How to create animations in Flash

Overview of tweening

A *tween* is an animation you create by specifying a value for an object property in one frame and another value for that same property in another frame. Adobe Flash Professional CS5 calculates the values for that property between those two frames. The term tween comes from the phrase in between. You can tween movie clip, graphic, and button symbols and text fields.

A *tween span* is a group of frames in the Timeline in which an object on the Stage can have one or more properties changed over time. A tween span appears in the Timeline as a group of frames in a single layer with a blue or green background. You can select a tween span as a single object and drag it from one location in the Timeline to another, including to another layer. Only one object on the Stage can be animated in each tween span. This object is called the *target object* of the tween span.

A *property keyframe* is a frame within a tween span where you explicitly define one or more property values for the tween target object. Each property you define has its own property keyframes. If you set more than one property in a single frame, the property keyframes for each of those properties reside in that frame. You can view each property of a tween span and its property keyframes in the Motion Editor. You can also choose which types of property keyframes to display in the Timeline from the tween span context menu.

Note: Beginning with Adobe Flash Professional CS4, the concepts of keyframe and property keyframe differ from earlier versions of Flash. The term *keyframe* refers to a frame in the Timeline in which a symbol instance appears on the Stage for the first time. The term *property keyframe*, new to Flash CS4, refers to a value defined for a property at a specific time or frame in a motion tween.

Types of Flash Animation

Motion tweens: Set properties for an object, such as position and alpha transparency in one frame and again in another frame, and Flash interpolates the property values of the frames in between. Motion tweens are useful for animation that consists of continuous motion or transformation of an object. Motion tweens appear in the Timeline as a contiguous span of frames you can select as a single object by default. Motion tweens are powerful and simple to create.

Shape tweens: Draw a shape at one frame in the Timeline and change that shape or draw another shape at another frame. Flash then interpolates the intermediate shapes for the frames in between, creating the animation of one shape morphing into another.

Classic tweens: Like motion tweens but more complex to create. You can create some specific animated effects not possible with span-based tweens. For example, you can apply eases to the groups of frames between the keyframes within the tween instead of across the entire length of a motion tween span. (To ease only specific frames of a motion tween, you must create a custom ease curve.) You can also use classic tweens to animate between two color effects, such as tint and alpha transparency, while motion tweens can apply only one color effect per tween.

Inverse kinematic poses: You can stretch and bend shape objects and link groups of symbol instances to make them move together in naturalistic ways. If you position the shape object or linked instances in different ways in separate frames, Flash interpolates the positions in the frames in between. Inverse kinematics poses help make character animation quick and easy.

Note: You will learn more about how to use inverse kinematics poses to create character animations in Activity 5.4.

Motion tweens

You apply motion tweens only to symbol instances and text fields. All other object types are wrapped in a symbol when a tween is applied to them. The symbol instance can contain nested symbols, which can themselves be tweened on their own timelines.

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The minimal building block in a tween layer is a tween span, which can contain only one symbol instance. The symbol instance is called the target instance of the tween span. If you add a second symbol to the tween span, the new symbol replaces the original one. You can change the target object of a tween by dragging a different symbol from the library onto the tween span in the Timeline. You can delete the symbol from a tween layer without removing or breaking the tween.

To have a symbol in the Timeline, you do not have to include more than one property keyframe. You can edit individual property keyframes on the Stage, in the Property inspector, or in the Motion Editor.

To create a motion tween:

1. Start Flash and choose File > New (ActionScript 3.0).
2. Draw a shape on the Stage.

   The shape appears in keyframe 1 of Layer 1.
3. Using the Selection Tool (**Figure 1**), double-click to select the shape and border, if present
4. Choose Modify > Convert To Symbol.

   The Convert To Symbol dialog box appears (**Figure 2**).

   Note: You cannot apply motion tweens to shapes. Applying a motion tween to a shape automatically converts the shape to a symbol.
5. Type a new name for the symbol in the Name text box, select Graphic for Type, and click OK (**Figure 2**).
6. Select frame 10.
7. Select Insert > Timeline > Frame. (The motion tween will last for 10 frames.)

   When you insert a frame, Flash fills the area between the last frame (on the current layer) and the new frame with the same content (**Figure 3**). Frames 1 through 10 all contain the new symbol.
8. Make sure frame 10 (the end frame for the motion tween) is selected and select Insert > Motion Tween.
9. Select the symbol in frame 10; then make one or more of the following changes:

   Color change: In the Property inspector, select Tint from the Color Effect Style pop-up menu (**Figure 4**). Select 100% for the Tint Amount and change the color in the Tint Color box.

   Fading: In the Property inspector, select Alpha from the Color Effect Style pop-up menu. Reduce the percentage of the Alpha Amount for more transparency. For example, an Alpha value of 0% makes the object disappear.

   Position: Use the Selection tool to move the object to a different position on the Stage. A motion path appears. The points on this motion path are editable.

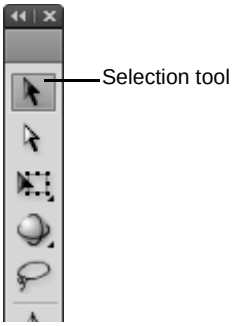

Figure 1 Tools panel with Selection tool

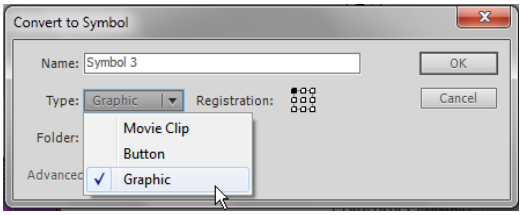

Figure 2 Convert To Symbol dialog box

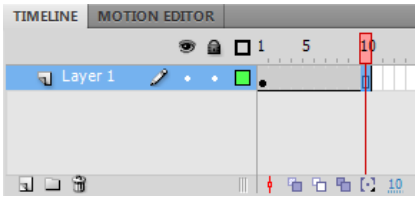

Figure 3 Inserted frame

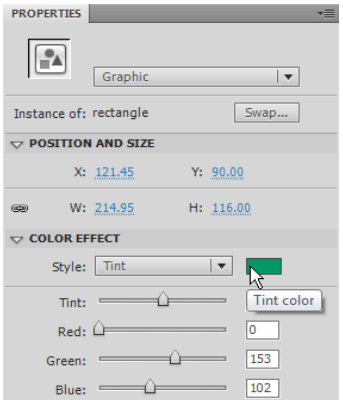

Figure 4 Tint options

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Size: Select the object. Then select Modify > Transform > Free Transform. Drag the object handles to increase size, decrease size, or rotate the object.

10. Select frame 1 on the Timeline.

In the Timeline, the motion tween is represented by a solid blue background running from the start keyframe to the end keyframe (**Figure 5**). (When you inserted the motion tween in step 7, frame 10 was converted to a keyframe.)

11. With frame 1 selected, adjust one or more properties of the motion tween in the Property inspector (**Figure 6**).

- *Ease*: Controls how fast the object starts or ends the motion tween. For example, a high number makes an object begin tweening quickly and end slowly.
- *Rotate*: Rotates the object clockwise or counterclockwise a designated number of times.
- *Path*: If you add a guide layer, the object is linked to the path drawn on the guide layer.
- *Sync Graphic Symbols option*: Starts and stops the tweening of all objects on the Stage at the same time.

12. You can also use the Motion Editor to adjust tweens (**Figure 7**).

You can view all tween properties and their property keyframes in the Motion Editor. You can also add precision and detail to your tweens. Once you create a tween in the Timeline, you can control the tween in several different ways:

- Add or remove property keyframes for individual properties.
- Move property keyframes to different frames within the tween.
- Add or remove filters or color effects and adjust their settings.
- Add different preset eases to individual properties and property categories.
- Create custom ease curves.
- Enable *roving* for individual property keyframes for X, Y, and Z properties. Roving allows the property keyframe to move to different frames or between individual frames to create smooth motion.

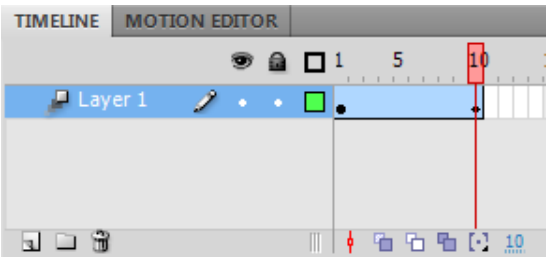

Figure 5 Motion tween in the Timeline

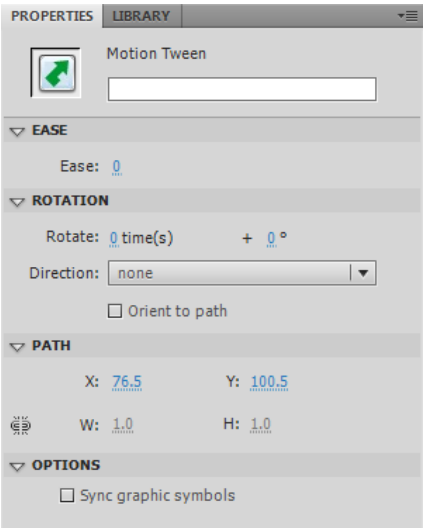

Figure 6 Tween Property inspector

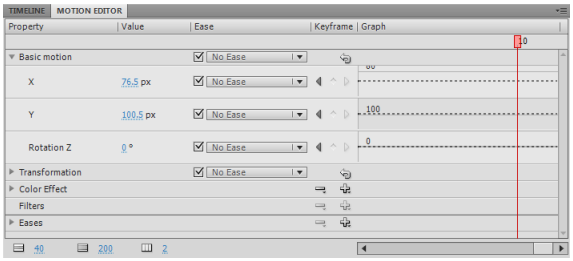

Figure 7 Motion Editor

13. Select Control > Test Movie > In Flash Professional to test the movie.
14. Select File > Close to close the preview window.
15. To see all phases of the tween at the same time, click the Onion Skin button at the bottom of the Timeline (**Figure 8**).
16. Drag the onion skinning frame handles (they appear as brackets with circles on them at the top of the Timeline) to span the frames in which the object appears.

    All the intermediate steps of the tween are visible on the Stage (**Figure 9**).
17. Turn off onion skinning by clicking the Onion Skin button again..
18. Save the movie.

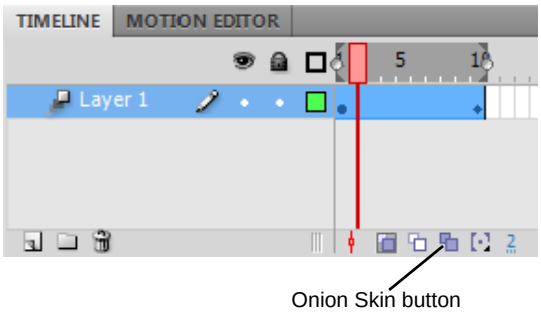

Figure 8 Onion Skin buttonl

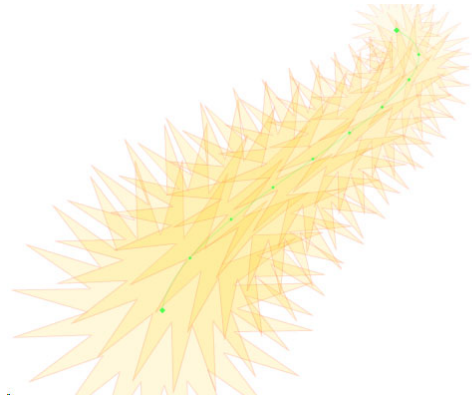

Figure 9 Onion skinning visible

Shape tweens

In shape tweening, you draw a vector shape at one specific frame in the Timeline and change that shape or draw another shape at another specific frame. Flash then interpolates the intermediate shapes for the frames in between, creating the animation of one shape morphing into another.

Note: Shape tweens work best with simple shapes. Avoid shapes with cutouts or negative spaces in them. Experiment with the shapes you want to use to determine the results. You can use shape hints to tell Flash which points on the beginning shape should correspond to specific points on the end shape. Shape tweens can use much more computer memory than motion tweens, so it is best to use shape tweens sparingly.

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To create a shape tween:

1. Start Flash and choose File > New.
2. Select ActionScripot 3.0 and click OK.

   Frame 1 in Layer 1 already contains a blank keyframe.
3. Begin by adding a shape to the Stage:

   Drawn objects: Select a shape tool (rectangle or oval) and draw an object on the Stage.

   Text: Select the Text tool and type a word or phrase on the Stage. Then select the text and select Modify > Break Apart. This breaks the words into separate letters. With the letters still selected, select Modify > Break Apart again to convert the letters into shapes.

   Outside images: Select File > Import > Import To Stage to import an image. If the image is a bitmap, you must break it apart. If the image is a grouped vector drawing, you must ungroup it completely. To break apart a bitmap, select Modify > Break Apart. To ungroup an image, select Modify > Ungroup.

   Note: You might need to select Modify > Break Apart or Modify > Ungroup multiple times until the object becomes a shape, as indicated in the Property inspector.
4. Select frame 10.
5. Select Insert > Timeline > Keyframe.

   The tween will last for 10 frames.
6. Make sure frame 10 is still selected and make one or more of the following changes to your shape:

   Amorphous shape change: Click the Stage with the Selection tool to deselect the object. Bring the Selection tool close to the object to grab an edge. Drag the edge to change the shape of the object (**Figure 10**).

   Different shape: To morph between your original shape and a new shape, delete the object in keyframe 10 and draw a new object.

   Note: Select Modify > Break Apart if the drawn object is not a shape.

   Text: To morph between your original shape and some text, delete the object in keyframe 10 and type the text on the Stage. Select Modify > Break Apart until the text block is a shape, as indicated in the Property inspector.

   Outside image: To morph between your original shape and a new image you import, delete the object in keyframe 10 and select File > Import to bring in the outside image. Select Modify > Break Apart to make the object a shape, as indicated in the Property inspector.

Figure 10 Changing a shape with the Selection tool

7. Click anywhere inside the tween span on the Timeline (**Figure 11**) and select Insert > Shape Tween.
8. Select frame 1 on the Timeline (on the current layer).

   This is the start frame for your animation.
9. In the Tweening section of the Property inspector, adjust one or more properties of the Shape tween (**Figure 12**):

   Ease: Controls how fast the object starts or ends the shape tween. For example, a high number begins the tweening quickly and ends slowly.

   Blend (Distributive): Creates an animation in which the intermediate shapes are smoother and more irregular.

   Blend (Angular): Creates an animation that preserves corners and straight lines in the intermediate shapes.
10. Select Control > Test Movie to test the movie.
11. Select File > Close to close the preview window.
12. To see all phases of the tween at the same time, click the Onion Skin button at the bottom of the Timeline.
13. Drag the frame handles (they appear as brackets with circles on them at the top of the Timeline) to span the first 10 frames of Layer 1.

    The steps of the tween are all visible on the Stage.
14. Turn off onion skinning by clicking the Onion Skin button again.
15. Save the movie.
16. Close the movie.

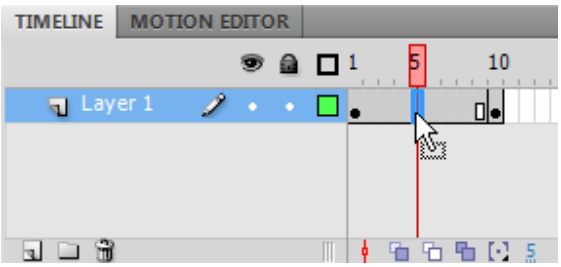
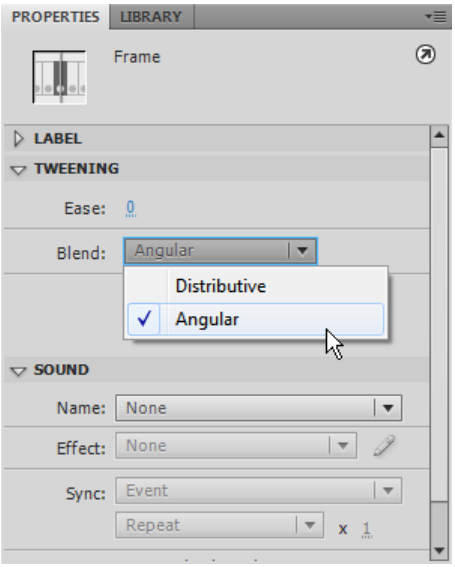


Figure 11 Click inside the tween span



Classic tweens

In classic tween animation, you define keyframes at significant points in the animation and Flash creates the contents of frames between. The interpolated frames of a tweened animation appear as light blue with an arrow drawn between keyframes. Because Flash documents save the shapes in each keyframe, create keyframes only at those points in the artwork where something changes.

Classic tweens are similar to motion tweens, except they are more complex and you can create certain types of animated effects not possible with motion tweens, as in the following:

- Work with Timeline effects
- Add an animation to instances, groups, or types
- Create tween motion along a path
- Paste motion tween properties
- Apply custom ease-in/ease-out settings

Note: Advanced uses of classic tweens, such as those listed here, will be dealt with in greater detail in Unit 6. The following exercise outlines the steps for creating a simple classic tween, which serves as a basic introduction to classic tweening and the procedural differences between classic and motion tweening.

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To create a classic tween:

1. Start Flash and choose File > New.
2. Select ActionScripot 3.0 and click OK.

   Frame 1 in Layer 1 already contains a blank keyframe.
3. Begin by adding a symbol to the Stage.
4. Select frame 10.
5. Select Insert > Timeline > Keyframe.

   The tween will last for 10 frames (**Figure 13**).
6. Make sure frame 10 is still selected and move the symbol to a new position on the Stage.
7. Click on the tween span on the Timeline and select Insert > Classic Tween.

   The classic tween appears as light blue with an arrow (**Figure 14**).
8. Select frame 1 on the Timeline (on the current layer).

   This is the start frame for the animation.
9. Adjust the position, color, or scale of the symbol in the starting keyframe.
10. Select frame 10, and adjust the position, color, or scale of the symbol to be as you want the animation to end.

    You can also adjust the properties of the symbol in the tweening section of the Property inspector.
11. Select Control > Test Movie to test the movie.
12. Select File > Close to close the preview window.
13. Save the movie.
14. Close the movie.

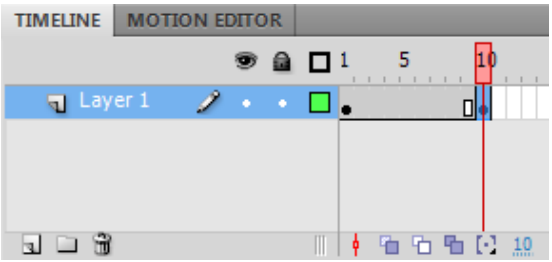

Figure 13 Insert keyframe

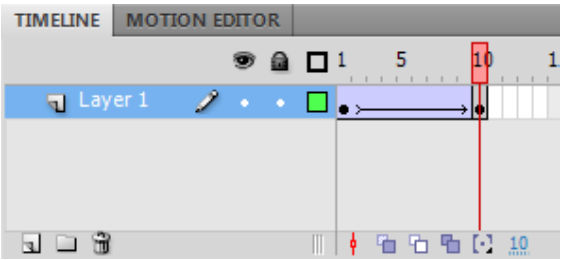

Figure 14 Insert classic tween