

UNIT 4

IMAGE PROCESSING AND MULTIMEDIA SYSTEMS

UNIT OUTCOME

Students will be able to:

- recognise components of multimedia and work with these components effectively;
- understand the meaning and use of multimedia production;
- create interactive applications using multimedia applications.

4.1 BASICS OF MULTIMEDIA

In this sub-unit, we will learn about basics of multimedia.

● Definition of Multimedia

Media is the means of communication *i.e.*, plural of medium. *Multimedia* is the combined use of several media, such as motion-pictures, slides and music. Or in other words, multimedia refers to technology that presents information in more than one medium—such as text, pictures, video, sound, and animation—in a single integrated communication. The development of the World Wide Web expanded the Internet to include pictures, sound, music, and so on, as well as text.

Multimedia is media that utilizes a combination of different content forms (see Fig. 4.1).



Fig. 4.1: Multimedia contains a combination of content forms

● Importance of Multimedia

Multimedia is appropriate whenever a human interface connects a human user to electronic information of any kind. Multimedia improves information retention. When it is properly constructed, multimedia can be entertaining as well as useful. The importance of multimedia grows as new technology develops.

Multimedia plays an important role in the following fields:

1. **Business:** The Internet provides the general public with website hosting and building that lets multimedia enhance an idea. These websites, blogging and social platforms give businesses a way to enhance their progress. Business applications for multimedia include presentations, training, marketing, advertising, product demos, simulations, databases, catalogs, instant messaging, and networked connections.
2. **Education:** Schools in Ethiopia are perhaps the destination most in need of multimedia. Computer-assisted programs like Microsoft PowerPoint have allowed classrooms to use graphics and visuals to do presentations in creative ways. Interactive graphics make learning more visually enhanced and can clarify ideas. Students can also design and run websites.
3. **Home:** Multimedia has entered the home via TVs and is used for gardening, cooking, home design, remodeling etc. Today, home consumers of multimedia use a computer with CD-ROM or DVD drive for their different type of activities.
4. **Recreation:** People are able to watch movies and listen to audio, read books with multimedia access on their laptop computers. This allows people to entertain themselves wherever they go.
5. **Engineering:** Software engineers may use multimedia in computer simulations for anything from entertainment to training such as military or industrial training. Multimedia for software interfaces are often done as collaboration between creative professionals and software engineers.
6. **Public Places:** Multimedia is available at stand-alone terminals or kiosks used in hotels, at railway stations, shopping malls, museums, libraries. The way we live is changing as multimedia penetrates our day-to-day experience and our culture. Today, multimedia is found in churches and places of worship as live video with attached song lyrics shown on large screens using elaborate sound systems with special effects lighting and recording facilities.
7. **Communication:** Multimedia platforms can be used as a communication device that can link to two people from different regions of the world. People are able to talk over the computer through chatting, social networking and through video cameras.

In summary, we can say that multimedia is very useful in education, training, marketing, advertising, product demos, databases, catalogs, entertainment, and networked communications.

● Components of Multimedia

The multimedia components are:

1. Text

In the past, content was produced primarily via text. Though additional elements have been added, text remains vital to multimedia applications. This is because text is still an effective way to communicate. In multimedia, text is used as headlines, subtitles, and captions. In addition to supplying content, text is used to give directions and communicate information, text-based menus and buttons help guide users through the multimedia applications, and electronic books, magazines, and reference materials still rely on text to inform and educate.

2. Graphics

Because most people like illustrations, visuals, graphics, 2D and 3D images are crucial to multimedia development. In fact, multimedia applications are predominately graphic. Because they play such a critical role, balancing graphics is essential. *When designing a multimedia application, it is important not to get carried away with graphics.* Adding just the right graphic and just the right number of graphics may help the user learn and retain more information in less time and with less effort.

Graphics that fit most needs are quite easy to find. Commercially prepared drawings called clipart come packaged with many application programs. Charts, another type of graphics, can convey a great deal of information in a very limited space. Photographs can also be used to enhance multimedia applications.

When a graphic or other multimedia object serves as a link to additional information about a topic, the link is called hypermedia.

3. Animation

Animation refers to graphic images that change or move. Animation can convey information, add visual interest, or draw attention to important information or links in a multimedia application. Animation is commonly used in advertising and marketing on the Web because the movement does grab the visitor's attention. By illustrating proper techniques or explaining complex procedures, animation can also serve as an excellent learning aid in computer-based training programs.

Like clipart and stock photography, animated graphics are available for purchase on CD-ROM or they can be downloaded from the Internet. In addition, commercial software and shareware can be purchased or downloaded and used to create simple or complex animations.

4. Sound

By incorporating sound into a multimedia application, you require the user to make use of yet another sense. This enhances the experience and increases the likelihood of user understanding and enjoyment.

In multimedia applications, sound that has been digitized is called audio. Audio can be obtained by capturing sound into a personal computer using a microphone, CD-ROM, or other input device. It can also be played from a synthesizer, keyboard, or other musical instrument that is connected to the computer using MIDI (musical instrument digital interface) port.

5. Video

Video can do a great deal to enhance a presentation, illustrate a proper technique, or advertise a new product. Video files are photographic images played at speeds that make it appear as if the images are in full motion. Video files are incredibly large because a huge number of images are required to give the appearance of motion. Delivering video over the Internet is particularly challenging.

Interactive multimedia allows users to respond directly to and control media elements. Users of interactive multimedia become active participants in an application instead of passive recipients of information.

• Hardware and Software Requirements for Multimedia

A *multimedia computer system* is a computer capable of integrating two or more types of media (text, graphics, animation, audio and video) for generation, storage, representation, manipulation, and access of multimedia information.



Fig. 4.2: Typical multimedia computers

For using multimedia on a computer system, it needs certain hardware components and software resources to be present.

Hardware Requirements for Multimedia

The basic hardware requirement for multimedia are:

1. Central Processing Unit (CPU) – Pentium Processor
2. Random Access Memory (RAM) – 1 GB RAM
3. Monitor – Super Virtual Graphics Arrays (SVGA)
4. Video Card
5. Sound Card
6. CD-ROM Drive

Software Requirements for Multimedia

The basic software requirement for multimedia are:

1. Word Processor for entering text
2. Image Processing software such as Photoshop, CorelDraw, etc.
3. Animation creator like 3D Max, Flash, etc.
4. Sound can be created using Sound forge, etc.
5. Video can be used by using software like Video for Windows, Author Ware, etc.

● Multimedia and Hypermedia

Multimedia

It is the integration of sound, animation, and digitized video with more traditional types of data such as text. It is an application-oriented technology that is used in a number of ways, for example, to enhance presentations, and is based on the increasing capability of computers to store, transmit, and present many types of information. Some examples of multimedia applications are: business presentations, online newspapers, distance education, and interactive gaming.

Hypermedia

It is an enhancement of hypertext, the non-sequential access of text documents, using a multimedia environment. It provides the users the flexibility to select whatever document they want to view based on their current interests. The path followed to get from document to document changes from user to user and is very dynamic. This “make your own adventure” type of experience sets hypermedia apart. The best example of hypermedia is World Wide Web.

The major difference between multimedia and hypermedia is that the user is more actively involved in the hypermedia experience, whereas the multimedia experience is more passive.

4.2 MULTIMEDIA AUTHORIZING

Multimedia authoring involves collating, structuring and presenting information in the form of a digital multimedia, which can incorporate text, audio and still and moving images. In this sub-unit, we will learn about multimedia authoring.

● Stages of Multimedia Authoring

The five stages of multimedia authoring are:

1. *Analysis*: What do you need to do and what do you use to do it.
2. *Design*: Create storyboards to tell the story of the project.
3. *Development*: Incorporate data and set it up as a prototype or model.
4. *Evaluation*: When the prototype application works the way you want it to, test it again, fine-tune it, make it attractive, and then review your work.
5. *Distribution*: When it is ready to go (after the evaluation phase), make it real. Package and distribute it.

● Authoring Tools Examples

Authoring can be described as creating highly interactive applications in which the information can flow in both the directions *i.e.*, from application to user and from user to application. Multimedia packages and authoring tools help us in creating higher quality audio and video applications with little expertise.

Some multimedia authoring packages are:

- | | |
|---------------------------|-------------------------------|
| (i) Macromedia Authorware | (ii) Adobe Premier |
| (iii) Macromedia Flash | (iv) Everest Authoring System |
| (v) Icon Author | (v) ImageQ |

Some multimedia authoring tools are:

- | | |
|----------------------|---------------------|
| (i) Computer | (ii) Scanner |
| (iii) Digital camera | (iv) Sound recorder |

● File Formats of Sounds, Image and Video

In many cases electronic publications include images, photographs and may be some video and sound, too. Images and photographs can be inserted into inside the actual document or be linked to the document.

There are dozens of different file formats for images, video and sound. The most common ones are given below:

File Format for Sound

- (i) WAV (*Windows Wave Format*)
- (ii) MIDI (*Musical Instrument Digital Interface*)
- (iii) WMA (*Windows Media Audio*)

File Format for Image

- | | |
|--|---|
| (i) TIFF (<i>Tagged Interchange File Format</i>) | (ii) JPEG (<i>Joint Photographic Experts Group</i>) |
| (iii) GIF (<i>Graphics Interchange Format</i>) | (iv) PNG (<i>Portable Network Graphics</i>) |
| (v) BMP (<i>Windows Bitmap Format</i>) | |

File Format for Video

- (i) AVI (*Audio Video Interleave*)
- (ii) MPEG (*Moving Picture Experts Group*)

4.3 INTRODUCTION TO MULTIMEDIA AUTHORIZING TOOLS

Multimedia authoring tools are the tools that are used for creating various types of multimedia applications. Here, we will learn about these tools.

● Screen Elements of Multimedia Application

We should open a multimedia application for having a look at the screen elements. Here, we are using Macromedia Flash.

To open Macromedia Flash,

Click *Start* → *All Programs* → *Macromedia* → *Macromedia Flash MX*.

Figure 4.3 shows the Macromedia Flash screen elements.

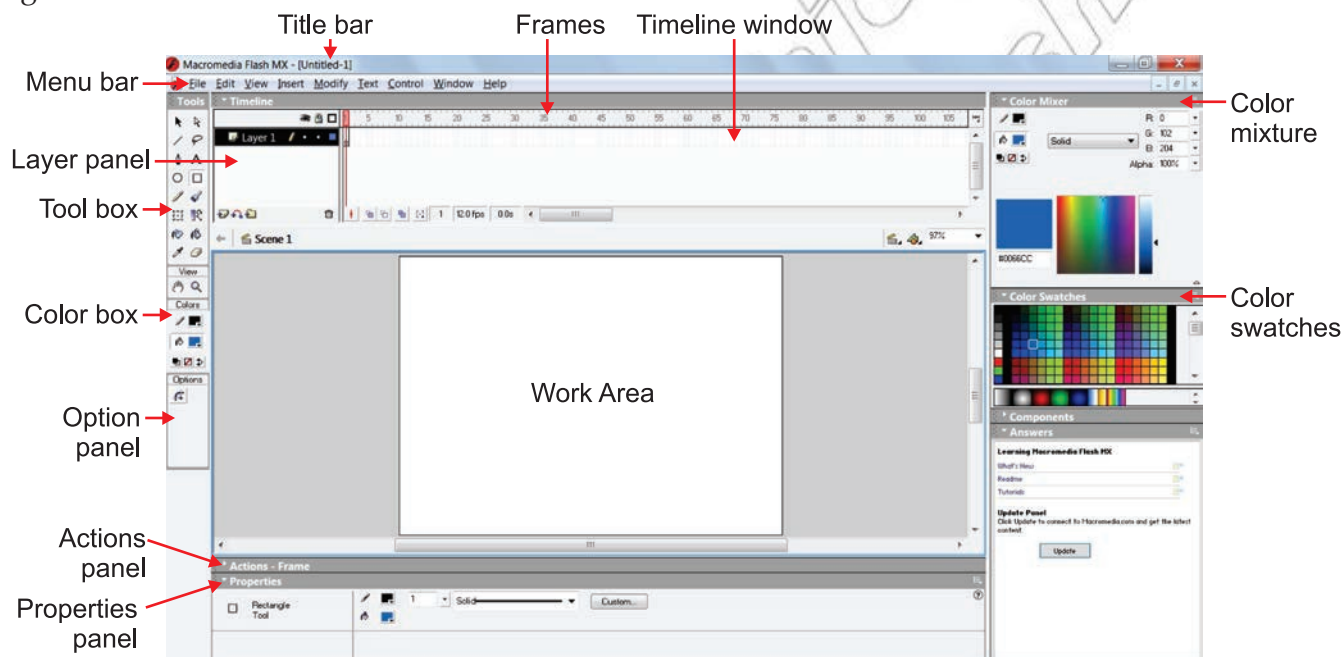


Fig. 4.3: Macromedia Flash screen elements

Table 4.1 describes some screen elements of Macromedia Flash MX.

Table 4.1: Macromedia Flash MX Screen Elements

Screen Element	Description
Menu bar	It contains various menus for commands.
Work area	It consists of Flash stage (White area in the middle of Work area) and Workspace (grey area).
Timeline window	It controls when things happen during playback of movie. For example, playback time, frame rate etc.
Layer panel	It controls the layers (The transparent overlays on the stage where different objects can be placed). It is an integral part of the timeline.
Toolbox	It contains all the tools you need for drawing or selecting objects.
Panels	Flash makes extensive use of panels (The different parts of the screen). For example, option panel, action panel, properties panel etc.

● Creating a New Project

To create a new project,

Click *File* → *New*.

It will open a new project file.

Your new project can be in the form of a drawing, shape, or even an animation.

Let us start with a simple project, *i.e.*, drawing a rectangle and fill it with colors.

● Building a Basic Piece

You can draw a basic drawing piece in work area by using various drawing tools (Line Tool, Rectangular Tool, Oval Tool, etc.) from the toolbox.

To insert a rectangular box perform the following steps:

1. Click on *Rectangle Tool*.
2. Draw a rectangle box in the work area.
3. Click on the *Paint Bucket Tool* and select the desired color from *Color Swatches*.
4. Click inside the rectangle box and fill the color (see Fig. 4.4).

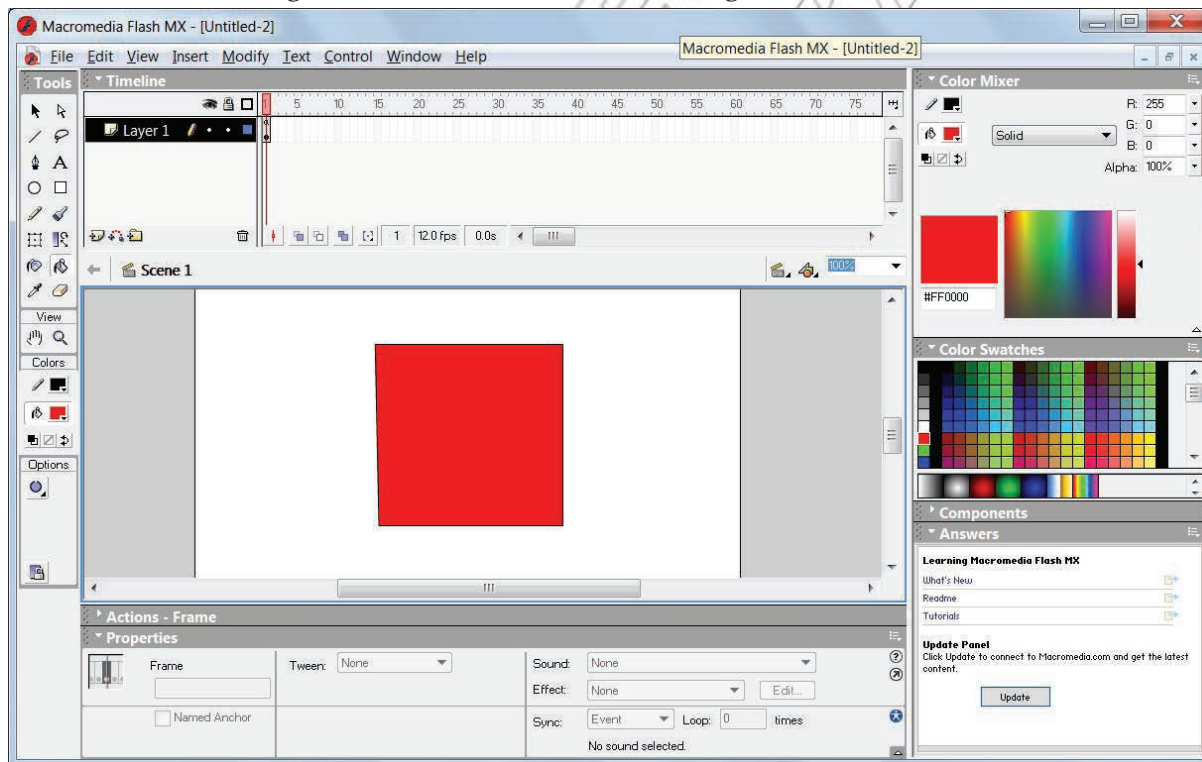


Fig. 4.4: Building a basic piece

Now save your basic piece with a suitable file name.

To save the file,

Click *File* → *Save* or press *Ctrl + S*.

Another type of project which can be created using a multimedia is Animation.

For this we can rotate the figure at different angles.

When we run the project it gives the impression of an animation.



To apply the animation on the basic piece, perform the following steps:

1. Click the first frame in the layer you want to frame.
2. Place the object you want to animate or just insert an image from the clipart.
3. Click the next frame in the *Timeline* window.
4. Add a keyframe. Flash inserts a keyframe that duplicates the previous frame's contents.
5. Change the object slightly; change it to 90° to the right.
6. Repeat the steps 4 and 5. This time image will turn face down.
7. Now again repeat the same steps, making the figure turn to 270° so that it now faces to the left.
This way you can change the angle to a smaller degree and make frames if you want to have real fun.
8. Click at first keyframe in the layer and press *Enter* key to see the animation.
Your animation will be shown on the screen (see Fig. 4.5).

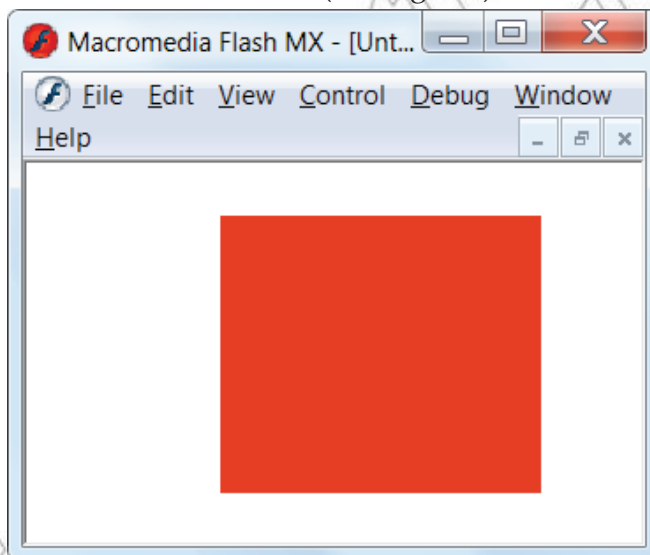


Fig. 4.5: Showing an animation



To preview the animated test movie, click *Control* → *Test Movie* or *Ctrl + Enter*.

● Editing an Icon

An icon is an element (graphical, textual, audio, video) which we can see or listen using Graphical User Interface (GUI), for example Windows or X-Windows (a GUI for many operating systems like Linux and UNIX etc.). In other words, an icon is a broad term associated with multimedia elements.

During creation of multimedia projects it is necessary to modify properties like appearance, placement, size, time duration, and other animation related items. It is known as editing an icon.

To edit an icon, perform the following steps:

1. Select the icon by clicking on it.
Now you can see the properties of the selected icon at the bottom of screen in the *Properties* panel.
2. Change the displayed properties as per your need like contents, sound, color etc.

3. After making the changes, you can run and pause the project to see the edited icon. If still not satisfied with the modifications, you can re-edit the icon.

4.4 INSERTING AND EDITING TEXT

In this sub-unit, we will learn about inserting and editing text in multimedia applications.

• Inserting Display Icons

Display icons are those icons that display some image or graphic. These are available in the form of various items such as symbols, tools, figures, text etc. These are available individually or in combinations. So, you can use them the way you want. The process of inserting display icons and graphic icons is similar.

• Inserting Text into a Text Field

To insert text, perform the following steps:

1. Open a new project file.
2. Click on *Text Tool* button.
3. Click and drag a text field in the work area.
4. Type the desired text and click anywhere in the work area to deactivate the text field.

Figure 4.6 shows a text inserted in the new project.

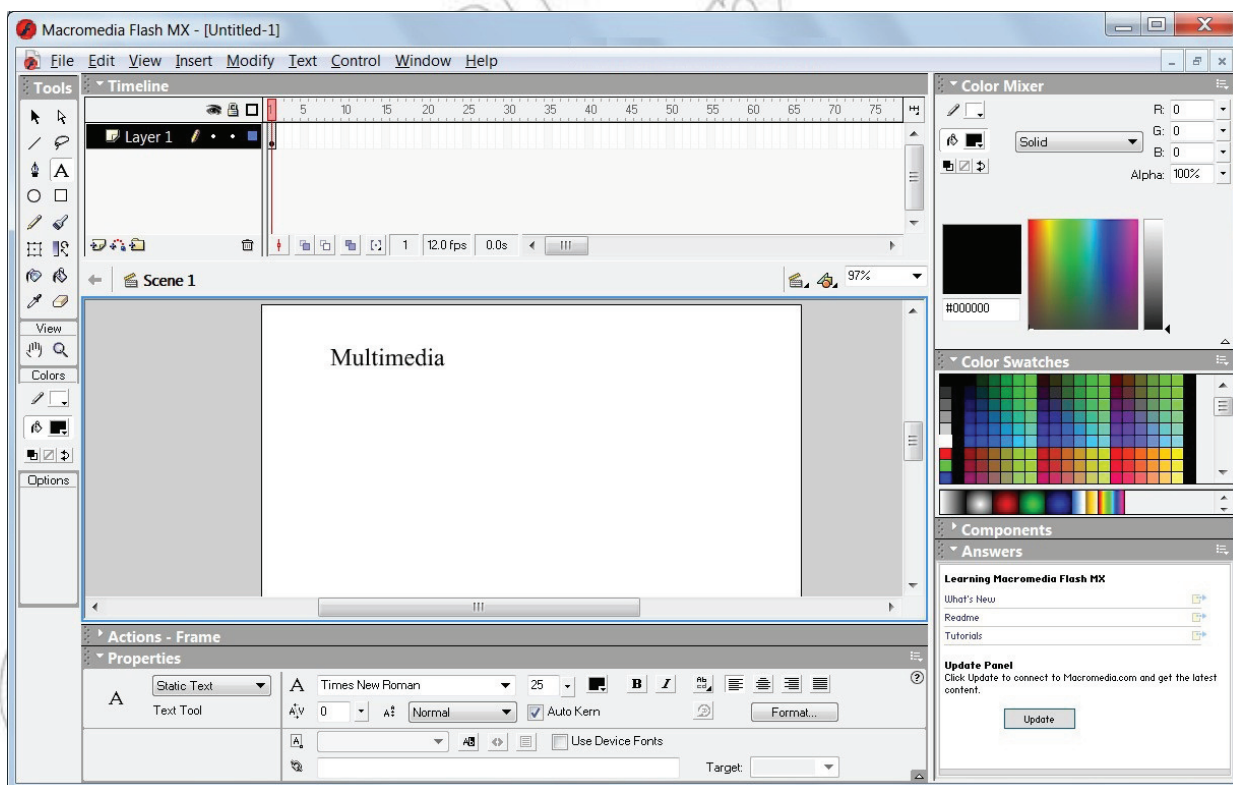


Fig. 4.6: Inserting text

● Importing and Pasting Text

To import a file, perform the following steps:

1. Open a new project.
2. Click *File* → *Import*. The *Import* dialog box opens.
3. Select the desired file and click *Open*.
4. The selected file will be imported in the work area.

To paste the text, perform the following steps:

1. Open a new project.
2. Select and copy the desired text from the document you want.
3. Now return to your project file and click *Edit* → *Paste* or press *Ctrl + V*.

The selected text will be pasted in the project file.

● Defining and Applying Text Style

To define and apply text style, perform the following:

1. Click on the *Text Tool* button.
2. From the *Properties* tool panel (see Fig. 4.7) lying below the work area, set your desired *Text type*, *Character position* and *Character Spacing*, etc.

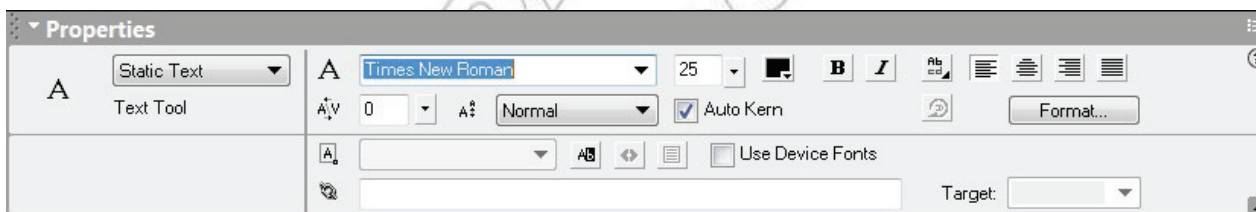


Fig. 4.7: Properties tool panel

3. Now, draw the text field by using click and drag, and enter your text. The text style will be applied to the text.



If *Properties* panel is not displayed, then select the *Text Tool*, right click on the work area and click on *Properties*.

● Editing and Formatting Text as Required

To edit and format text, perform the following steps:

1. Click on the text field, edit the text you want.
2. Now select the text entered in the text field and set the desired font, alignment, color, etc. from *Properties* tool panel (see Fig. 4.8).



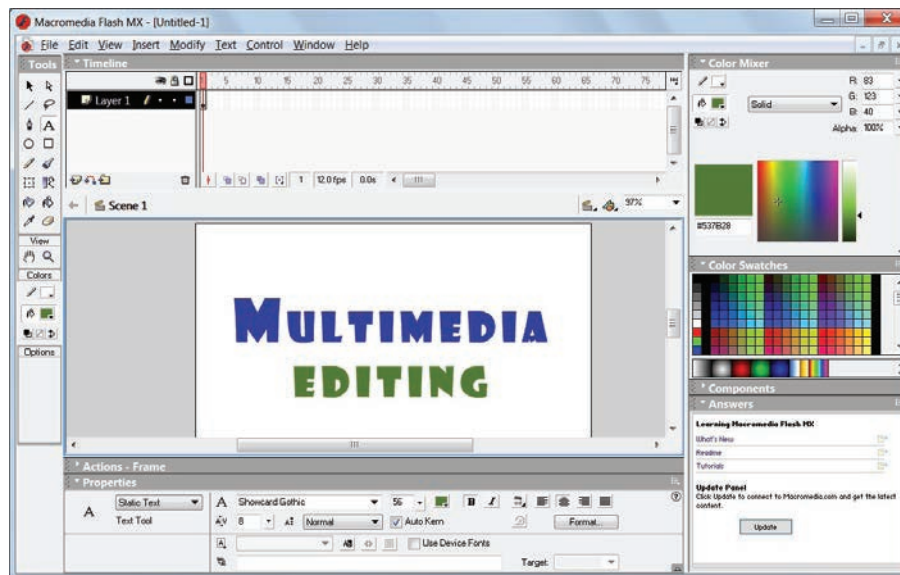


Fig. 4.8: Editing and formatting text

4.5 WORKING WITH IMAGES AND GRAPHICS

In this sub-unit, we will learn about working with images and graphics.

● Importing an Image or Graphic; Pasting an Image or Graphic

To import an image, perform the following steps:

1. Click on *File* → *Import*.
2. The *Import* dialog box opens.
3. Select the image you want to import and click *Open*. The image file will be imported to your project (see Fig. 4.9).



Fig. 4.9: Importing an image

To paste an image, perform the following steps:

1. Copy the desired image you want to paste.
2. Click *Edit* → *Paste*
or
Press *Ctrl + V* to paste image.
3. The image will be pasted in your project.

• Modifying an Image or Graphic

To modify the image or graphic, perform the following steps:

1. Select the image by clicking on it.
2. Click on *Free Transform Tool* button in the toolbox. A boundary box will be applied on the image or graphic.
3. Now, in the *options* panel, select the operation (*Rotate* and *Skew*, *Scale*, *Distort*, *Envelope*).
The desired operation will be applied on the image or graphic.

4.6 PAGE TRANSITIONS, POSITIONING AND MOTION ICON

In this sub-unit, we will discuss about Page Transitions, Positioning and Motion Icon.

Here, we will use *Adobe Premiere Elements 9*. It is one of the premiere software for working with sounds and digital movies.

To open *Adobe Premiere Elements 9*,

Click *Start* → *All Programs* → *Adobe Premiere Elements 9*

Figure 4.10 shows the opening screen of *Adobe Premiere Elements 9*.

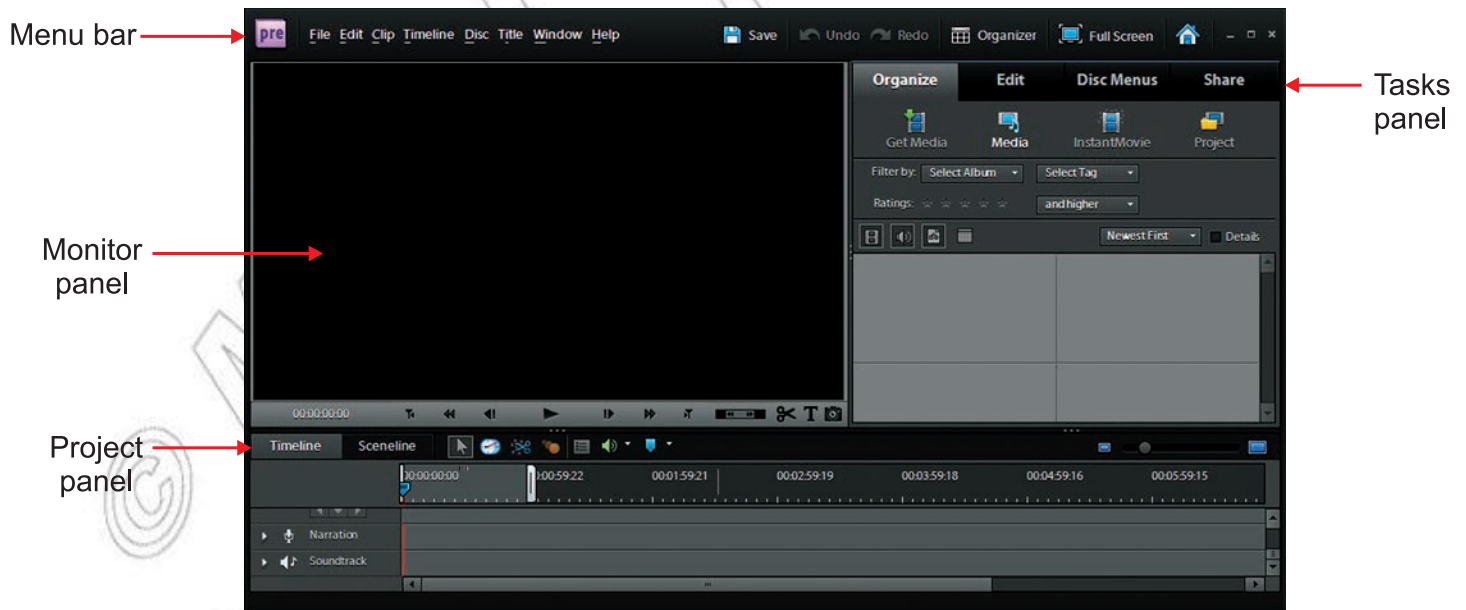


Fig. 4.10: Opening screen of Adobe Premiere Elements 9

● Transitions

Transitions let you add effects to phase out one clip and phase in the next, and then preview the transition before applying it. You can customize audio and video transitions as gradual fades or have one clip replace another.

Using *transitions*, you can phase out one clip while phasing in the next or you can stylize the beginning or end of a single clip. A transition can be as subtle as a cross dissolve, or emphatic, such as a page turn or spinning pinwheel.

You generally place transitions on a cut between two clips, creating a *double-sided* transition. However, you can also apply a transition to just the beginning or end of a clip, creating a *single-sided* transition, such as a fade to black. When a transition shifts from one clip to the next, it overlaps frames from both clips. The overlapped frames can either be frames previously trimmed from the clips (frames just past the In or Out point at the cut), or existing frames repeated on either side of the cut. It is important to remember that when you trim a clip, you do not delete frames; instead, the resulting In and Out points frame a window over the original clip. A transition uses the trimmed frames to create the transition effect, or, if the clips do not have trimmed frames, the transition repeats frames.



To see if a transition is *single-sided* or *double-sided* and if it *has repeated frames*, select it and click *Edit Transition* in the *Transition* view of the *Task Panel* to view it in *Properties* view.

● Selecting Transitions

There are many transitions to choose from that come with Adobe Premier Elements 9. First time film makers tend to overuse this feature. Only add a transition when it makes sense otherwise they tend to distract from the video. Add transitions after editing and before adding the soundtrack.

You can select the desired transition effect by clicking *Edit* → *Transitions*. Figure 4.11 shows various types of transitions effects.



Fig. 4.11: Selecting Transitions

● Positioning Objects

You have full flexibility in adjusting an object's position, rotation, scale, and opacity—attributes collectively referred to as *transform properties*. To transform an object, you can drag in the Monitor panel or choose a command from the Title menu.

• Types of Positions

You can choose the different types of positions of transition effect like Start, End, and Centre etc. from the Transition properties window. It can be opened by clicking on *Edit Transition* button.

• Type of Motion

We can customize different types of motion by using different drawing tools such as Line Tool, Oval Tool, Rectangle Tool, and Lasso Tool. Figure 4.12 shows Zig-zag motion.

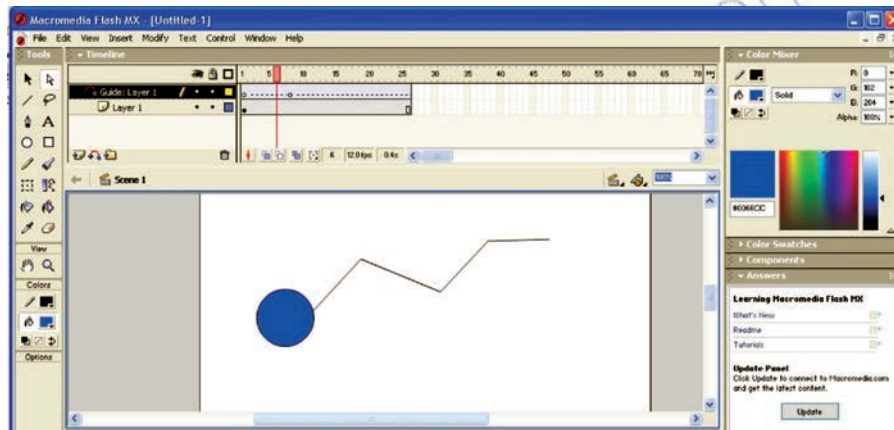


Fig. 4.12: Zig-zag motion using Line Tool

• Using Motion Icon

Motion is a special layer effect that an object shows during its movement. Creating a motion is quite simple in Macromedia Flash MX. We can generate the motion effect by creating a guide layer.

In this section, we will add motion to an object.

To use motion icon in Macromedia Flash MX, perform the following steps:

1. Create a graphic symbol or drag a pre-existing graphic symbol from library onto the stage. Name the layer as *Graphic*
2. Right click on *Graphic* label and select *Add Motion Guide* from the pop-up window (see Fig. 4.13).

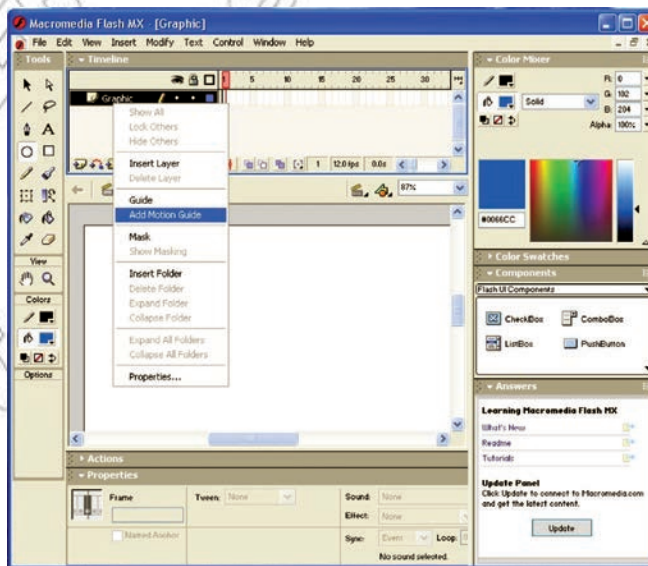


Fig. 4.13: Adding Motion Guide to the selected layer



A new layer will appear on top of the *Graphic* layer with the label *Guided Graphic* along with the guide icon.

3. Draw the path for your symbol in this new layer using pencil or line tool.
For example: Draw a circle.
4. Select frame 60 of guide layer and press “F5” to insert frames (see Fig. 4.14).

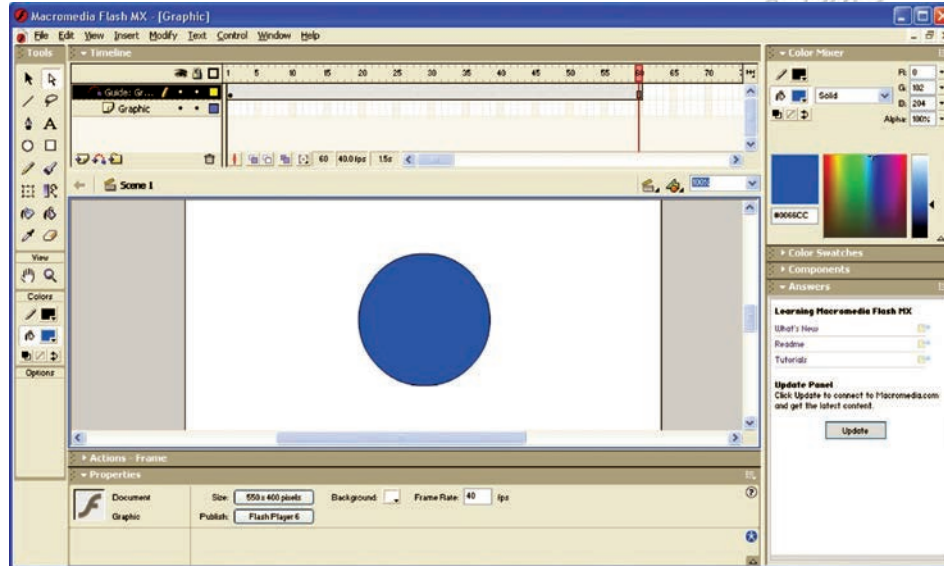


Fig. 4.14: Inserting frames

5. Now go to *Frame 1* of *Graphic* layer and drag your symbol to one end of your path. While dragging, you will see a bubble on the symbol. That bubble should go right below the path.
6. Now go to *Frame 60* of *Graphic* layer and press F6 to insert a new keyframe.
7. Now drag your symbol to other end of your path. Again, the bubble should go right below the path.
8. Select any frame between 1 to 60 of your *Graphic* layer. Right click and select *Create Motion Tween* from the pop-up menu (see Fig. 4.15).

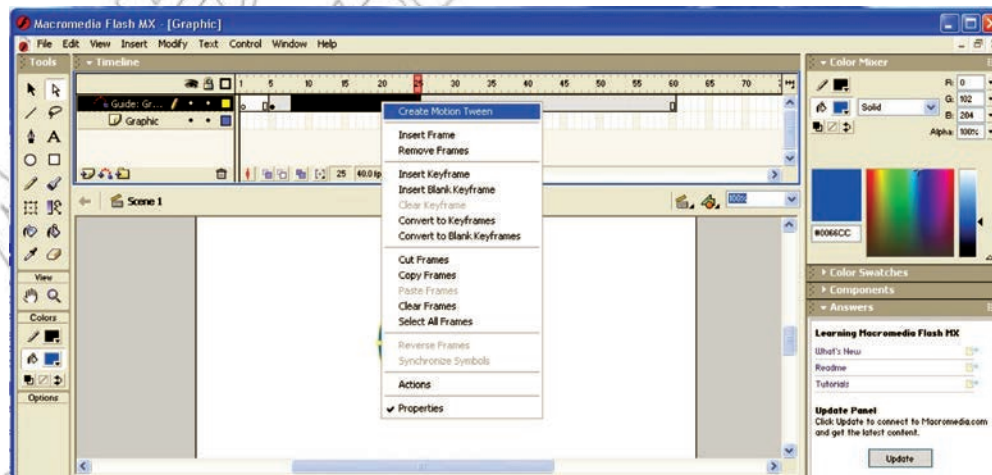


Fig. 4.15: Creating Motion Tween

9. Press *Ctrl + Enter* to view your work.

4.7 LIBRARIES

In this sub-unit, we will learn about libraries.

The multimedia library contains visual and audio element (Icons) required for developing new multimedia contents. The contents are often in the form of audio and video files. To ensure full access the users must have the appropriate software to view the multimedia files.

● Creating

You can use the sample libraries included with Flash to add symbols, buttons, or sounds to your documents. You can also create your own sample libraries, which you can then use with any documents that you create.

To create a sample library for your Flash application, perform the following steps:

1. Create a Flash file with a library containing the symbols that you want to include in the permanent library.
2. Place the Flash file in the Libraries folder located in the Flash application folder on your hard drive.

● Saving

We can save our information to the Flash application library, so that it is available for future use.

To save the information, perform the following steps:

1. Click *File* → *Save As*.

The *Save As* dialog box opens (see Fig. 4.16).

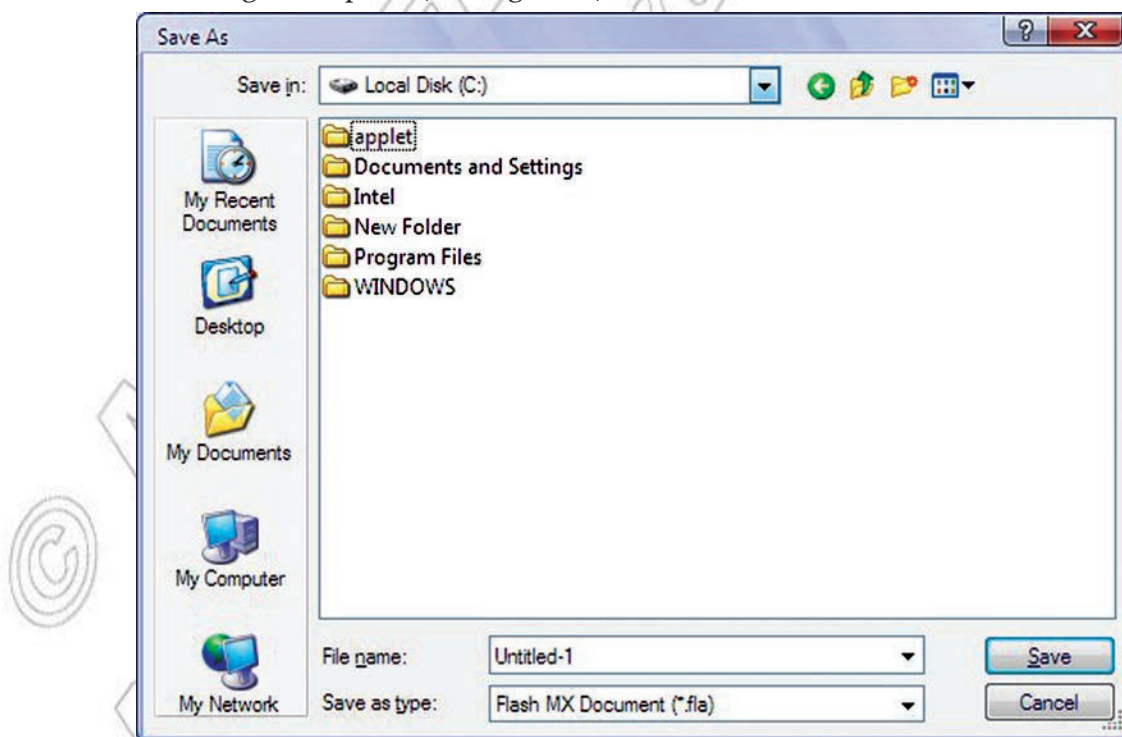


Fig. 4.16: Save As dialog box

2. Identify the location where you want to save the file.
3. Give a suitable file name and click *Save*.

● Opening and Closing

Opening the Library

To open a library, perform the following steps:

1. Click *File* → *Open as Library*

The *Open as Library* dialog box appears (see Fig. 4.17).

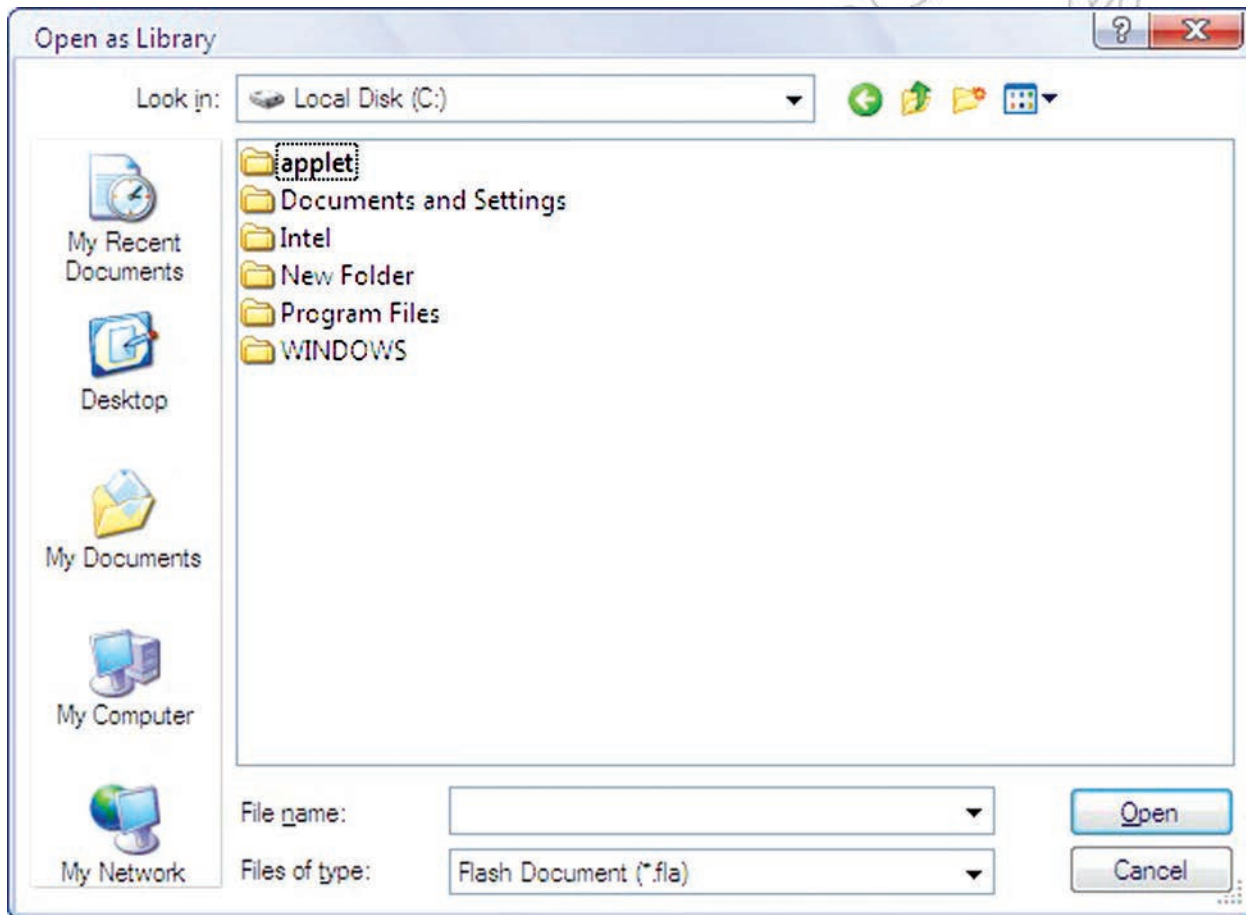


Fig. 4.17: Open as Library dialog box

2. Browse the library file and click *Open*.

Closing the Library

To close the library,

Click *File* → *Close* or press *Ctrl + W*.

Another way of closing the library is to exit the application or open another library file.

● Selecting a Library

When the *Open as Library* dialog box opens, you can select the desired library file.

● Adding Icon to the Library

To add an icon to the library, perform the following steps:

1. Open a library file.
The *Import* dialog box will be opened.
2. Click *File* → *Import* or press *Ctrl + R*.
The *Import* dialog box will be opened.
3. Choose the desired icon file and click *Open*.
An icon for that file will be added in the library.

● Using an Icon From a Library

To use an icon from a library, perform the following steps:

1. Open the library file.
2. Select the desired icon from the library by double-clicking it.

4.8 WORKING WITH SOUND AND DIGITAL MOVIES

In this sub-unit, we will learn about working with sound and digital movies:

● Sound Icon

Sound icon is the graphical representation of inserted or available audio file in project or library. Figure 4.18 shows a sound icon.



Fig. 4.18: Sound Icon

● Importing Sound

You can import various sound in the project.

To import the sound file, perform the following steps:

1. Click *Organize* → *Get Media* → *Files and Folders*.
The *Add Media* dialog box opens.
2. Browse the audio file you want to import and click *Open*.
The selected audio file will be imported in the project (see Fig. 4.19).

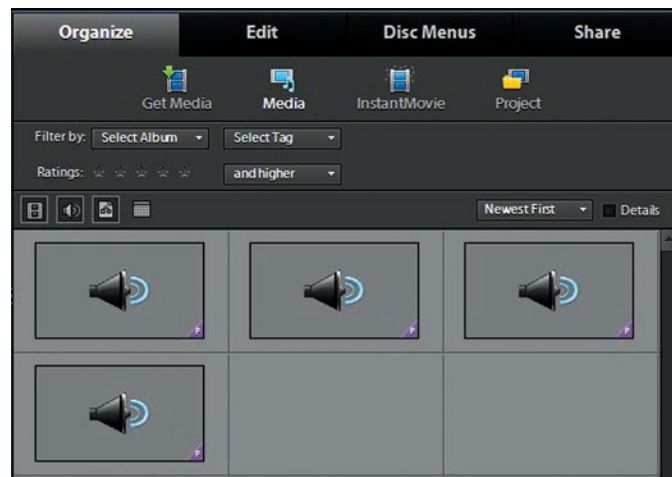


Fig. 4.19: Imported Sound

● Changing the Sound's Play Speed

To change the sound's play speed, perform the following steps:

1. Drag the imported audio file to the Timeline (see Fig. 4.20)

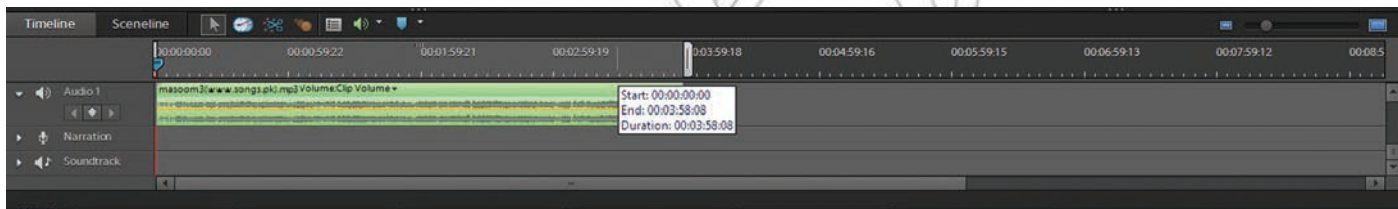


Fig. 4.20: Dragging sound to Timeline

2. Right click on the imported sound waveform and click *Time Stretch*.
3. The *Time Stretch* dialog box opens (see Fig. 4.21).

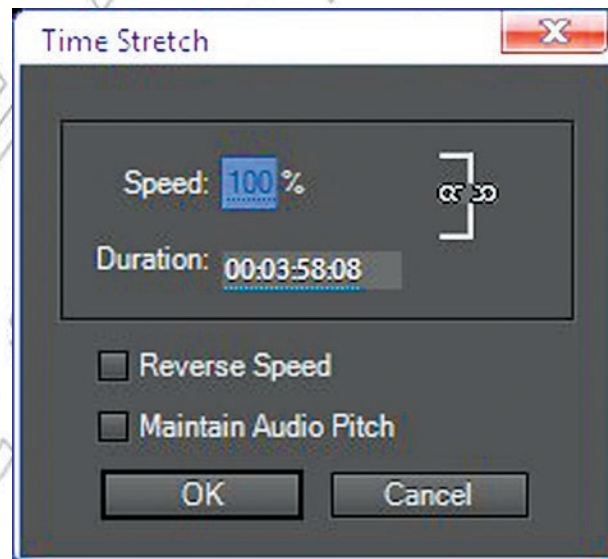


Fig. 4.21: Time Stretch dialog box

4. Set the play back speed and click *OK*.

● Working with Digital Movies

Digital video is a type of video recording system that works by using a digital rather than an analog video signal. We can work on digital movies using Adobe Premiere. It allows various operations such as trimming, motion, audio enhancing and adding transition effect etc.

● File Formats

Adobe Premiere supports several file formats for audio and video files such as MP3, MP4, AVI, MPG, WAV, and WMV etc.

● Importing a Digital Movie

To import a digital movie, perform the following steps:

1. Import your digital media clip or movie by clicking *Organize* → *Get Media* → *Files and Folders*.
2. Browse the video file and click *Open*.
3. The selected video file will be imported to your project (see Fig. 4.22).



Fig. 4.22: An imported video

● Setting Playback Conditions

We can set various playback conditions from the audio properties such as Fade In, Fade Out, Bypass, Balance, Time Duration, Toggle, Repeat and Clip Volume. To open audio properties dialog box, right click on the dragged audio file in Timeline and click *Show Properties* (see Fig. 4.23).

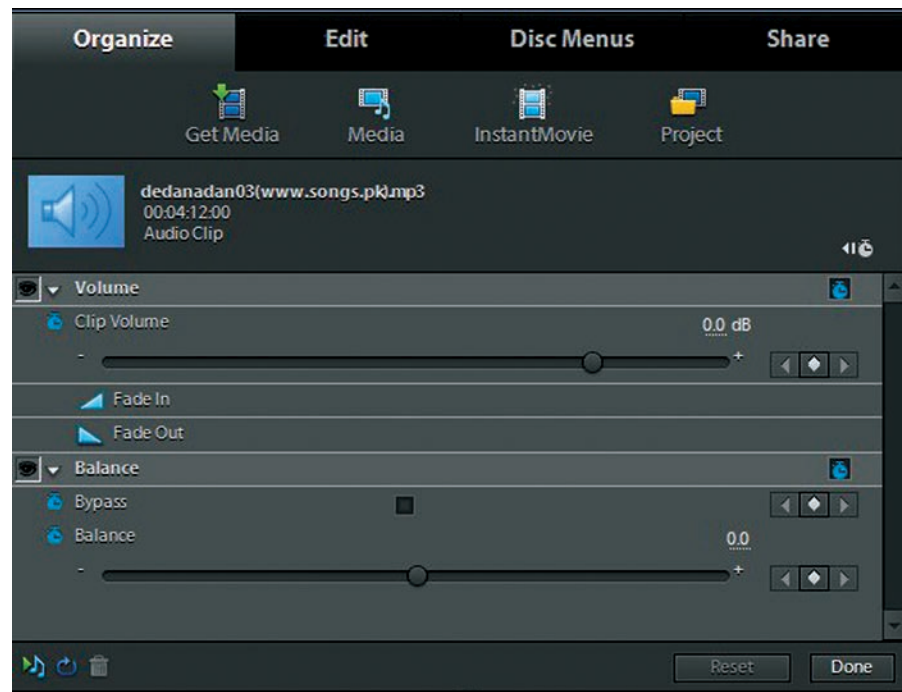


Fig. 4.23: Setting playback conditions

● Turning the Sounds Off

To turn the sound off, perform the following steps:

1. Open audio properties dialog box by right clicking on the dragged audio file in *Timeline* and click *Show Properties*.
2. Toggle the *Volume* effect by clicking on toggle button (see Fig. 4.24).



Fig. 4.24: Turning the sound off

4.9 OVERVIEW OF FILM EDITING

In this sub-unit, we will learn the basics of film editing:

● Basics of Film Editing

The process of editing clips includes previewing and trimming them to eliminate unnecessary material. It also includes revising clip properties such as speed, direction, and duration. You can also edit media clips generated by other programs in their original applications, from within Adobe Premiere Elements.

Trimming Video Clips

You can create a refined good-quality video file by removing unwanted sections and low-quality sections. Adobe Premiere Elements 9 enables you to efficiently handle blurred, shaky, and unwanted low-quality and low-interest sections of your video file. You can easily and quickly edit and fine-tune the video files. Smart trimming enables you to trim the low-quality sections of a video file. Smart trim can be done manually and automatically. You can trim clips from *Timeline* view or *Sceneline* view. However, you can trim only one clip at a time from the *Sceneline* view. Smart trimming is of two types, manual and automatic. Manual Smart trimming is the default mode. In this mode, you can specify the options

that determine the trimmable sections. In the automatic Smart trim mode, Adobe Premiere Elements automatically determines the trimmable sections and you can choose to delete them or retain them. Figure 4.25 shows the trimming of a video clip.

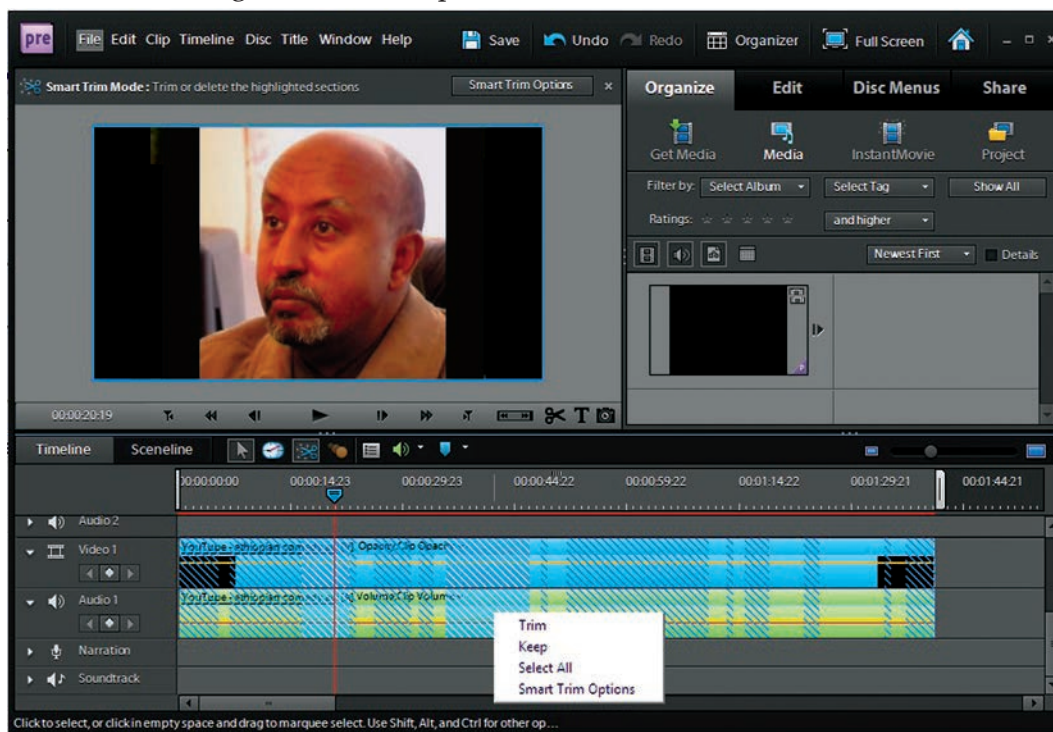


Fig. 4.25: Trimming a video clip

Changing Clip Speed and Duration

Changing Clip Speed

To create a fast- or slow-motion effect, we can change clip speed. Changing clip speed changes the clip's duration. Speeding up a clip removes frames, thus shortening the clip duration. In the same way, slowing down a clip repeats frames and thus adds to the length of a clip. For audio clips, a change in speed also changes pitch. The Time Stretch command includes an option to maintain the original pitch of an audio clip at any speed.

You can change a clip's speed using the Timeline only—not the Sceneline.



When you change the speed of a clip containing interlaced fields, you may need to adjust how Adobe Premiere Elements processes the fields, especially when the speed drops below 100% of the original speed.

Set the Duration of a Clip

The *duration* of a video or audio clip is the length of time it plays from its first frame (In point) to its last frame (Out point). The initial duration of a clip is the same as it was when the clip was imported or captured. Most often, you change a clip's duration by trimming frames from either end. But you can also trim the end of a clip by designating a specific duration.


Unlike video, still images are not limited to the length of the original clip. You can set their duration to any length.

Freezing and Holding Frames

Export a Video Frame

You can grab a single frame from a video clip to use as a still image in your current movie or to save as a still on your hard drive for use elsewhere. For example, you can use a still in your movie to show a character start an action, but then stop mid-action, frozen on the screen.

Play and Hold a Frame

To make the video start out as a still image and then begin to play, click the Freeze Frame button  in the Monitor panel to create a still image from a frame, and then insert that still image at the location of the original frame. Figure 4.26 shows a freeze frame.

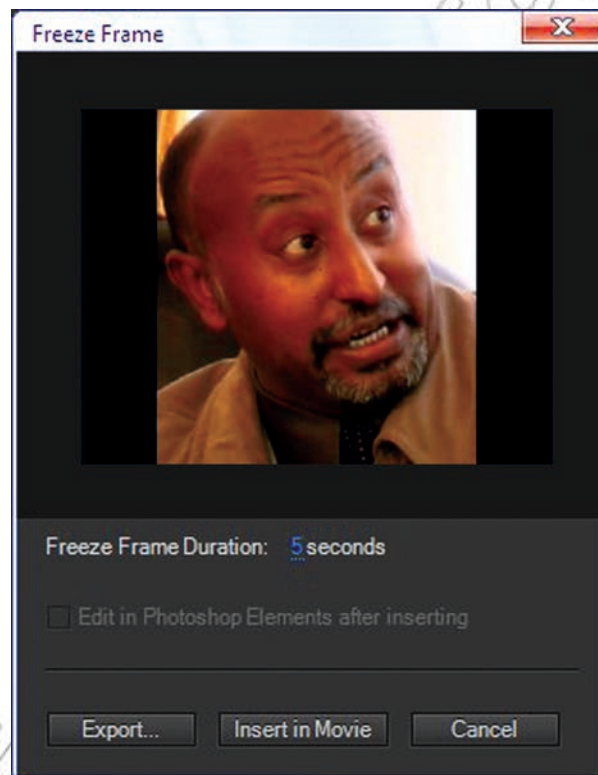


Fig. 4.26: Freeze Frame

ACTIVITY 4.1



DIFFERENTIATE MULTIMEDIA AND HYPERMEDIA

In small groups, the students will explain and demonstrate the difference between multimedia and hypermedia.

Multimedia

Multimedia is media that uses multiple forms of information content and information processing like text, audio, graphics, animation, video, interactivity to inform or entertain the audience. Figure 4.27 shows some multimedia tools.



Fig. 4.27: Multimedia tools

Multimedia is very useful in various areas including, but not limited to, education, entertainment and fine arts, engineering, medicine, mathematics, business, scientific research etc.

Hypermedia

The World Wide Web (WWW) has become without doubt the best-known and most widely used hypermedia system (see Fig. 4.28).

Most Web navigation is done by clicking text-based links that open new pages in a Web browser. These links, which are often blue and underlined are referred to as hypertext, since they allow the user to jump from page to page. Hypermedia is an extension of hypertext that allows images, movies and Flash animations to be linked to other content.

Hypermedia systems are very popular tool for user-driven access to information. These are very useful in various areas such as online documentation systems, application systems with advanced help and explanation facilities, educational systems etc.



Fig. 4.28: WWW–An example of hypermedia



KEY CONCEPTS

- Multimedia is the combined use of several media, such as motion-pictures, slides, and music.
- Multimedia authoring involves collating, structuring and presenting information in the form of a digital multimedia, which can incorporate text, audio and still and moving images.
- Multimedia authoring tools are the tools that are used for creating various types of multimedia applications.
- Display icons are the ones that display some image or graphic.
- The wait icon provides a way to pause or delay any onscreen action. Delay can be a set time interval or may require a mouse click to continue.
- The multimedia library contains visual and audio elements (icons) required for developing new multimedia contents.
- The process of editing clips includes previewing and trimming them to eliminate unnecessary material. It also includes revising clip properties such as speed, direction, and duration.



REVIEW QUESTIONS

Fill in the Blanks

- refers to technology that presents information in more than one medium— such as text, pictures, video, sound, and animation—in a single integrated communication.
- The components of multimedia are,,, and
- let you add effects to phase out one clip and phase in the next clip.
- MIDI, JPEG and MPEG are file formats for,, and respectively.

State Whether True or False

- Multimedia does not utilize a combination of different content forms.
- Hypermedia is an enhancement of hypertext, the non-sequential access of text documents, using a multimedia environment.
- In multimedia packages, using pre-stored libraries, creating libraries and adding and using icons is not possible.
- Macromedia Authorware, Adobe Premier, and Macromedia Flash are multimedia packages.

Multiple Choice Questions

- Which of the following field(s) use multimedia?
 (a) Business (b) Education (c) Home (d) All of these
- The best example of hypermedia is
 (a) World Wide Web (b) Hardware (c) Printout (d) None of these
- TIFF stands for
 (a) Transitional Image File Format (b) Total Inclusion File Format
 (c) Tagged Interchange File Format (d) Temporary Instruction File Format
- is an object actually moving across, into, or out of the screen.
 (a) GIGO (b) Animation (c) WMA (d) Trimming
- Which of the following hardware is used in Multimedia Authoring tool?
 (a) Computer (b) Scanner (c) Sound Recorder (d) All of these

Match the Following

Column A

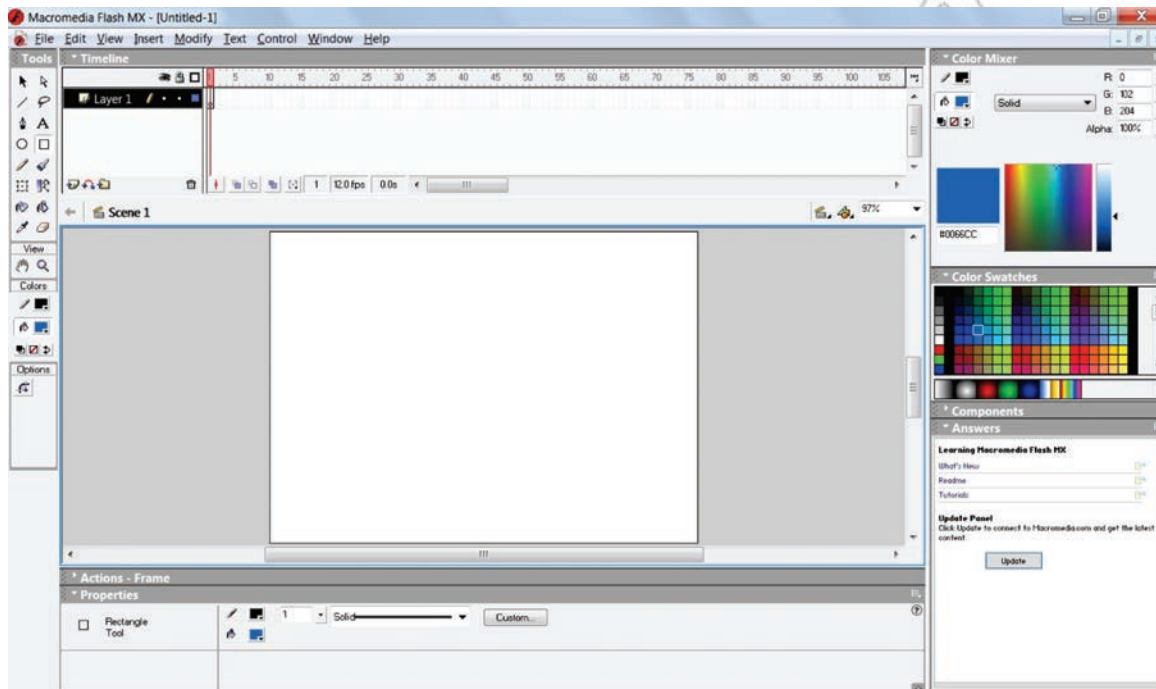
- Multimedia
- Macromedia Authorware
- Editing clips
- WAV

Column B

- Includes previewing and trimming them to eliminate unnecessary material
- Combines two or more media together
- An sound file format
- Multimedia authoring package

Answer the Following

1. Define multimedia. Discuss its components also.
2. List and explain the stages of multimedia authoring.
3. Identify screen elements of Multimedia application Macromedia Flash shown below:



4. Give the steps to import sound files.
5. Write a short note on basics of film editing.

Suggested Activities

1. The teacher will explain and demonstrate stages of multimedia authoring and authoring tools examples like Macromedia Authorware, Adobe Premier, Macromedia Flash and the students will practice.
2. The teacher will explain and demonstrate the steps involved in using sound and in working with digital movies and the students will practice.
3. Design and produce a multimedia presentation on an idea or theme of your own which has relevance to the work you are doing in Grade 12.
4. Explain how to insert, edit and format text in the presentation windows of Multimedia Authoring.
5. Explain how to import and paste images, graphics and movies from other applications.
6. Explain how to set the time duration:
 - before content on the presentation window is erased,
 - to erase the contents of a presentation window.

Field Trip

Organize a field trip to various business houses and publications around you to get useful information about Image Processing and Multimedia Systems being used currently and present it to the class.

GLOSSARY

A

Absolute Reference: Commonly used in spreadsheet applications, it is a formulated cell reference that will not adjust when used to calculate the sum of specific cells.

Address Book: In e-mail, list of regular contacts' addresses held in the e-mail software.

AI (Artificial Intelligence): It is the branch of computer science concerned with making computers behave like humans.

Animation: The display of a sequence of images in a computer program or on a Webpage to give the impression of movement.

Application Software: A program that is designed to perform specific tasks.

B

B2B (Business-to-Business): Companies doing business with each other such as manufacturers selling to distributors and wholesalers selling to retailers constitute B2B type of e-commerce.

B2C (Business-to-Consumer): It comprises of businesses selling to the general public typically through catalogues utilizing shopping cart software.

Backup: To copy files or data to a second source or media so as to safeguard it.

Binary: A basic numbering system consisting of 1s and 0s.

BIT (Binary DigIT): It is the smallest unit of processing of computerized data in terms of 1s or 0s.

Blog: (Slang term for a Weblog) A blog is a personal journal that can be accessed publicly and

allow people to comment on the previously posted comments.

BMP (Bitmap): It is a standard uncompressed format for Microsoft Windows and IBM OS/2.

Browser: Software program that allows the user to find and read encoded information in a form suitable for display especially on World Wide Web.

Byte: A combination of 8 bits to represent computer data transfer or data storage measurement.

C

CD-ROM (Compact Disc Read-Only Memory): A durable and low cost circular optical storage device widely used to store large amounts of information.

Clipart or Clip Art: A collection of image files that can be embedded or inserted into Web pages, word-processed documents, PowerPoint presentations, etc.

Compiler: A type of system software that translates a source program usually written in a high level language into a machine language.

Computer: An electronic device that accepts, processes, stores and outputs data under the control of a set of instructions.

Cropping: The process of removing portions of an image to create focus or strengthen the composition.

CPU (Central Processing Unit): A processor on an IC chip (called a microprocessor) that serves as the 'brain' of the computer.

D

Database: A structured collection of data that can be used for a variety of purposes.

DBMS (Database Management System): Application software which enables the storage, modification, retrieval, and querying of data in a database.

Desktop Publishing (DTP): Application software for laying out text, graphics and pictures in order to produce a professional-looking publication.

Display Icons: The icons that display some image or graphic.

Domain Name System: An addressing system in which abbreviations are used to indicate the type of organization or entity instead of whole name, for example, .edu for educational institution.

Downloading: It means transmitting data from a remote computer to a local computer, as from a website to your own PC.

DVD: Digital Versatile Disc or Digital Video Disc.

E

E-Banking: Use of computer and e-technology as a substitute for checks and other paper transactions.

E-Business: Business involving transactions using electronic media and technology.

E-Commerce: Buying and selling or business transaction conducted on the Internet.

E-Governance: Application of electronic means in governance.

E-Government: Government's use of information technology to exchange information and services with citizens, businesses, and other arms of government.

E-Learning: Means of teaching through e-technology.

E-Libraries: The physical sites and/or websites that provide 24-hours online access to digitized audio, video, and written material.

E-Mail: Stands for Electronic Mail. This is a system of relaying messages across the Internet, from one Internet user to another.

Encryption: A system of coding that helps prevent access to private information on computer networks or on the Web.

F

Flash Player and Flash Professional: Software produced by Adobe for the development and viewing of animated and interactive sequences on the Web.

Forms: Used to provide an easy to use interface for user to enter, view and modify data in a table.

Format Painter: Helps to copy the format that has been applied to text and apply it to another.

FTP (File Transfer Protocol): A software protocol for exchanging information between computers over a network.

G

GIF (Graphics Interchange Format): It is pronounced "jif", supports upto 256 colours (8 bits per pixel).

Gigabyte (GB): 2 to the 30th power (1,073,741,824) bytes. One gigabyte is equal to 1,024 megabytes.

GIGO: It is an acronym that stands for Garbage In, Garbage Out.

Google: A popular search engine.

GUI (Graphical User Interface): A program interface that takes advantage of the computer's graphics capabilities to make the program easier to use. Well-designed graphical user interfaces can free the user from learning complex command languages.

H

Hacker: A person who spends his/her time trying to gain access to information stored on other people's computers all around the world.

Hardware: The physical equipment used in a computer system, such as the CPU, peripheral devices and memory.

Home Page: The initial page of a site on the World Wide Web.

HTML: Hypertext Markup Language. It is a collection of structuring and formatting tags used to create Web pages.

Hyperlinks: A word or graphic display on one web page that allows a computer to shift to another related web page.

I

Icon: A picture or symbol to represent a command on a computer screen.

Image Processing: The set of computational techniques for analyzing, enhancing, compressing, and reconstructing images, generally with a digital computer.

Information: Meaningfully organized data.

Information System: A system that provides information to people in an organization.

Internet Explorer: A browser produced by the Microsoft Corporation and supplied together with the Windows operating system.

Integrated Circuit (IC): A circuit of transistors, resistors, and capacitors constructed on a single semiconductor wafer or chip, in which the components are interconnected to perform a given function.

Interpreter: It translates and executes source program, written in high level language, statement-by-statement.

Internet: The Internet is a network of networks all of which use the same set of communications protocols.

ISP (Internet Service Provider): A company that provides access to the Internet.

J

JAVA: A high-level programming language developed by Sun Microsystems.

Joystick: A device that looks a bit like a gear lever in a car. This is connected to a computer and is used mainly for controlling the cursor in fast action games.

JPEG (Joint Picture Experts Group): It is pronounced "jay peg". It supports 16.7 million colors (24 bits per pixel).

K

Keyboard: An input device which is used to enter information which the computer displays or processes.

Kilobyte (KB): This is about a thousand bytes of space. In reality, it is two to the 10th power or 1,024 bytes.

L

LAN (Local Area Network): A network that links together computers and peripheral equipment within a limited area, such as a building or a group of buildings.

Language Processor: Software that converts a high level language or assembly language code into machine understandable form.

Laser Printer: A type of printer that produces high-quality output at a reasonable speed.

Learning Management System (LMS): A software package that enables the management and delivery of learning content and resources to students.

Login: To attach to a computer using the user's ID.

M

M-Commerce: Buying and selling of goods and services through wireless technology.

Megabyte (MB): About a million bytes of space. Actually it is 2 raised to the 20th power or 1,048,576 bytes of space.

Memory: Internal storage areas in the computer.

Microsoft Office: A suite of programs produced by Microsoft Corporation, comprising a Word-processor (Word), a Spreadsheet (Excel), a Presentation Program (PowerPoint), an Email package (Outlook), a Database program (Access), and a Desktop Publishing package (Publisher).

Moodle: An Open Source Course Management System (CMS), also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE).

MPEG (Motion Picture Experts Group): A format to make, view, and transfer both digital audio and digital video files.

MS-Access: Database application software, provided by Microsoft.

MS-Excel: Spreadsheet application software, provided by Microsoft.

MS-PowerPoint: Presentation software, provided by Microsoft.

MS-Word: Word processing application software, provided by Microsoft.

Multimedia: The integration of two or more types of information (text, images, audio, video, animation, etc.) in a single application.

Multimedia Authoring: It involves collating, structuring and presenting information in the form of digital multimedia, which can incorporate text, audio, and still and moving images.

Multimedia Authoring Tools: Tools that are used for creating various types of multimedia applications.

Navigation: It is the process of finding the way, *i.e.*, navigating, around a series of menus within a computer program or finding the way around the World Wide Web by means of a browser.

Netiquette: The rules of etiquette that apply when communicating over computer networks, especially the Internet.

Network: A system containing any combination of computers and its peripherals, used to transmit or receive information.

Offline: Not connected to a computer or network of computers.

Online: Connected to a computer or network of computers, especially the World Wide Web.

Operating System: A system software program that works as a bridge between computer hardware and the user. Operating systems perform basic tasks, such as recognizing input from the keyboard, sending output to the display screen, keeping track of files and directories on the disk, and controlling peripheral devices such as disk drives and printers.

Outlook: A popular e-mail program, part of the Microsoft Office suite of programs.

PDF (Portable Document Format): A technology developed by Adobe and was designed to capture all of the elements of a printed document and place it in a single image file.

Pixel: The smallest element of an image that can be individually processed in a video display system.

Plotter: A computer output device that draws images on paper using a pen.

Portal: A Webpage, website or service that acts as link or entrance to other websites on the Internet.

Primary Key: A set of one or more values in a database that uniquely identifies a record in a table.

Protocol: A set of rules governing the format of messages that are exchanged between computers.

Q

Query: Used to retrieve information on a certain condition from a database.

R

Relative Reference: The default reference in a spreadsheet package.

Reports: Used to present data in a printed format.

Resolution: A measure of the number of pixels or small dots displayed on a computer display screen, printer or scanner.

S

Scanner: A device used to convert hard copy, e.g., a printed page, photograph or photographic negative, into a form that can be stored on a computer.

Search Engines: A computer program that searches documents, especially on the World Wide Web, for a specified word or words and provides a list of documents in which they are found.

Server: This is a mainframe computer that serves the other computers attached to it.

Sheet Tab: In spreadsheet applications, this refers to a tab at the bottom of a worksheet that acts as a means to identify or access different sheets within a workbook.

Slide Show: Used to display the slides in a desired sequence.

Software: The set of instructions used to direct the operation of a computer, as well a documentation giving instructions on how to use them.

Social Networking: The grouping of individuals or organizations into specific groups.

Source data: Data for which the chart is prepared.

Spam: The disruptive unwanted messages, especially commercial messages posted on a computer network or sent as e-mail.

Spreadsheet: A document which helps to organize data in rows and columns that intersect to form cells.

System: Collection of related components that interact to perform a task in order to accomplish a goal.

Systems Analysis and Design: A six-phase problem-solving procedure for examining an information system and improving it.

Systems Development Life Cycle (SDLC): A step-by-step process that many organizations follow during systems analysis and design.

System Software: It is a set of master programs that keeps the computer system working.

T

Technology: It is the usage and knowledge of tools, crafts, techniques, or systems, or methods of organizations.

Telecommunication: The transmission of messages over significant distances for the purpose of communication

Terabyte (TB): 2 to the 40th power (1,099,511,627,776) bytes.

TIFF (Tagged Image File Format): It stores compressed files with a flexible number of bits per pixel.

Toolbar: A row or rows of buttons on a display screen that are clicked on to select various functions in a software application or web browser.

Twitter: A microblogging facility that allows users to post very short texts (maximum 140 characters) containing snippets of information about what they are doing at a given moment, news items, links to websites or comments on events.

U

Uploading: It means transmitting data from a local computer to a remote computer, as from your PC to a website you are constructing.

URL (Uniform Resource Locator): A protocol for specifying addresses on the Internet. It is an address that identifies a particular file on the Internet, usually consisting of the protocol as http, followed by the domain name.

User-friendly: Mainly used to describe software. Software that is easy to use and offers guidance if the user does silly things is described as user-friendly.

V

Virus: A program or piece of code that is loaded onto your computer without your knowledge and runs against your wishes.

W

W3C (World Wide Web Consortium): An international non-profit organization which acts as a resource centre for the World Wide Web, and is active in setting technical standards.

WAV: Stands for WAVEform sound format. Microsoft's format for encoding sound files.

Webcam: A camera connected to a computer and linking it to the Internet.

Web page or Webpage: A single, usually hypertext document on the World Wide Web that can incorporate text, graphics, sounds, etc.

Web server: A computer that runs specific software to serve web pages to the Internet.

Web site: A connected group of pages on the World Wide Web regarded as a single entity, usually maintained by one person or organization and developed to a single topic or several closely related topics.

Wizard: A utility that provides guided sequence to perform complex task easily and quickly.

Word Processor: Software that processes textual matter and creates organized documents.

WWW (World Wide Web): Series of servers or computers that are interconnected through hypertext.

WYSIWYG: What You Say Is What You Get.

X

XML (eXtensible Markup Language): It is a markup language, not limited to Web documents.

Y

YouTube: A website to which we can upload our own video clips and view video clips uploaded by others: <http://www.youtube.com>.

Z

Zip Disks: The disks with a special high-quality magnetic coating that have a capacity of 100, 250 or 750 megabytes.