4 Use of Multimedia

The chapter concerns the following;

- The basics of digital graphics
- Graphic size and compression
- Graphic types
- Basics related to graphic design
- Fundamentals of animation
- Geometric objects and shapes
- Types of frames
- Multimedia animation
- Multimedia distribution
- Audio recording
- Multimedia editing
- Audio/Video mixing towards animation

4.1 Digital Graphics

From times immemorial man practiced the art of drawing and colouring to portray a beautiful idea, or a visual that left a lasting impression. Ancient wall paintings remind us about the important role played by artistry in conveying ideas. Pictures formed the basis of communication. At the same time, available pictures make us realize the difficulties our ancestors would have faced to convert an idea into an illustration. There would have been many drawbacks in mixing of colours. Yet, they overcame such drawbacks to leave behind the paintings seen today.

However, with the development of technology and the availability of software for digital graphics, it is now possible to create various graphical illustrations and edit them. Using such software for graphics is quite simple and interesting.

Drawings or images, created with the use of computer graphic software, are called digital graphics.

Let us identify the fundementals of digital graphics (fig. 4.1).

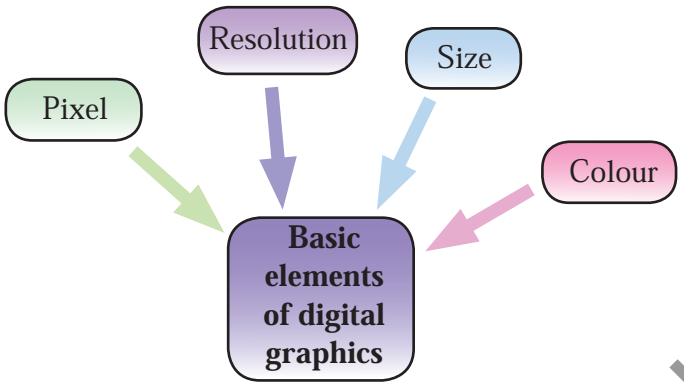


Figure 4.1 - Basic elements of digital grapics

• Pixel

A pixel is a tiny illuminated dot having a colour which is displayed on a computer screen. The digital graphics are created with thousands of such pixels.

These pixels get arranged in rows or columns close to each other to produce graphical image (fig. 4.2). A digital graphic is an array of rectangular pixels called a bitmap.

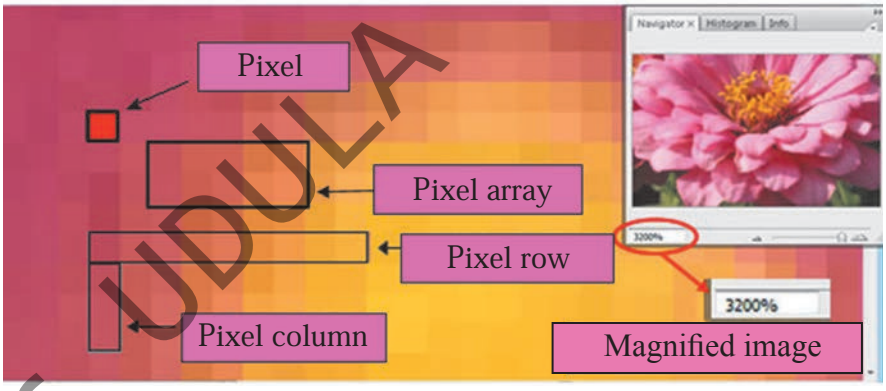


Fig 4.2 - Pixel

The size of a graphic can be increased or decreased to fit into a computer screen or a printing paper. In changing the size of the original graphic, the size of the pixel is changed. When the graphic has a smaller number of pixels its quality decreases when it is enlarged (fig 4.3).

Fig 4.3 - Decrease in quality in an enlarged graphic

Colours used in a graphic are represented by the number of bits per pixel (bpp) used. Graphics which use more bits per pixel are higher quality.

• Colours in a pixel and the number of bits

The number of bits per pixel determines the colours used in an image.

A single bit represents two colours	Two bits represent four colours
0 **1** } two colours	**00** **01** **10** **11** } four colours

However, by observing a graphic, it is not possible to determine the numbers of colours per pixel used. The number of bits used for the pixel only help find out the number of colours per pixel used. The following function can be used for the purpose.

Colour per pixel used = **(2)** *bpp* (bits per pixel)

E.g. - If a pixel has 4 bits,

Colour used on the pixel $= (2)^4$
$= 2 \times 2 \times 2 \times 2$
$= 16$ colours

To find the number of bits when the colours are known:

The number bits per pixel $= \sqrt{\text{colour}}$
$= \sqrt{16}$
The number of bits per pixel $= 4$

1 bit 4 bit 8 bit 24 bit

Bits per Pixel	function	Number of colours
1 bpp	$(2)^1$	2
2 bpp	$(2)^2$	4
3 bpp	$(2)^3$	8
4 bpp	$(2)^4$	16
5 bpp	$(2)^5$	32
6 bpp	$(2)^6$	64
7 bpp	$(2)^7$	128
8 bpp	$(2)^8$	256
10 bpp	$(2)^{10}$	1024
16 bpp	$(2)^{16}$	65536
24 bpp	$(2)^{24}$	16777216 (16.7 million colours)
32 bpp	$(2)^{32}$	4294967296 colour (4294 million colours)

• Resolution

Fig 4.4 - Image Resolution

Pixels are used to measure the physical dimension of a digital graphic. The physical dimension is displayed as the image resolution.

This illustration in Figure 4.4 is 250 pixels wide and 175 pixels high. The image resolution, therefore, is 250 x 75 pixels or 43,750 pixels.

A high resolution digital graphic using a large number of pixels is higher in quality. To determine the quality of a graphic the number of pixels per inch (ppi) used (horizontal or vertical) or the number of dots per inch (dpi) used (horizontal or vertical) are considered. (Figure 4.5)

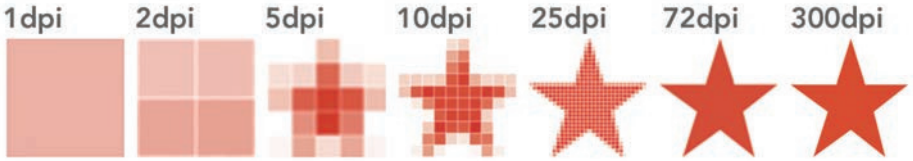


Fig. 4.5 - Number of dots per inch (dpi)

- **Colour**

A digital graphic contains tens of thousands of pixels. Each pixel represents a colour. Therefore, a pixel is a small dot with a colour.

There are about 16 million of recognizable colours visible to the naked eye. This number comes from a mixture of colours. However, it is difficult to correctly recognize each colour. (figure 4.6)

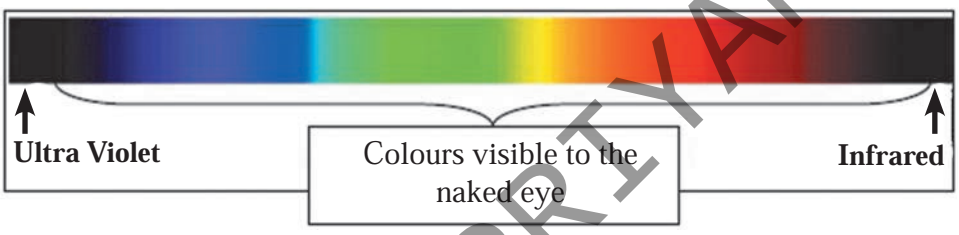


Fig 4.6 - Colours visible to the naked eye

In designing digital graphics it is possible to use many colours. The colour model which should be used for the design must be decided based on the output device or the media. (figure 4.7)

Two widely used colour models are shown on figure 4.7

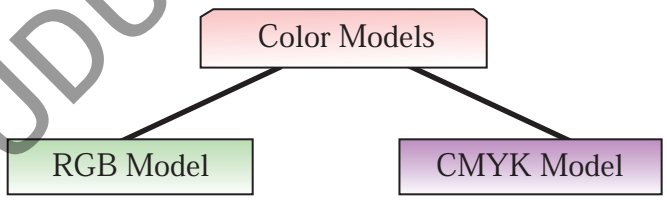


Fig 4.7 - Colour Models

- RGB Model – This is widely used to create images on television screens or computer screens using coloured lights. The Primary Colours used here are red, green and blue.
- CMYK Model – This model is used for printing on paper using coloured inks. The Primary Colours used here are Cyan, Magenta, Yellow and Black.

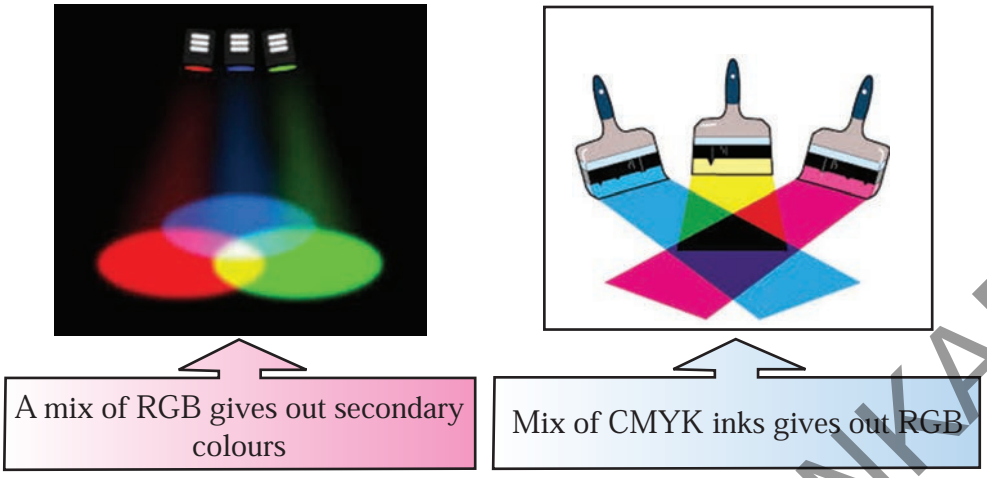


Fig 4.8 - Mixing colours

Colours are very useful to maintain the quality of the picture or illustration. Single colours are known as primary colours. Colours made by mixing two colours are known as secondary colours while tertiary colours are made by mixing three colours. There are 256 (0 - 255) colour variations in a primary colour.

Forming a tertiary colour

To make a tertiary colour, the colour combination should be from 000, 000, 000 to 225, 225, 225. This is known as RGB Triplet and it can be represented in octal numbers as RGB (245, 102, 36) or RGB (F5, 66, 24). (Figure 4.9)

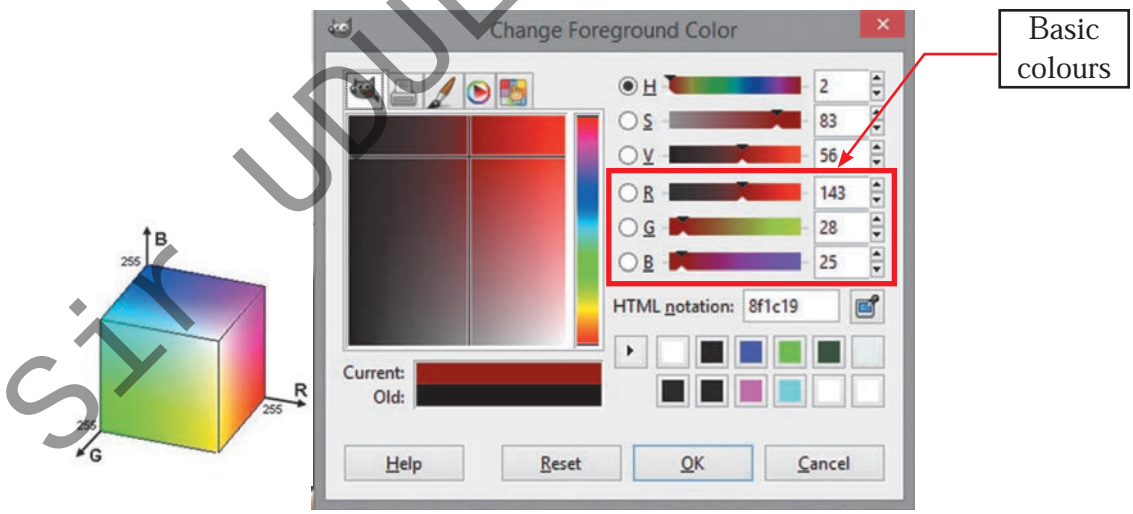


Fig 4.9 - tertiary colour mixture

Graphic size and compression

The size of a graphic is determined by the number of pixels, the number of lines and the colour combinations used for the creation. A graphic with a large number of pixels, colours and a high resolution has a large file size. There may be difficulties in storing and transmission of such a graphic. Graphic compression is used to compress file size. Compression can be carried out at the time of saving the graphic or later.

The file formats used for compression in saving a graphic may or may not cause affect to the original quality of the graphic. The file formats are created using different algorithms to suit the compression.

There are two methods for graphic compression - Lossy compression and Lossless compression. (Figure 4.10)

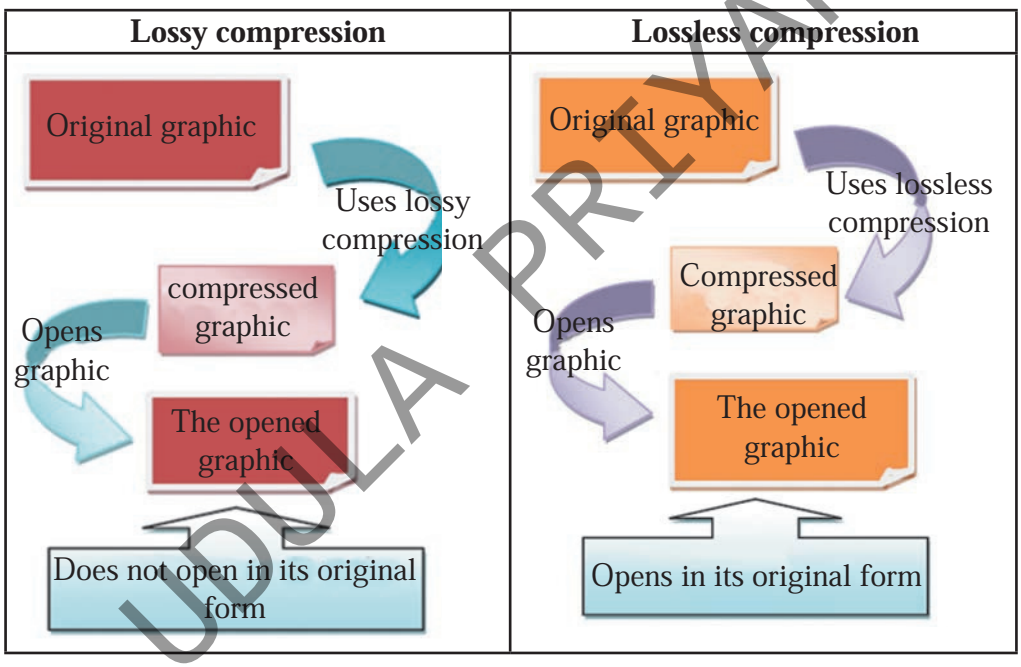


Fig 4.10 - Use of Compression methods

It is possible to compress graphics to a minimum size using Lossy file formats, but this compression reduce the quality of the original graphic. The reopened graphic does not show its original form. Yet, to make it faster for compression and for saving and downloading from the Internet, Lossy compression is useful. JPEG, TIFF, BMP are a example for Lossy file formats.

On the other hand, it is possible to compress a graphic preserving its original quality. In opening such a file, it is displyed in its original quality. This compression is identified as Lossless format. GIF, PNG, RAW are examples for Lossless file formats.

Graphic Types

Digital graphics fall into two main categories. They are raster graphics and vector graphics. The type of graphic (raster or vector) is decided according to the graphical software used.

There is a difference between Raster graphic and Vector graphic. Let us identify them.

Criteria	Raster graphic	Vector graphic
Creation of the graphic	Array of pixels in different colours	By collection of straight or curved lines
File records	No records	Maintains a record of the start and the end, number of lines, straight and curved lines and colours used
Quality of the graphic	Quality is lost when the size changes	Quality is not lost when the size changes
For high quality creations	Not suitable	Suitable
Creation and saving	Uses less memory space	Needs more memory space
Computer speed in creation	Does not change	Reduces
Examples of software	Adobe Image Ready, Adobe Photoshop, ProArtRage, Artweaver, Corel PHOTO-PAINT, GIMP, Deluxe Paint, GIMP shop, Microsoft Photo Editor	Adobe Illustrator, Adobe Live Motion, Corel Paint Shop Pro, Adobe Fireworks, Microsoft Expression Design, DrawPlus, X ara Photo & Graphic Designer, CorelDRAW, Litha-Paint

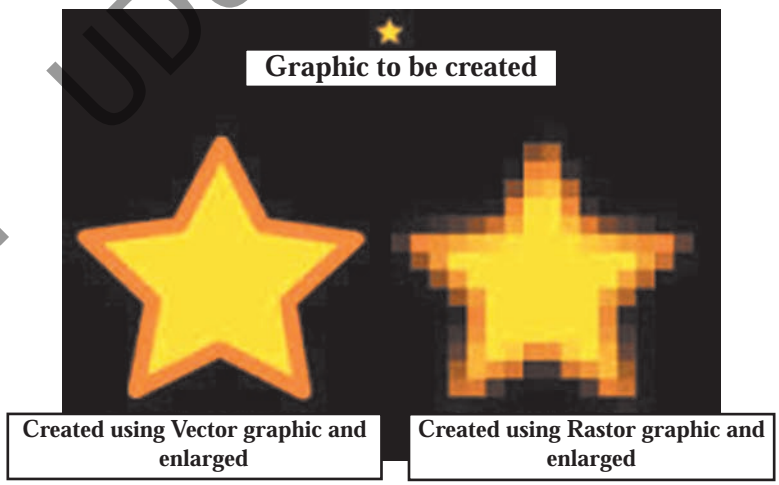


Figure 4.11 - Difference between raster graphics and vector graphics

Graphic Design

There are many software types for the creation of static graphics. A few of them were mentioned earlier. Most of such software need to be purchased while some may not be compatible for all Operating Systems. Therefore, let us see a software that comes free and can be downloaded from the Internet.

GIMP

GIMP is an image manipulation program created for GNU free and open source operating system. This free software is widely used to reconstruct photographs, create graphics, edit and formatting of graphics. This software with many tools helps with the creation a simple graphic as well as to edit a high quality photographs. GIMP software belongs produces raster graphics.

GIMP software is UNIX based. It can also be installed on Microsoft Windows and Mac Operating system to install GIMP on a computer, go to http://www.gimp.org/downloads/.

GIMP - Graphical User Interface

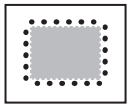
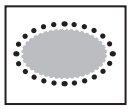
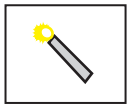
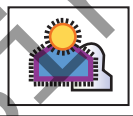
1. The Main Toolbox
2. Tool Options
3. Image Window
4. Layers, Channels, Paths
5. Brushes/Patterns/Gradients

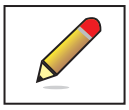
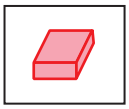
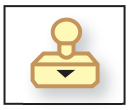
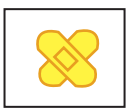
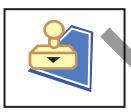
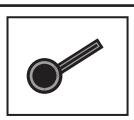
1. The Main Toolbox

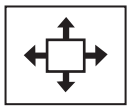
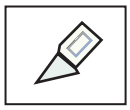
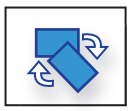
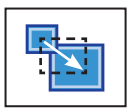
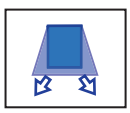
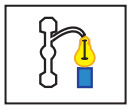
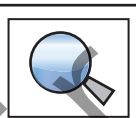
It is possible to open or close the tools in this box for the editing graphics.

For the purpose, follow:

Edit → Preferences →Toolbox →
The tools can be enabled or disabled.

Icon	Name of the tool	Shourtcut	Description
Selection tools			
	Rectangle	R	Selects the required area as a square or rectangular region.
	Ellipse	E	Selects the required area as a circular or elliptical region.
	Free (Lasso)	F	Draws free-form selections
	Fuzzy (Magic Wand)	U	Selects areas on color similarity.
	By Colour	Shift + O	Selects all instances of a colour in a graphic.
	Scissors	I	Creates paths to select shapes
	Foreground	-	Selects a region containing foreground objects.
Brush Tools			
	Bucket Fill	Shift + B	Fills an area with a colour or a pattern.

	Blend (Gradient)	L	fills the selected area with a gradient blend
	Pencil	N	Paints hard-edged lines; that is, the pixels are not anti-aliased.
	Paintbrush	P	Paints soft-or fuzzy-edged lines; that is, the pixels are anti-aliased and/or feathered.
	Eraser	Shift + E	Erases pixels from a layer.
	Airbrush	A	Paint tool with variable pressure to spray colours on a graphic
	Ink	K	Adds colour to a graphic, like the paintbrush. Quick movement of mouse minimizes the size of brush. Slow movement makes its vice versa
	Clone	C	Copy pixels from one part of a graphic to another.
	Heal	H	Resolves image irregularities removing unnecessary colours and spots
	Perspective Clone	-	Clones from an image source after applying perspective transformation.
	Convolve (Blur/Sharpen)	Shift + U	Blurs or sharpens an image
	Smudge	S	Dampens graphic
	Dodge/Burn	Shift + D	Lightens or darkens an image's shadows, mid tones, or highlights.

Transform Tools			
	Move	M	To shift or move a selection
	Align	Q	To align or arrange layers or objects
	Crop	Shift + C	Crops or clips the image
	Rotate	Shift + R	Rotates the active layer, selection or path.
	Scale	Shift + T	Scales the active layer, selection or path
	Shear	Shift + S	Shifts part of the image in some direction.
	Perspective	Shift + P	Changes the perspective of the active layer, selection or path
Other Tools			
	Path	B	Allows selecting and modifying paths
	Colour Picker	O	Selects the colour of any image opened on your screen.
	Magnify (Zoom)	Z	Alters the zoom level of the image
	Measure	Shift + M	Shows distances and angles
	Text	M	Places text into the image.

2. **Tool Options:** The Tool Options are available to customize the options for a tool.
3. **Image Window:** Helps display the graphic created. It is possible to keep several windows open to suit selection. In this situation several windows will be open at the same time. Or else one window can be kept open and use others as necessary. For this purpose, select:
   Windows → Single-Window Mode
4. **Layers, Channels, Paths:** These are shown as Tabs and can be clicked open when necessary.
5. **Brushes/Patterns/Gradients:** These tabs help create and add colour to a graphic.

Basics of a Graphic software

Opening a new window for a graphic

- Click 'File' → 'New'
  The 'New Image' dialogue box opens.
- Select the size of the graphic
- Either adjust height and width or select a template
- Click 'OK'

To save a graphic created

- Click 'File' → 'Save'
- Give name to the graphic in 'Save Image' dialogue box
- Select a saving location from 'Places'
- Click, 'Save'

Note: Graphics Created in GIMP are saved in XCF (file extension)
(**Eg:** image 1.xcf)

Export Graphic

- Select File → Export
- Give a Name for the graphic in 'Image' dialogue box
- Select suitable saving Location from 'Places'
- Select File Formats from 'Select File Type (By Extension)'
- Click, Export

(Compression takes place to suit different file types)

Opening an existing window

- Click 'File' → 'Open'
- From the dialogue box 'Open', select saving location from 'Places'
- Select the saved graphic from, 'Names' window.
- Click 'Open'

Using GIMP software

1. Creating a graphic using several pictures

- The following methods can be used to obtain images for graphic creation.
- scanned pictures saved in the computer
- Images captured on a digital camera saved in the computer
- Images captural on a digital camera in a smart phone and saved in the computer.

The above graphic shows a creation with three different images. It is created as follows:

You may use images stored in the computer or select an image that can be obtained easily.

Step 1 - Open GIMP software

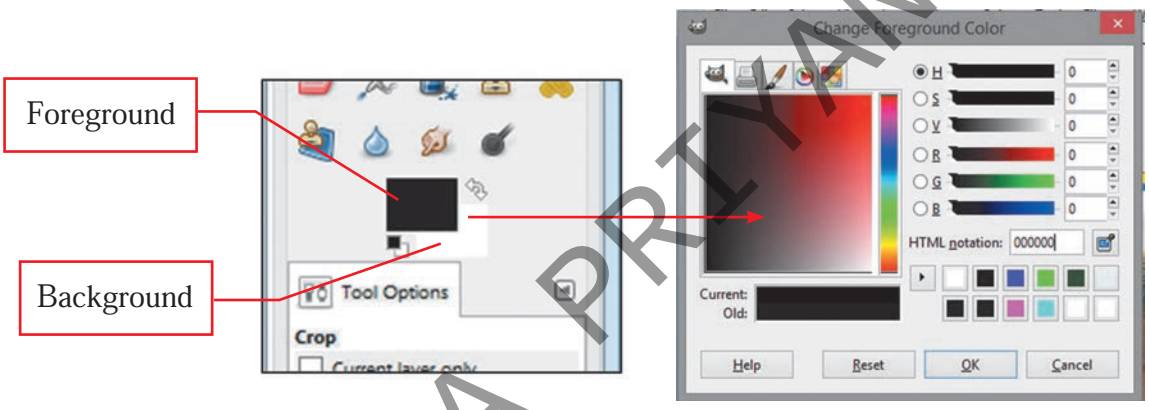
Step 2 - From the Menu, select 'Windows' → 'Single - Window Mode'

Note: GIMP software contains two window types for use. One is Single-Window Mode and the other, Multi Windows Mode. The window has to be changed before the graphic is created.

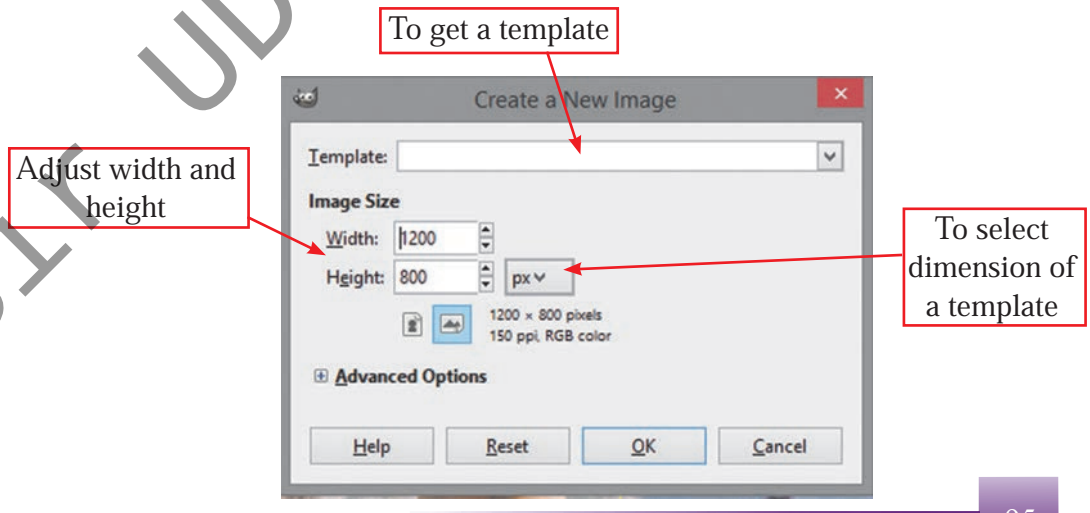
To obtain images,

Step 3 - Click 'File' → 'Open' and from the dialogue box and open pictures for work. Pictures need to be opened one at a time. Therefore, do not select 'Open as Layers'.

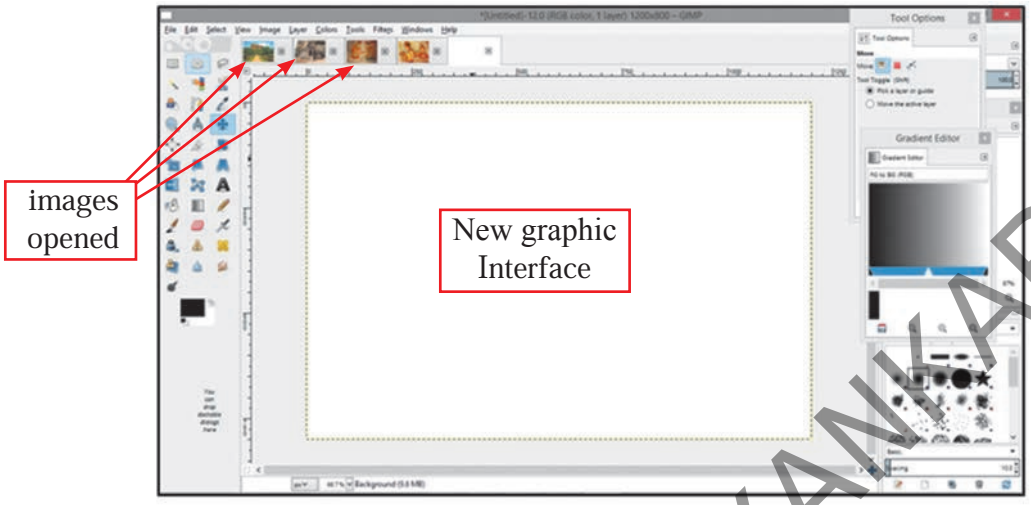
Step 4 - From the Tool Options, select foreground and background as black and white. For this, follow the illustration and click on the colour in the colour box. Or else, with HTML notation, use 000000 for black and ffffff for white using the keyboard. Click 'OK'.



Step 5 - To open a window for a graphic, click on 'File' → 'New'. In the 'Create A New Image' dialogue box, indicate width as 1200 and height as 800 px and click 'OK'. (Templates can be used for other scales.)



Once adjusted, it opens a GIMP Interface as follows.



Step 6 - Select the first image. Right click on the related Layers. Select 'Add an Alpha Channel'.

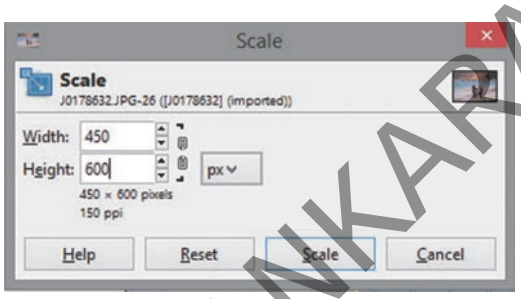
The Alpha Channel helps make the picture transparent. With the second picture, this transparency comes in automatically. However, when there is only one picture in the Layer window, it is necessary to select 'Add an Alpha Channel.

Step 7 - Select 'Ellipse' from Tool Option. Click 'Tool Options → Feathers' and mark the ellipse on selected picture.

Step 8 - 'Select → Feathers' Make 'Feather' to 10 pixels Click 'OK' Select 'Edit → Copy Visible'

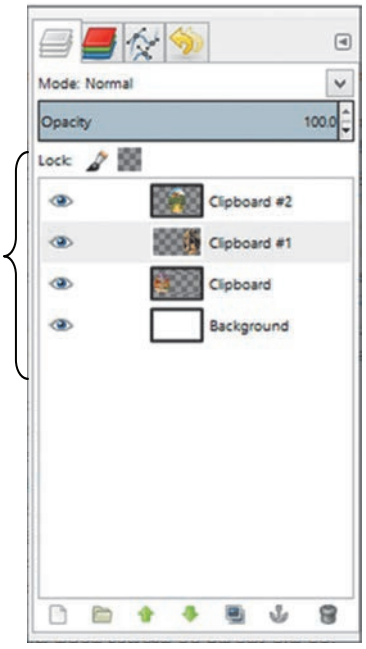
Step 9 - Click on new graphic window
Select, 'Edit' → 'Paste as' → 'New Layer'
The prepared section of the image appears on the new graphic window.
Using Move Tool, to position the image on the window.

Step 10 - It is suitable to have all images in the same size. For this, select 'Scale' tool from Tool Options.
Click on image
In the Scale dialogue box, arrange the width and height of the image as 450, 600 pixels. Click, Scale.



Step 11 - Follow steps 5, 6, 7, 8, 9, 10 and 11 to bring the other two pictures too to the graphic window. Position them and scale.

The positioning of layers is shown in this manner.



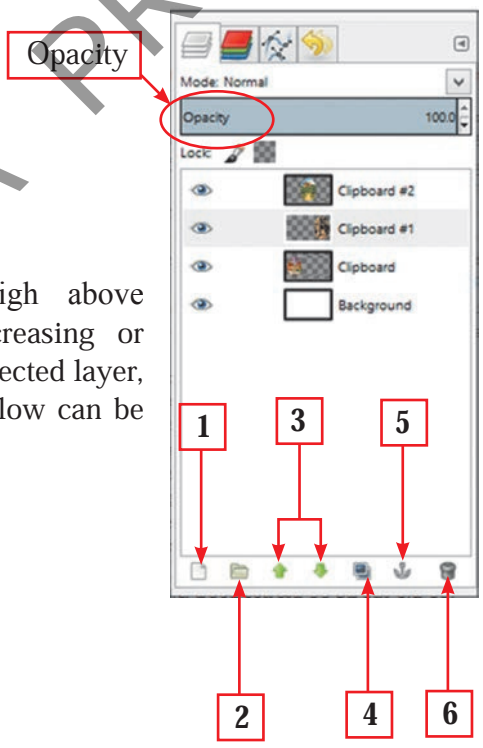
Layers

The use of Layers is important for both simple and complex graphic creations. It is easy to manipulate objects on a graphic by using different layers.

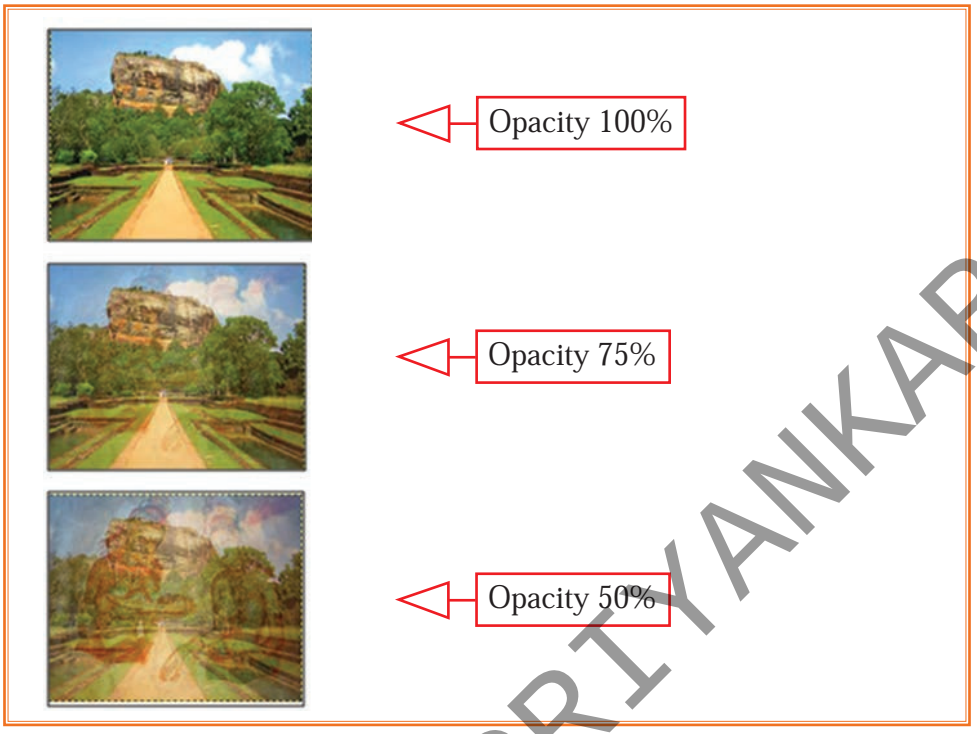
Layers resemble sheets of transparent paper. However, when objects are added one above the other, the layer beneath may not be shown.

- For, different pictures, different layers are to be created on layer window.
- For each image a separate layer must be used on the layer window.
- This prevents alterations done on one layer affecting another layer. (adding texts, adding colour, shapes, editing etc).
- Use the eye symbol to make the layer visible or invisible.
- Use the botton line of layer window to make various alterations.

1. New
2. Group
3. Move
4. Duplicate layers
5. Anchor
6. Delete



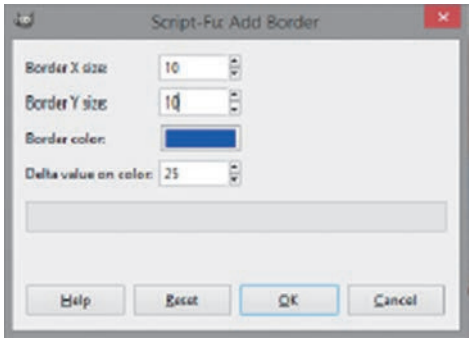
- Opacity - Can be seen high above the Layer window. By increasing or decreasing the opacity of a selected layer, the visibility of the layers below can be altered.



Step 12 - Once, editing and positioning are completed, it is necessary to merge all layer together into one layer. For this purpose, Right click on Layer window and click, 'Merge Visible Layers' → 'Expand as necessary' → 'Merge'

Step 13 - Use 'Crop' tool to remove unnecessary sections in graphics created.

Step 14 - To add a border to a graphic, Select:
'Filter' → 'Decor' → 'Add Border'.
Set Border X – 10, Border Y – 10, Border colour blue → 'OK'
Border X – 15, Border Y – 15, Border colour yellow → 'OK'
Borders need to be created twice as shown above.

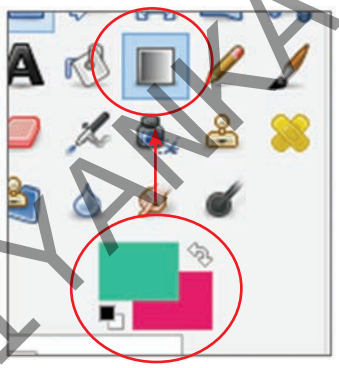


Step 15 - Save graphic. Thereafter, Export it.

2. Creating graphics with texts

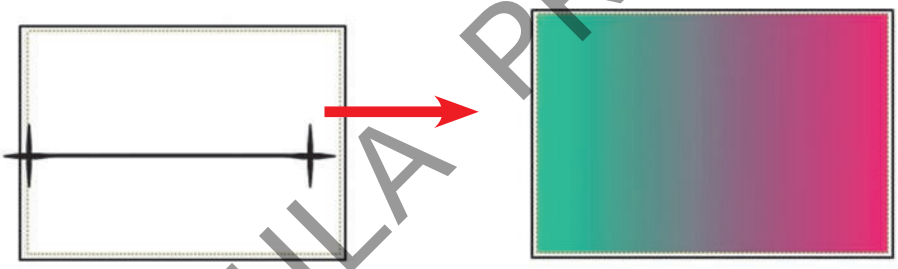
Step 1 - Open GIMP software

Step 2 - To open a new graphic window, click 'File' → 'New' In the dialogue box select 'Create a New Image', set width - 640, height - 400 px and click 'OK'.



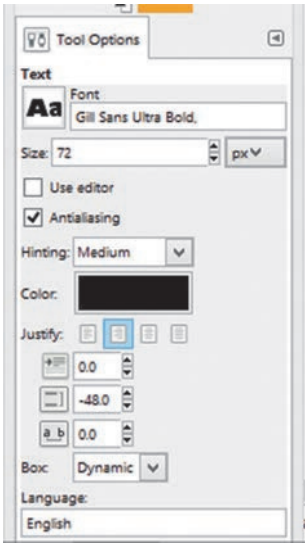
Step 3 - For foreground and background colour, change HTML notation value 29c89c, e3216a to select the colours.
Next, select Gradient tool.

Step 4 - Click to draw a line on background window from left corner to right corner. The background gets coloured with selected colours.



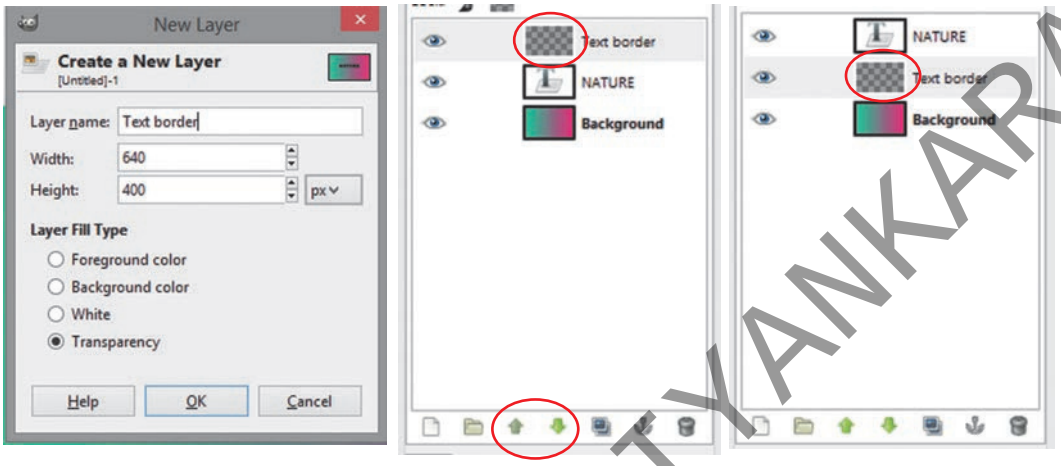
Step 5 - To add text:
Select 'Text' from Tool Options. Tool Option changes accordingly. Follow procedure given below to suit the text.

- Font type - Gill Sans Ultra Bold or a broad letter type
- Font size - 72
- Colour - Black



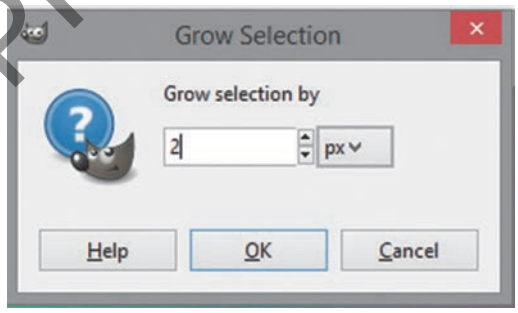
Click on window and type NATURE. Using 'Move' tool, drag text to the center.

Step 6 - To include a border around the text, select the layer which contains the text and add another layer below this. Name the new Layer, as 'Text Border'. Using arrows, shift 'Text Border' downwards from text Layer.



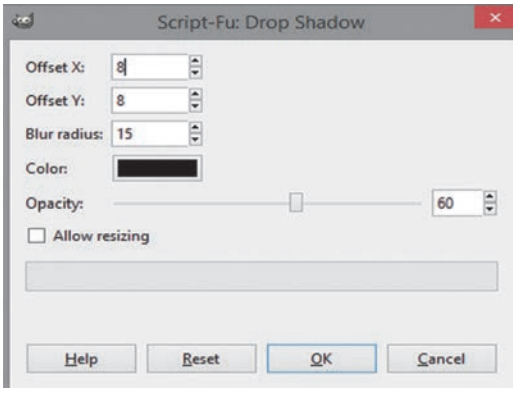
Step 7 - Select text Layer. R ight click and select 'Alpha to Selection'

Step 8 - To increase the selected area :
Select → Grow
Increase
'Grow Selection' to 2 pixels and click 'OK'.



Step 9 - Select Text Border Layer
Select white as Foreground colour and to fill colour, select Bucket fill and click on the text.
Next, 'Select → None'.

Step 10 - To Add Shadow to text
Select 'Text Border' layer
From the Menu, select:
'Filters' → 'Light and Shadow' → 'Drop Shadow'.
Set the values as shown in figure. Click 'OK'.



Step 11 - Once, it is placed it needs to merge all layers together.
Right click on Layer window and click:
'Merge Visible Layers' → 'Expand as necessary' → 'Merge'.

Step 12 - Add a border to the graphic as you learnt earlier. Save in the correct place. Export the graphic.

Note: It is possible to use different colours and different patterns for the background of a graphic. Select a pattern. Click mouse on selection → Drag and drop on the background.
Use different pictures and create few backgrounds.

Examples:

Activity

1. Create a graphic using several photographs you have captured on a special occasions or found on the computer.
2. Using other 'Filter' methods used in graphic designing, produce a better finish to the graphic you created.
3. Download images of places of special interest in Sri Lanka from the Internet. Create graphics using the images downloaded. Give suitable titles or introductions to them.
4. Create an invitation for digital printing.
5. Create a banner for a special event held in the school.

4.2 Two - dimensional animation

The previous lesson discussed several areas connected with the creation of digital graphics as related to digital creations and graphic design.

The main aim of animation is to give more depth to a static graphic and make it look real or authentic.

Creative animations are used in commercial publications, as a media to promote products, to develop computer games and creating cartoon films.

What is animation?

Animation is an optical illusion to show the movements of an object or objects. A series of frames of an object or objects are arranged in a sequential order and displayed continuously to create the animation. The speeds of the objects can be changed by changing the speed of frames.

Basics of animation

Types of Frames

Several frames are used to create an animation. They are: Key frame, Tween frame, frames, and Blank Key frames.

- **Key Frame:** A key frame is the main, specialised static frame in a series of frames to be used with the creation of an animation. The user decides on the key frame for the creation. In a complete motion, there can be many key frames in important positions.

  E.g. - The frames used at the beginning and at the end of motion are Key Frames.

- **Tween Frames:** Animation is created in the Tween Frame. The purpose of a tween frame is to create smooth motion between two frames. While the user creates the key frames, the software creats the tween frame. It is possible to create smooth motion of 24 frames per second (fps). In a motion consisting of 24 frames, the additional 22 frames are created as Tween frames.

  E.g. - There are two key frames; one at the beginning and the other at the end. In a motion of 24 frames, the rest of the 22 frames are created by the computer programme. Eventually, The user creates an animation with a smooth motion with little effort.

- **Frames:** When an adjoining frame is added to a frame with a content, the time period of the content in the animation can be increased.

- **Blank Keyframe:** In every instance when blank key frame is added, it provides a blank frame to include a content. However, when a creation is done in this, it is no longer a blank key frame.

Animation

Vectorian Giatto

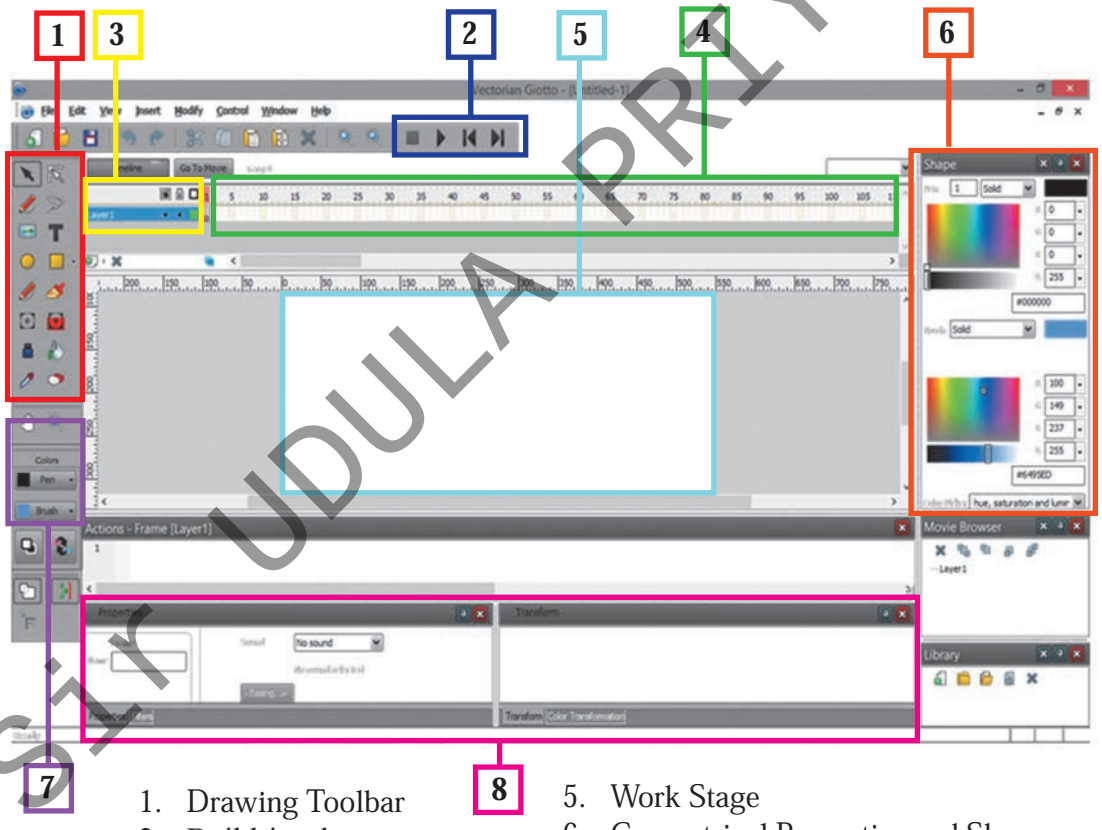
Vectorian Giatto is produced for animations. It is a free software and can be downloaded from the internet. This software is easy to use and requires no coding unlike with some other software for animation.

The main purpose of this software is to embed motion for created images, while there are nearly 50 flash animation tools.

The specialty with Vectorian Giatto is in its ability to remain free from complex scripts and enable creation of simple animation including music.

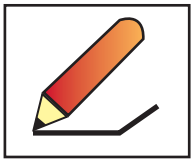
Vectorian Giatto software can be downloaded and installed in your computer from: http://vectorian.com/giatto

The Graphical User Interface of Vectorian Giatto



1. Drawing Toolbar
2. Build-in-player
3. Layers
4. Timeline
5. Work Stage
6. Geometrical Properties and Shapes
7. Colours
8. Properties Window

1. **Drawing Toolbar:** A basic need of animation is to create an object or a text on a work stage for motion or editing. The tools that can be used for this purpose. are as follows:

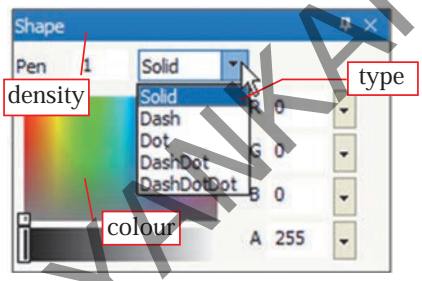


Line tool (N)

Can be used to draw lines on the work stage.

1. Click on the tool.
2. In the column for the Shape, select type of line and colour, using the pen. Include the number for density.
3. By clicking the mouse, keep drawing on the work stage.

Note: On completion of drawing lines, it is possible to change type, colour and density as required.



Insert bimap (M)

This is used to add a picture to the work stage. Image file formats that can be added to work stage are;
Bitmap (bmp), JPEG (jpg), TIFF (tif), PNG (png), GIF (gif) and ICO (ico).

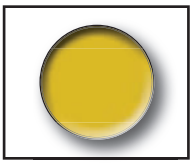
1. Click on tool.
2. Select and open the image from 'Open' dialogue box.

Text tool (T)

This is used to add text to the work stage.

1. Click on the tool.
2. From the Properties window which is opened at the same time, select font type, size and alignment.
   Select colours from 'Brush'
   Click mouse on work stage and type.

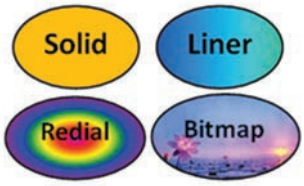
Note; If 'Properties' window does not appear,
Click 'Window → Object properties'
Changes can be done after the completion of typing.

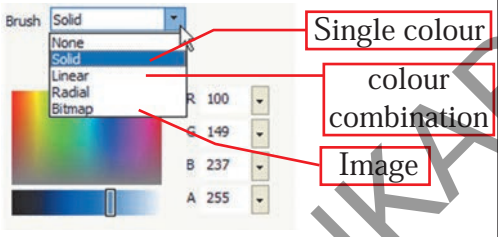


Oval tool (O)

This is used to draw oval shapes on the work stage:

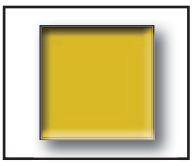
1. Select tool.
2. Select border type, colour and density from 'shape' bar. and select colour using 'Brush'.
3. While clicking mouse, continue drawing on work stage.





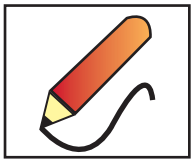
In the colouring process:

- One colour
- Combination of colours or a picture can be used.



Rectangle tool (R)

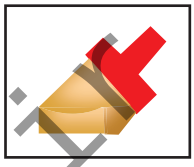
- This helps draw rectangular shapes on work stage. Follow steps used to draw oval shapes discussed earlier.



Pencil tool (P)

- This can an be used on the work stage to draw free lines.

1. Select tool.
2. Follow steps that were used in drawing lines earlier.

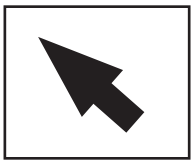
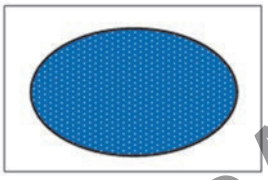
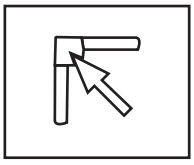
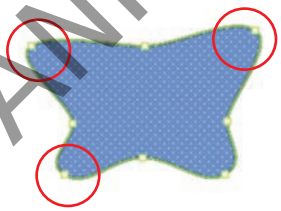
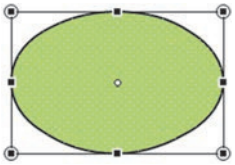
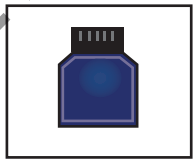


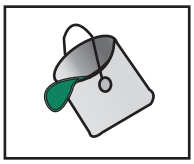
Brush tool (B)

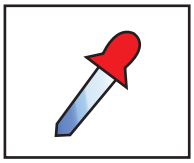
This can be used to draw wider shapes on the work stage.

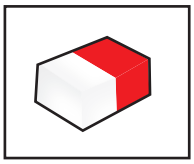
1. Select tool.

Follow the steps described for drawing lines, using the pencil.

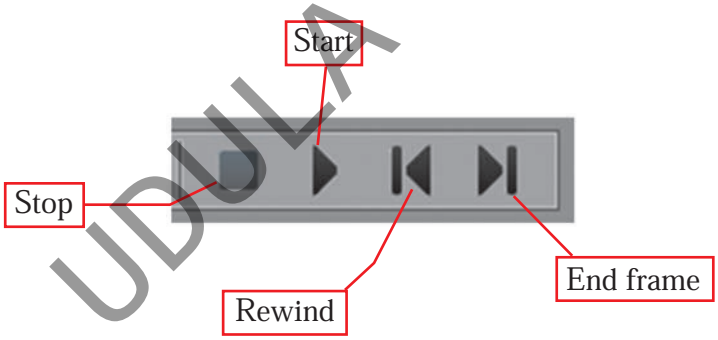
 Selection tool (V)	Selection tool is used to select or move around shapes, texts and pictures. 1. Select tool. 2. Place the arrow head on the object and click. 3. If the object gets covered in small white dots, the picture or object is selected. 
 Sub selection tool (A)	This is used to change the appearance on the created shape. 1. Select tool. 2. Click on the shape to be changed. 3. Click on the marks around it, drag in or out to do the change. 
 Lasso tool (L)	This helps to cut and remove shapes or pictures on work stage. 1. Select tool. 2. Click on the image and get the selection.
 Free transform tool (Q)	This is used to change dimension, rotate or change the shape of the object. 1. Select tool. 2. Click on object. 3. Click on tools around the object and do the changes. 
 Ink bottle tool (S)	This is used to change the border around shapes drawn on the work stage. 1. Select tool. 2. Use 'Shape → Pen' to select area, colour and type. 3. Click on 'Object'.

 Paint Bucket tool (K)	This is used to change colour on shapes drawn. 1. Select tool. 2. Use 'Shape' → 'Brush' to select a colour or a combination of colours

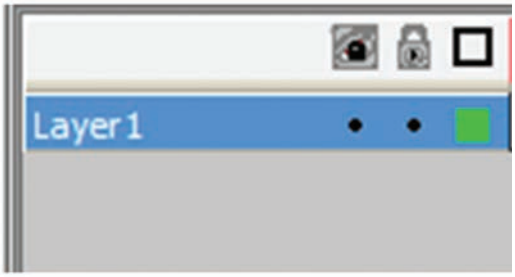
 Eyedropper tool (I)	This is used to select a colour combination on one object, to be used on another object elsewhere. 1. Select tool. 2. Click on object with a necessary colour. 3. Click on the object where there are no colours.

 Eraser tool (E)	This is used to erase only a section of a creation. However, this does not remove the entire shape.

2. **Built-in-player** - Built-in-player is used to play, stop, rewind or move to end with an animation created.

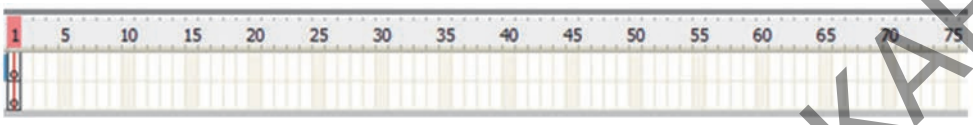


3. **Layers** - Layers are important in the creation of simple and complex animation. The use of different layers helps with the organization of different objects in animation. Layers are similar to a collection of transparent papers. Getting one object on to another can obstruct the lower



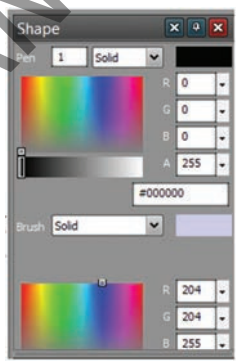
layer. Usually, when Giotto is opened, the first layer can be seen. It is named Layer 1. Right click on the layer frame can bring up another layer, remove one, make the layer visible or not, lock/unlock the layer and place it in the correct position.

4. **Timeline** - Timeline is an important feature in animation. Timeline sets time period for animation.

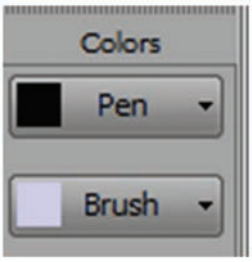


5. **Work stage** - Animations are created on the work stage.

6. **Geometrical Properties and Shapes** - The geometric properties and shapes window is used in colouring the shapes. This window is also helpful with the selection of border type and adding border colour, combination of colours, drawing designs and inserting images.



7. **Colours** - Basic colours for the tools (Pencil, brush, ink, bucket, letters) are selected from this window. Colour for the border is from 'Pen' and fill colour from 'Brush' can be obtained.



8. **Properties Window** - In the selection of text tool, the properties window that changes accordingly can be used to select font size, font type, alignment etc.

Basics of animation

Open a new window to create an animation → File → New Movie

Saving an animation

- Click 'File → Save'
- Type a name in 'Save Image' dialogue box
- Select a location to save from 'Places'
- Click 'save'

A file created by Giotto software is saved in the .vgd file format. The file can be saved to be used in web designing as well. This is called 'Export Flash Movie' and saved in .swf file format.

Export saved animation files to other file formats

To save as .swf file formats; Select 'File' → 'Export Flash Movie'.

- Select the location for saving, give file a name and click 'Save'.
- Thereafter the 'Export Settings' dialogue box opens. Select 'Compress movie' and click 'OK'.

Open a saved animation

- Click 'File' → 'Open' and open it from the saved location.

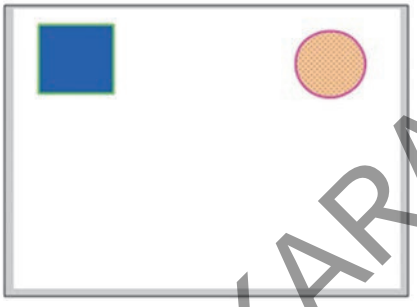
To open the file as an animation,

- Open the saved location.
- Right click on the file.
- Select the web browser you use.
- It can be seen that the animation plays in the browser

Creating a simple animation using Vectorian Giatto

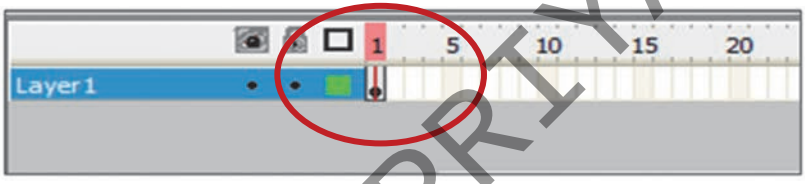
Step 1 - Open Giotto software.

Step 2 - On top of the work stage, draw two shapes - a square and an oval, as shown in the illustration.

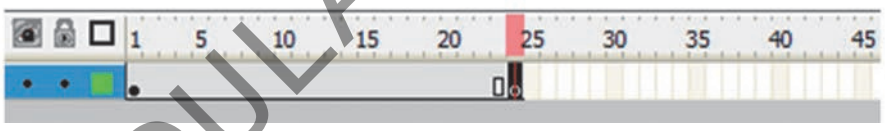


Step 3 - Using the tools to select these shapes, draw border and fill colours using the Pen and Brush.

Step 4 - Observe that this activity is shown in the first frame in Timeline. This is the first basic key frame.



Step 5 - Right click on frame 24 in Timeline and select 'Insert Key frame'. Frames 1 to 24 can be seen as follows;



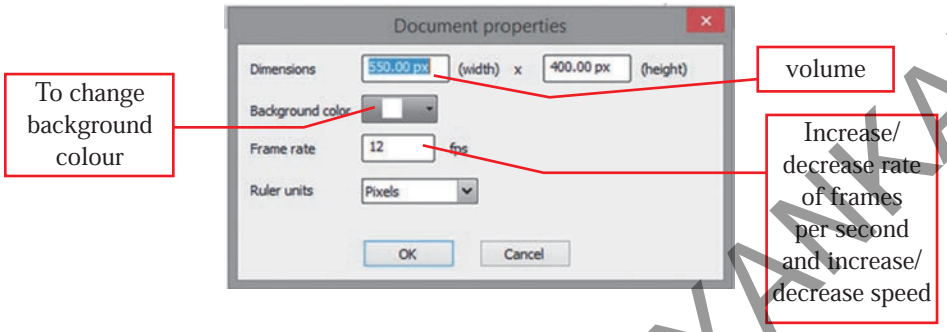
Using Selection tool, drag the square the oval drawings to the bottom created on the work stage.

Step 6 - Right click on any frame in Timeline, 1 – 24. From the menu that comes up, select 'Create Motion Tween'. The Timeline is seen as follows.

Step 7 - Use Built-in Player to play the animation.

If it is necessary to increase or decrease the speed in an animation or to change the background colour or dimensions.

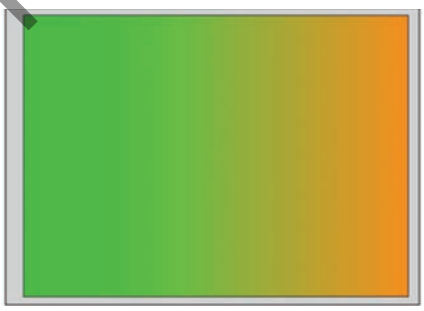
Click 'Modify' → 'Document'. From the dialogue box that opens, select 'Document properties' to do necessary changes. Click 'OK'.



Creating animation with captions

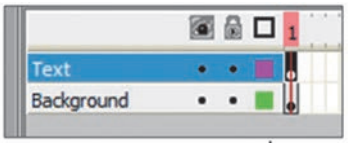
Step 1 - Open Giatto software.

Step 2 - Draw a rectangle on work stage as shown.



Step 3 - Select 'Brush' → 'Linear' to arrange colours and fill colour using 'Colour basket'.

Step 4 - Double click on Layer I. Label it as 'Background'.

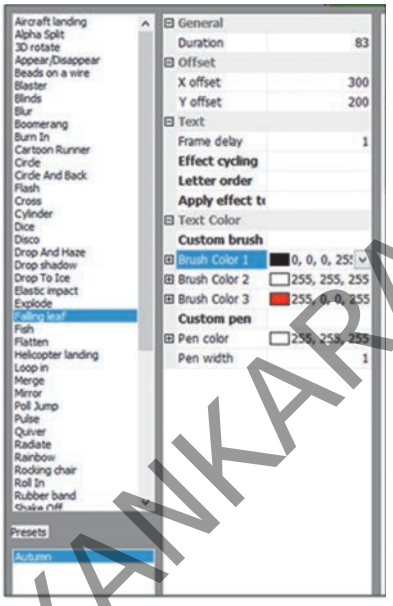


Step 5 - Right click on layer and select '+ Layer'

Step 6 - Label this layer as 'Text'

Step 7 - Select 'Text' layer.
Using text tool, type 'Beautiful Sri Lanka' on work stage.

Step 8 - Select text and using Properties window, edit caption.
(Font type – Curlz MT, font size – 35)
Centre the text as shown.



Step 9 - Right click on the text and select. 'Effect' → 'Add'.

Step 10 - 'Effect' window shows many effects that can be added to the text
Select 'Falling Leaf'. Click 'OK'.

Observe the changes in the 'Text' frame accordingly.

Effects have brought about changes to the Text frame. The background time frame too has to be edited accordingly.

Step 11 - Select 'Background time frame'. Right click on 83 frame (The end of the text frame) and select 'Insert' key frame.

Step 12 - Save the animations, export and open.

Activity

Create an animation by adding a motion text using an image you have created.

4.3 Audio Content

In the last lesson, we learnt about creating still graphics and animations for effective communication. To make such creations more meaningful and attractive, voice or sound can be added. Files that are created using recorded sounds or voices are known as audio content. These files can be edited as necessary using computer software. Some such software are as follows:

- Audacity
- Power Sound Editor
- Mp3DirectCut
- Music Editor Free
- Wavosaur
- Ardour
- WavePad Sound Editor
- Sound Engine

Audio editing

Audacity

Audacity is a free software that can be installed in Windows, Mac and Linux operating systems. Audacity can be used for both editing and recording purposes. It consists of multi layers. In installing the software, the user can select the language in the interface to suit user's choice.

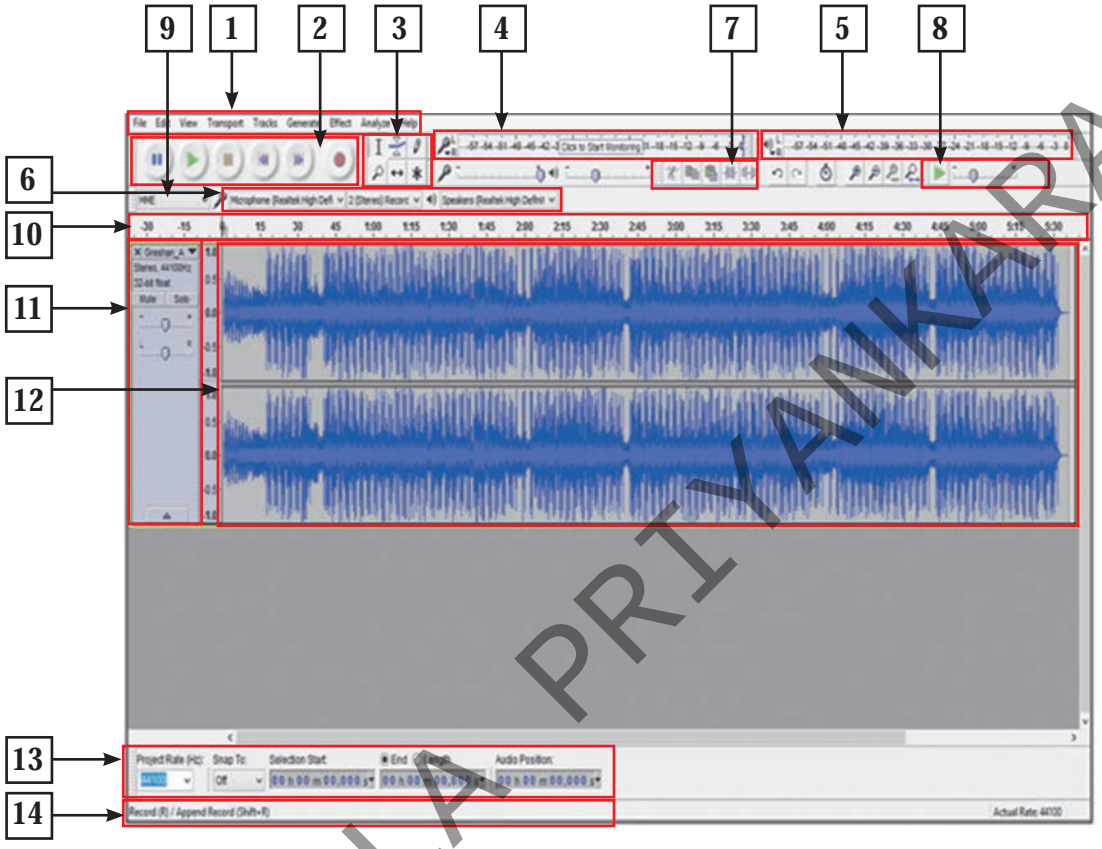
Audacity has functions for;

- Recording live audio proceedings
- Recording music being played in the computer
- Inserting sound effects on recorded digital graphics write on CDs/DVDs content.
- Editing file formats such as WAV, AIFF, FLAC, MP2, MP3 or Ogg Vorbis
- Copying sound, triming, mixing, or joining together for editing purposes
- Changing speed and pitch in recordings

Audacity can be downloaded from the following URL;

http://audacity.sourceforge.net/

Audacity Interface



1. Menu Bar
2. Transport Toolbar
3. Tools Toolbar
4. Recording Meter Toolbar
5. Playback Meter Toolbar
6. Mixer Toolbar
7. Edit Toolbar
8. Transcription Toolbar
9. Device Toolbar
10. Timeline
11. Track Control Panel
12. Audio Track
13. Selection Toolbar
14. Status Bar

Basics of using software for sound effects

Open a new window for creating audio content. → File → New

Saving a created audio content. →
- File → Save
- Select location for saving, type a file name and click 'Save'.

The file format used to save Audacity file is .aup. File saved in this format can be edited.
It is also possible to save such a file so as to use in web designing. This is known as audio exporting. There are several file formats where the animation can be saved. Some of them are: WAV, AIFF, FLAC, MP2, MP3.

Export Audio →
- Select 'File' → 'Export Audio'.
- Select the location for saving. Give it a suitable name.
- Select required file format from of 'Save as type'. Click Save. (Audio content compresses at this stage)
- Dialogue box 'Edit Metadata' opens. Using it, provide details such as audio mixing (name, year, title etc) and click Ok.

Audio Recording with Audacity

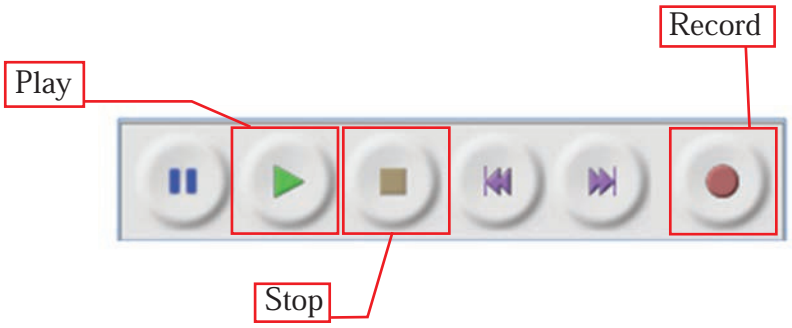
Step 1 - Click 'File' → 'New'.

Step 2 - Click 'Record' on Transport Toolbar.

Step 3 - Using the microphone built into the computer, record the required audio content.

Step 4 - Click 'Stop' on Transport Toolbar to end recording.

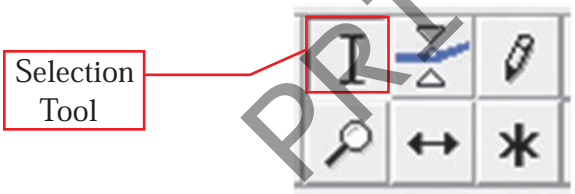
Step 5 - Click Play and listen to the recording done.



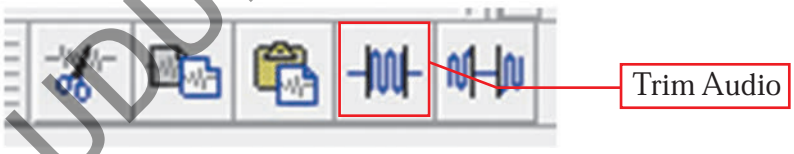
Editing recorded sound track to remove unnecessary sections

Step 1 - Open created file saved using -.aup (Audacity Project) file format.

Step 2 - Using Selection tool on Transport Toolbar select the necessary sections in the audio content.



Step 3 - Click 'Trim Audio' on Edit Toolbar. This helps remove unnecessary sections.



Step 4 - On completion of editing, Save edited file.

4.4 Creating a video clip

A video created using a series of visuals is called a video clip. For this, a recorded video, or still pictures and audio content can be used. Software can be used to create and edit video content.

Some software that are used to create video clips and edit as follows;

- PhotoBucket
- YouTube Remixer
- Movie Masher
- One True Media
- Motion Box
- Stash Space
- Windows Movie Maker
- AVI Edit
- Super DVD Video Editor

Use of video editing software to create video clip

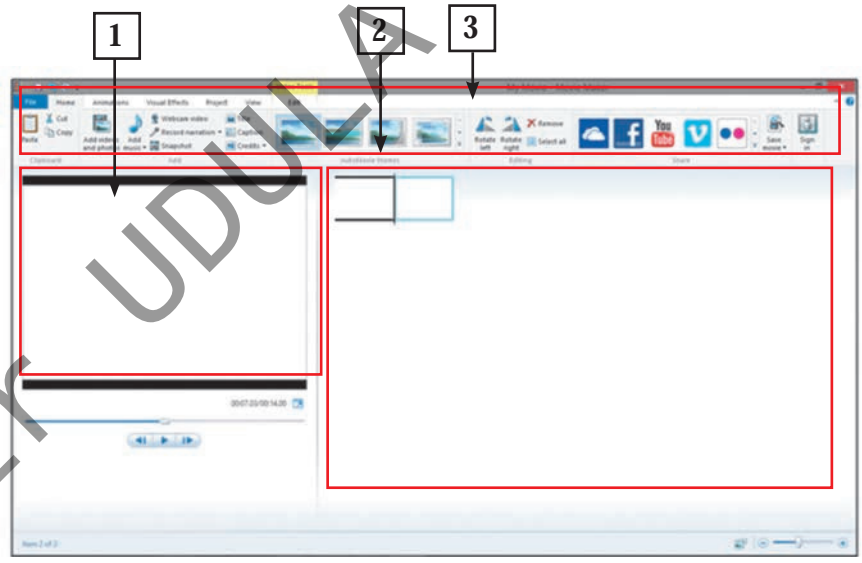
Windows Movie Maker

Windows Movie Maker is a free software provided by the Microsoft co-operation. This software can be used to create and edit video clips.

Download and install Windows Movie Maker software from the URL given below.

http://www.windows-movie-maker.org/

Windows Movie Maker – Interface



1. Preview/Player pane
2. Timeline stage
3. Editing function panel

1. Preview/Player pane

This is used to view a video and image frames expected to be used in a video clip and to watch a created video clip before saving it.

2. Timeline stage

The video clips to be created, the image frames and the audio clips are arranged on Timeline stage. Unlike on a time frame, the images and image frames are displayed very clearly.

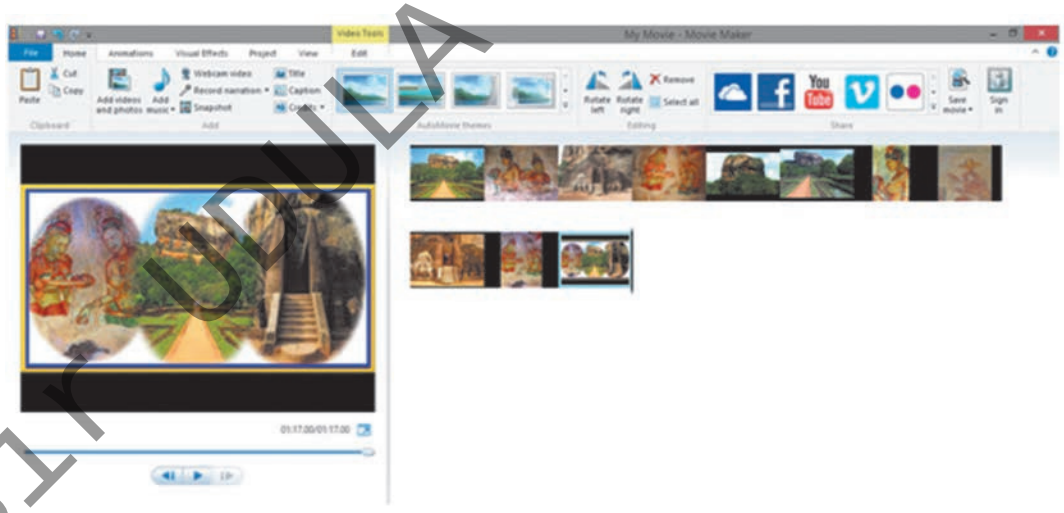
3. Editing function panel

The tools in the editing function panel are important for editing video clips that are created. These tools can be used to edit video content, add visual effects and edit audio content.

Making a video clip with Windows Movie Maker

Step 1 - Open Windows Movie Maker software.

Step 2 - Using 'Home' → 'Add Videos' & Photos' open video clips for the creation.
The screen to appear will look like as follows:



Apply Transition

Transition is used to show the relationship between two image frames and the manner in which the frames appear.

Step 1 - Open menu 'Animations'.

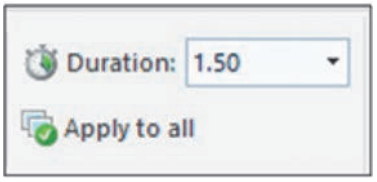
Step 2 - Click on first frame.

Step 3 - Take the mouse along each transition. The selected image is displayed in various forms. Then, click on the suitable transition.

4. Apply suitable transitions to other images on the Timeline stage. After applying transitions, Timeline stage is shown as follows.

5. Using the Preview/Player pane, play the creation. Edit as necessary.

6. To arrange the time period to display an image frame, use 'Animations' → 'Duration'. Select 'Apply to all' to enable use of same effects for all image frames.



7. To move image frames:
   i) Select the image frame.
   ii) Use Mouse over each movement shown in 'Pan and Zoom'. Click on suitable motion.

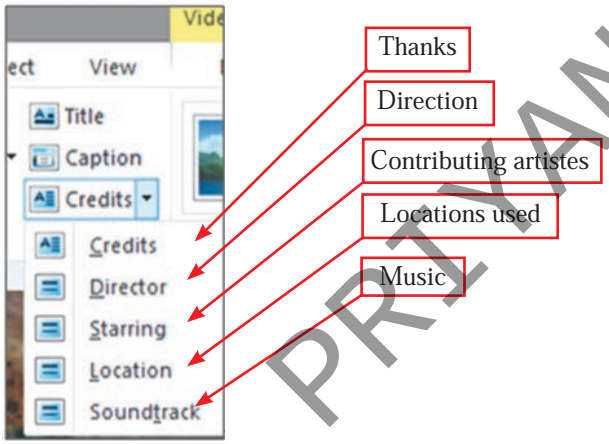
8. To add a topic to the creation:
   i) Select first frame.
   ii) Select 'Home' → 'Title'.
   iii) Type a suitable topic.
   iv) Open Format menu. Add Effects to suit topic.

9. Captions can be added to each image frame. For this purpose:

   i) Select image frame.
   ii) Select 'Home → Caption' and type a suitable caption
   iii) Format as shown earlier.

10. At the beginning or at the end of the video content, the direction, artists, music, venue etc. can be introduced. Separate frames can be added for this.

   i) Select the necessary introduction from 'Home → Credits'.
   ii) Type in necessary information.



11. The video content can be more effective by adding an audio content.

   i) Select first frame
   ii) Select 'Home → Add music'

12. Select and open an audio file prepared beforehand. At the end, the timeline stage is shown as follows:

13. Play the video content. Edit as necessary.

Saving an animation

'File' → 'Save Project'

Select a location for saving. Give file a suitable name. Click 'Save' to save the file.

A video clip that is created using Windows Movie Maker is saved .Wlmp (Movie Maker Projects) format. Files saved in this format can be edited.
Video clip can be saved so that it can be viewed through web browser and social media (Facebook, You Tube, Flicker)

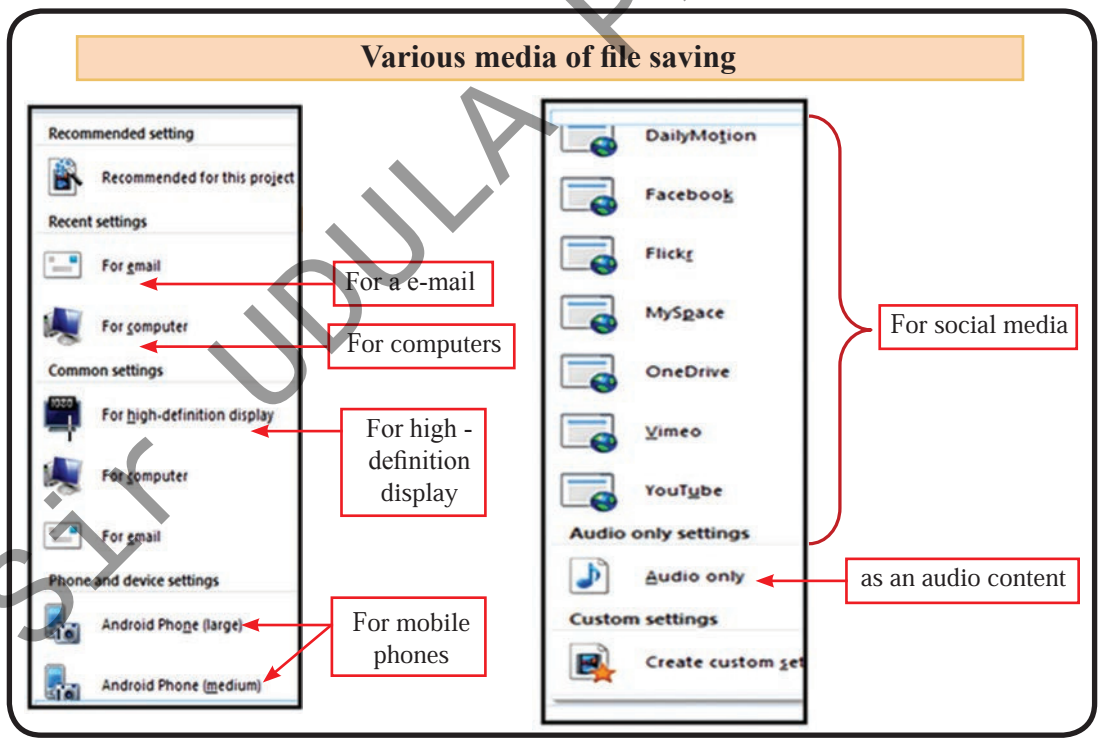
Saving and distribution of video content as a video clip

Method of saving a video content as a video clip to be watched on a computer, television, mobile phone or to open in social medias as follows;

Step 1 - Select the medium to save by 'File' → 'Save Movie'

Step 2 - Select location to save, give the file a name and click 'Save'.

Various media of file saving



Activity

1. Create a few still graphics using photographs of special places of internet in Sri Lanka using the lesson learnt in this chapter.
2. Create a few two dimensional animations by using the still graphic in the background.
3. Include an audio content to suit the created graphics and animation.
4. Using the creations above, prepare a video clip about the places in Sri Lanka.
5. Compare and contrast lossy and lossyless graphic compression.
6. Compare and contrast raster graphic and vector graphics.

Summary

- Images or graphics created using graphic software are known as digital graphics.
- Basic elements of a digital graphic are pixel, resolution, size and colour.
- Pixel is the basic element of a digital graphic. Digital graphics are made up of thousands of pixels.
- Pixel is composed of bits. Single colour pixel is made up of 8 bits while a colour pixel is made up of 24 (8×3) bits.
- The unit to measure the physical dimension of a digital graphic is pixel and physical dimension is known as image resolution.
- A high resolution digital graphic has higher quality.
- There are two types of colour models;
  - RGB model (Red, Green and Blue)
  - CMYK Model (Cyen, Magenta, Yellow and Black)
- Single colour- Primary colours
- Two colours - Secondary colours
- Three colours - Triplet colours
- There are 256 (1 - 256) colours
- RGB Triplet is formed from 000,000,000 to 255, 255, 255
- For example 'RGB Triplet' = RGB (245, 102, 36) = RGB (F5, 66, 24)

- There are two forms for graphic compression;
  - Lossy
  - Lossless
- There are two types of graphics:
  - Raster Graphic
  - Vector Graphic.