



05201330 / 05202182 – Computer Graphics

Dr. Ghanshyam Rathod, Assistant Professor
Parul Institute of Computer Application - BCA



CHAPTER-5

2D and 3D Animation Tools – Flash I



What is Multimedia and Animation?

- **Multimedia** in computer graphics is the use of a computer to combine text, audio, video, graphics, and animation to present information.
- **Animation** is the technique of designing, drawing, making layouts and preparation of photographic series which are integrated into the multimedia and gaming products.

Introduction to Flash

- This software was named as Future Splash. But it was updated by macromedia people and renamed as Macromedia Flash.

- **Definition:** Flash

Flash is a multimedia platform used to add animation, video and interactivity to web pages. Flash is frequently used for advertisements, games and flash animations for broadcast.



Flash File Types

- **Source .fla files:** One of the two main file types in flash is the source Flash Movie that you save while working.

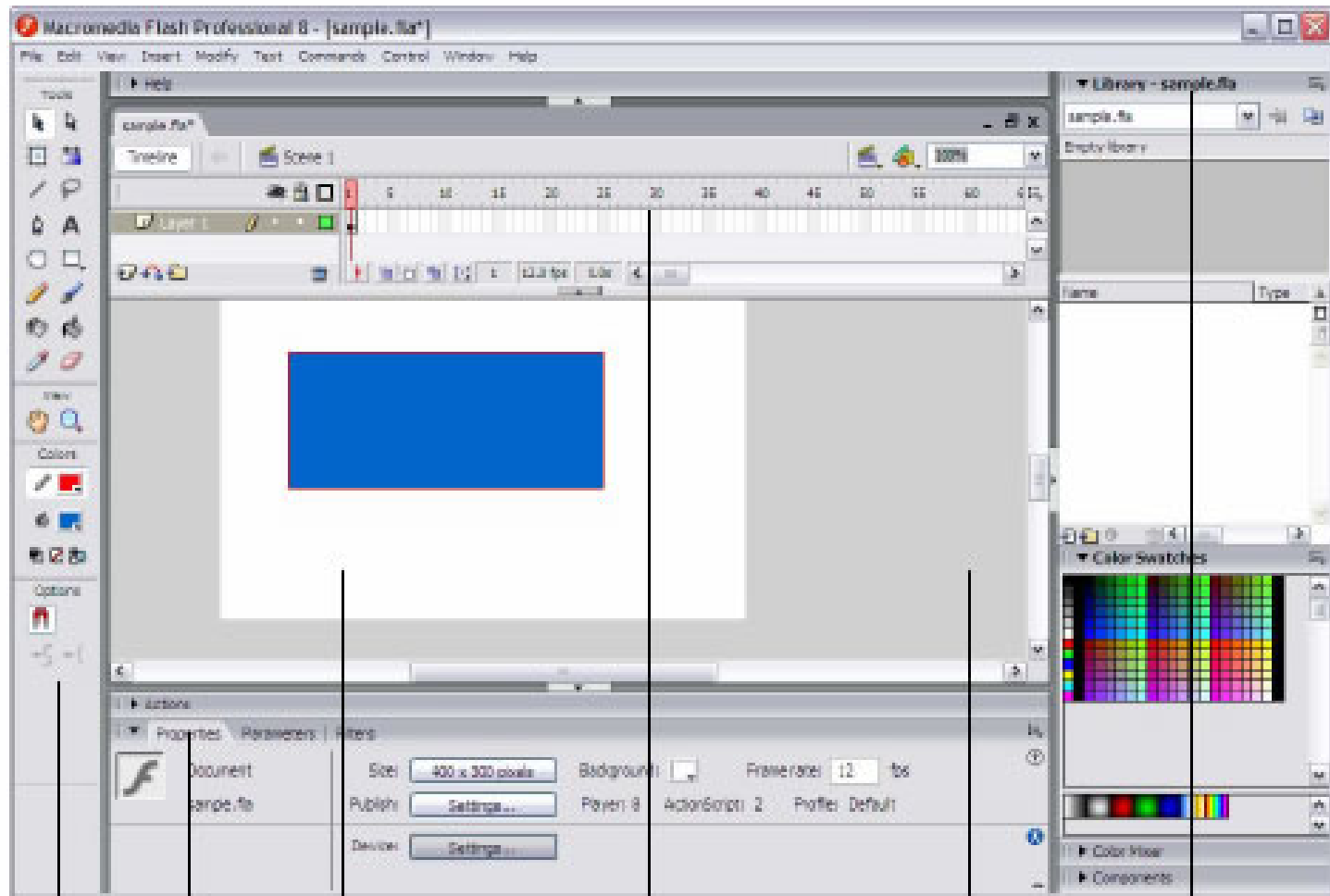
It uses the file extension .fla. you can open and edit any .fla file provided you own Flash. This is your “source” file.

- **Exported .swf files:** When you are done editing your source file and ready to distribute your creation, you simply export a .swf “Flash Player” file.

A .swf can be viewed by anyone with an Internet browser and the Flash Player plug-in. You cannot edit the .swf – you can only “watch” it.

Introduction to Flash

- **Flash Interface: Flash interface contains following features:**
 - 1) **Stage**
 - 2) **Tools**
 - 3) **Timeline**
 - 4) **Property Manager**
 - 5) **Different Panels for scripting and object settings.**



Toolbar
Properties
Inspector

Stage

Timeline

Workspace

Panels



Introduction to Flash: Stage

- The Stage is where you compose the content for individual frames in the movie, drawing artwork on it directly or arranging imported artwork on it.
- The large white rectangle in the center of Flash's workspace is called the stage.
- Stage is user's visual workspace. Any graphics placed in this area will be visible to the user.
- User can place Text, Graphics, Photos – anything on the stage.
- The default stage size is 550 x 400 pixels.
- The minimum size is 1 x 1 pixels; the maximum is 2880 x 2880 pixels.

Introduction to Flash: Timeline

- **Definition:** The Timeline organizes and controls a movie's content over time in layers and frames.
- The timeline contains the sequence of individual images that make up the animation.
- In the Timeline window, there are two types of panels:
 1. Layer panel
 2. Frame panel.

Introduction to Flash: Layers

- **Definition:** Layers are like multiple film strips stacked on top of one another, each containing a different image that appears on the stage.
- The major components of the Timeline are: Layers, Frames and the Play head.
- Layers in a document are listed in a column on the left side of the timeline.
- Frames contained in each layer appear in a row to the right of the layer name.
- The Timeline header at the top of the Timeline indicates frame numbers.
- The Playhead indicates the current frame displayed on the stage. As a document plays, the Playhead moves from left to right though the Timeline

Introduction to Flash: Layers

- The Timeline status displayed at the bottom of the Timeline indicates the selected frame number, the current frame rate, and the elapsed time to the current frame.
- Layers help you organize the artwork in your document. You can draw and edit objects on one layer without affecting objects on another layer. You can also hide, lock or rearrange layers.
- To create a normal layer
 1. Click the New Layer icon in the Timeline in the bottom left corner.
 2. Click Insert Menu > select Layer



Introduction to Flash: Types of Layers

1. **Normal layers:** contain most of the artwork in a FLA file.
2. **Mask layer** contain objects used as masks to visible selected portions of layers below them.
3. **Masked layer** This is the layer that is affected by the mask, and only the parts of this layer that align with the transparent areas of the mask will be seen.
4. **Guide layers** contain strokes that can be used to guide the arrangement of objects on other layers or the motion of classic tween animations on other layers.
5. **Guided layers** are layers associated with a guide layer. The objects on the guided layer can be arranged or animated along the strokes on the guide layer. Guided layers can contain static artwork and classics tweens, but not motion tweens.



Introduction to Flash: Using Frames and Keyframes

To create an animation, we need to work with the frames. It is the series of frame, which are moving at a particular speed, which creates the illusion of the motion.

- **Definition Frame:** Every small block that you see in the Timeline window is Frame.
- **Definition Keyframes:** A Keyframe is a frame in which you define a change in an animation or include frame actions to modify a document. It is identified by a dot in the frame.

Introduction to Flash: Using Frames and Keyframes

To work with the frame, we have the options given in the insert menu.

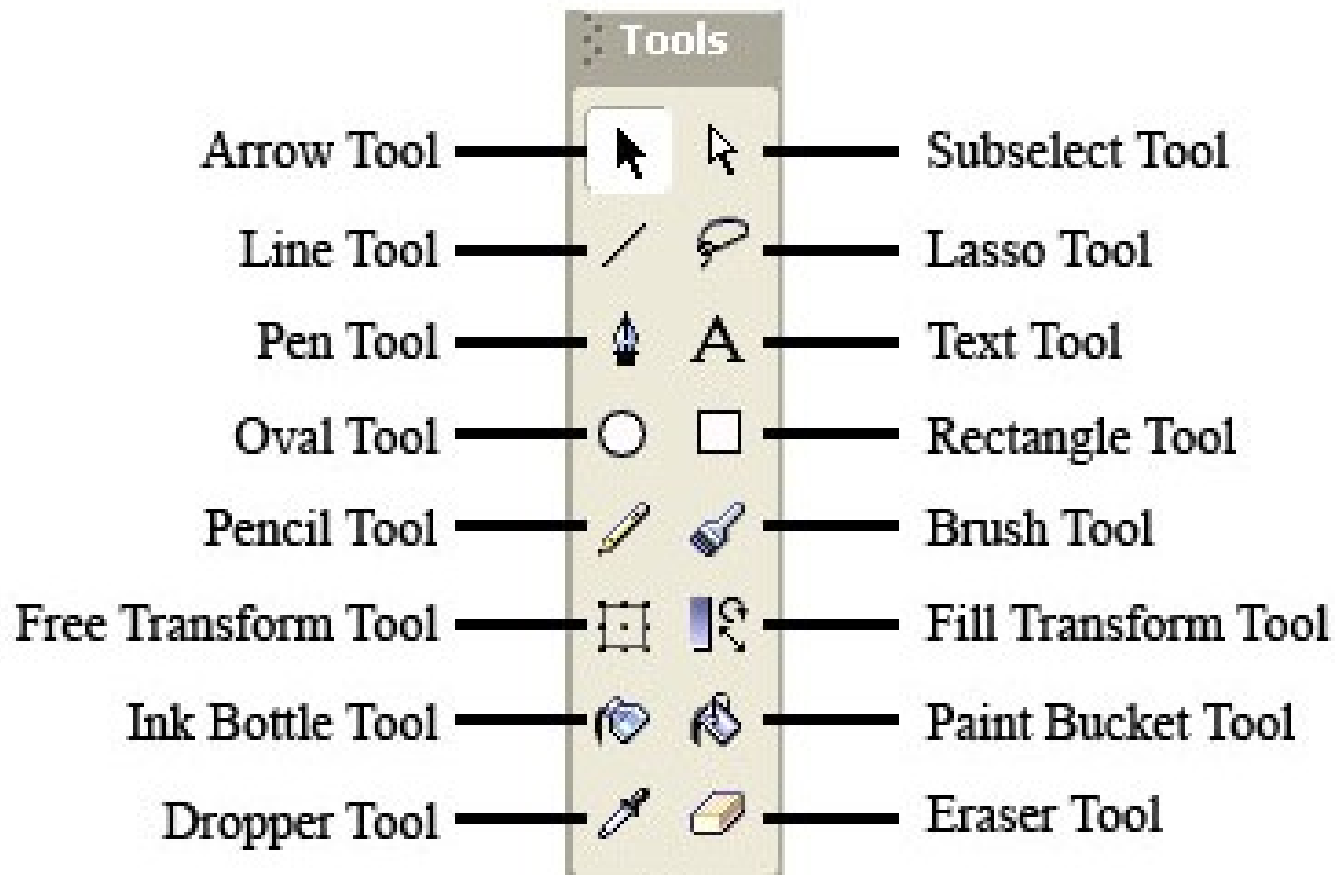
Insert Frames:	To add the frame, we use the Insert / Frame (F5)
Delete Frames:	To removes frames, we use the Insert / remove frames (Shift + F5)
Insert Keyframes:	To add keyframe we use Insert / Keyframe (F6).
Insert Blank Keyframe:	To add blank keyframe we use Insert / Blank Keyframe.
Remove Keyframe:	To remove the keyframe we use Insert / Clear keyframes.
Convert Frame:	There are options like convert to keyframes and blank frames. These options are for converting the general frames, into keyframes or blank frames.



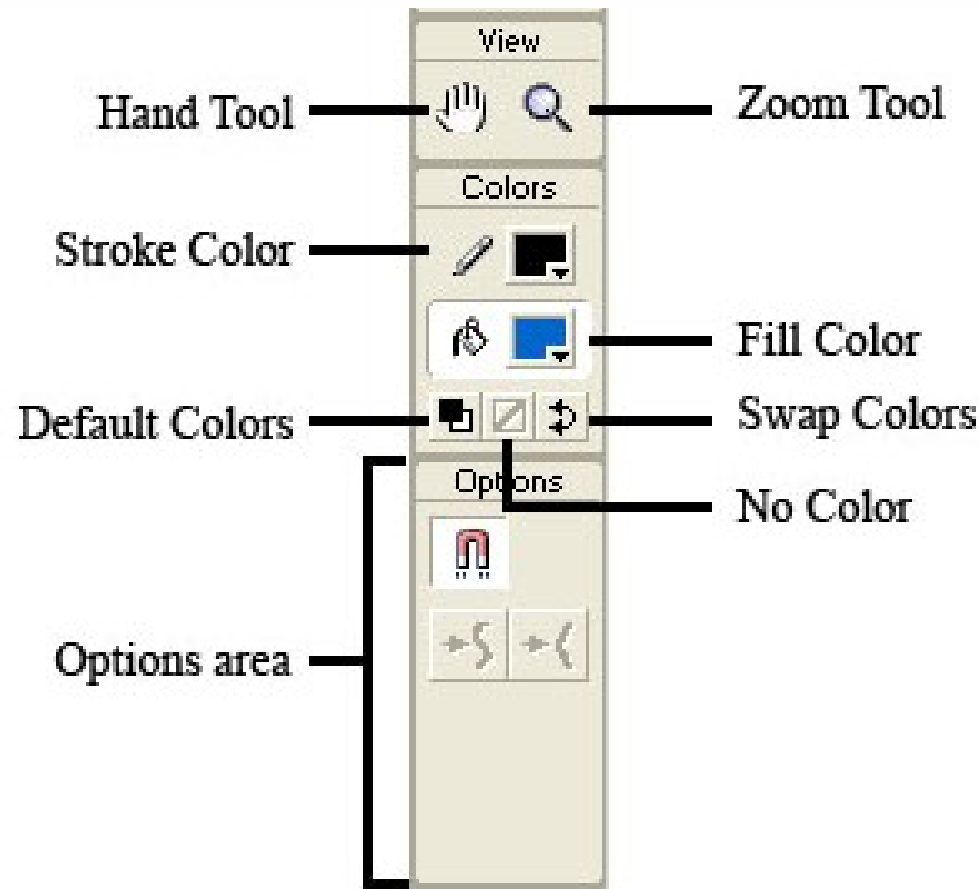
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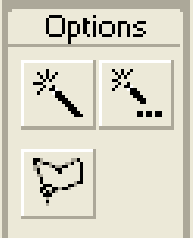


Toolbox



Toolbox








Toolbox

	Arrow Tool :	The Arrow Tool is used to select, move, scale, rotate, and modify the shape of editable objects.
	Subselect Tool :	This tool is use to the edit the shape created by the pen tool.
	Line Tool :	To draw the straight line, we use this tool. shift button + line tool for precise angle. Go to property panel change properties like stroke color, width and style.
	Lasso Tool : 	This tool is very helpful to select the object partially in random shape.
	Pen Tool :	To draw the custom shshapes, we use the pen tool.
	Text Tool :	The Text tool allows you to add test boxes to an object.



Toolbox

	<p>Oval Tool:</p>	<p>The Oval Tool is used to draw ovals and circles. To draw a shift key + Oval tool = perfect circle</p>
	<p>Rectangle Tool:</p> 	<p>The Rectangle Tool is used to draw rectangles and squares. shift key + Rectangle tool = perfect square</p>
	<p>Pencil Tool:</p> 	<p>The Pencil Tool is used in much the same way as a regular pencil. It is used to draw lines and shapes.</p> <p>Options:</p> <ul style="list-style-type: none"> ▪ Straighten - to draw straight lines. ▪ Smooth - to draw smooth curved lines ▪ Ink - to draw freehand lines with no modification.



Toolbox

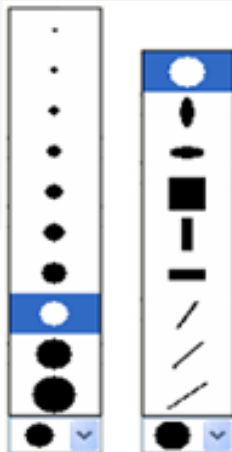


Brush Tool:



- ☒ Paint Normal
- ☐ Paint Fills
- ☐ Paint Behind
- ☐ Paint Selection
- ☐ Paint Inside

Size Shape



The Brush Tool allows you to paint as with a paint brush.

Options :

1. Brush Mode:

Paint Normal – applies paint over existing lines and fills on a layer.

Paint Fills – applies paint to all filled shapes and blank areas on the stage while not affecting the lines.

Paint Behind – applies paint behind existing lines and fills as well as on blank areas of the stage.


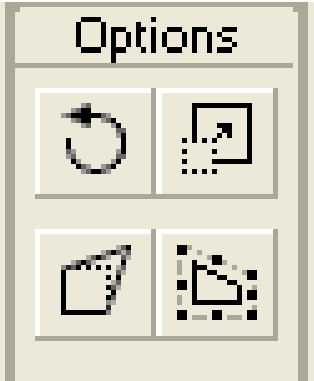


Paint Selection – applies paint within a selection but leaves the lines and the blank areas of the stage unaffected.

Paint Inside – this option allows you to paint within the lines. It paints within an object without affecting surrounding lines, fills, or stage area.


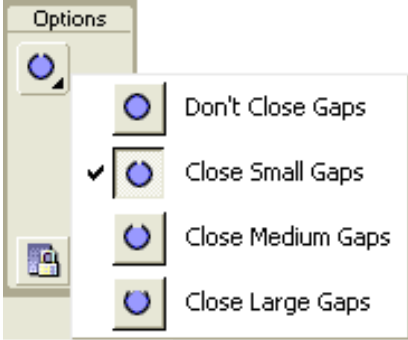



2. Brush Size: Allows you to change the diameter of your brush.

3. Brush Shape: Allow you to change the type of brush you

Toolbox

	<p>Free Transform Tool:</p> 	<p>The Free Transform Tool allows you to manipulate and change an object in various ways.</p> <p>There are four options available.</p> <ol style="list-style-type: none"> 1. Rotate and Skew: Allows you to rotate or slant an object. 2. Scale: Allows you to make an object proportionally larger or smaller. 3. Distort: Allows you to completely change the look of an object by distorting sections of it. 4. Envelope: Creates a series of handles around the edges of the object that allow you to manipulate it by any of those points.
	<p>Fill Transform Tool:</p>	<p>Allows you to change the gradients given to the object like rotating, scaling and position.</p>
	<p>Ink Bottle Tool:</p>	<p>Allows you to apply colors to lines and outlines.</p>

Toolbox

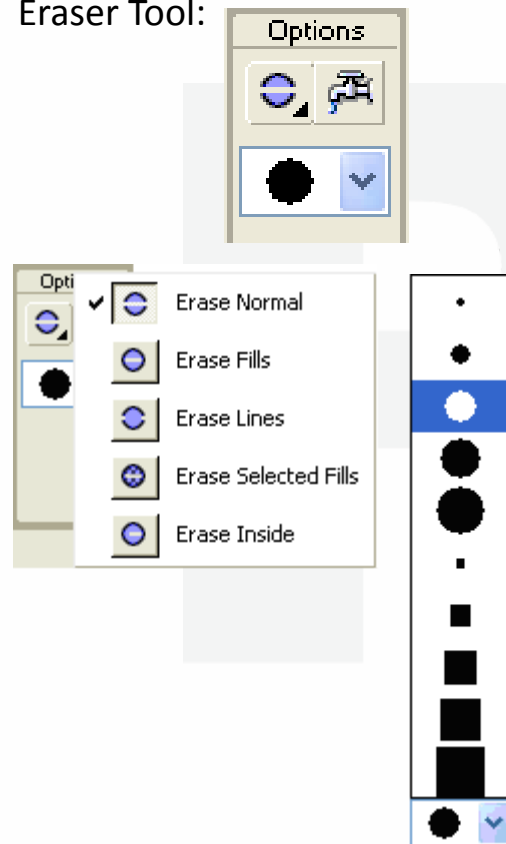
	<p>Paint Bucket Tool:</p> 	<p>Allows you to apply color to objects.</p> <p>The options for this tool allow you to fill in an object even if there are gaps in its outline.</p>
	<p>Dropper Tool:</p>	<p>Used to sample fill and stroke colors and apply them to other areas.</p>
	<p>Hand Tool:</p>	<p>The Hand Tool allows you to grab the stage and move it around.</p>
	<p>Zoom Tool:</p>	<p>The Zoom Tool allows you to zoom in and out on areas of the stage.</p>



Toolbox








Eraser Tool:



To erase the object as per the requirement. There are two shape of the eraser, round and block.

1. **Erase Normal:** Erase the object normally.
2. **Erase Fill:** Erase the fill region only without touching the lines.
3. **Erase Lines:** Erase the lines without touching the fill area.
4. **Erase Selected fill:** Erases the fill area only which has been selected without touching the lines.
5. **Erase Inside:** If started from outside it won't the object inside and if to the starting point. It is for erasing the object without disturbing the other objects.
6. **Faucet:** It washes away everything means it erase all object on which you click.

Toolbox

	Stroke Color:	The Stroke color tool allows you to change the color of the stroke.
	Fill Color:	The Fill color tool allows you to change the color of the fill.
	Default Color:	Set the default application color
	No Color:	You can also deactivate any color option if not required by clicking no color option.
	Swap Colors:	You can toggle the stroke and fill color by swap color option.



Introduction to Flash: Stage, Timeline, Properties, Library

- 1. Stage:** The stage is the main workspace of Flash, all your compositional elements (movie clips, buttons, graphics, and etc.) will be arranged here.

Content that is within the box in the middle of the stage will be visible when the Flash movie will run.

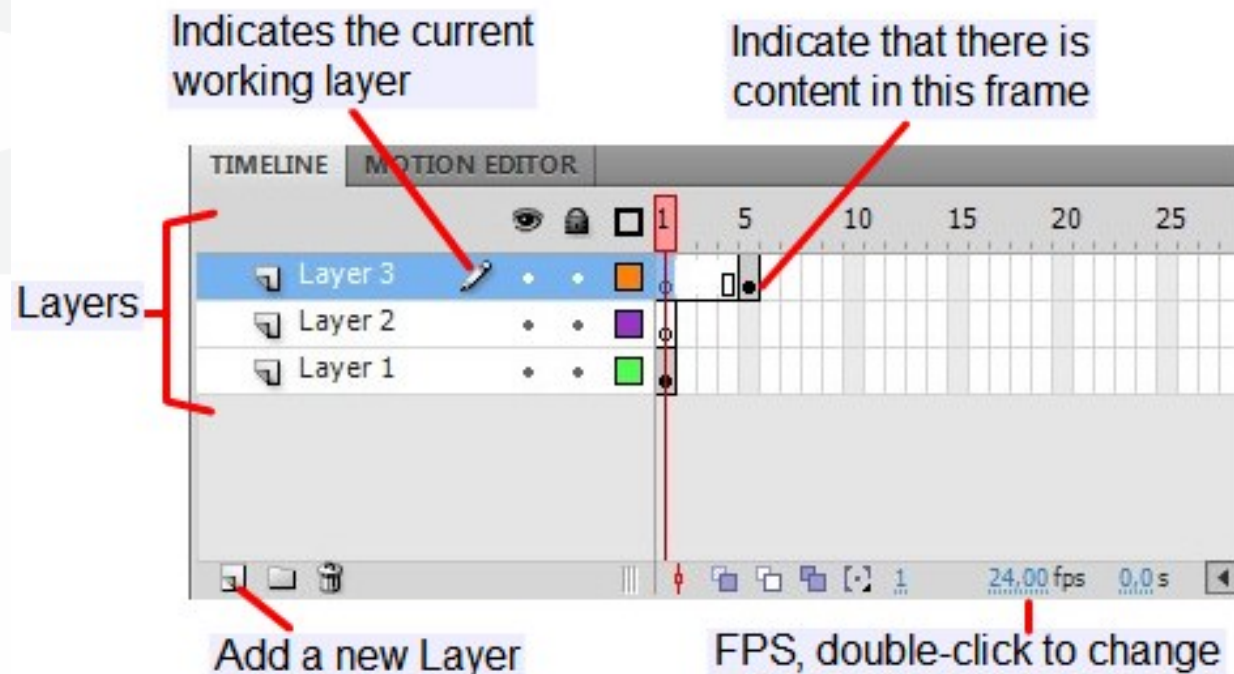
The grey background area outside the box in the middle is 'off-stage'. You can animate content from off-stage onto the main stage area or use a background image that is larger than the main stage to move around as if the camera is panning across a background.

The default size of stage is 550 x 400 PX, default background color is “White”, and default Frame Rate per Second is “12”.

Introduction to Flash: Stage, Timeline, Frames, Layers

2. Timeline Panel: is where you will control every object's animation using frames and Keyframes. You will learn more about Keyframes in the animation tutorial.

In the Timeline, you are able to layer objects as you would in Adobe Photoshop. This allows for easier control and modification of your objects.





Introduction to Flash: Stage, Timeline, Frames, Layers

3. The **Tools Panel** is very similar the Tools panel in Adobe Photoshop. Tools include selection (move), free transform (scale, rotate), line, lasso, magic wand, shape, fill, gradient, erase, pencil, pen, brush and more.
4. The **Library Panel** is where Flash will store all of your imported items, graphics, motion tweens, audio, video and symbols. Flash also has “Common Libraries” with useful buttons, Actionscript programming classes and “learning interactions”.
5. The **Properties Panel** is where you will control and select options. The properties will change depending on what you are currently selecting. In the screenshot, the properties displayed include stage size, background color and frames per second. If you were to create text, all of your font options would be here.



Simple Frame and Key-Frame

- **Simple Frame:** The frame can be defined as a blank paper on which one needs to create a figure having a position. Similarly, on the second frame, another figure will be created, and following this principle, a lot of figures will be drawn on different frames.

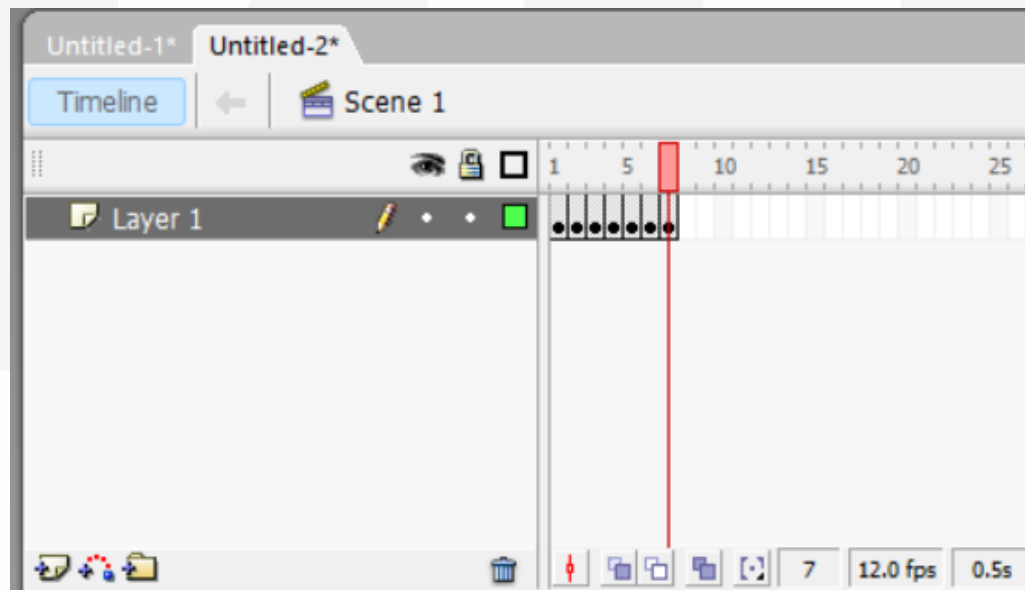
In the timeline, you work with the frames to organize and control the content of your document. You place frames in the timeline in the order you want the objects in the frames to appear in your finished content.

- **Key-Frame:** A keyframe is a frame where a change occurs in the timeline. For example, a keyframe can indicate where a new symbol instance appears in the timeline.

A keyframe can also be a frame that includes ActionScript code to control some aspect of your document. You can also add a blank keyframe to the timeline as a placeholder for symbols you plan to add later or to explicitly leave the frame blank.

Animation: Frame by Frame

- To create a frame-by-frame animation, you define each frame as a keyframe and create a different image for each frame.
- Each new keyframe initially contains the same contents as the keyframe preceding it, so you can modify the frames in the animation incrementally.





Animation: Frame by Frame (Steps)

- Step 1: Click a layer name to make it the active layer, and select a frame in the layer where you want the animation to start.
- Step 2: If the frame isn't already a keyframe, select Insert > Timeline > Keyframe to make it one or press F6 key.
- Step 3: Create the artwork for the first frame of the sequence (i.e., Circle, Rectangle)
You can use the drawing tools, paste graphics from the clipboard, or import a file.
- Step 4: Click the next frame to the right in the same row and choose Insert > Keyframe, or right-click and choose Insert Keyframe from the context menu.
This adds a new keyframe whose contents are the same as those of the first keyframe.
- Step 5: Alter the contents of this frame on the stage to develop the next increment of the animation.
- Step 6: To complete your frame-by-frame animation sequence, repeat steps 4 and 5 until you have built the motion you want.
- Step 7: To test the animation sequence, select Control + Enter

Animation: Tween

Tween animation is an effective way to create movement and changes over time while minimizing file size. In tween animation, Flash stores only the values for the changes between frames.

In flash there are two types of tween animations.


1. Motion Tween
2. Shape Tween

Motion Tween:

In motion tween, you define properties such as position, size and rotation for an instance, group, or text block at one point in time, and then you change those properties at another point in time. You can also apply a motion tween along a path.



Animation: Motion Tween (Steps)

- Step 1: Click a layer name to make it the active layer, and select a frame in the layer where you want the animation to start.
- Step 2: Create a small circle to the side in the stage using oval tool.
- Step 3: Select the Arrow tool from toolbox. Double-click on the circle to select it.
- Step 4: Convert the circle to symbol
Select Modify  Convert to Symbol.
Set the Property-Name = Ball and Select Graphics option then press OK.
- Step 5: Click on 60th Frame in the Timeline. Insert Keyframe (Press F6).
- Step 6: Right click between 1 to 60th frame and select Create Motion Tween.
- Step 7: Select 60th Frame and then select the circle and move it to the right side in the Stage. Here you can change the size and shape.
- Step 8: Press Ctrl + Enter to run.

Animation: Shape

- By tweening shapes, you can create an effect similar to morphing, making one shape appear to change into another shape over time. Flash can also tween the location, size, and color of shapes.
- If you are tweening multiple shapes at one time, all the shapes must be on the same layer.
- To apply shape tweening to groups, instances, or bitmap images, you must first break these elements apart. To apply shape tweening to text, you must break the text apart twice.



Animation: Shape Tween (Steps)

- Step 1: Click a layer name to make it the active layer, and select a frame in the layer where you want the animation to start.
- Step 2: Create a small circle to the side in the stage using oval tool.
- Step 3: Select the Arrow tool from toolbox. Double-click on the circle to select it.
- Step 4: Convert the circle to symbol
Select First Keyframe from the Timeline.
Set the Property - Tween = Shape
- Step 5: Click on 60th Frame in the Timeline. Insert Keyframe (Press F6).
Delete the circle object and draw new object (polygon / square).
- Step 6: Press Ctrl + Enter to run.

Animation: Shape Tween – Text (Steps)

- Step 1: Put Text “Sneha” on frame in layer 1.
- Step 2: Press F6 at 60th frame in Layer 1, and Set destination position of object
- Step 3: Right-click in layer-1 between 1st to 60th frame, Select Create Motion Tween
- Step 4: Click on frame 1 and set the property Tween: Shape
- Step 5: Select object and press Ctrl + B Three times
- Step 6: Delete Text “Sneha” and write new Text “Reena” at 60th frame
- Step 7: Select object and press Ctrl + B Three times
- Step 8: To Run, Press Ctrl + Enter

Animation: Masking

- For spotlight effects and transitions, you can use a mask layer to create a hole through which underlying layers are visible. It consists of two layers : Mask and Masked layers.
- A mask item can be a filled shape, a type object, an instance of a graphic symbol, or a movie clip. You can group multiple layers together under a single mask layer to create sophisticated effects.
- To create a mask layer, you place a mask item on the layer that you want to use as a mask. A mask layer can contain only one mask item. You cannot have a mask layer inside a button, and you cannot apply a mask to another mask.

Animation: Masking (Steps)

1. Take three layers: i.e. Layer 1, Layer 2 and Layer 3
2. Import one image on layer 1
3. Press Ctrl + k, and adjust the image.
4. Put one Circle on layer 2
5. Press F6 at 60th frame in all layers
6. Select all frame from layer 2 and right click on that and select Create Motion Tween
7. Set Source and Destination position of a Circle
8. Right Click on layer 2, and Select Mask
9. Import same image on Layer 3 which used in Layer 1.
10. Press Ctrl + k, and adjust the image.
11. Right click on image of Layer 3, and select convert to Symbol.
12. Select Graphics and press OK.
13. Set color equal to alpha, and set intensity (Alpha amount) to 40%.
14. To Run, Press Ctrl + Enter

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