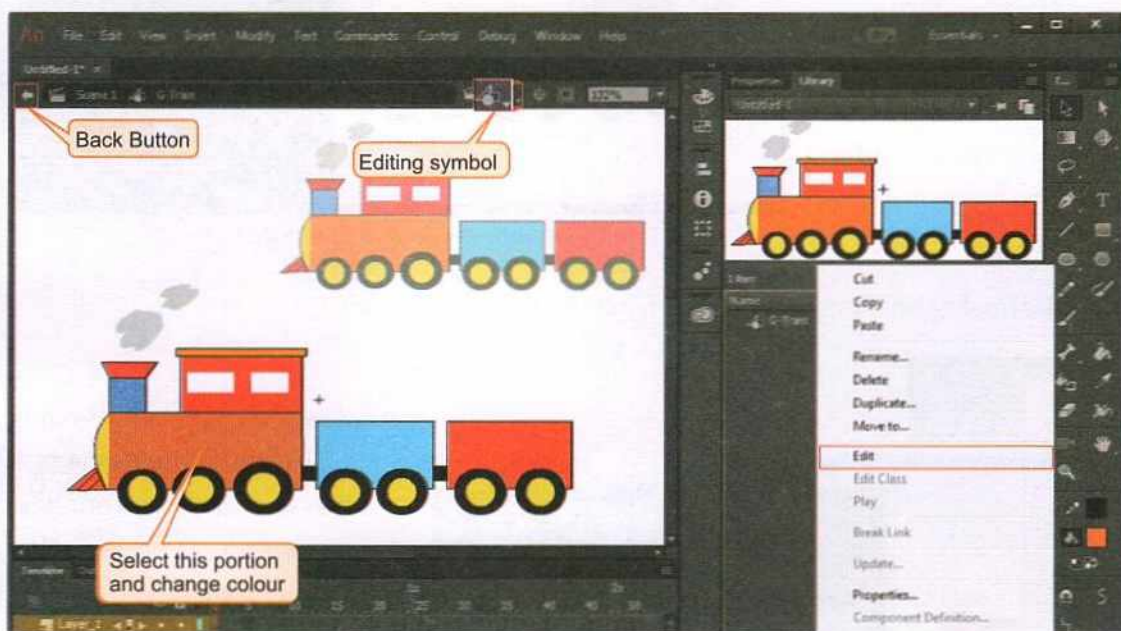Select this portion and change colour

Figure 7.4: Editing a symbol

USING ANIMATION

When a series of images is displayed in a rapid sequence at a fixed interval of time, an illusion of movement is created. This illusion of movement created by quick transition of images is termed as animation. The animations can be created in Animate with the help of tweening, which means 'in between'. The movement from one keyframe to the other becomes convenient with the use of the tweening. Animate provides three types of tweened animation.

> **Motion Tween**   > **Shape Tween**   > **Classic Tween**

The main difference between these types of tweenings is that the Motion and Classic tweening works on symbols, whereas, Shape tweening is used with the objects that are not symbols and are ungrouped.

CREATE A MOTION TWEEN

We create a **motion** tween by specifying the starting and ending position of an object in keyframes and Animate automatically fills the in between frames for creating an animation. To apply motion tween, it is important to convert an object into a symbol. This tween is best suited for creating movement, size, and rotation changes.

> To create a **motion tween**, drag the graphic symbol 'G-Train' from the **Library panel** to the Stage to apply an animation effect on it.

> In the Timeline, double-click the **Layer_1** title and type the Layer Name 'Moving-Train' and press the **Enter** key.

> Now, the symbol is in the **Frame 1** of the 'Moving-Train' layer.
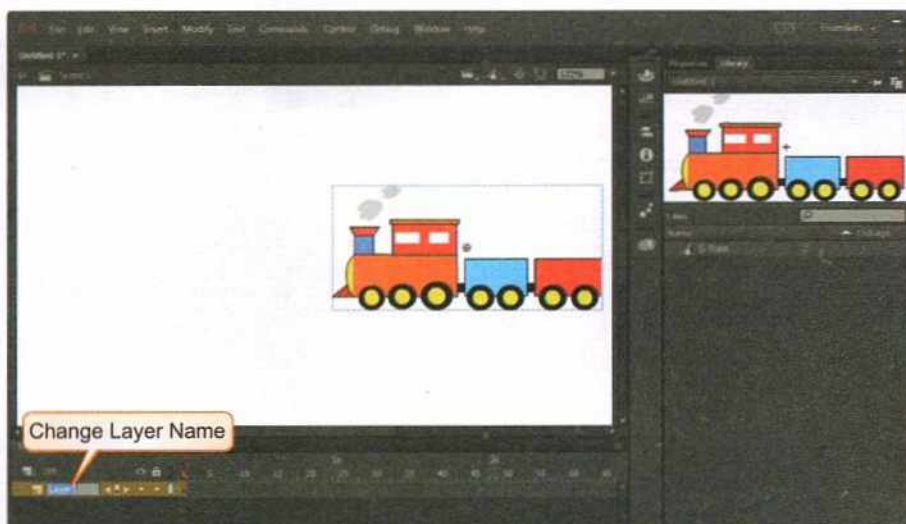
Figure 7.5: **Changing Layer Name**

> Right-click on **Frame 1** and select the **Create Motion Tween** option from the Context menu.
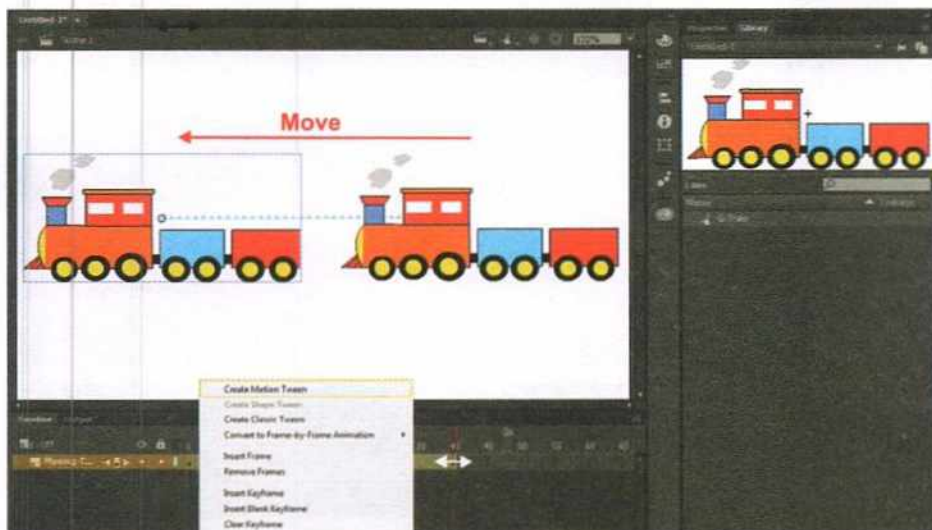
Figure 7.6: **Creating Motion Tween**

> A blue coloured span of 24 frames appears on the Timeline and the layer gets converted to a tween layer.

> Bring the mouse pointer to the right end of the blue coloured bar. A **double headed arrow ↔** appears. Drag the arrow to move the playhead to **Frame 40**. Move the train to the left side of the stage. A new keyframe will be created automatically at Frame 40. You will observe that a green coloured

'motion path' is created and the Train symbol will follow this path.

➤ Press **Ctrl + Enter** or select **Control > Test Movie > In Animate** to view the effects of motion tween.

⟫ SHAPE TWEEN

Shape tweening is used to transform the shape of an object into another. It does not work if the object is converted into a symbol or is grouped. You can create a wonderful morphing effect by using the **shape tween**.

Figure 7.7: Previewing the Motion Tween Animation

Suppose, you have a circle and want to make it appear to be changing into a star. In this case, you need two shapes, namely a circle and star, to be drawn in different frames at different points on the Timeline. Let us try this by following the given steps:

➤ Select the **Stroke Color** blue and **Fill Color** yellow. Draw a circle in the first keyframe of the Timeline. Do not convert it into a Symbol.
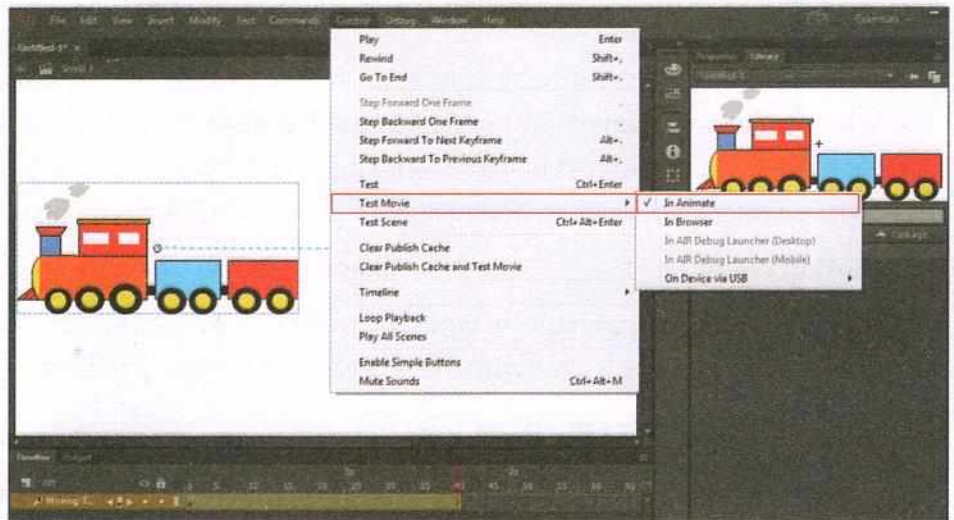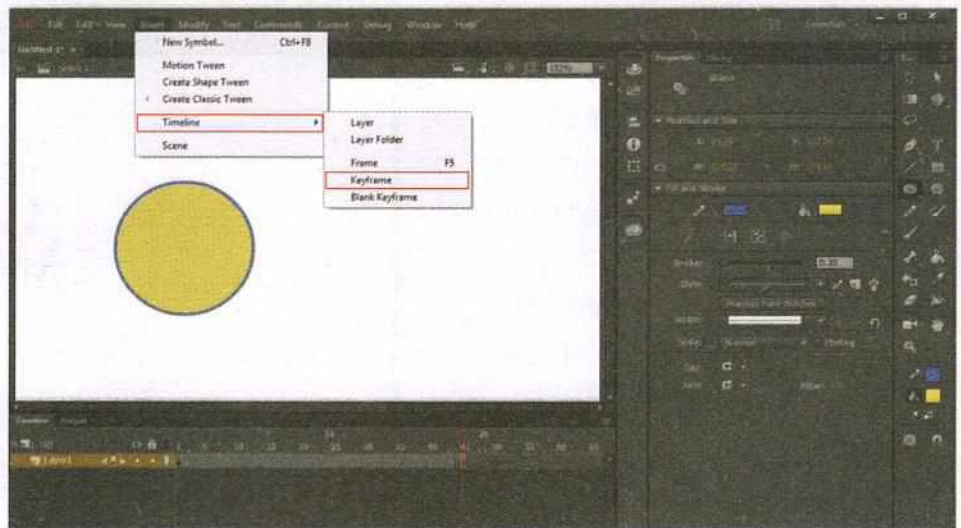

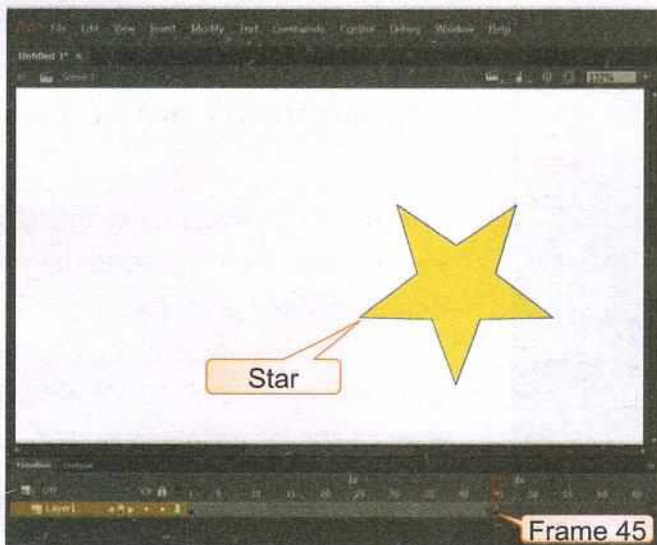**Figure 7.8: Drawing a Circle and Inserting Keyframe**

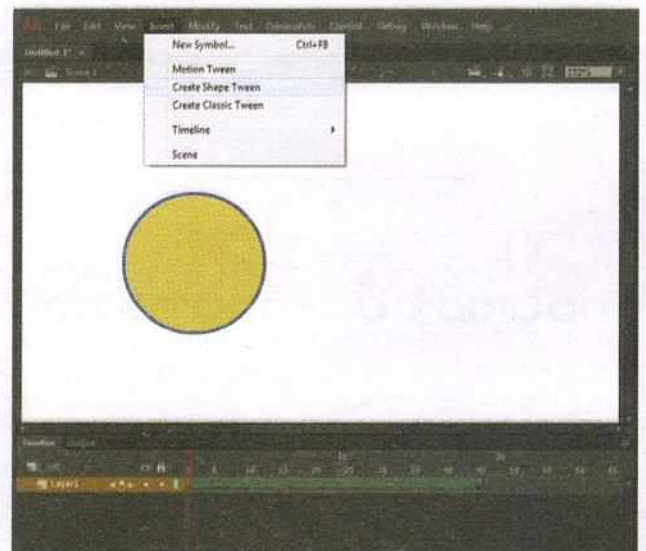**Figure 7.9: Drawing a Star in Keyframe 45**

Figure 7.10: Selecting Shape Tween

- Select **Frame 45** and insert keyframe by selecting the **Insert > Timeline > Keyframe** option.

- While keeping playhead on **Frame 45**, delete the circle object from your working area and draw a star shape as shown in Figure 10.9.

- Select **Frame 1** and choose the **Insert > Create Shape Tween** option. A green shaded area with a solid arrow will appear between these two keyframes.

Figure 7.11:
Playing the Shape tween Animation

- Press **Ctrl + Enter** or select **Control > Test Movie > In Animate** to play the movie and view the shape tween effect.

☰ CLASSIC TWEEN

Classic tween is an alternative way of creating an animation in Animate. While Motion tween Animate automatically fills the frames between the specified starting and ending points, in Classic Tween we have to manually create all the keyframes and connect all of them to create an animation.

- To create a **Classic Tween**, open a file that contains 'G-Train' symbol.

- Copy the **G-Train** symbol and paste it in a new file.

- You will notice the symbol is in the **Frame 1** of the Layer_1.

- Move the train to the right-side of the stage.

- Select the **Frame 40** and insert a keyframe by selecting the **Insert > Timeline > Keyframe** option.

- On **Frame 40**, move the train to the left-side of the Stage.

- Select **Frame 1** and choose the **Insert > Create Classic Tween**. A purple-shaded area with a solid arrow will appear between these two keyframes.

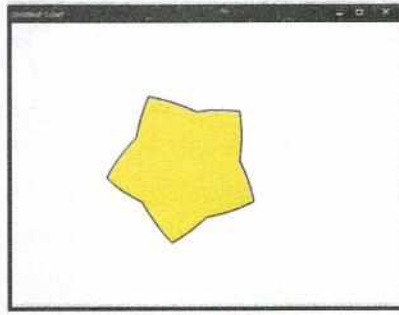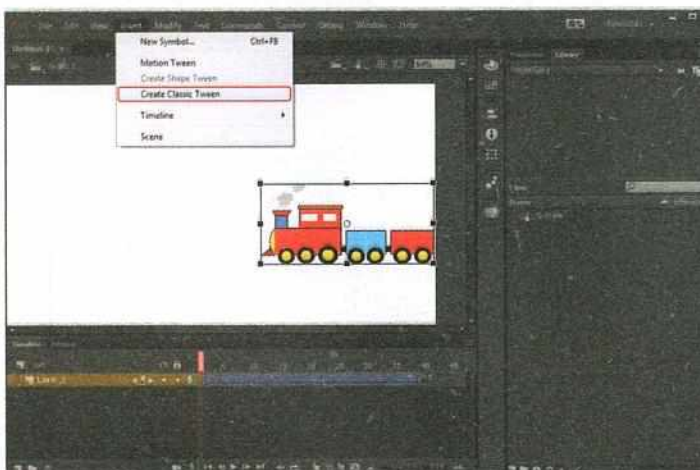- Press **Ctrl + Enter** or select **Control > Test Movie > In Animate** to view the Classic Tween effect.

Figure 7.12: Creating Classic Tween

➤ MOTION GUIDE

When you visit an unknown place, you do not know which path to follow to reach your destination. So, it is better to take the help of a guide who knows the route. He will take you to your destination. Similarly, Animate provides you with the ability to create a motion guide that defines the path of the movement for an object. Instead of having an object move from one point to another in a straight path, you can make it follow an arbitrary path that you draw, i.e., a motion guide.

Let us see how a motion guide is used:

Figure 7.13: Drawing an Airplane

➤ Select the **Pencil Tool** 🖊 and set the **Pencil Mode** to 'Smooth' from the bottom of the **Tools panel**. Draw an airplane as shown in Figure 7.13 and fill colour in its various parts using the **Paint Bucket Tool** 🪣.

➤ Convert it into a symbol, by selecting the **Modify > Convert to Symbol** option.

➤ In the **Convert to Symbol** dialog box, enter the name 'Airplane' in the **Name** text box and select the **Graphic** option from the **Type** drop-down list.

Figure 7.14: Converting the Airplane into Symbol

➤ Now, double-click on **Layer_1** and rename it as 'L-Airplane'.

➤ Select **Insert > Timeline > Layer** to create a new layer on the Timeline. Rename this layer as 'Motion-Airplane'.

➤ Select the **Pencil Tool** from the **Tools panel** and select a Stroke colour from the **Properties panel** on the right. Draw a path on the Stage, that the object will follow while in motion.
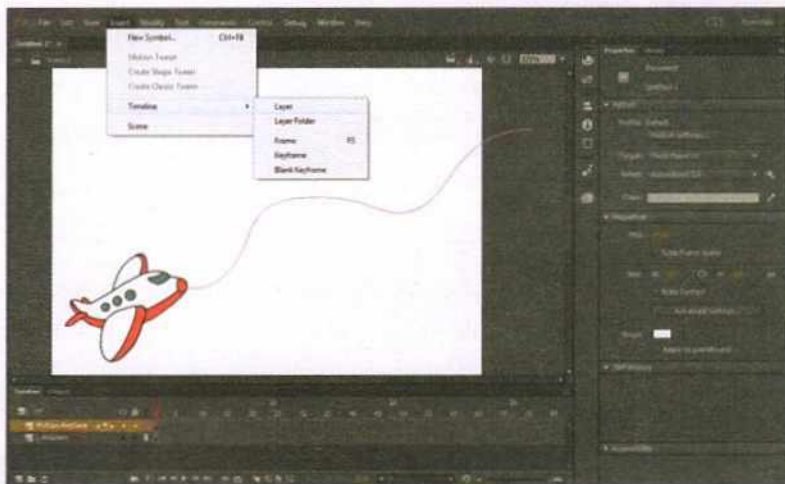
Figure 7.15: Drawing a Path in a New Layer
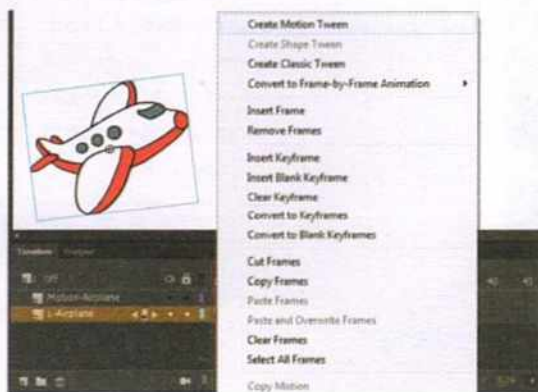
➤ Choose the **Selection Tool** and double click on the path to select it. Now, select **Edit > Cut** to remove the path from the Stage temporarily.

➤ Click on the layer L-Airplane. Right-click on **Frame 1** and choose **Create Motion Tween** option from the Context menu. A blue coloured span of frames appears.

Figure 7.16: Creating Motion Tween in the L-Airplane Layer

- Choose **Edit > Paste in Place** to paste the path in this layer. The path automatically gets converted to a 'motion path' and the Airplane symbol itself snaps to the path.

- Drag the playhead to **Frame 40**.

- Press **Ctrl + Enter** or select **Control > Test Movie > In Animate** from the Menu bar to test the Animation. The Airplane follows the path that you have created.
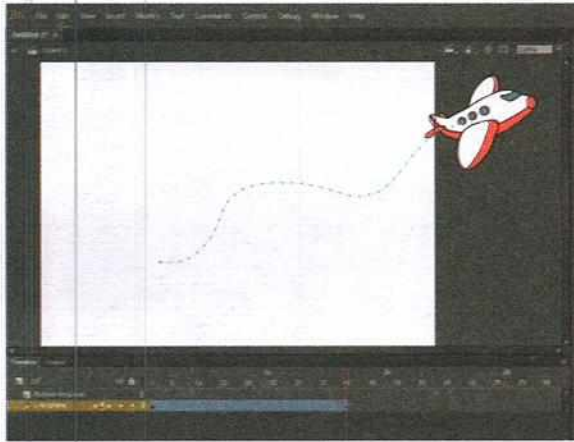
Figure 7.17 : **Converting to Motion Path**
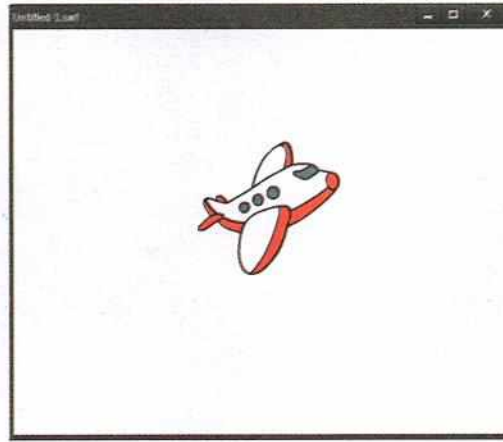
Figure 7.18: **Playing the Animation**

⮞ CLASSIC MOTION GUIDE

Classic Motion Guide is yet another way to create a motion guide that defines a random path, which the object should follow, while in motion. To make use of this option:

- Select the **Rectangle Tool** ▣ and draw a rounded rectangle shaped track as shown in Figure 7.19. Rename the **Layer_1** to 'Racing Track'.

- Insert another layer by selecting the **Insert > Timeline > Layer**. Rename the **Layer_2** as 'Racing Car'.

- Draw a car as shown in Figure 7.19, by using various tools from the **Tools panel**.

- Convert the car to a graphic symbol and place it on the track using the **Selection Tool** ▱ .

- Insert another layer by selecting the **Insert > Timeline > Layer** and rename it to 'Path'.

- Select **Frame 80** in all the layers together, right-click and choose the **Insert Frame** option.

Figure 7.19: **Drawing Racing Car and Track**

> Select the car and the Track layer and insert a keyframe at **Frame 80** by right-clicking and selecting the **Insert Keyframe** option.

> Now, select the Path layer. Choose **Pencil Tool** [icon] from the **Tools panel** and draw a path on the track.

> Select **Frame 1** of the 'Racing Car' layer. Choose **Selection Tool** and position the car at the beginning of the circular path.

> Select **Frame 80** of the same layer and drag the car to the end point of the path.

> Right-click on a frame between **Frame 1** and **Frame 80** and select the **Create Classic Tween** option from the Context menu.

Figure 7.20: Creating Path of Racing Car

> Right click on the 'Path' layer and select the **Guide** option.

> Drag the 'Racing Car' layer onto the 'Path' layer and vice versa. You will see that the Path layer changes to a **Guide Layer** indicated with a [icon] symbol.

> Select a Frame on the Racing Car layer, go to **Properties panel** and select the **Orient to path** checkbox to rotate the car on the path.

> Press **Ctrl + Enter** or select the **Control > Test Movie > In Animate** to play the animation.

Figure 7.21: Properties panel
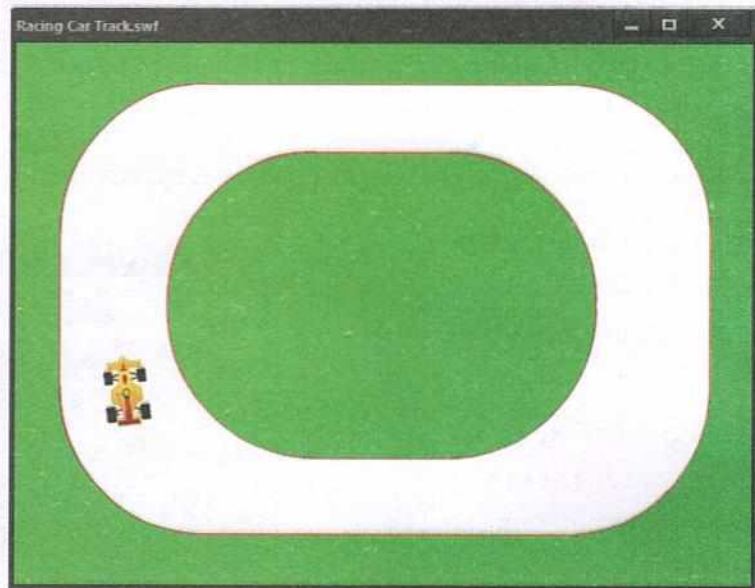
Figure 7.22: Playing Animation

➢ HOW TO PAINT STYLISH STROKES ON THE STAGE

Animate CC provides you a new tool that enables you to get creative. This tool has symmetry brushes, which allows you to draw cool symmetrical interesting textures, patterns, and drawings.

PAINT BRUSH TOOL

This tool is used to draw stylish brush strokes. These brush strokes can be applied on the existing objects, or you can use it to draw any path on the stage.

➤ Click on the **Paint Brush Tool** 🖌.

➤ In the Property inspector, type in the Stroke size '10'.

➤ Click on the **Brush Library** icon 📚.

➤ The Brush Library appears on the Animate window.

➤ Select any brush from the displayed options and double-click on it.

➤ The selected brush will appear in the **Style** option.

Figure 7.23: Paint Brush Tool

➤ Now, click and drag the mouse in the direction where you want to draw it.

➤ Release the mouse button and observe.

HOW TO MAKE YOUR OWN BRUSH STROKE

Animate CC allows you to save any shape as stroke. To do so, follow the given steps:

➤ Select the **Pencil Tool** ✏ from the Tools panel and set Pencil Mode to 'Smooth'. Draw a flower as shown in Figure 7.24 and fill colour in it using the **Paint Bucket Tool** 🪣.

➤ Choose the **Selection Tool** and drag the mouse pointer to select the flower.

➤ Click on the **Create New Paint brush** from

Figure 7.24: Creating a Brush Stroke

selection icon 🔲 present next to the pencil symbol in the **Style** option on the Property inspector.

➤ The **Paint Brush Options** dialog box appears as shown in Figure 7.25.

➤ Select the type of brush from the **Type** drop-down list. Enter the name 'Flower' in the **Name** text box.

➤ Select **Scale proportionately** radio button and customise the other settings as per your need. Click on **Add** button.

➤ Select the **Line Tool** from the **Tools panel**. You will notice the saved brush stroke in the **Style** option list.

➤ Now, click and drag the line on the stage. Automatically, the flower will be drawn.

Figure 7.25: Paint Brush Dialog Box

RECAP

➤ A symbol is a reusable object for static images or animation.

➤ In Animate, the movement from one keyframe to the other becomes convenient with the use of the Tweening method.

➤ Shape tweening is used to change the shape of one object into another.

➤ Motion Guide defines the path for the movement of an object.

➤ Classic Motion Guide is a way to create a motion guide that defines a random path that should be followed by the object, while in motion.

➤ Morphing refers to the special effects in animation that transform one shape into another through a seamless transition.

➤ Paint Brush Tool is used to draw stylish brush strokes.

BRAIN DEVELOPER

SECTION - A

A. Fill in the blanks.

1. A .... is a reusable object for static images or animation.

2. There are .... types of symbols.

3. .... refers to special effects in animation that transforms one shape into another shape.

4. The shortcut to convert any object into symbol is ....

5. In Animate, a set of Paint Brushes called .... are available by default.

HINTS ○ Brush Library ○ Morphing ○ Symbol ○ Three ○ F8

B. State True or False.

1. We can create only one instance of a symbol.

2. Motion Tweening works on symbols.

3. Shape Tween works if the object is converted into symbol.

4. The Property Inspector in Animate displays all the attributes regarding the object that is selected.

5. We cannot edit the Properties of graphic symbol.

C. Application-based questions.

1. Feroz wants to create an animation in which he would show a smiling face change into a crying face. Which tweened animation should he use to get the desired result?

....

....

2. Bhoomi has learnt Animate in school. While practising at home she has drawn a beautiful scene of a cloudy day. She wants to show the movement of clouds in the sky, but does not remember the option that can perform this action. Help her select the correct option to accomplish the task.

....

....

SECTION - B

A. Multiple-choice questions.

1. .... is the shortcut key to open the Library dialog box.

   a. Ctrl+M   b. Ctrl+L   c. Ctrl+D

2. To preview the animation effect, press .... key combination.

   a. Ctrl+Shift   b. Ctrl+Enter   c. Ctrl+Alt

3. .... defines the path of the movement for an object.

   a. Motion Tween   b. Shape Tween   c. Motion Guide

4. .... is represented by a red vertical line in the Timeline window.

   a. Frame   b. Playhead   c. Keyframe

5. .... option displays only the outline of the object in the frames.

   a. Onion skin   b. Onion Skin Outlines   c. Edit

B. Answer the following questions.

1. What are symbols? Name the different types of symbols.

....

....

....

2. Define the term Instance.

3. What do you understand by the term Animation?

4. What is the utility of Motion Guide?

5. How do you convert an object into a symbol? Explain briefly.

6. What is Tweening? List the types of Tweening.

7. Explain the use of Paint Brush Tool.

ACTIVITY SECTION

Perfection Through Practice

A. Draw a polygon shape and a star with 5 sides. Fill the polygon with red colour and the star with yellow colour. Animate these objects using Shape Tweening.
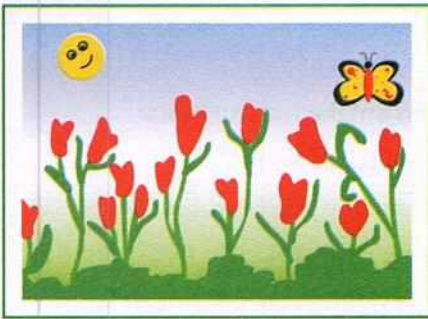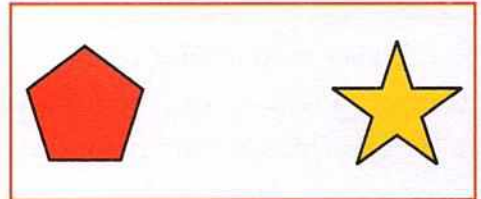
B. Draw a few flowers, a butterfly, and the sun using the Oval and Pen tool. Animate the sun using Motion Tween, and the butterfly using Motion Guide Tween.

ONLINE LINK

Looking For More

To know more about Animate, visit the website:

https://helpx.adobe.com/animate/using/documents.html

INTRODUCING PYTHON

Have you ever tried making pasta on your own? Figure 8.1 shows a recipe to make Tomato Pasta. It solves the problem of "how to make Tomato Pasta?" The recipe is a **set of instructions** on what to do, how to do, and when to do it. The **set of instructions** uses **ingredients (inputs)** to make Tomato Pasta **(output)**.

RECIPE FOR TOMATO PASTA

List of required ingredients:

500 ml water

150 gram pasta

1 spoon olive oil

1 large chopped onion

300 gram chopped tomatoes

100 gram hummus

Instructions to make Tomato Pasta:

1. Boil water in a large pan.
2. Add pasta to the boiling water.
3. Simmer for 10 minutes.
4. Strain and cool.
5. Add olive oil in a pan.
6. Add the onions and fry gently.
7. Stir in the tomatoes and the hummus.
8. Leave to simmer for 5 minutes.
9. Add the pasta and mix. Serve hot.

Figure 8.1: Making Tomato Pasta

Adding all the required ingredients to the recipe is input. Simmering the ingredients is processing, and the product that you get after processing is output, which in our case is pasta.

Likewise, a computer also works in three stages. To get the work done on a computer, you enter the raw data **(input)**, a computer operates on this data **(processing)**, and the desired result is obtained **(output)**.

Input → Process → Output

To get the desired output from the computer, you key in instructions to the computer using different programming languages. There are some specific computer languages, which are used to write programs. Some of the popular examples of Programming languages are Python, C, C++, LISP, Pascal, Java, PHP, etc.

Modern computers follow the set of operations called **programs**. In simple words, a program is a sequence of instructions that specifies how to perform a computation. These programs help a computer to perform wide range of tasks.

In this chapter, you will learn the basics of Python programming language, which is one of the most powerful, high-level programming languages.

INTRODUCTION TO PYTHON

Python is a simple Programming language that is used to write codes for the computer programs. Python was created by Guido Van Rossum when he was working at Centrum Wiskunde & Informatica (CWI), which is a National Research Institute for Mathematics and Computer Science in Netherlands. The language was released in 1991.

Python is a high-level programming language.

Some of the features that make Python so popular are as follows:

➤ It is an easy to learn general-purpose programming language.

➤ It is a platform independent programming language, which means it can be used on any machine and in any operating system.

➤ It has a simple syntax.

➤ Python is a case-sensitive language.

➤ It is an interpreted language.

➤ It is free to use and even free for commercial products.

APPLICATIONS/ PYTHON PROGRAMMING

Python is a popular and easy to learn language. It can be used to:

➤ Build a website

➤ Develop games

➤ Program robots

➤ Perform scientific computations

➤ Develop artificial intelligence applications

INSTALLING PYTHON

Python can be easily installed on your computer by following the given steps:

1. **Obtain a Python Distribution:** You can download Python distributes from:

www.python.org/download. For this chapter, we have used Python 3.7.4.
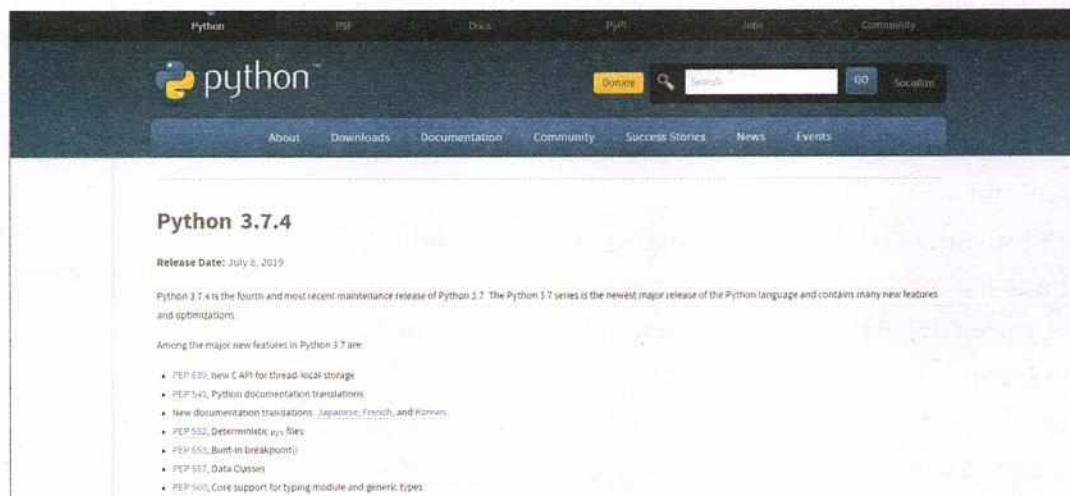
Figure 8.2: **Downloading Python**

2. Python Installation Process

After downloading the Python distribution, all you need to do is, to execute it. Double-click the downloaded installer software. Click on **Run** in the Dialog box, and the installation process starts. Keep following the instructions and clicking on the **Next** button until you see the highlighted **Finish** button.

After you have installed Python, the IDLE screen looks like this:
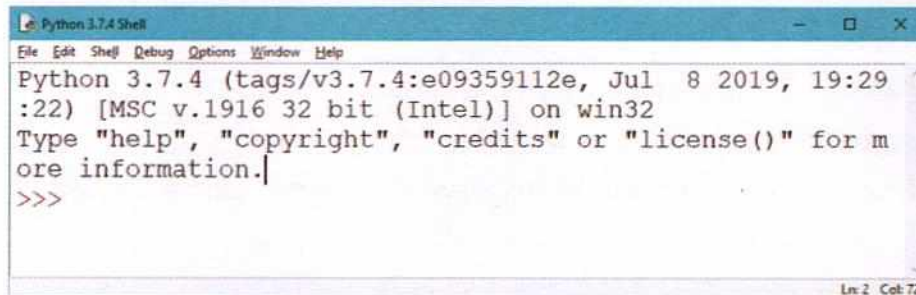
Figure 8.3: **Python 3.7.4 Shell Window**

On Windows machines, the Python installation is usually placed in C:\Python 3.7.4 folder, though you can change this when you are running the installer.

⟫ COMPONENTS OF PYTHON WINDOW

Just like any other application window, Python window has the following components:
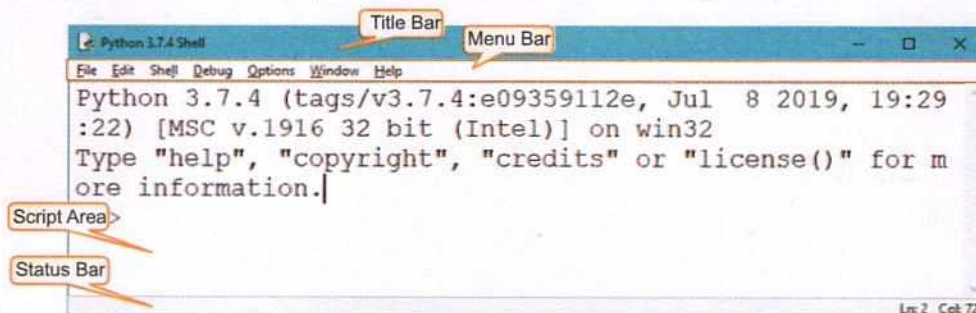
Figure 8.4: **Components of Python Window**

Title Bar

This is the area that displays the name of the application and the document. It also contains command buttons like minimize, maximize, restore, and close.

Menu Bar

The menu bar consists of various menus with different options. The common menus you will be working with in this chapter are **File, Edit, Shell, Debug, Options, Window,** and **Help**.

Working with File Menu

This menu is used to work with the options related to the currently used file. It includes sub-options like opening a new file, opening an existing file, viewing recently used files, saving the files, closing the files, and exiting the application.

Figure 8.5: **File Menu**

Working with Edit Menu

This menu is generally used to edit the file in use. You can cut, copy, or paste the selected text. You can also search for a particular text or phrase, and even replace it with some other text.
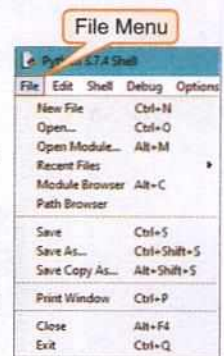
Figure 8.6: **Edit Menu**

Working with Help Menu

To get help related to any topic of Python, press **F1** key or click on the Help menu.

Script Area: This is the area where you type your code.

Status Bar: The Status Bar tells you the current status of your control/cursor on the window.

After installing Python, you are ready to work on it. You can work in Python in two ways:

➤ In Interactive mode

➤ In Script Mode

Python Programming in Interactive Mode

In the Interactive mode of Python, the instructions are executed, line by line, giving the output.

In this mode, the commands are typed next to the Python Command prompt (>>>). For example, if you type 3+6 next to the Python Prompt, it will give you the result as 9.

To work in the Interactive mode, follow the process given:

➤ Click on the **Start** button > scroll down to **Python 3.7** > **IDLE(Python 3.7).** It will open the Python Shell window where you will see the Python prompt (>>>).

```
Python 3.7.4 Shell                                    —    □    ×
File  Edit  Shell  Debug  Options  Window  Help
Python 3.7.4 (tags/v3.7.4:e09359112e, Jul  8 2019, 19:29
:22) [MSC v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for m
ore information.
>>>

                                                    Ln: 2  Col: 72
```
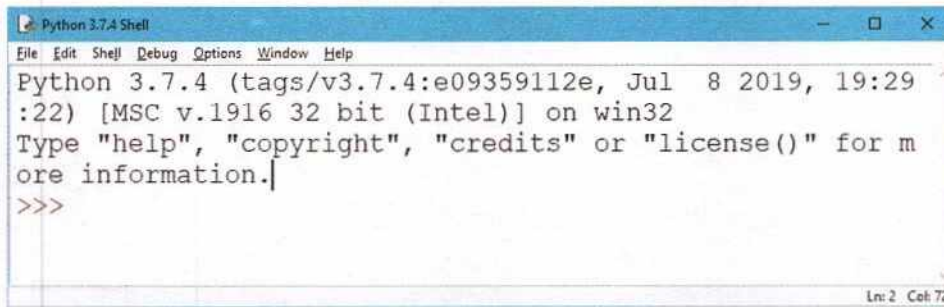
Figure 8.8: Python Shell Window

➤ Type the following commands next to Python prompt and Python will immediately give the output as shown in Figure 8.9.

```
>>>'welcome to python world'

>>>10

>>>12.78

>>>'A'

>>>10<5

>>>10+20
```

```
Python 3.7.4 Shell                                    —   □   ×
File  Edit  Shell  Debug  Options  Window  Help
Python 3.7.4 (tags/v3.7.4:e09359112e, Jul  8 2019, 19:29:22) [MSC
v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more inform
ation.
>>> 'welcome to python world'
'welcome to python world'
>>> 10
10
>>> 12.78
12.78
>>> 'A'
'A'
>>> 10<5
False
>>> 10+20
30
                                                    Ln 15  Col 4
```
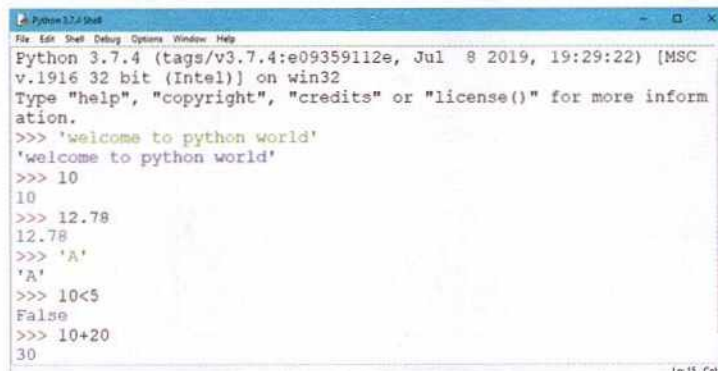
Figure 8.9: Interactive Mode

Let's Recall

A high-level language is a computer language that uses letters, numbers, and special symbols for coding. It is a user-friendly and interactive type of language. For example, C++, Python, Java, etc.

Let's Know More

Syntax refers to the grammatical rules to be followed while writing a program in any language.

Let's Know More

PySoy is a 3D game engine that supports **Python-**based games.

Use of Interpreter

In the interactive mode of Python, the commands are executed line by line. When you type a command next to the python prompt (>>>) and press the **Enter** key, the interpreter converts the command into machine language. After processing, the interpreter again converts the machine code into human readable form **(output)**.

Using print() function
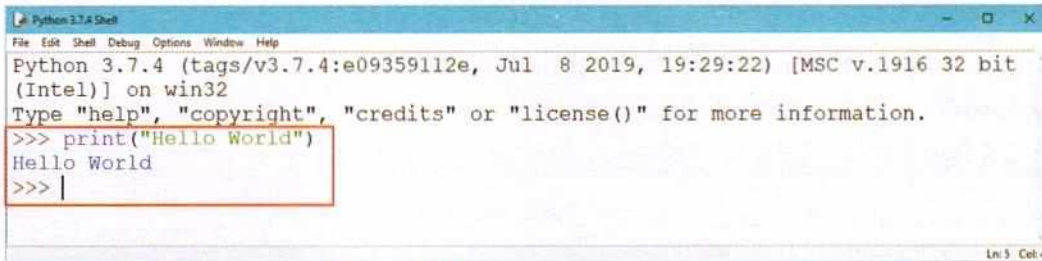
The **print()** function is used to display the output of any command on the screen. It can also be used to print the specified messages.

For example:

>>>print ("Hello World") will display **Hello World**
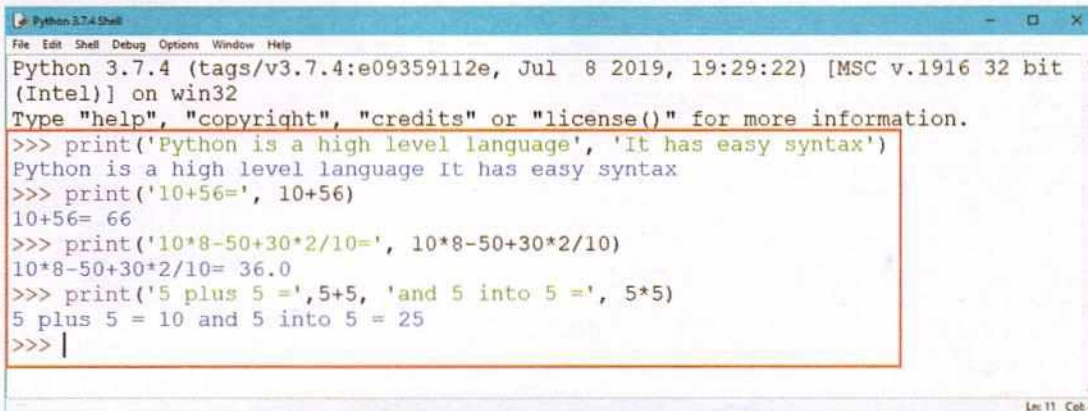
Figure 8.10: Using print() function

Python is a **case-sensitive** programing language. It means that Python differentiates between capital and small letters. For example, Print (P capital) and print (p small) are two different things for Python, where print is a valid command in Python, while Print is just a word and not a command.

You can also pass more than one argument to the print () function. In such a case, the arguments are separated by commas as shown in Figure 8.11.

Figure 8.11: Separated Arguments by Commas
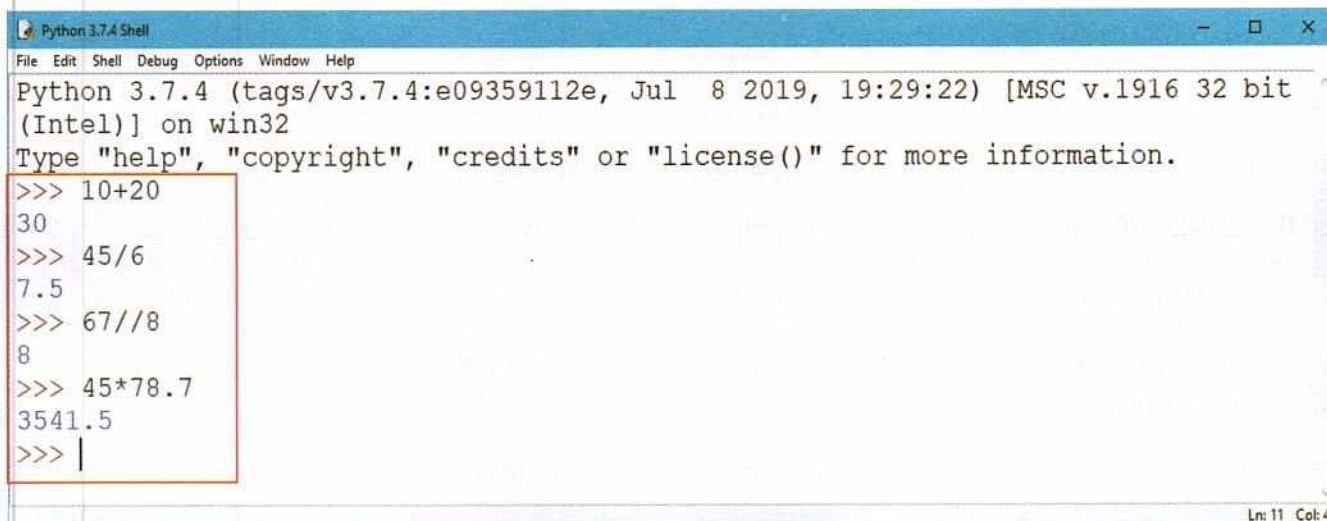
Using IDLE as a calculator

To evaluate an arithmetic expression, it is not necessary to use the print() function. If you type an arithmetic expression at the Python prompt and press the **Enter key,** the interpreter automatically evaluates it and shows the result. In this case, the interpreter acts as a simple calculator. The expressions are evaluated using operators like +, –, *, /, etc. The basic **BODMAS** rules are followed for performing calculations. For example:

```
Python 3.7.4 Shell                                                    –   □   ×
File  Edit  Shell  Debug  Options  Window  Help
Python 3.7.4 (tags/v3.7.4:e09359112e, Jul  8 2019, 19:29:22) [MSC v.1916 32 bit
(Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> 10+20
30
>>> 45/6
7.5
>>> 67//8
8
>>> 45*78.7
3541.5
>>> |
                                                                    Ln: 11  Col: 4
```

Figure 8.12: IDLE as a calculator

> **Tips** In IDLE, you can press **Alt+P** to repeat the previous command.

PRACTICE TIME

i. Type the following expressions, one by one, next to the Python prompt and note down the output in the table given below:

SNo.	Expression	Result
1.	23*98	
2.	(100+58)/3	

ii. Write the statement next to the Python prompt using print ( ) function to get the following output:

a.   Python works in two modes: Interactive mode and Script mode.

b.   Interpreter is a language processor.

⯈ VARIABLES IN PYTHON

If you need to store some food for future use, what will you require? Well, you will need a container to store the food. Similarly, when you are working with the values in Python, you require some storage to hold values for later use. Such storage locations are known as variables. A variable can store only one data value at a time. When a new value is stored in a variable, its previous value gets overwritten.

The Assignment Operator (=)

Values are assigned to variables using assignment operator (=). For example, the statement x=25 assigns the value 25 to the variable x.

Observe the following codes to understand the use of assignment operators:

a=10   # Value 10 is assigned to the variable a

b=20   # Value 20 is assigned to the variable b

c=a+b   # The numbers are added and the value is assigned to the variable c, i.e., 30 is assigned to the variable c.

a=c-10   # Value 20 (30-10) is assigned to the variable a. So, now the value of the variable a is 20, and not 10.

Rules to write the variable names

There are certain rules in Python which have to be followed to form valid variable names. The rules for valid identifier (variable name) are:

➤ A variable name must start with an alphabet (capital or small) or an underscore (_).

➤ A variable name can consist of alphabets, digits, and underscore. No other character is allowed.

➤ A Python keyword cannot be used as a variable name.

> **NOTE**
>
> ➤ A variable name can be of any length.
>
> ➤ Variable names are case-sensitive (e.g., Age and age are different variable names).

Examples of some **valid** variable names are:

```
Class, emp_code, totsalary, minvalue, bal_fee, age1980, a45r
```

Following are examples of some **invalid** variable names:

Variable Name	Reason
Employee code	Space is not allowed in a variable name.
10code	Variable name cannot start with a digit.
A.B.C. Ltd	. is not allowed in a variable name.
ABC@ltd	Special characters are not allowed in a variable name.
else	'else' is a keyword in Python, so it cannot be used as a variable name.

> **NOTE**
>
> If a variable is being used without assigning a value, i.e., if the variable is not defined, it gives an error.

Figure 8.13: Undefined Variable Error

The above code gives an error because the variable **x** is used in the **print()** function without being defined.

➢ WORKING IN SCRIPT MODE

Interactive mode is preferred for small programs, where only a few commands are to be executed. This is because the output in interactive mode is compressed between the statements and may create confusion while writing long programs.

For writing lengthy programs in Python, Script mode is used. Using this mode, we can create and edit Python programs. In this mode, we can save our file so that it can be used later. The complete script is written in an editor, such as a Notepad in Windows.

1. Create Module/Script/Program File:

i.   Open **IDLE Python**.

ii. Click on the **File > New File** in IDLE Python Shell as shown in Figure 8.14.

iii. In the new window that opens, type the commands you want to save as a program as shown in Figure 8.15.

Figure 8.14: Creating New File

Figure 8.15: New Window

> **Let's Know More**
>
> A variable is a named memory location that stores the data and whose value may change during program execution.

> **Let's Know More**
>
> A keyword is a word that conveys a special meaning to the compiler.

> **Let's Know More**
>
> A compiler is a language processor that converts a program written in high-level language into machine language, and vice versa, just like an interpreter but in one single step.

> **Let's Know More**
>
> A script is a program that you type in python.

iv. Click on the **File > Save**, and save the file with the name 'prog1.py' where .py is the extension for Python files.
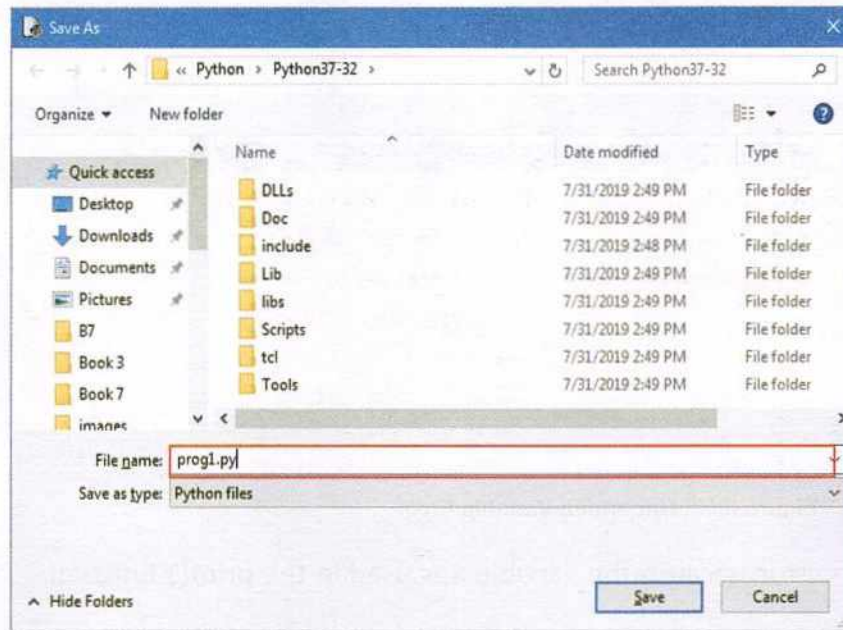
Figure 8.16: Saving a File

2. Run Module/Script/Program File:

After the Python program file is created, you can run the program by following the given steps:

➤ Open **IDLE Python Shell**.

➤ Click on the **File > Open**. (If the file is already opened, you can directly follow the next step).

➤ Click on the **Run > Run Module** or press **F5** key.

Figure 8.17: Run Module

➤ It will execute all the commands you have stored in a separate Python Shell window.
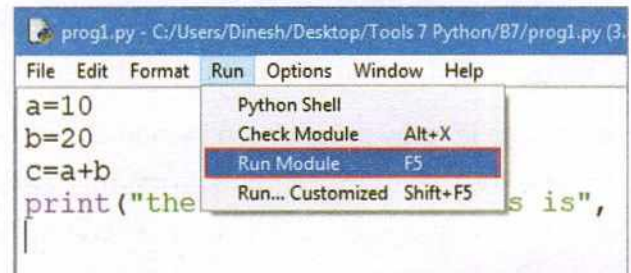
Observe the difference between the Script mode and the Interactive mode as shown in **Figure 8.18**.
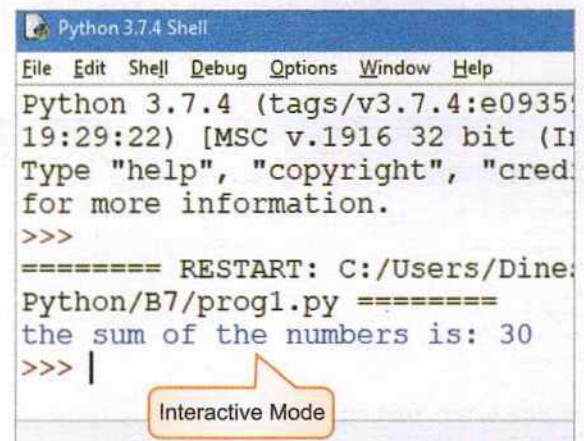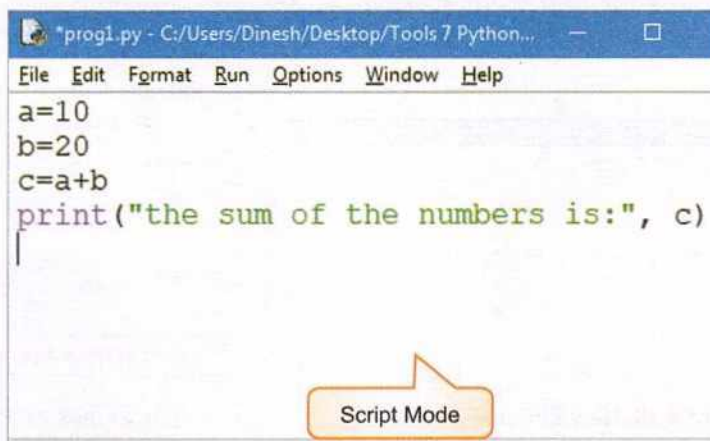
Figure 8.18: Program Output in Interactive Mode

1. Write a program to print the general details about your school in five lines.

2. Write a program to calculate the sum of two given numbers.

⧑ DATA TYPES

Suppose, you have planned a holiday trip during vacations, and you have to book tickets for your family members. The first action that you need to take is to fill a form to get the reservation done, where you need to give your required details like train number, date of journey, name, age, etc. Here, every piece of data that you enter is of a specific type; As your name is a String type, age is a numeric type, and date of journey is of date type. Similarly, in Python, one must specify in a program, what kind of values will be stored in a specific variable.

⧑ BASIC DATA TYPES IN PYTHON

In Python, a data type represents the type of data stored in a variable. The data stored in memory can be of many types. Python has various standard data types based on the type of value. For example, a student's marks are stored as a numeric value, whereas, his or her address is stored as alphanumeric characters.

The basic data types used in Python are mentioned here:

int (Integer): Represents integral numbers (numbers without any fractional part). There are three types of integers in Python:

Integer type	Description
Integer (int)	Stores values in the range of - 2147483648 to 2147483647.
Long Integers (long int)	Support the values that lie beyond the range of Integers.
Boolean (bool)	It represents logical values in the form of **True** and **False**. In Boolean, **0** represents False and **1** represents True.

float: Represents floating point values (numbers with fractional part). The fractional part of a floating point number may be 0 as well. Examples of floating point numbers are, 3.14, -48.6, 18.0, etc.

str (String): A String data type represents strings of characters enclosed within single or double quotation marks ('' Or "").

Examples of strings are, 'Hello', "Myname", '218', 'Peace', etc.
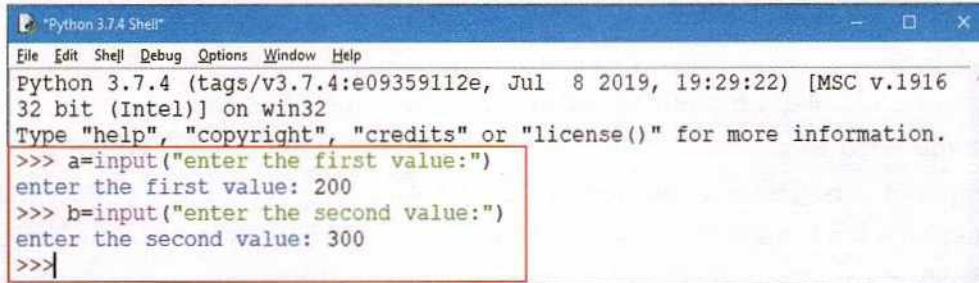
Some examples of data types in Python are:

S.NO.	Value	Data Type
1.	15	int
2.	7.9	float
3.	Computer Application	str
4.	7>3	bool

⮞ Input() FUNCTION

Input() function is used to accept the value for a variable from the user. To input integer and float values, we can use **int()** or **float()** along with **input()**.

Program 1:
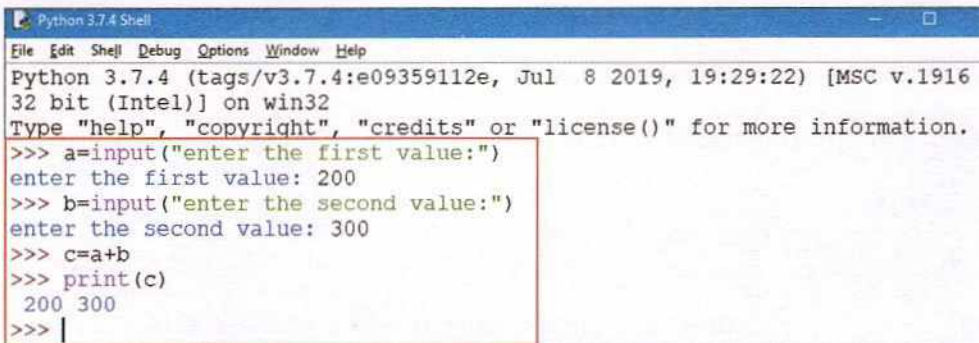
```
Python 3.7.4 Shell                                                    □   ×
File  Edit  Shell  Debug  Options  Window  Help
Python 3.7.4 (tags/v3.7.4:e09359112e, Jul  8 2019, 19:29:22) [MSC v.1916
32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> a=input("enter the first value:")
enter the first value: 200
>>> b=input("enter the second value:")
enter the second value: 300
>>>
```

Figure 8.19: Using Input() function

In Python, input() function takes one string argument. This means that whatever value is being entered by the user, it will be taken as a string argument.

Program 2:
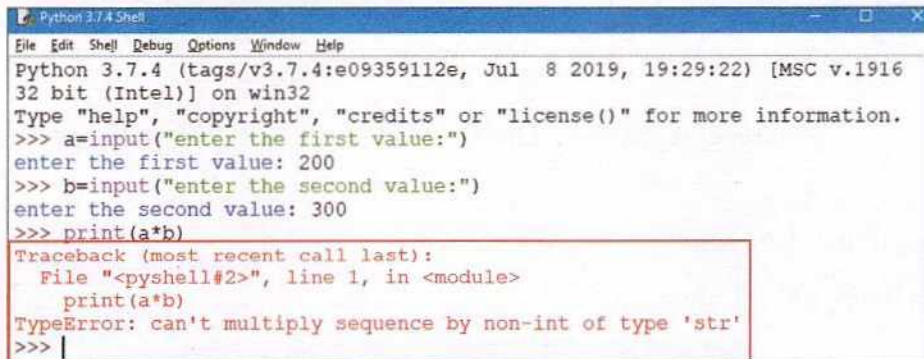
```
Python 3.7.4 Shell                                                    □   ×
File  Edit  Shell  Debug  Options  Window  Help
Python 3.7.4 (tags/v3.7.4:e09359112e, Jul  8 2019, 19:29:22) [MSC v.1916
32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> a=input("enter the first value:")
enter the first value: 200
>>> b=input("enter the second value:")
enter the second value: 300
>>> c=a+b
>>> print(c)
 200 300
>>>
```

Figure 8.20: String Operator

Observe in the above program, when you add the two numbers, you do not get the sum. Rather the numbers are joined together and are printed as a string.

Program 3:
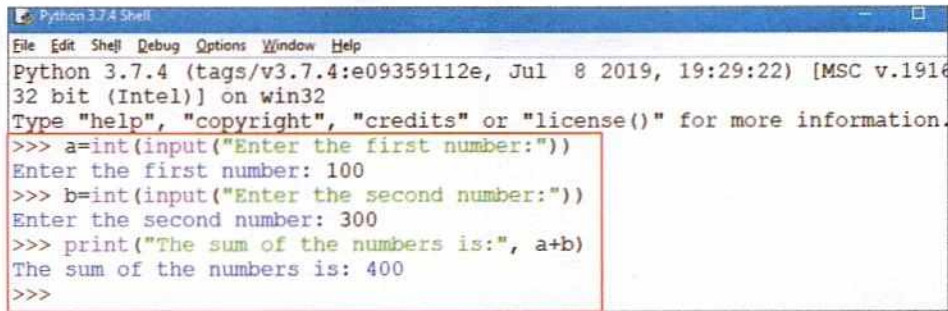
```
Python 3.7.4 Shell                                                    □   ×
File  Edit  Shell  Debug  Options  Window  Help
Python 3.7.4 (tags/v3.7.4:e09359112e, Jul  8 2019, 19:29:22) [MSC v.1916
32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> a=input("enter the first value:")
enter the first value: 200
>>> b=input("enter the second value:")
enter the second value: 300
>>> print(a*b)
Traceback (most recent call last):
  File "<pyshell#2>", line 1, in <module>
    print(a*b)
TypeError: can't multiply sequence by non-int of type 'str'
>>>
```

Figure 8.21: Type Value Error

Here, in this program, when you try to multiply these two values, you get an error in the program. This is because the strings values cannot be multiplied together.

To work with the values provided by the user, Python provides a method as discussed in the given example:

Program 4:
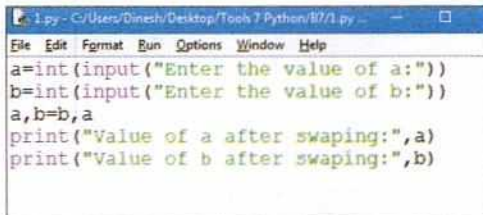
Figure 8.22: Sum of Numbers
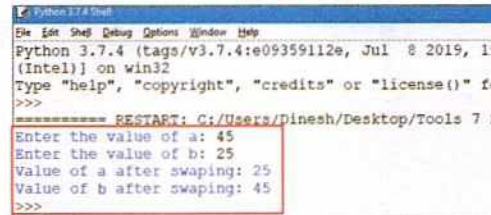
Observe, when you use **int()** function, the values are converted to integers and are added.

Program 5:
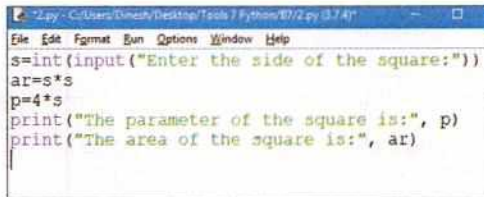
Figure 8.23: Swapping Two Numbers   Output
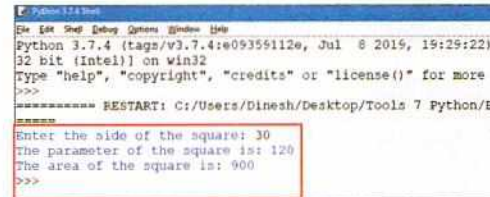
Program 6:

Figure 8.24: Area and Perimeter of a Square   Output

PRACTICE TIME

1. Create a program to calculate 5% discount on total purchase of stationery.
2. Create a program in Python to convert miles into kilometers.

      1 Mile=1.6 Kilometers
3. Create a program to convert temperature from Fahrenheit to Celsius.

      Celsius= (Fahrenheit-32)×5/9
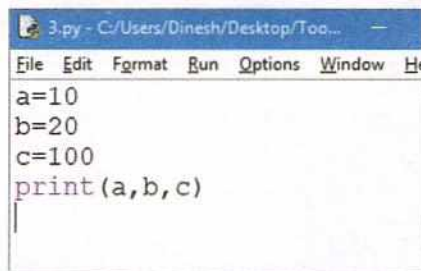
Features of print() function

➤ The **print()** function in Python is used to print a message or value on the output device.

➤ It converts the message or an object into a string before writing it on the screen.

➤ It can have multiple parameters.

➤ It supports multiple escape sequences to format the output, e.g., '\n' (new line), '\t' (tab space), and '\r' (carriage return).

Using separators with print() function
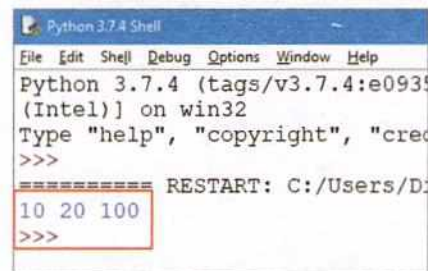
Using ',' operator : When you use ',' operator as the separator among the values, the values are displayed with a space between them.

Program 7:

Figure 8.25: Using Comma Operator | Output
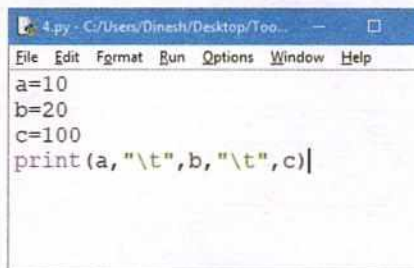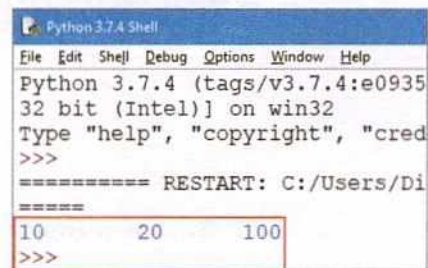
Using '\t' (tab space): When you use '\t' escape sequence as the separator among the values, the values are displayed with a tab space between them.

Program 8:

Figure 8.26: Using '\t' Escape Sequence | Output
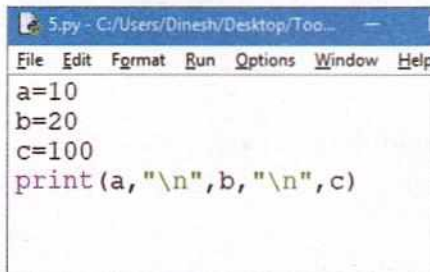
Using '\n' (Newline character):
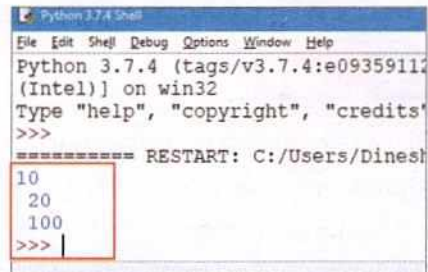
A **newline character** in Python is used to end a line and start a new line. In **Python**, the new line character can be used with the **input** function and with the **print** function. '\n' is a **newline character** used in Python.

Program 9:

Figure 8.27: Using \n Escape Sequence | Output
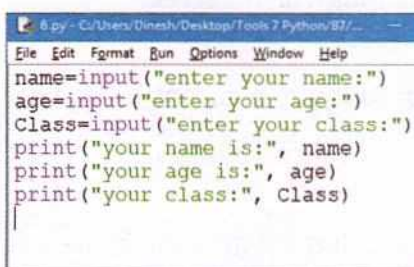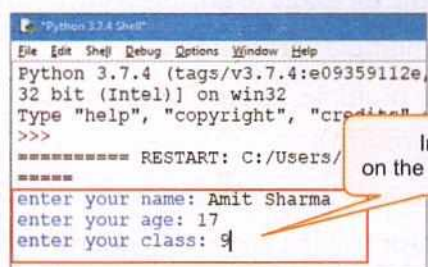
Let us consider another example. Suppose you want to make a program to accept the name, age, and marks of a student. For this, add the following code in the Python script file:

Program 10:

Figure 8.28: Program without Escape Sequence | Output

Now in the Python script file, add '\n' with the input and print function:

Program 11:

Figure 8.29: Program with Escape Sequence

Output

In the above output window, in order to give a better understanding, the text and the values are placed one after another.

RECAP

➤ Python was created by Guido Van Rossum when he was working at Centrum Wiskunde & Informatica (CWI).

➤ Python is a high-level language used to write codes for the computer programs.

➤ Interactive mode is beneficial for testing code where you type the commands one at a time and get the result or error immediately.

➤ Script mode is used for writing lengthy programs in Python.

➤ The print() function is used to display the output of any command on the screen.

➤ Python has various standard data types based on the types of values stored in variables.

➤ Input() function is used to accept the value for a variable from the user.

BRAIN DEVELOPER

SECTION - A

A. Fill in the blanks.

1. .... refers to the grammatical rules to be followed while writing a program in any language.

2. Python was created by ....

3. .... menu is generally used to edit the file in use.

4. In the Interactive mode of Python, the instructions are executed ...., giving the output.

5. A .... is a named memory location that stores the data.

6. Python .... cannot be used as a variable name.

HINTS • Variable • Syntax • Guido Van Rossum • Edit • Line by line • Keyword

B. State True or False.

1. To evaluate an arithmetic expression, it is not necessary to use print() function.

2. A variable name can consist of alphabets, digits, and underscore.

3. A script is a program that you type in Python.

4. In Python, only one type of data can be stored in memory.

5. Print() function is used to accept the value of a variable from the user.

6. The string values cannot be multiplied together.

7. When we use ',' operator as the separator among the values, the values are displayed with a space between them.

C. Application-based questions.

1. Kritika's computer teacher has given her an assignment to display the names of the fruits separated with a tab space in Python. Which separator should she use with the print() function?

   ....

2. Aman is working on his mathematics project work. He has to perform some quick calculations. Which mode of Python programming should he use for doing them?

   ....

SECTION - B

A. Multiple-choice questions.

1. Which of the following data types is not supported in Python?

   a. Numbers   b. String   c. List

2. When a new value is stored in a variable, its previous value gets ....

   a. Accepted   b. Overwritten   c. Overlapped

3. Values to variables are assigned using the .... operator.

   a. String   b. print()   c. Assignment

4. The data type for 12.4 should be ....

   a. int   b. float   c. str

5. To give a tab space while printing the statement, you use ....

   a. \t   b. /t   c. Tab key

6. The area where you type the code is called ....

   a. Work area   b. Worksheet   c. Script area

7. >>> print('10'+'20') will give the output ....

   a. 30   b. 1020   c. 2010

B. Answer the following questions.

1. Write any four features of Python language.

2. What is a variable? Discuss the rules for naming the variables.

3. Explain the different working modes of Python.

4. What are data types? Explain any two data types in Python.

5. What is the use of print() function? Discuss all the separators used with the print() function.

6. What is an Interpreter? How is it different from a compiler?

MY ACTIVITY　　　　**Learning While Playing**

A.　Write the output for the following code of statements.

a.　>>>print('India', 'Delhi')　　　...

b.　>>>print('India', '\t', 'Delhi')　　　...

c.　>>>print('India', '\n', 'Delhi')　　　...

d.　>>>a=10
　　>>>b=20
　　>>>c=(a+b)*4
　　>>>print(c)

e.　>>> a='10'
　　>>> b='20'
　　　>>> print(a+b)

f.　　>>> a=10
　　>>> b=20
　　>>> print(a+b)

B.　Rewrite the following statements after correcting them.

a.　>>>10=c　　　...

b.　>>>Print('India')　　　...

c.　>>>Print(age)　　　...

d.　>>>a=10
　　>>>b=20
　　>>>a+b=c
　　>>>print(c)

C.　Write the following code in the Script mode of Python and write the output in the given box.

```
one = 1
two = 2
three = one + two
print(three)

hello = "hello"
world = "world"
helloworld = hello + " " + world
print(helloworld)
```

A. Give the output of the following commands in the Interactive mode of Python:

1. 2 * 3.14 * 5
2. 4 + 5 / 3 * 8 − 5

B. Write the code for the following programs using the Script Mode:

1. Write a program to find the product of two numbers x and y, where x=150 and y=200.

2. It takes 3 hours to drive a distance of 192km on a motor way. Create a program to calculate the average speed in km/h?

3. To calculate and print the circumference and area of a circle.

4. To input the roll number, name, and marks in five subjects of a student. Calculate the total and percentage marks of the student.

GROUP DISCUSSION · For Concept Clarity

Divide the class into two groups and conduct a group discussion on the following topic:
Interactive mode vs **Script mode**

ONLINE LINKS · Looking For More

To know more about programming in Python, visit the following links:

https://www.tutorialspoint.com/python/

https://www.w3schools.com/python/

INTERNET SERVICES

Internet is defined as a network of millions of computers connected to each other worldwide. You can relate the term internet to the telephone network or the interstate highway system, which is spread across and interconnected to each other. It is the largest information database and has become a vital part of our lives. It enables the users to share ideas and search for information on any topic.

The internet has transformed the entire world into a global village.

HISTORY

In 1969, when man walked on the moon, the US Defence Department set an Advanced Research Project Agency (ARPA) for further research. They designed a network of four computers to exchange and share their data. This network was called **ARPANET** (Advanced Research Project Agency Network). Later, many Universities were allowed to join this network and share their information. This was the beginning of 'Networking of computers', which grew bigger day by day and gave birth to the INTERNET, the technology which has radically changed our lives. Earlier, Internet was used by engineers, scientists, and computer experts for research purpose but gradually the network was made accessible to private agencies and general public. People started using it for sending messages and files between any two computers.

In India, the internet services started on 15th August 1995, through a government owned company, VSNL. Some of the popular Internet Service Providers (ISP) in India are BSNL, Tata, Airtel, Reliance, Idea, etc.

POPULAR SERVICES ON THE INTERNET

There are many facilities available on the internet, which make our lives better. Some of the widely used internet services are as follows:

WORLD WIDE WEB (WWW)

The **World Wide Web** (WWW) or simple web is a means of accessing and sharing information over the internet. It contains millions of documents, called **Web Pages**. Each page contains text, graphics, video, audio, and links to other web pages called **Hyperlinks**. To access and traverse through these web pages, one requires a software program called Web Browser. The most popular browsers are Google Chrome, Mozilla Firefox, and Internet Explorer.

In 1990, while working at European Council for Nuclear Research (CERN), Sir Tim Berners-Lee, along with Robert Cailliau, invented the World Wide Web. Today the World Wide Web is the greatest database of human knowledge available online.

VIDEO CONFERENCING

A Video Conference is a mode of communication that involves exchanging audio and video at the same time between people sitting at geographically different locations. The participants can view each other on their monitors, as well as hear voice over speakers of their laptops or desktop computers.

It involves the use of camera known as **Webcam** as well as a microphone. The participants can also capture video and audio data in real time. Images and sounds are transmitted through the internet and delivered to other participants.

This technology is mainly used for virtual meetings among a group of people to discuss political, business, medical, or social affairs. On television, many times we see that a programme host is conducting an interview among several participants sitting in different cities and countries. This is done through video conferencing. Popular Video Conferencing applications include: **Skype, Adobe Connect, Oovoo, Yugma, Ekiga,** etc.

CHATTING

A **chat** is a text-based communication between one or more users in which messages are exchanged back and forth in real time through a chat software. Chat messages are generally short in order to enable other participants to respond quickly.

Chat is also known as Online chat, or Internet chat. Chat not only allows you to exchange text messages, but it also allows you to interact with the other users through voice and video chats.

There are various types of chats available on the internet. One can chat through instant messenger, a chat room, a chat website etc. However, most of them require the user to get registered first.

The **Chat room** is a designated area or forum on the World Wide Web that allows people with a common interest, friends, relatives or corporates to communicate with each other through instant messaging. Typically chat rooms are dedicated to various activities, such as sports, politics, health issues, television shows etc.

INSTANT MESSAGING

Instant messaging is like a private chat room where both the users must be online at the same time. It is a communication service over the internet that allows transmission of text-based messages from sender to receiver instantly. Like Online chat, instant messaging offers two-way message exchange in real time. The only difference between Instant messaging and Online chat is that in Instant messaging (IM), the communication
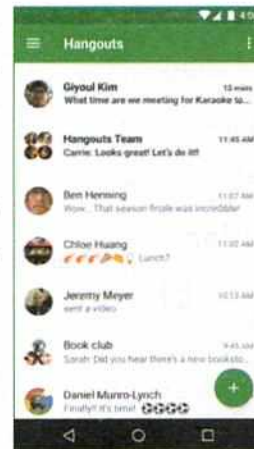
takes place between known users, and includes only those people whom the user has invited, whereas, Online chat could happen between unknown users too. Some popular IM services in use these days are **Google Hangouts, Windows Live Messenger, AOL Messenger, Yahoo Messenger, Skype IM** etc.

HANGOUTS

Google Hangouts is a free chat service that allows its members to participate in text, voice, or video chats. The chat can be in the form of one-to-one conversation or group chat involving ten people at the most. It can be easily installed and used on laptops, desktops, and mobile devices. This application is available for different operating systems including Windows, Android, and iOS.

In addition to chatting, Google Hangouts users can also use it to share documents, images, and YouTube videos with the other users. To access Google Hangouts, a user is required to have a gmail account.

How to add a contact to Hangouts

➤ Open the link **hangouts.google.com** and sign-in with your gmail id.   Or

Open your gmail account and click on the **Google apps launcher** button ▦ . Click on **Hangouts** under the **More** section.

➤ At the top of your Hangouts list, click the **Search** button 🔍 .

➤ Type a name, phone number, or email address. When you find the person you want in the search results, click his/her name to send him/her an invite.
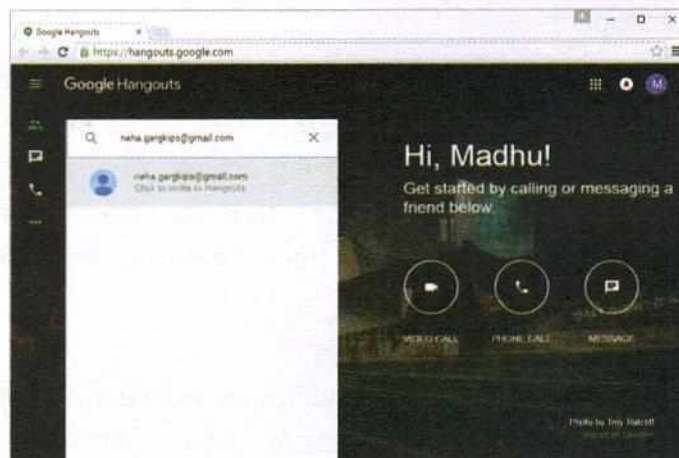
Figure 9.1: Searching Contact on Hangout

The next time you open Hangouts, the contact will appear in your Hangouts list.

Start a Hangouts Conversation

➤ Click on the **Message** button ▣ . In the Search box, enter the name or email address of the person you want to communicate with.

➤ When you find the person you were looking for, click on his/her name.

➤ A separate window appears. Type your message where the cursor blinks and press the **Enter** key.
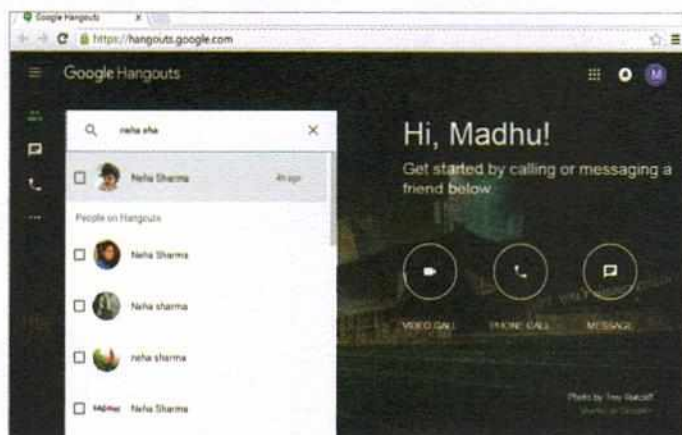
Figure 9.2: Displaying added Contact
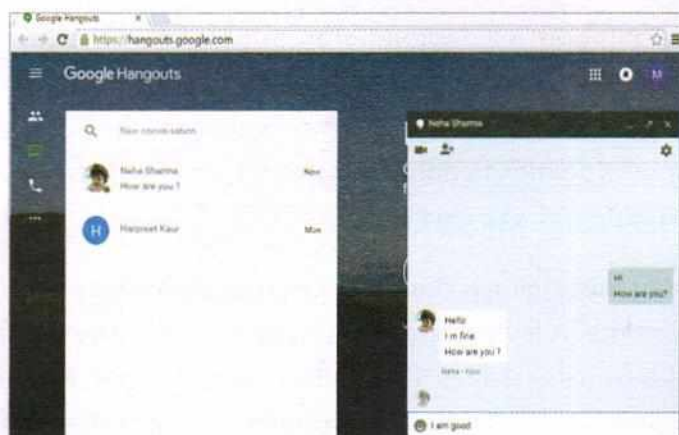
Figure 9.3: Starting a Conversation

INTERNET FREE CALLS

Another feather in the cap of the internet is that it lets you make free voice calls and video calls to anyone across the world. You can make free calls at much lower rates to anywhere in the world. Some software even allows you to send free messages and videos along with the free internet calls. The only condition is that the particular software or application should be installed in the devices at both the ends. After installing the software on a mobile or computer system, you need to create an account on it. Examples of such software or applications are:

skype™

Viber

Tango

Google Hangouts

REBTEL

FREE CALLING VIA HANGOUTS

The Google Hangouts application provides you with voice and video call capabilities with which you can have a face-to-face conversation with anyone. To make use of these features,

> Make sure that your computer is equipped with a camera, microphone and speakers before making a video call.

> At the top of the hangouts list, click on the **Search** button 🔍.

> Type the name or the email address of the person you want to call. When you find that person, click his/her name.

> A separate window opens. Click on the **Video call** button ▣ to start the video call.

Figure 9.4: **Making a call via Hangouts**

> Click on the **End call** button 🔴 at the bottom of the window, once you are done with the call.

NOTE

Likewise, you can make a Video call with upto ten persons at the same time by selecting the check boxes adjacent to their names.

E-LEARNING

E-learning means 'Electronic Learning'. It refers to learning with the use of technology that enables the people to learn anytime or anywhere. E-learning can be implemented by using an internet connection, a network, an intranet, or a storage disk. It is less expensive

than traditional learning and can be used to impart training to a large group of students at the same time, in an interactive and interesting manner. Thus, it saves time and reduces the need for costly classroom-based training. The quality of the electronic-based training depends primarily on the content and its delivery.

We have the facility to download study materials from universities, which may incorporate various types of media, like audio, text, virtual environments, video, and animation. There are various websites that are used for E-learning like Coursera, edx, National Programme on Technology Enhanced Learning (NPTEL), etc.

Figure 9.5: **E-Learning**

Various universities worldwide like Harvard, MIT and even IITs have launched courses, focused on offering classes online for free.

Besides Distance learning, Mobile learning, E-learning, Open Education Resource (OER), Massive Open Online Courses (MOOC) etc., are being well accepted as alternative approaches for imparting knowledge to the users.

⤷ E-BANKING

E-banking stands for **Electronic Banking**. It is the way of performing bank transactions using the internet. It enables the customers to perform all routine transactions such as account transfers, balance enquiries, bill payments and stop payment requests, and some even offer online loan and credit applications. These transactions can be done from anywhere, irrespective of time, if one has an internet connection on his computer. As all the services are web enabled; the customer needs to log in to the website of a bank and access the centralised database by specifying the desired bank service. This saves more time than going to the bank physically.

The steps to perform E-banking are:

> Open the website of the bank

> Enter user name and password

> Do the desired transaction

Figure 9.6: **E-Banking**

Some of the sites that provide e-banking are:
www.statebankofindia.com, www.pnbindia.com, www.hdfcbank.com, etc.

⤷ E-COMMERCE

E-commerce stands for **Electronic Commerce**, which means online commercial activities. It involves buying and selling of goods and services, or the transmitting of funds or data over the internet.

Lots of internet services are available to promote business electronically. The internet offers us convenient ways to shop from our homes or offices for almost everything, such as movies, games, stationery, apparels, health care and
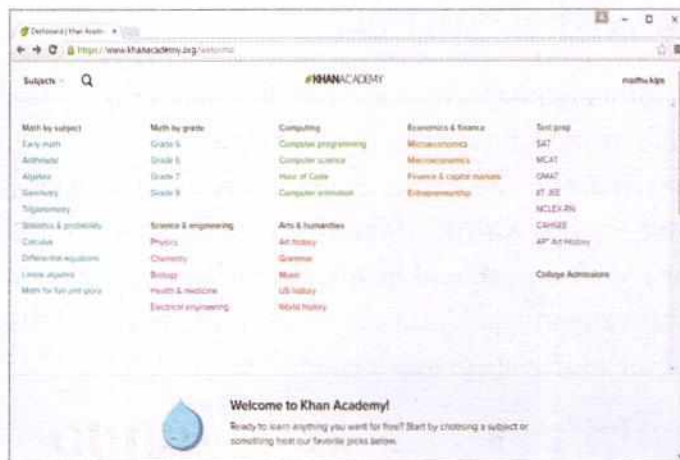
personal products, home appliances, and electronic items, etc. We can buy or sell new as well as second-hand goods. This process of selling and buying products over the internet is called **Online shopping** or **E-shopping**. Some of the popular portals for selling and buying goods are **amazon.com, ebay.com, craiglist.com, bonanza.com, and flipkart.com.**

AMAZON

Amazon is one of the largest online shopping websites in the world. It is an American electronic commerce and Cloud computing company, founded on 5 July 1994 with headquarters in Seattle, Washington. This site is popularly known for its wide collection of books, although it has expanded its domain to sell electronic appliances, clothing, furniture, books, and many more. It allows its users to avail payment through credit or debit card transactions, net banking, e-gift voucher, card swipe on delivery, or cash on delivery. To make use of this amazing e-shopping tool:

➤ Logon to the official website of Amazon, i.e. **amazon.in.** using your username, password.

➤ Type the name of the item you want to search, in the **Search** box at the top or you can search the item by selecting the appropriate category from the drop-down list of the '**Shop by Category**' option present just below the Amazon logo.

➤ Select the desired product and check the details, that is, the key features and specifications of that item.

➤ Once you are satisfied with the product specification, click on the **Buy Now** button.

Figure 9.7: E-Shopping

➤ After clicking on **Buy Now,** you need to create an amazon account. Enter your valid name, mobile number or email id and password. Click on **Create your Amazon account.**

➤ Fill in your address details under the **Delivery Address** section and click on **Continue.**

➤ Select the **Payment Method** and enter the required details. Click on **Continue.**

➤ Review your order details and click on **Place Your Order and Pay**. Enter the 3-D secure code received from bank in order to authorise your payment.

➤ You will get a 'Thank You' page once the order is successfully placed.

> Amazon has created different retail websites for different countries to facilitate faster and easier delivery of the products e.g., for India it is www.amazon.in, for Canada-www.amazon.ca, for America-www.amazon.com and so on.

⫸ INTERNET TV

Internet TV can be defined as a medium of delivering television content over an internet connection. To use the internet TV you must have a broadband connection. The internet TV is also known as **web television**. It is similar to cable TV.

You can even find more variety on the internet TV as many websites offer independently produced programs and unlimited number of channels keeping the specific interests of people in mind.

The internet TV options include web-based shows, video on demand (VOD), and regular television shows hosted on the channel's website.

You can watch the Internet TV on a computer screen, a television screen (through a set-top box) or a mobile device like a cell phone or an iPod. Rather than having a fixed time schedule designed by the channels, consumers can actively search and retrieve programs of their choice, anytime.

Some of the popular independent service providers of internet TV are **Netflix, Hotstar, Sony LIV**, etc.

⟫ INTERNET RADIO

Internet Radio, as the name suggests, is an online radio service that is broadcasted over the internet on dedicated radio servers. It is broadcasted in much the same way as traditional radio with regard to its presentation and format. Here, audio stream is digitised and split into small pieces for transmission across the internet. It provides the listeners with a continuous stream of audio, which cannot be paused or replayed. The internet radio has been in existence since the late 1990s. Unlike the traditional radio station, that has its broadcasting limitation (typically up to 100 miles), the internet radio has no limitation. It is capable of broadcasting graphics, text, and links along with audio, thus serving all the senses of the listeners. The internet radio is evolving and expanding its reach from desktop computer to devices that enable accessing broadcasts anywhere, anytime. Some of the popular Internet radio services are **Tunein, Pandora, Soma.fm, Vividh Bharti, Radio Mirchi**, etc.

RECAP

- ➤ Internet is defined as a network of millions of computers connected to each other worldwide.
- ➤ In India, the internet services started on 15 August 1995 through a government owned company, VSNL.
- ➤ The software program used to access and traverse through the web pages is known as Web Browser.
- ➤ A Video Conference is a mode of communication that involves exchanging audio and video at the same time between people sitting at geographically different locations.
- ➤ A chat is a text-based communication between one or more users in which messages are exchanged back and forth in real time, through a chat software.
- ➤ Google Hangouts is a free chat service that allows its members to participate in text, voice, or video chats.
- ➤ E-learning refers to learning with the use of technology that enables people to learn anytime or anywhere.
- ➤ E-banking is the way of performing bank transactions using the internet.
- ➤ E-commerce involves buying and selling of goods and services, or the transmitting of funds or data over the internet.
- ➤ The internet TV can be defined as a medium of delivering television content over an internet connection.
- ➤ The internet Radio, is an online radio service that is braodcasted over the internet on dedicated radio servers.

SECTION - A

A. Fill in the blanks.

1. .... is defined as a network of millions of computers connected with each other.

2. The software program, used to access and traverse through web pages is known as ....

3. .... is one of the popular video conferencing applications.

4. .... enables people to learn anytime and anywhere.

5. In .... audio stream is digitised and split into small pieces for transmission across the Internet.

| HINTS | ● E-Learning | ● Skype | ● Internet Radio | ● Web browser | ● Internet |

B. State True or False.

1. Bill Gates is the founder of World Wide Web.

2. Hangouts is one of the popular IM service.

3. In Online shopping, you can only sell the products.

4. E-learning is less expensive than traditional learning.

5. Flipkart is a popular e-commerce company based in India.

C. Application-based questions.

1. Shruti's children live in the USA. She wants to talk to them, face to face. Which internet service should she use for communication?

    ....

2. Anuj is a sales representative. He hardly gets time to visit the bank for transactions. Which internet service should he use to do all his banking activities?

    ....

SECTION - B

A. Multiple-choice questions.

1. In India, internet services started on ....

    a. 15th August 1995   b. 15th August 1985   c. 15th August 2005

2. Google Hangouts is a free ....

    a. E-learning   b. Web browser   c. Chat Service software

3. MOOC is one of the .... tool.

    a. E-banking   b. E-learning   c. E-shopping

4. Sachin Bansal and Binny Bansal are the founders of ....

    a. Flipkart   b. Skype   c. Amazom.com

5. .... is one of the popular payment gateways.

    a. Paypal   b. Bing   c. Ekiga

B. Answer in one word.

1. Which communication service involves exchanging audio and video at the same time between people sitting at geographically different locations?

    ....

2. Name the internet service that allows the the transmission of text-based messages from the sender to the receiver instantly.

    ....

3. What does ARPA stand for?

    ....

4. Name the service that helps us to perform bank transactions using the internet.

    ....

5. Name any two websites used for e-learning.

    ....

C. Answer the following questions.

1. What is the internet? Write a short note on the history of the internet.

    ....

    ....

    ....

    ....

    ....

2. Describe the term Video Conferencing.

    ....

    ....

3. What is Instant Messaging? How is it different from Online Chat?

4. Explain the concept of E-learning.

5. What is Internet Radio? How it is different from the traditional radio?

6. Write short notes on the following:

a. E-banking

b. E-shopping

c. Internet free calls

d. Internet TV

ACTIVITY SECTION

LAB SESSION — Perfection Through Practice

- Visit the site - www.bing.com. Search and download information and pictures on the topic - **Water Cycle**. Create an informative presentation by collecting information from the net.
- To increase your knowledge and for further learning, visit the site : www.wikipedia.com (The biggest online encyclopedia).

GROUP DISCUSSION — For Concept Clarity

Divide the class into four groups and discuss the topic:

Learning with the help of Technology

PROJECT WORK — Using Creativity

Make a presentation on the topic: **Popular Services on the internet**.

ONLINE LINKS — Looking For More

To know more about Internet, visit the following sites:
- http://www.gcflearnfree.org/internetbasics/
- http://fcit.usf.edu/internet/chap1/chap1.htm

WORSHEET

Chapters 6-9

A. Fill in the blanks.

1. The .... is a copy of the original symbol.

2. The .... is the store house of symbols from where these are used throughout the movie.

3. .... refers to the grammatical rules to be followed while writing a program in any language.

4. The .... function is used to display the output of any command on the screen.

5. .... is a communication that involves exchanging audio and video at the same time, between people sitting at geographically different locations.

HINTS   • Print   • Video Conference   • Instance   • Library Panel   • Syntax

B. State True or False.

1. A variable name must start with an alphabet (capital or small) or an underscore (_).

2. In Animate CC we can create only one instance of a symbol.

3. To access the Convert to Symbol option press F9 Key.

4. Input() function is used to print the value of a variable.

5. Internet TV can be defined as a medium of delivering television content over an Internet connection.

C. Write the shortcut keys for the following activities in Animate CC.

1. To enable the Properties panel ....

2. To preview the animation ....

3. Break apart the text ....

4. To import an image ....

D. Write the name of the Python window component.

1. This is the area that displays the name of the application and the document ....

2. The area where you type your code. ....

3. Shows the current status of your control/cursor on the window. ....

4. This menu is used to work with the options related to the currently used file. ....

A. Choose the best answer.

1. Animate provides .... types of tweened animation.

   a. One   b. Two   c. Three

2. .... is one of the popular payment gateways.

   a. Line path   b. Bing   c. Ekiga

3. >>> print('50'+'Fifty') will give the output ....

   a. 50Fifty   b. 50   c. Fifty

4. Python is a .... language used to write codes for the computer programs.

   a. Low-Level   b. High-Level   c. Assembly

B. Answer in one word.

1. Which tool is used to draw stylish brush strokes?   ....

2. Name the tool used to create a motion guide that defines a random path.   ....

3. Name the option used to remove a Keyframe.   ....

4. Which Python function is used to accept the value for a variable from the user? ....

C. Answer the following questions.

1. What is the utility of Motion Guide?

   ....

   ....

2. What is Tweening?

   ....

   ....

3. What is the use of print() function?

   ....

   ....

4. Explain the concept of E-learning.

   ....

   ....

PROJECT WORK

PYTHON

Project 1: **A Computer manufacturing company announcing special offer for their customers on purchasing Laptops and Desktops.**

On Laptops	Discount = 10 %
On Desktop	Discount = 5 %

Write a program in Python to calculate total discount on purchase of desktops and laptops.

Project 2: **Write a program in Python to enter employee name and basic salary. Find the gross pay of an employee for the following allowances and deductions.**

Dearness Allowance	20 % of Basic Salary
House Rent Allowance	15 % of Basic Salary
Provident Fund	9.20% of Basic Salary
Net Pay	Basic Salary + House Rent Allowance
Gross Pay	Net Pay – Provident Fund

Display the output in the following format:

```
Enter Employee Name:Abhinandan
Enter Basic Salary:67000
*****************************************************************
                    Employee Salary Details
           Employee Name is: Abhinandan
           Total Gross Pay=Rs: 90450.0
           Total Net Pay=Rs: 84286.0
*****************************************************************
>>> |
```

Project 1: Dear students, apart from your regular school fees, your parents are investing a lot of their hard earned money on your education. To be aware of this investment, visit your school uniform shop and school book shop. Enquire about the price of the following items and calculate the total amount.

FIRST DAY AT SCHOOL

S.No.	Particulars	Items	Quantity	Price	Amount
1	School Uniform	Shirts	2		
2		Trousers/Skirts	2		
3		Neck Tie	1		
4		Shoes	1		
5		Socks	2		
6		School Belt	1		
7	Stationery and Books	Text Books	One Set		
8		Note Books	15		
9		Stationery	One Set		
10	Accessories	School Bag	1		
11		Lunch Box	1		
12		Water Bottle	1		
	Total				

Now type the cost of each item in 'Price' column and calculate the amount as per quantity, in the 'Amount' column. Find the total of the calculated amount of all the items.

Project 2: Create an Excel sheet to calculate the Total and Percentage of the students of class 6. Also find out the maximum and minimum marks scored in each subject.

S14	▼	⋮	✕	✓	*fx*									

	A	B	C	D	E	F	G	H	I	J	K	L	M
1										Maximum Marks		150	
2													
3					**PROGRESS REPORT**								
4													
5	Roll No.	First Name	Last Name	English	Hindi	Maths	Science	S.Science	IT	Total	Percentage		
6	101	Anu	Raina	18	17	20	19	18	20				
7	102	Vijay	Sharma	5	5	9	3	5	7				
8	103	Preeti	Sahni	5	5	6	3	6	6				
9	104	Neeti	Verma	7	6	6	5	5	7				
10	105	Ajay	Goyal	8	5	7	6	6	8				
11	106	Soha	Ali	6	4	8	7	7	8				
12	107	Rohan	Gupta	6	6	5	6	5	7				
13	108	Bindu	Kumari	4	7	8	8	4	6				
14	109	Sheetal	Mahajan	4	4	6	5	6	5				
15	110	Mohit	Jain	7	3	5	5	5	5				
16													
17										Subject	Max.	Min.	
18										English			
19										Hindi			
20										Science			
21										Maths			
22										S.Science			
23										IT			

Sheet1 ⊕ ◀ ▶

Ready | | | 100%

➤ Format the spreadsheet and design it as shown in the figure.

➤ Calculate the 'Total' by adding up the marks in each subject. (Use Quick Analysis Tool)

➤ Fill up the data in the 'Roll no.' column with the help of **Auto Fill**.

➤ Calculate Percentage by dividing 'Total' with 'Maximum Marks' and multiplying the result with 100. (Use **Absolute Referencing** to include the cell reference of 'Maximum Marks')

➤ Find the maximum and minimum marks scored in each subject by using **Max** and **Min** function respectively.

➤ Insert one more column in the above sheet, between 'Last Name' and 'English', and name it 'Full name'. Fill this column by joining 'First Name' and 'Last name' enteries. Use **Flash Fill** for this activity.

⤳ ANIMATE CC

**Project 1 :** Create an animation in **Animate** by using the given hints:

➤ Draw the objects like sun, clouds, beehive, and tree by using the **Oval, Pencil,** and **Paint Bucket** Tools from the **Tools Panel.**

➤ Draw some flowers in the scenery and create multiple copies of it.

➤ Draw 4 bees in separate layers and convert them into **Graphic symbols.**

➤ Draw path for each one of them in separate layers and create **Classic Motion Guide** for all.
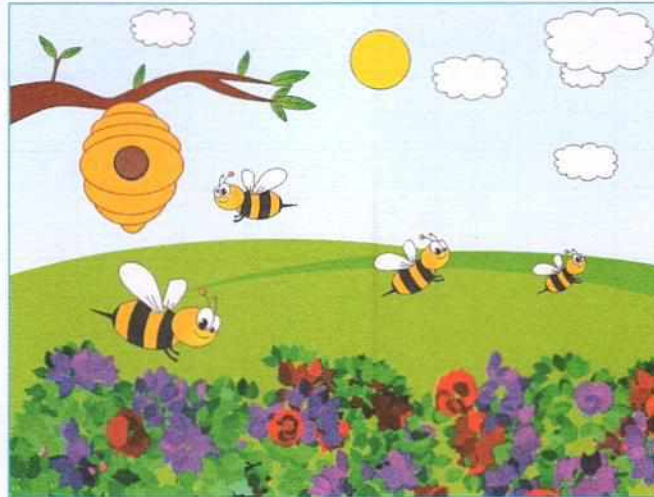
Project 2 : Create an animation in **Animate** by using the given hints:

➤ Create a two lane road scene as shown in the figure.

➤ Create a layer and draw a traffic signal flashing green light in one direction.

➤ Create another layer and draw cars facing the traffic signal.

➤ Define Motion Tween for the cars facing the green light.

➤ Create another layer and draw another set of cars in it. Make the cars stop when signal flashes red light.
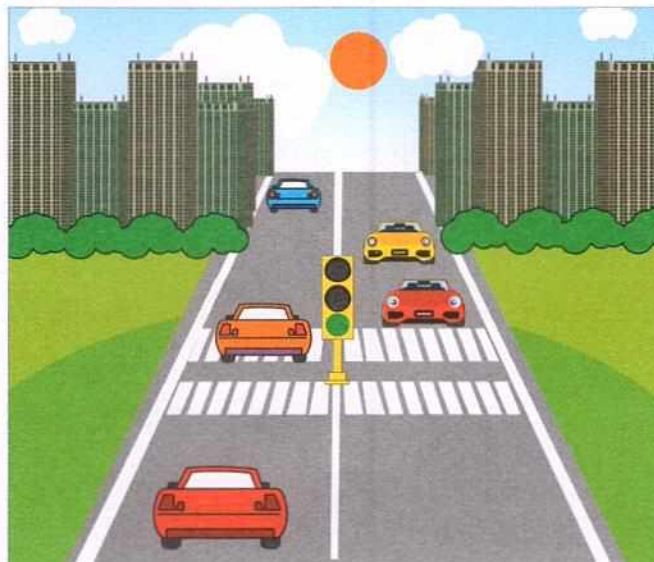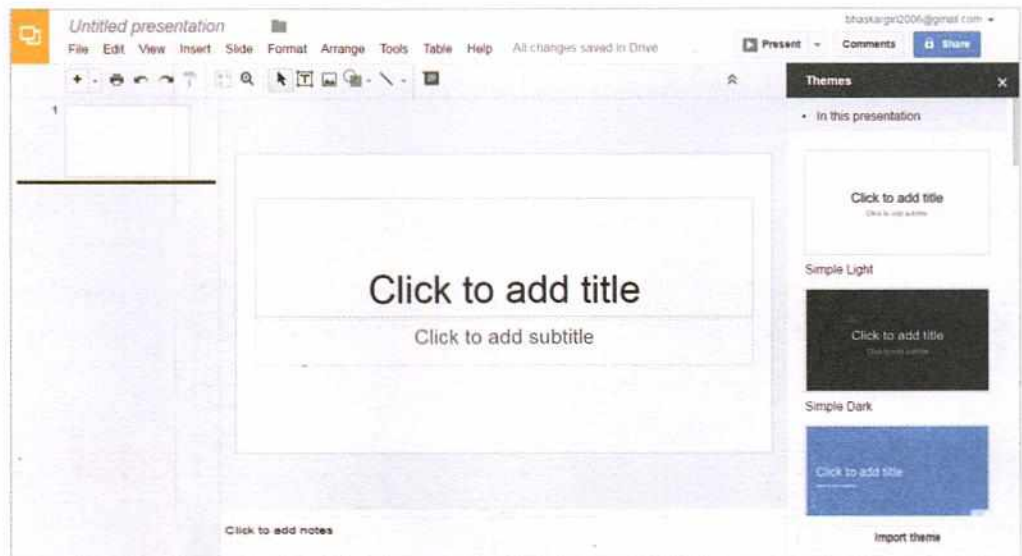
GOOGLE SLIDES

Google Slides is an online application for creating dynamic presentations. With Google Slides, you can create presentations right in your web browser and no special software is required. It is a presentation editor in Google Docs and Google Drive productivity suite. The only prerequisite to use it is to have a Google account. It works similar to PowerPoint and Keynote. Presentations created with Google Slides are automatically saved to the Google Drive and accessible anywhere in the world, provided there is an internet connection. Various features of Google slides are as follows:

➤ Easy to create and edit presentations in the web browser.

➤ Formatting can be done easily by adjusting spacing, fonts, and colors.

➤ Sharing is simple. It allows multiple users to collaborate on a document in real time, giving permission to edit, view, or add comments.

➤ Uploading of .pptx and .pps files can be done with ease and further they can be converted into a Google presentation.

➤ Google presentation can be downloaded as a .pdf, .ppt, .svg, .jpg, or .txt file on the desktop.

➤ Images and videos can be inserted to beautify your presentation.

➤ Presentations can be published and embedded in a website.

⋙ CREATING A NEW PRESENTATION

To create a new presentation in Google Slide:

➤ Open the webpage **www.google.com** and login with your e-mail id and password.

➤ Click on the **Google apps Launcher** .⋮⋮⋮ drop-down menu appears.

➤ Choose the **Drive icon** ▲ from the menu.

➤ Click on the **New** tab and select **Google Slides** option from the drop-down list.

➤ A new blank presentation named-**Untitled presentation** will appear on the screen.

NOTE

You can also open **Google Slides** from the **Google Docs** window by clicking on the Main menu ☰ icon.

CHOOSING A THEME

When you first create a new presentation, Google Slides will prompt you to select a theme. You can configure the looks of your presentation by selecting any theme from the displayed list. Each theme has a unique combination of colours, fonts, and slide layouts. You can also select the desired theme from the **Theme** command on the shortcut toolbar or **Change Theme** option from the **Slide** menu.

CHANGING THE SLIDE LAYOUT

Whenever you start a new presentation, it will contain one slide with the **Title Slide** layout. You can change the layout of the slide according to the content. The layout can be changed in a variety of ways.

➤ Click on the drop-down arrow next to the **New Slide** ⊞ command.

➤ Choose the desired layout from the displayed list that appears. Or

Select the Layout tab and choose the desired layout. Or

Click on the **Slide > Apply Layout** option and select the desired layout.
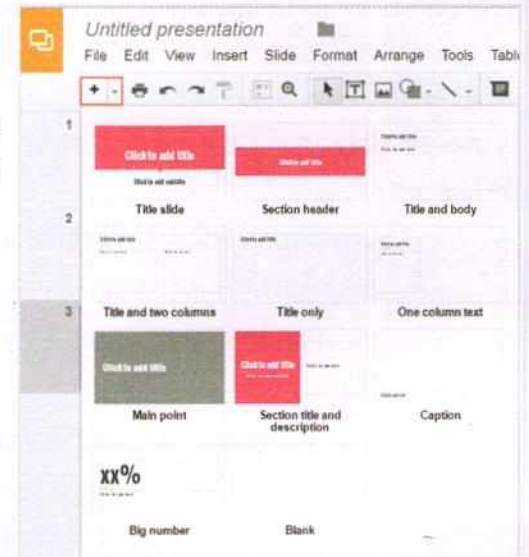
CREATING A PRESENTATION FROM THE TEMPLATES

Google Slides offers a wide variety of pre-designed templates that can be used to beautify your presentation. You can also customise these templates according to your requirement.

➤ Click on **File > New** and select the **From template** option from the displayed list of options.

➤ This will take you to the **Start a new presentation** window, which contains various templates.

➤ Navigate through the templates and select the one that suits your need.
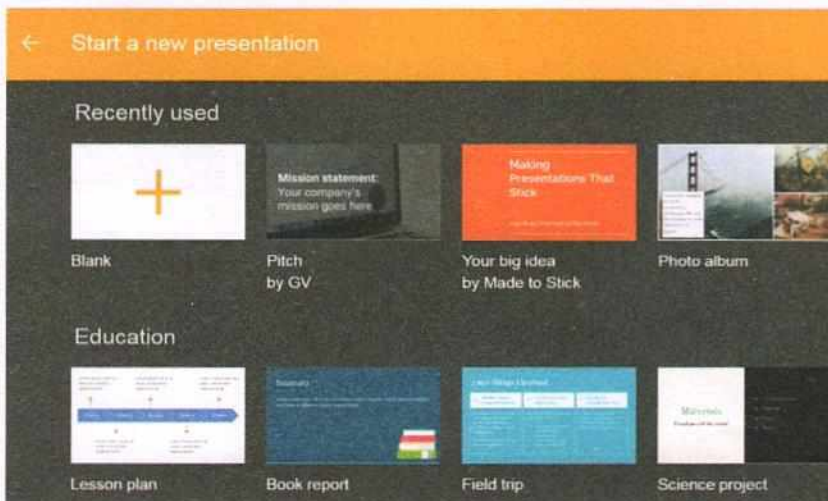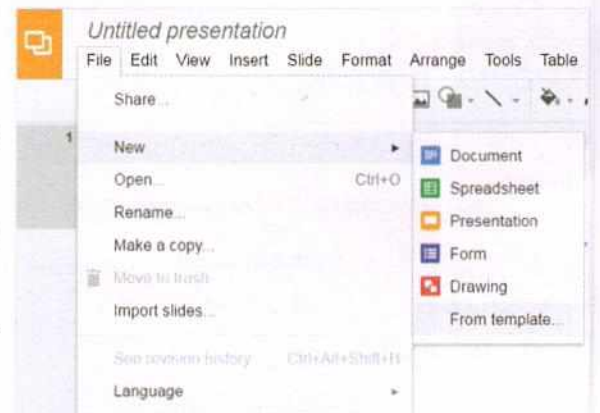
➤ A new file will be created with the selected template. Customise the file with your own information.

NOTE

You can also browse for more templates available in the **Google Docs Template Gallery**.

WORKING WITH SLIDES

Google Slides works similar to other presentation software. The left side of the presentation window displays the slides that you have created and the centre of the window displays the current slide in which you are working.

While creating a presentation, you may need to add more slides, delete or duplicate the existing ones or change the position of the slide. Google slides helps you to carry out all these tasks.

ADDING, MOVING, DUPLICATING, AND DELETING SLIDES

➤ Click on the **Slide** menu and choose **New slide** to add a new slide in the presentation. You can also click on the **New slide** button + ‑ present on the shortcut toolbar just below the Menu bar. or

Press the **Ctrl + M** shortcut key combination from the keyboard.

➤ To move a slide to a new location, choose any option amongst **Move slide up, Move slide down, Move slide to beginning,** or **Move slide to end** from the **Slide** menu according to your requirement or simply click and drag the slide thumbnail to the desired location in the **Slides Navigation Pane**.

➤ Choose the **Slide** > **Duplicate slide** command to make a duplicate copy of the currently selected slide. The new slide will be placed below the original slide.

➤ Choose the **Slide** > **Delete slide** command to remove the currently selected slide.
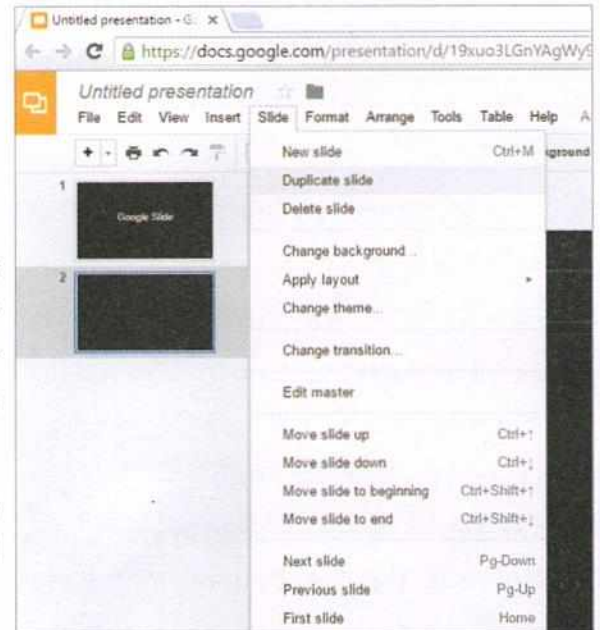
> **NOTE**
>
> The above-mentioned functions can also be performed by right-clicking on a slide thumbnail and selecting the desired option from the shortcut menu.

ADDING TEXT IN SLIDE

➤ Click on the **Click to add title** placeholder, insertion point appears. Enter any text to define the title of the slide.

➤ Similarly, define the subtitle by selecting the **Click to add subtitle** placeholder.

➤ As you type in the document, it gets automatically saved in Google Drive.

➤ You can also edit your presentation whenever required.

INSERTING AN IMAGE INTO A SLIDE

➤ Click on the **Insert** menu and choose the **Image** option from the drop-down menu.

➤ The **Insert image** dialog box will pop-up; displaying several ways to add images in a slide.

You can also upload an image from your hard drive, your Google + account, or Google Drive. You can take a picture using a webcam, or you can search Google, LIFE magazine photo archives, or stock photos in the **Image** panel. Here

you can use Search source:

➤ Click the Search source and type your search item in the Search box to find images using Google Search. Press either **Enter** or the **Search** 🔍 tool.

➤ Choose the desired image and click on the Select button to insert it into your slide.

INSERTING A VIDEO INTO A SLIDE

You can also insert online videos in Google slides through YouTube.

➤ Click on the **Insert** menu and choose the **Video** option. The **Insert video** dialog box will appear.

➤ Find the desired video by typing in the Search box. The list of options will appear.

➤ Scroll through the video list and select the video you would like to insert.

➤ Click on the **Select** button.

➤ The video will be inserted in your slide. You can also resize the video by dragging its handles.
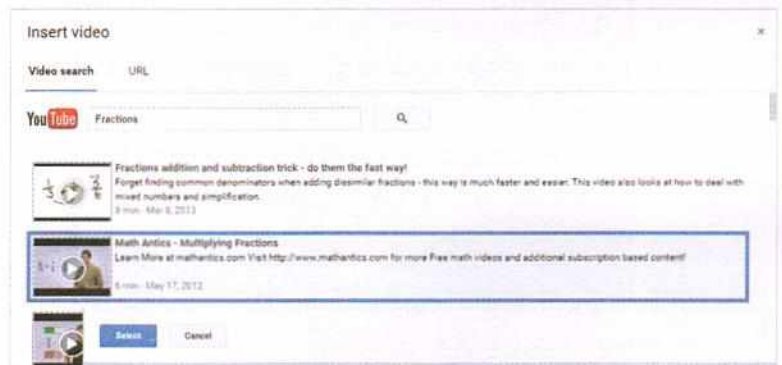
NOTE

You can also add videos in your slides by copying their URLs in the **Paste YouTube URL here** textbox under the **URL** option in the **Insert video** dialog box.

> The Insert menu contains various other options that enable you to insert textbox, different shapes, wordart, chart, tables, comments, and much more in your presentation.

ADDING TRANSITIONS AND ANIMATIONS

Animations are a great way to give a dynamic look to your presentation. They can also be used to show objects or text on a slide, step-by-step. To add animation effects to your presentation:

➤ Select a slide and go to **View** menu. Select **Animations** from the sub-menu.

➤ Select an object on the slide and then click on + **Select an object to animate** button in the **Animations** pane. Or click on the **Insert > Animation** option.

➤ Click on the drop-down arrow of the **Fade in** list box and choose the desired Animation type in which you want the selected object to appear.

➤ Open the **On click** drop-down menu and set the **Start condition** for the animation.

- Adjust the speed of animation by moving the **Duration** slider. Check the applied effects by clicking the **Play** button.

- To place animation on more objects, select another object and click on **+ Add animation** button in the **Animations** pane or right-click on the object and select **Animate** from the context menu.

- A list of animations is displayed in the pane. It specifies the order in which animations will take place on the slide. You can change the order by dragging the desired animation up or down.

- To test the animation effects, once again click the **Play** button at the bottom of the pane.

Animations pane can also be used to apply the transition effects. These effects appear when a slide moves to another slide. Let us apply the transition effect:

- Click on **Slide : No transition** in the **Animations** pane. Choose the Transition type for the currently selected slide from the **No transition** drop-down arrow. Set the speed from the **Duration** slider.

- Click on **Apply to all slides** button to apply this transition to all slides in the presentation. Click the **Play** button to view the effects.

> **NOTE**
>
> You can also add or modify slide transitions from the menu bar by clicking on **Slide > Change transition**.

ADDING COMMENTS

Adding comments in a presentation is a great way to leave feedback and suggestions on the slide when collaborating your work with the other team members. Comments can be added to slides, text, images and shapes as well. To add comments in a slide:
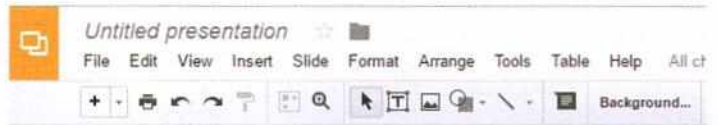
- Select a section of the slide.

- Click on the **Insert** menu and select the **Comment** option. Or Click the **Add comment tool** on the toolbar.

- The pop-up window will appear. Add your notes in it and click on the **Comment** tab.

- If the comment is important for a specific collaborator to see, enter '+' symbol in the comment text box followed by his address. You can also select the address from the drop-down list that appears when you type '+' symbol.

- The '+' symbol will add people to this discussion and send an email when you press the **Comment** tab.

- The receiver will get an email along with a link to the presentation. Thus, he can then reply to your comments to start a discussion.

▷ PRESENTING YOUR SLIDES

Once you finish editing your presentation, you can preview or present your slides by following the given steps:

- Click on the **View** menu and select the **Present** option from the drop-down list. Or

Select the ▶ Present ▾ button at the top-right side of the page to start the presentation.

➤ The presentation will open in a new window with a menu at the bottom left corner of the window.

➤ You can move between the slides either by clicking the mouse or clicking the **arrows** from the bottom menu.

➤ You can also jump to a specific slide by clicking on the **Slide 1** option and choosing the desired slide from the displayed list. To see the Speaker notes, click on the **Presenter View**.

PRINTING PRESENTATION

To print a presentation from the editor:

➤ Click on the **File** > **Print** option.

➤ In the preview that appears, you can either scroll through your document on the right or choose **Print** options on the left.

SHARING DOCUMENT AS A LINK

With Google Slides, multiple persons can work together on the same presentation in real time as it allows you to share your documents with others at the same time. You can share with specific people or with anyone just by sharing a link. To collaborate:

➤ Click on the **Share** button present at the extreme right corner of the window.

➤ The **Share with others** dialog box appears.

➤ Enter the name or email address of the persons you want to share your document with or click on the **Get shareable link** button ⊝ on the extreme-right corner.

➤ The link of the document will be displayed under the **Link sharing on** section. Click on the **Copy Link** button. The link gets copied to the clipboard. You can paste and share the link with anyone.

➤ Choose the desired authorisation from the list of options by clicking the drop-down arrow under the **Link sharing on** section. Click on the **Send** button.
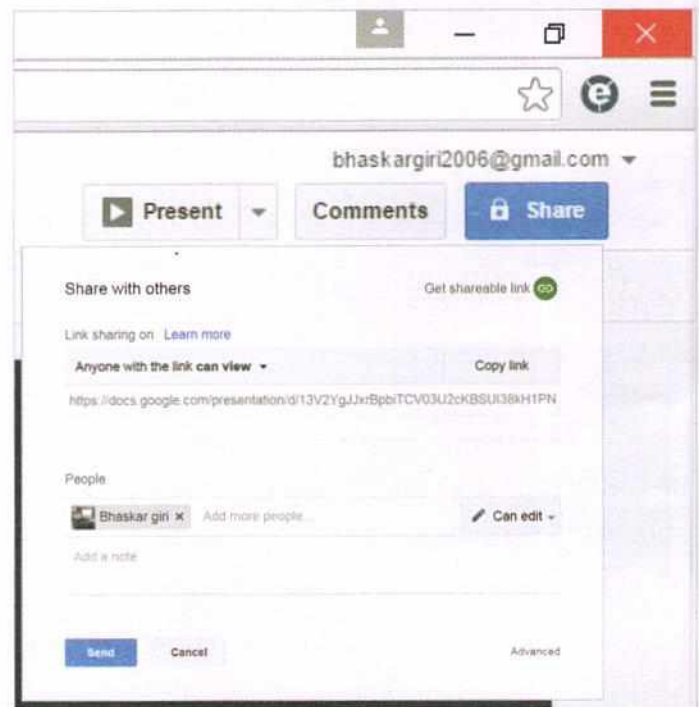
E-MAIL A COPY AS AN ATTACHMENT

If you need to collaborate with someone on your presentation, you can email it as an attachment.

➤ Click on **File** > **Email as attachment** option.

➤ Select a format.

➤ Enter the email addresses or Groups you want to send copies to.

➤ Enter a message and click on the **Send** button.

QUICK GLIMPSE OF OFFICE 365

Office 2016 suite contains applications, such as Word, Excel, PowerPoint, and Outlook that are available as a one-time purchase for use on a single PC.

Office 365 is a suite of services offered by Microsoft. It is a web-based subscription service, where you have to pay a monthly or yearly fee to make use of the various services it provides. Office 365 subscription plans include, Office 365 Home, Office 365 Personal, Office 365 University, Office 365 for Mac, Office 365 for Business, etc. With each plan, you can install the 2016 versions of Word, Excel, PowerPoint, Outlook, and OneNote (Access and Publisher are also included for PC users).

With the subscription of Office 365, you get:

➤ The latest version of Office applications that are updated regularly, as and when a new version is released. Office 365 can be installed on up to five devices.

➤ One Drive cloud storage (free up to 1 TB) enables you to store all the documents in one place and allows you to access these documents at any time and anywhere. Therefore, it is easier than ever to create, edit, and share the documents at one go.

➤ Free sixty minutes of Skype calling per month, which will help you to stay in touch with your friends around the globe.

➤ Office Mobile Apps to get the things done on any device-PCs, Macs, tablets (including iPad and Android tablet).

➤➤ KEY FEATURES OF OFFICE 365

Works smarter with the built-in Word Researcher and Editor

Researcher feature helps you to find and use the content, related to your topic, right within your Word document. It uses the Bing Knowledge Graph to extract the relevant content from the web and provides safe and credible information.

The Editor feature on the other hand provides intelligent suggestions for proof-reading and editing as you type in a document.

Finds the right command in seconds with Tell Me

It is easier than ever to find the feature you need. Just type what you want to do in the intelligent "Tell me what you want to do" search box and go directly to the command you need.

Put your best foot forward with PowerPoint Designer and Morph

PowerPoint Designer is an intelligent, built-in tool that helps you to create high-quality slides in seconds. The new Morph transition effect creates cinematic motion in one click, seamlessly animating between the slides.

Keyboard, touch, or pen - it works the way you do

Touch and inking capabilities give flexible options for reviewing, editing, and presenting the views.

N OneNote

Organise and Share Your Work

OneNote is a digital notebook that helps you in making quick notes either handwritten or typed. It provides you with the flexibility to assemble and organise your notes, images, audio, and video clippings together in one location on your computer. You can share your notebook with anyone you desire and work on your projects also at the same time.

S SharePoint

Keep Projects Together

It is a platform; offering different services. You can use SharePoint to store and organise documents and collaborate with anyone in real time. You can sign-in to SharePoint from any device, like desktop or mobile phones and use it to have access to any information.

Skype

Connect and Stay in Touch

It is the most popular application used for making voice and video calls on the internet. Skype to Skype calls are always free but you can also use Skype to call mobile phones and landlines at affordable rates. You can also use it for instant messaging or chatting.

yammer

Connect across your Company

It is a private social network within a company or an organisation that allows the team members to share information, to have group discussions, and build a body of knowledge that is instantly accessible by any co-worker at anytime and anywhere.

S Sway

Turn your Ideas into Stories

It helps in creating and sharing dynamic and interactive reports, presentations, newsletters, and personal stories. The built-in design templates help to enhance its look. It also provides you with a safe browsing tool to search relevant images, audio clips, videos, and other contents that you can drag and drop right into your creation. It is extremely easy to share a Sway with your family and friends without signing in or downloading additional software. Sway for Windows 10 is available for download in the Windows Store.

D Delve

Discover Exactly What you Need

Microsoft Delve, previously code-named "Oslo", helps you in searching your emails, meetings, contacts, social networks, and corporate documents stored across Office 365. It uses "machine learning" artificial intelligence to provide you with the stuff you need to see. You do not have to remember the title of a document and its location. Delve brings the right information to you proactively based on what you are working with. It shows you the documents, no matter where they are stored, in the cloud but you can only see the content that has been shared with you.

NATIONAL CYBER OLYMPIAD

LOGICAL REASONING

1. Select a figure from the options in which the figure (X) is exactly embedded as one of its part.

Figure (X)

(A) (B)

(C) (D)

2. The given equations are solved on the basis of a certain system. On the same basis, find out the correct answer from amongst the options.
If $12 - 5 = 84$, $10 - 5 = 50$, $8 - 5 = 24$, then $6 - 5 = ?$
(A) 11   (B) 30
(C) 6   (D) 1

3. Select a figure from the options which will complete the Fig. (X).

Fig. (X)

(A)
(B)

(C) (D)

4. The given question consists of figures (i), (ii), (iii) and (iv). There is a definite relationship between figures (i) and (ii). Establish a similar relationship between figures (iii) and (iv) by selecting a figure from the options which will replace the question mark in fig. (iv).

(i)   (ii)   (iii)   (iv)

(A) (B)

(C) (D)

5. If 'Cloud' is coded as 'Rain', 'Rain' is coded as 'Tree', 'Tree' is coded as 'Axe', 'Axe' is coded as 'House' and 'House' is coded as 'Mason', then from which of the following 'Wood' is obtained?
(A) Tree   (B) Rain
(C) Axe   (D) Mason

COMPUTERS AND INFORMATION TECHNOLOGY

6. What can be used with a PRINT statement for printing multiple values in a single line in QBASIC?
(A) Comma   (B) Semicolon
(C) Tab (n)   (D) All of these

7. Windows 7 can run on _____.
(A) 32-bit processors
(B) 64- bit processors
(C) 128 bit processors
(D) Both (A) and (B)

8. In MS-Word 2010, to insert the header and footer in a document, which tab should you go to?
   - (A) View
   - (B) Page Layout
   - (C) Home
   - (D) Insert

9. The software program that acts as an interface between the user and the www is _____.
   - (A) E-mail
   - (B) Internet
   - (C) Protocol
   - (D) Web browser

10. Which of the following is a volatile memory ?
    - (A) ROM
    - (B) RAM
    - (C) EPROM
    - (D) PROM

11. By clicking which button one can return the window to its original size in Windows 7 ?
    - (A) Maximize button
    - (B) Minimize button
    - (C) Restore button
    - (D) Close button

12. To switch between the running applications, _____ in Windows 7.
    - (A) Press F1
    - (B) Press ALT + F4
    - (C) Press TAB
    - (D) Press and hold down ALT and press TAB

13. What is the dierence between Volatile and Non-Volatile Memory?
    - (A) They are both same types of memory.
    - (B) Volatile memory loses its contents when there is no electricity while non-volatile memory retains its content with or without electricity.
    - (C) Non-volatile memory loses its contents when there is no electricity while volatile memory retains its content with or without electricity.
    - (D) None of these

ACHIEVERS SECTION

14. Aero shake feature of Windows 7 requires .... shakes only in order to perform the task.
    - (A) 3
    - (B) 2
    - (C) 10
    - (D) 7

15. Identify the following.
    - It is a Windows 7 utility program.
    - It is used to create new characters that can be inserted into documents using character maps.
    - It can be accessed by typing eudcedit.exe in the run box.

    (A) (B) (C) (D)

16. What would be the output of given QBASIC code if user enters the value of A = 1 and B = 5?
```
CLS
INPUT A
INPUT B
SUM = A + B
Avg = SUM/2
PRINT "SUM="; SUM
PRINT "Average="; Avg
```

- (A) SUM= 6
     Average= 3
- (B) A = 1
     B = 5
     SUM = 7
     Average = 3
- (C) A = 1
     B = 5
     SUM = 6
     Average = 3
- (D) SUM = 6
     Avg = 3

17. Transition effect deals with the entrance and exit of a slide in a slide show. Which of the following categories of Transitions is depicted in the given image of MS-PowerPoint 2010?

Dissolve   Checkerboard   Blinds   Clock

- (A) Subtle
- (B) Exciting
- (C) Dynamic Content
- (D) Static Content