Chapter 1: A Brief Introduction To Flash

Flash is not the focus of this book, but it is essential to know some basics of Flash since it is the environment in which ActionScript is embedded. Most of us have seen animations on the web that were created in Flash, the web is full of them. Flash is a great tool for making all sorts of cool web content. We first learn enough Flash to make some simple drawings and animation as this will greatly help our ability to make games.

We assume the reader has used some sort of drawing program.

1.1 Drawing in Flash

Learning how to draw is our first step. This is not exhaustive by any stretch of an overly active imagination, just some bare minimum steps to get you started to learn how to draw in flash. The flash drawing package is similar to many other drawing packages. Do the following:

1. Open Flash.

2. Create a new file. Notice a tab named "untitled" is created.

3. Save and name the file "firstFlashFile". Notice that the tab name changes. Also notice:

- The stage. This is the white box in which you draw.

- The timeline. This is the top panel named “Timeline”. We will explain this soon.

- The tool panel on the left. Here you find the drawing tools.

Now try out a few tools to draw some simple objects. Move your mouse over the tools in the panel, the name of the tool pops up when the mouse is over a tool. Try the following:

- Make a rectangle. Click on the rectangle tool inside the tool panel then move your mouse someplace on the stage, left-click and hold the mouse button while moving the mouse up and to right, then release the mouse button.

- Make an ellipse with the circle tool.

- Do the same two rectangle/ellipse exercises above but hold down the shift key while creating the rectangle/ellipse. Notice that you get a square/circle.

- Try the pencil and paint brush.

- Try the eraser

Did you notice the properties panel at bottom of the Flash screen? It changes to give options for the context you are in. Choose the rectangle tool again and look at how the properties panel changes. With properties you can change the rectangle to be filled, unfilled, add colors, and more. Play around with it.

You may find it is helpful to make the stage larger. To do this change the value in the upper right corner of the Flash window, just below the top title bar. I suggest you change it to 100% or "fit to window".

Another thing you may find helpful is to use the grid. Drawing with the grid allows you to snap points to the grid. To show a grid, select "View -> Grid". You can edit the grid to force snapping, and refine the grid.

You need to spend some time drawing and learning about drawing. The best way to learn is to play around with it! Next, use the Flash help menu, it is quite good. If you want something more tutorial in nature, try:

- http://www.echoecho.com/flashdrawing.htm
- Google “flash drawing tutorial”
- Check out one of the many books on Flash

1.2 Frame by frame animation

One of the most prevalent uses of Flash, and probably the reason you have heard of it, is all the cool animations on the web. The Flash player is installed on just about every computer hooked up to the Internet. Now it is your turn to start creating some Flash animations.

First, check out the following link: Cool Animation

Exciting, huh? Yes, you too will soon be able to put such awe-inspiring animations on your personal web space! Here is how:

1. Create a new file
2. On the left side draw a circle (filled, empty, red, blue, whatever you desire.)
3. Look at the timeline. There is a row labeled "Layer 1" with what looks like a scale to the right. Note there is a black filled circle under the number 1. This is "frame number 1". Flash creates animations by displaying the contents of frames, frame by frame.

4. Right-click in the empty box to the right of frame 1. You get many pull-down menu choices. Choose: "Insert Key-frame". This copies the contents of frame 1 into frame two. You will notice, by the red highlight box, that you are now in frame 2. Grab the circle and move it a bit to the right.

5. Create another keyframe in frame 3. Again move the circle in frame 3 a bit to the right.

6. Repeat 4 more times so you have 7 frames, each time moving the circle a bit to the right.

7. Now, hit the "enter" key. This will play the animation. You see the box moving to the right!

If for some reason you can not get this to work, just download and save file: f1.fla

Now that you have created this masterpiece of an animation, you may want to share it with your parents so they can see that those tuition dollars are being put to good use. Lets publish the page. Simply hit F12. Now look in the directory that you opened your file. In addition to the .fla file, you will see an .swf file and an .html file. Open the .html file in a browser (just double click on windows). The animation plays in your browser, again, and again, and again....

1.3 Publishing and File Types

There are four types of files associated with flash. Say you have a project name "example", then the four potential files are:

1) example.fla

These are the binary files that flash uses/modifies. You can edit/modify/create this file inside Flash. It is NOT normally made available to the end user, only to developers. I will make the .fla files available so you can view the code, and modify to your hearts content.

2) example.swf

This is the file that is made available to the user. The acronym is ShockWave Flash (swf). When you click on a flash web site, your browser downloads the .swf file. You can not see the source code, you can not right-click and save photos. Just about every browser supports .swf files, so almost everyone can view your animation/game.

3) example.html

This is an html file that is what you put on the web for users to access. You need to make sure it has world-readable permissions (on Unix use “chmod o+r example.html”).

You should also put it in the same directory as the example.swf file is in with readable permissions.

4) otherName.as

These files are for ActionScript code. We will talk about these later.

Lets consider how these file types are created. First create the example.fla file by the command "File -> SaveAs ...." and type in "example". You now have example.fla, which you can modify, resave, close, open. Flash will create the .swf and .html file for you by "publishing" them. To publish, and create the .swf and .html files, just open example.fla in Flash, then: “File -> Publish” (or just hit F12). Try this with your killer animation. In windows explorer make sure the files have been created. Feel free to click on them and see what happens. Note, when you click on a .swf file the file is opened in the flash player.

1.4 Tween animation

As you have seen, creating frame-by-frame animations is time consuming and difficulty. Later we will see how to automate motion animations using ActionScript programming to move graphical objects, but for now lets see what Flash can do for us to automate animations. Flash gives you the ability to set a first and last frame, then have the software fill in the between frames. This is called a "tween". The name "tween" comes from the animation community. Artist would draw key frames and "tweeners", less exalted artists, would fill in the frames "between" the key frames. Try it out by doing the following:

- Create a new file
- Make a small rectangle in the lower left corner
- Right click on the rectangle and select "convert to symbol"
- In the symbol dialogue choose the "movie clip" radio button
- Go to frame forty, right click, and insert a "blank keyframe"
- Go back to frame one, select the rectangle with the solid arrow tool, and copy the rectangle (ctrl-C)
- Go back to frame forty and paste the rectangle (it goes into the center). Move it to the right side.
- Now, right click in the frames between 1 and 40 and select "create motion tween". A solid arrow should now fill in the frames.
- Hit "enter" to play the animation. Viola!

Note, you MUST convert the object you want to tween into a symbol. Flash only tweens symbols. For now, just select symbol type Movie Clip.

If for some reason you can not get this to work, just download save file f2.fla

1.5 Layers

What if you want two things moving in the animation? How can you do that? What if you want them to move at different times? In order to answer these questions we need to learn another Flash component: Layers. Think of stacking plastic films (layers) one on top of another. The objects you draw on the top layer obscure the objects in lower layers.

Follow these steps to create a file with two layers.

- Create a new file with a motion tween, or reuse from above.
- Right click on the word "Layer 1". Choose "Insert New Layer" You now have two layers. The new layer has multiple frames, as many as the layer it was created from.
- To get rid of these frames in layer 2, right click on the frames in layer 2, choose "remove frames"
- Click below the eye symbol in layer 1, the objects in layer 1 are no longer visible.
- Right click in frame 1 of layer 2 and insert a blank key frame.
- Lets make a background. In layer 2, frame 1, draw a BIG rectangle that covers the entire stage and make is a pale color (say pale green).
- Now go the the last frame of layer 1 and insert a key frame in that same frame number of layer 2.
- Hit enter to test it. The motion tween is gone! Actually, it is still there, in layer 1, but layer 2 is ON TOP of layer 1 and hence obscures the contents of layer 1. To fix this reverse the stacking order: left click on the words "Layer 1" and while holding down on the mouse button drag the layer up above (i.e. on top of) layer 2.
- Hit enter to run.

If for some reason you can not get this to work, just download and save file: f3.fla

Helpful layer hints:

- You can "lock" a layer by clicking the lock button. Now, you can not accidentally edit anything in that layer.
- You can hide a layer by clicking the eye-ball on the layer.

- You can rename the layers to what you want by double-left-clicking on a layer name.
- You can change the layer stacking order by holding down on the mouse and moving the layers.

Layers have lots of uses. You could have one layer for player 1Õs sprites, and one layer for player 2's sprites. You could have one layer for a background, one for text, one for stationary objects, and one for moving objects.

NO MATTER WHAT: Good programming practice is to create a separate layer for ActionScript code and put all your code in that layer if possible. I'll say this again when we get to ActionScript.

Here is an example of something to do with layers. Download and save file: f4.fla This is a rip-off of: Original Hammer Site

My .fla file has two layers: one for the non-moving parts (the object being hit) and the other has a moving hammer. First layer 1 was created with the stationary objects. Next, layer 2 was created, initially with just key frame 1. The hammer was drawn in frame 1. The hammer was converted into a symbol (remember, to do a tween you must tween a symbol object). Then a blank key frame was created in layer 1 frame 5 and the hammer copied into the frame. The hammer was then rotated 90 degrees. Then a blank keyframe was added at 10 and the hammer copied back to the original position. Then Motion tweens created between frame 1 to 5 and between 5 to 10.