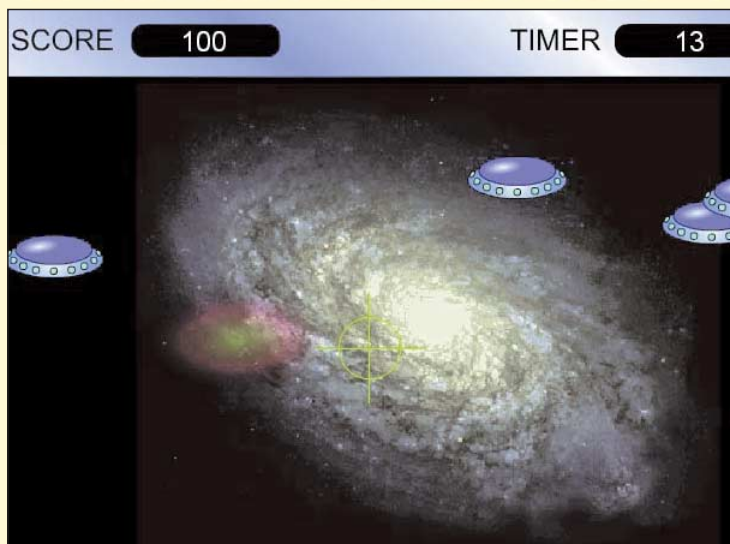**IN BRIEF:** **Task:** Create a great-looking shoot 'emup game for your Web site | **Difficulty:** Advanced
Time I need: 1.5 hours

CREATE AN ONLINE SHOOT-'EM-UP FOR YOUR SITE

ONLINE GAMING FOR YOUR SITE

SCORE 100   TIMER 13

Creating online games can be really fun and give your visitors a more memorable experience of using your site. What we plan to do in this tutorial is take you through all the steps necessary to create a simple online shoot-'em-up game in Flash. We'll be keeping the file size to an absolute minimum, so that you can use it as either a pre-loader to a large site that's loading or as a link within your site.

Up to around 10 years ago, creating games was still pretty hard, thanks to the procedural languages such as Fortran, Pascal or C. These days, object orientated languages let you be creative while not having to get too bogged down with hundreds of line of code.

ActionScript is great at producing games and Flash as a whole is superb for delivering entertainment over the Net, with its vector graphics packaged into such small files. We are going to break every little piece of code up into fully explained chunks so understanding what goes on will be easy. Well what are we waiting for, it's time to dive in and create your first online game!
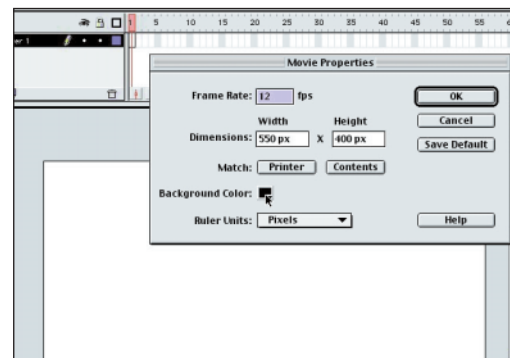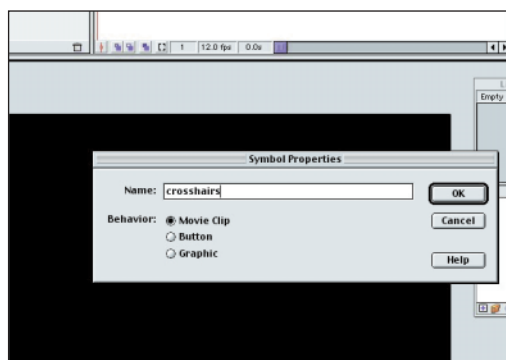
1 CREATE A NEW MOVIE

Once you've opened Flash, we need to set up our movie's properties from 'Modify', 'Movie'. In the pop-up dialog box that appears, you need to change the background colour to black. Make sure your movie has settings of 550 x 400 pixels.
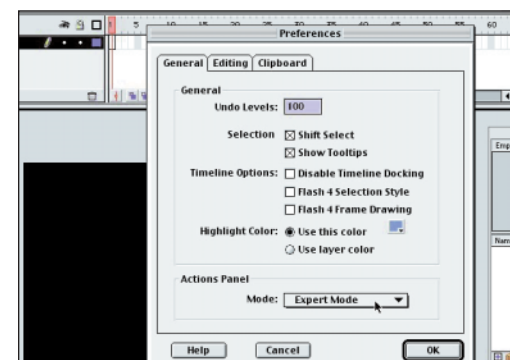
2 MODIFY THE PREFERENCES

Go to 'Edit', 'Preferences' and select 'Expert Mode' for the 'Actions' Panel. This will always bring up the 'Actions' dialog box in expert mode so that you can type straight into it, which saves you continuously having to change it by hand.

3 A NEW MOUSE

Our shoot-'em-up game is going to have a set of crosshairs to replace the mouse, so the first thing that we need to do is create a new Movie Clip symbol ('Ctrl' + 'F8') and call this 'crosshairs'. We will later use ActionScript to replace the standard mouse arrow.
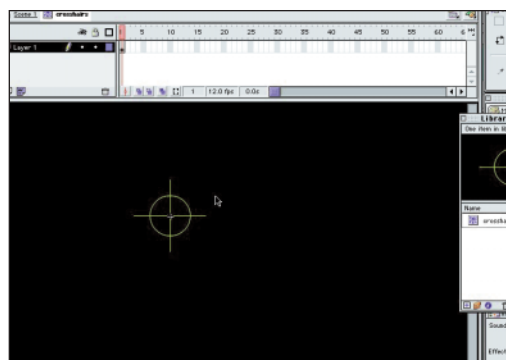
4 START DRAWING

You will need to draw a circle in this new symbol and modify it using the transform palette to 40 x 40 pixels. Make the stroke hairline and choose a bright colour such as yellow. Delete the inside, then draw two straight lines, horizontal and vertical.
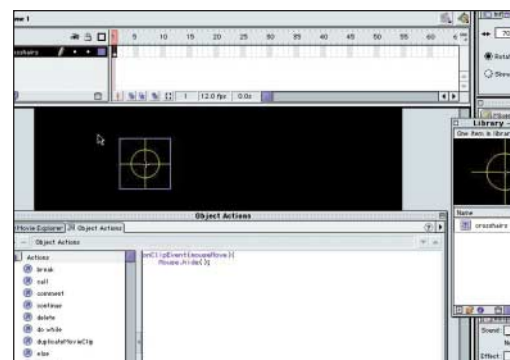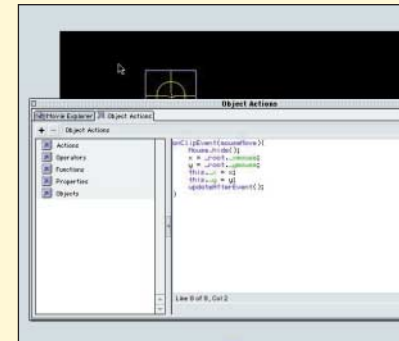
5 PLACE ON STAGE

Click the tab in the top left of the screen labelled Scene1 and you will return back to the main stage. Drag the crosshairs from the library onto layer 1 and label this layer 'crosshairs'. Then click the arrow in the bottom right of the main window to bring up the Object Actions.

USEFUL TIPS AND SHORTCUTS
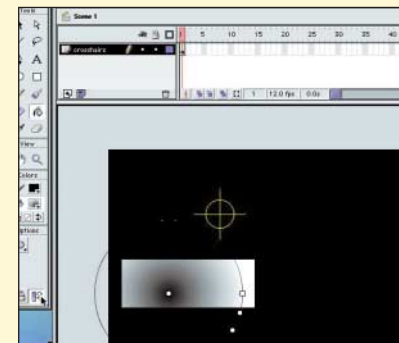

6 START CODING

Type the above code into it. This simply calls the movie clip to have a mouse movement attached to it. The next line then will hide our existing mouse, which is the standard pointer. Now we need to attach the crosshairs or we'll have no mouse at all!

7 MORE CODE

Copy the remaining code into the window as shown. The lines **x =** and **y =** are setting up a new variable that is the current location of the mouse. The lines **this._x** and **this._y** are attaching this clip, and then it is constantly updated in the next line of code.
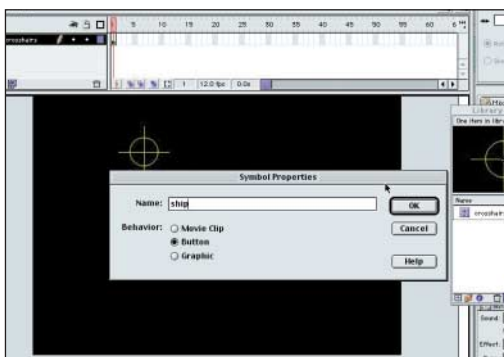
8 A NEW SYMBOL

Time to create a new button symbol and this time label it 'ship'. What we are actually going to do is create moving buttons as our enemies for the game. Once you have done this you can start to draw an alien ship for the enemy. Obviously if your drawing skills are not up to this, you can copy ours on the CD.
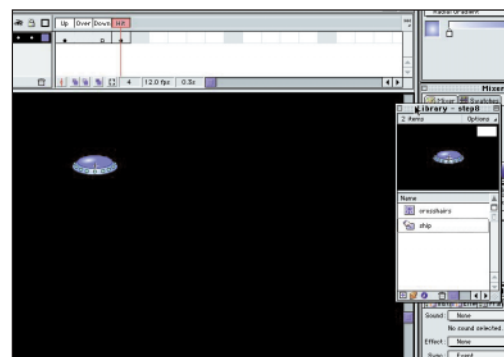
9 ADD HIT STATE

Select the hit state and press 'F6'. This will generate a hit area for the button and will automatically fill in the over and down state which are no different. Then create a new Movie Clip symbol and call this 'enemy'.
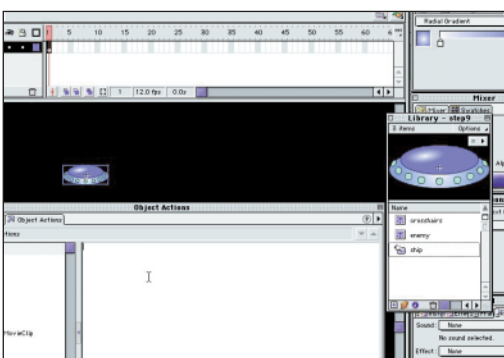
10 ENEMY SYMBOL

Now drag off the ship symbol from the library and place it on the new enemy symbol. Try to get it as close to centre as possible. Now call layer 1 'ship', and with the ship still selected bring up the 'Object Action' panel by pressing the arrow icon in the bottom-right of the main screen.
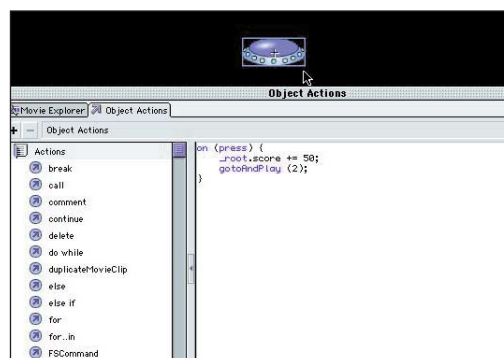
11 CODE FOR BEING HIT

Copy the code from the screen shot into the Actions. The first line tells Flash what to do when pressed, the next line adds 50 to an existing score in a variable called score which we will set up later. Then the next line of code tells the animation to continue playing the next frame (2).
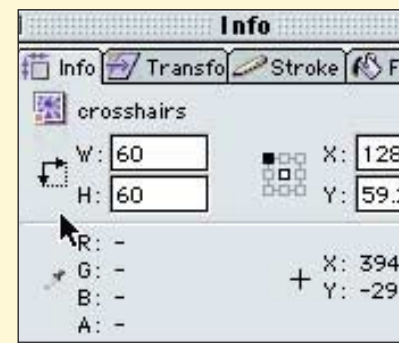
➔

Accessing Actions Easily
To access Frame Actions quickly and easily simply, select the keyframe you need from the timeline and press the arrow as shown in the screenshot above. To apply object actions, select the object that you wish to apply actions to and then press the same arrow as shown in the screenshot.
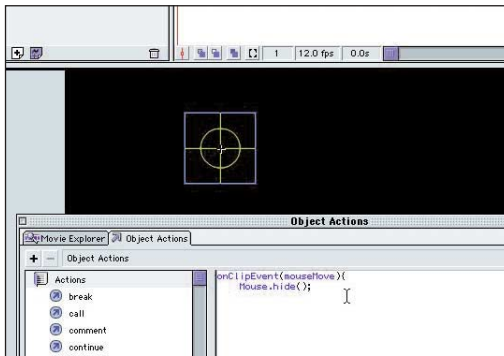
Handy modifiers
Most of the tools in the palette have modifiers attached to them, which appear in the 'Options' section at the bottom of the tool palette. The modifier shown here allows you to scale, rotate and move gradient blends within your object. This ability allows you to give your graphics much better shading.
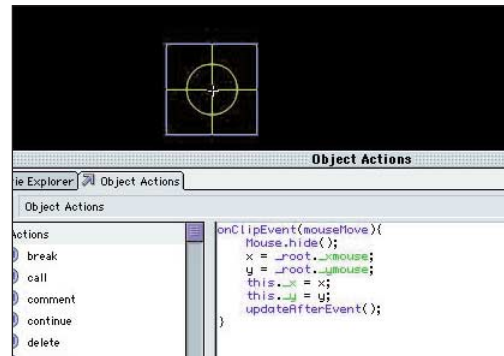
Information panel
You can quickly resize and reposition items using the 'Information' panel. Sometimes you will need to place things exactly on the stage. Using this panel you can specify exact locations of the **x** and **y** co-ordinates, plus you can easily make modifications by using the transform panel, also located here.

ONLINE GAMING FOR YOUR SITE

12 EXPLOSIVE ACTION

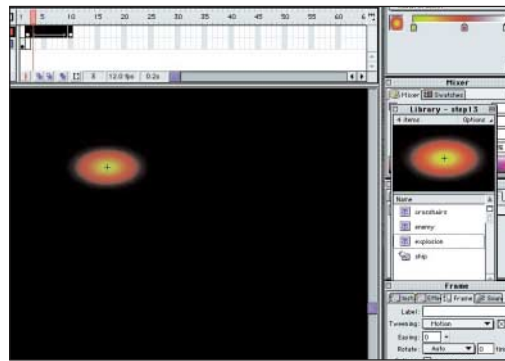Now create a new Movie Clip symbol and draw an oval, with a gradient fill going from yellow to red to transparent. This will act as our explosion. When you are happy with it, return to the Enemy Movie Clip symbol, create a new layer and call it 'explode'.


13 PLACING THE EXPLOSION

Create a keyframe (F6) on frame 2 of the 'explode' layer and drag the explosion onto it, making sure it is covering the ship. Add a keyframe at frame 10. Now go into the 'Effect Properties' and take the alpha down to 0. Then select this whole layer and a motion tween.
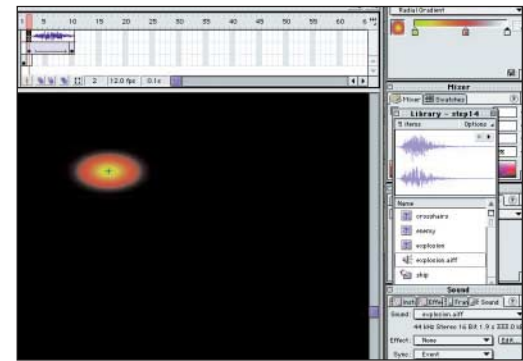

14 SOUNDS GOOD

Add a new layer and call this sound. Add a keyframe at frame 2, then go to import and select the file **explosion.aiff** from the CD. You will notice this in your library. Go to the sounds palette and select it, making sure the sync is set to 'event'.
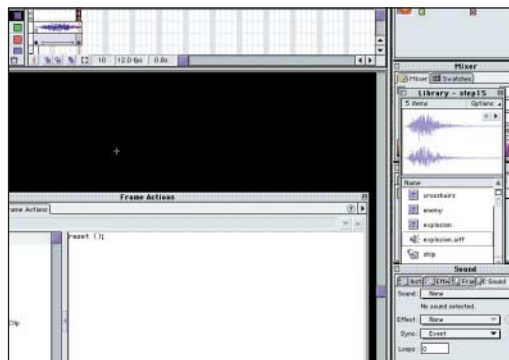
15 CODE LAYER

Add a new layer and call this 'code'. Add a keyframe at frame 1 and double-click the frame. In the frame actions panel type 'stop();'. Then add a keyframe at frame 10 and type 'reset();' in the 'Frame Actions' panel. This will call a function named 'reset', which we are about to set up.
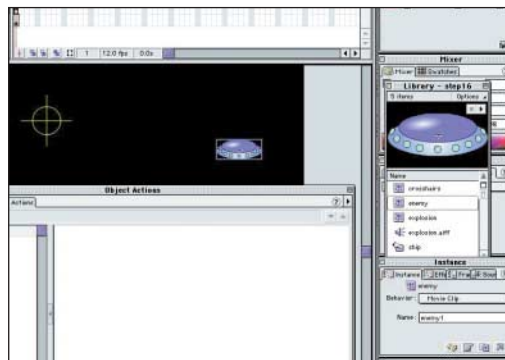

16 ADD TO THE MAIN SCENE

Go to the main scene and create a new layer, calling it 'enemy'. Drag off your enemy symbol and place it on frame 1. Call this enemy 1 in the 'Instance' panel. Then with the enemy still selected, bring up the 'Object Actions' Panel.


17 ACTIONS FOR THE ENEMY

Type the above code straight into the 'Actions' Panel. This creates a function called 'reset', which is placed off the right of our screen. It is given a random **y** location and a variable called **enemySpeed** is generated from a random number. Finally the code is called into action with 'reset();'.
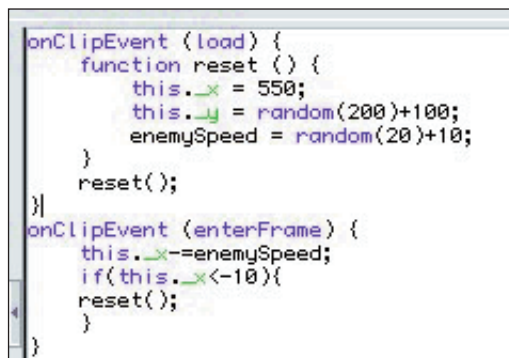

18 MOVEMENT FOR THE ENEMY

Type the remaining ActionScript shown above. This moves the enemy ship across the stage using the random speed. If it reaches −10 pixels, which will be off the left of the stage, then the whole function is reset and it starts over again from on the right-hand side.
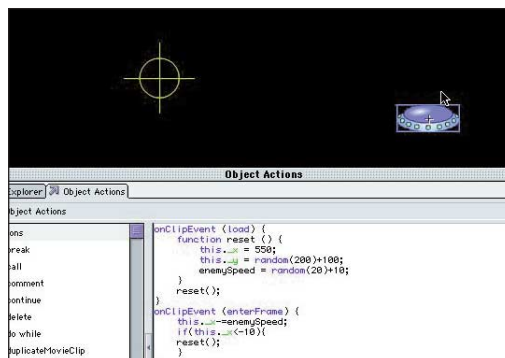
19 PLACEMENT DOESN'T MATTER

Both the enemy ship and the crosshairs have been placed anywhere on the stage. This is not important because in both cases the ActionScript code is going to reposition them itself.
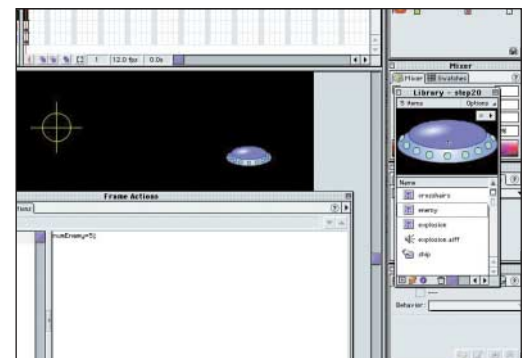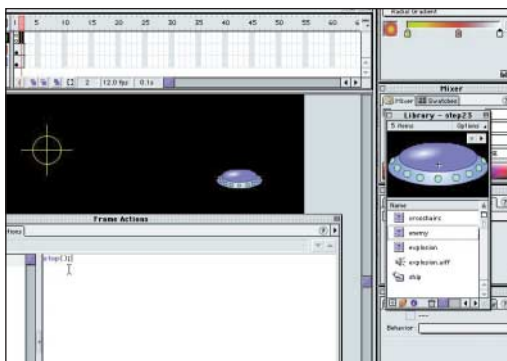

20 ONE ENEMY IS NOT ENOUGH

If you test the movie, you only have one enemy which is a bit poor, so create a new layer and call it 'code'. Double-click on this layer in keyframe 1. In the 'Frame Action' panel type the above code, which sets a new variable called 'numEnemy' to a value of 5.

```
numEnemy=5;
for (i=2; i<=numEnemy; i++){
    enemy1.duplicateMovieClip( "enemy"+i, i+100 );
}
```

```
numEnemy=5;
for (i=2; i<=numEnemy; i++){
    enemy1.duplicateMovieClip( "enemy"+i, i+100 );
}
score=0;
starttime=getTimer();
```

21 A FOR STATEMENT

Copy the next lines of code in, as in the screenshot. The 'for' statement first makes a variable called 'i' equal 2, then if it is less than or equal to 'numEnemy' (which is 5) it creates another enemy by executing the 'duplicateMovieClip' command. The value of 'i' is increased and it stops when it reaches 5.

22 A LITTLE MORE CODE HERE

Copy the last of the code to go into this section. This sets up two new variables. The score variable is set at 0 for the start of the game. When the enemy is hit it increases by 50 (remember in step 11 you added 50 to a variable called score). Then 'starttime' calls Flash's 'getTimer' command.

23 GOING BLANK AGAIN

Add a blank frame to all layers visible on the stage at frame 2 by pressing 'F5' at frame 2. On the code layer make this a keyframe at frame 2 by pressing 'F6'. Double-click frame 2 and in the 'Frame Actions' Panel type 'stop();' to stop the movie playing any further.

24 INFORMATION PANEL

Add a new layer and call it 'top panel'. Draw a rectangle and in the information panel set its width to 0 and height to 50 pixels. Then position it at 0 on both the x and y axis. This is going to be a panel to display the score and time limit left on the game.
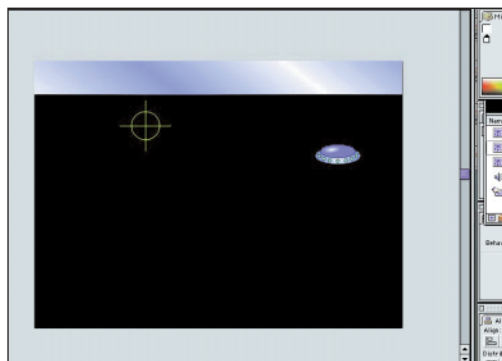
25 SCORE STATUS

On the top panel layer, type the word 'score' using the 'type' tool and position it in the top-left. Then next to it, use the rectangle tool to draw a rectangle. You'll notice a modifier under 'Options' that the mouse is pointing to. You can use this to give your rectangle rounded edges.

26 DYNAMIC TEXT

Create a text box over the black rectangle, type in a zero, change the font colour to white and centre the paragraph. In the text options choose 'Dynamic Text', 'Single Line' and for the variable type 'score'. This will display the current value of the variable called 'score'.

➜

JARGON BUSTER

TECHNICAL TERMS EXPLAINED

x and y co-ordinates
This simply refers to an object's position horizontally (x) and vertically (y). In ActionScript _x and _y always refer to an objects position so if you name an instance and change it's values in code it will be reflected on the stage.

Invisible button
A button that only has a hit area, ie the button only exists on the hit state and not on the up, down and over positions. The button appears on the stage semi-transparent. This allows you to re-use the same button from the library and just place it over text.

Keyframe
This is a frame that a key action takes place at. It can simply be a change in direction of an animation or ActionScript can be stored to change the Action of something on the stage.

Preloader
When you have large files that are going to take a long time to load it is often a good idea to place a scene at the start of your main movie which contains a message or something to keep the visitor occupied until the site downloads.

Tween
This can be a motion or shape tween between two keyframes. Values such as colour, transparency and position can be changed in order to build up animation.

WEB RESOURCES

FIND OUT MORE ONLINE

arcade
www.flashkit.com/arcade
A superb showcase of really good online games available to play and rate. This site provides a wealth of ideas and inspiration for all budding games creators!
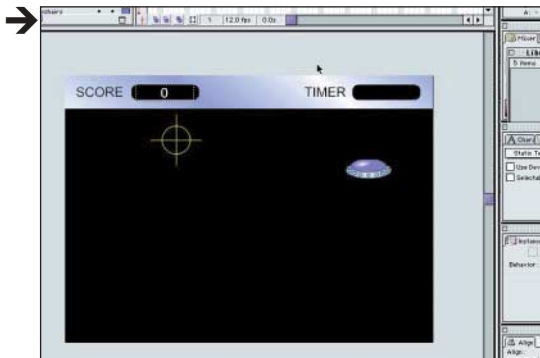
actionscripts
www.actionscripts.org
This site is dedicated to getting you completely up to speed on ActionScript. There are tons of tutorials that will take you through from beginner to advanced level.
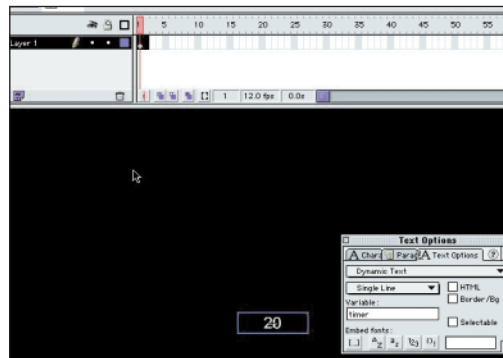
ONLINE GAMING FOR YOUR SITE

27 CREATE THE TIMER

Create a text box, this time on the right-hand side of the screen, and type 'Timer' instead of 'score'. Then copy and paste the rectangle over. Create a new Movie Clip symbol and call this 'timer'.
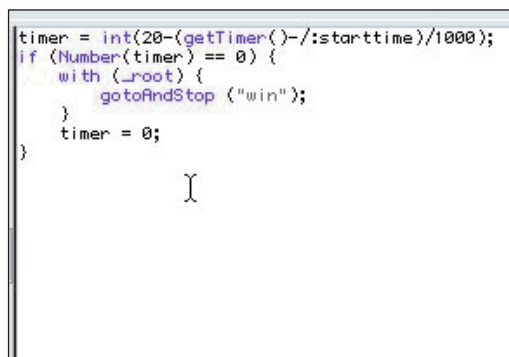

28 TIMER SYMBOL

Create a new text box and type in 20, make the text white and centre the paragraph. In the text options, once again select 'Dynamic Text', 'Single line', and this time call the variable 'timer'. Add a frame at frame 2 using 'F5'. Double-click frame 1 to bring up the 'Frame Action' panel.
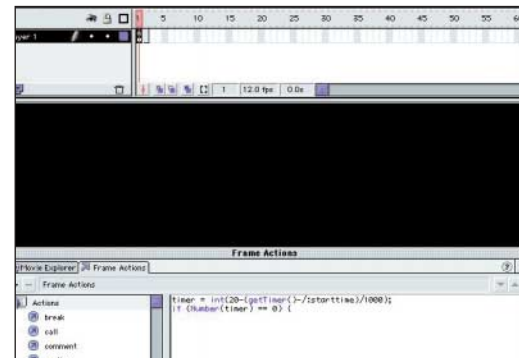

29 TIME FOR ACTION

In the 'Frame Action' panel, type the above code. The timer is set at 20 and is then set to count backwards, by dividing it by 1000 which will give a time of 20 seconds. The next line asks if it is equal to 0 using the double equals (one equals sign sets the value, a double equals checks if the value is equal).

```
timer = int(20-(getTimer()-/:starttime)/1000);
if (Number(timer) == 0) {
    with (_root) {
        gotoAndStop ("win");
    }
    timer = 0;
}
```

30 WHAT HAPPENS AT ZERO

Copy the remaining code into the box as shown. When the counter reaches 0, Flash is told to return to the root movie and 'gotoAndStop' at a marker called 'win'. The timer is told that it is then set at 0 to avoid any further countdown. Go to the main movie and drag the timer symbol onto the stage.
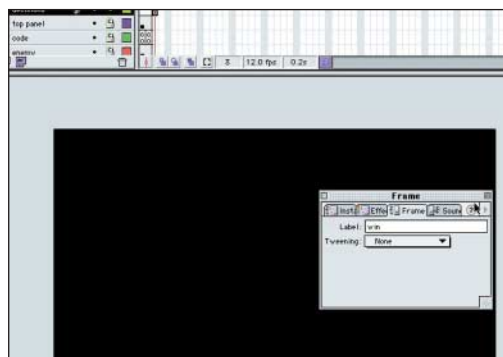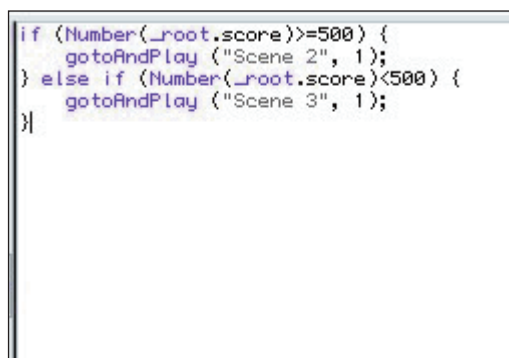

31 DECISIONS, DECISIONS

Create a new layer and label it 'decisions'. Now add a keyframe using 'F6 'at frame 3. Go to the 'Frame' Panel and in the 'Label' area type 'win'. This adds the label of win to frame 3 of this layer. Double-click this frame on the timeline to bring up the 'Frame Action' Panel.
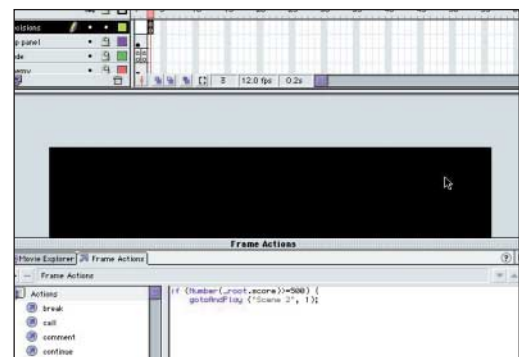

32 I WANT TO WIN

Flash is going to make a decision based on information we provide. Type the above code into the 'Frame Action' Panel. This is saying that if the score is greater than or equal to 500 when the time is up, then go to Scene 2 and play frame 1.

```
if (Number(_root.score)>=500) {
    gotoAndPlay ("Scene 2", 1);
} else if (Number(_root.score)<500) {
    gotoAndPlay ("Scene 3", 1);
}
```

33 WHAT IF I LOSE?

Copy the next part of the code into the 'Frame Action' Panel as shown above. This is telling Flash that if our score is less than 500, we are to be taken to Scene 3 and frame 1 will be played. In a few moments we will set up these scenes.
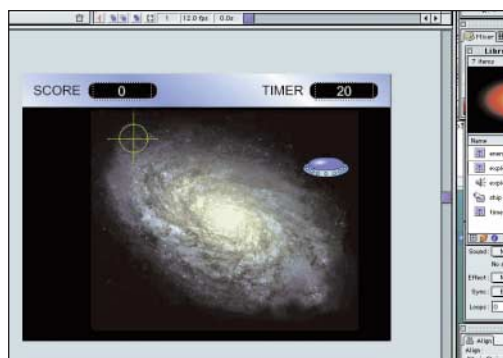
34 COSMETIC OR BANDWIDTH

If you want to keep the file size small, ignore this step as it takes the size from being an 8k game to a 40k game. Add a new frame called background, make it 3 frames long and import the file 'background.gif'.
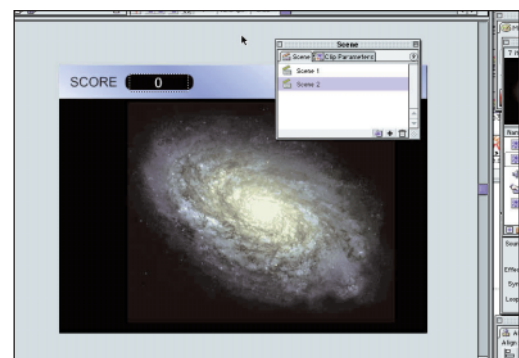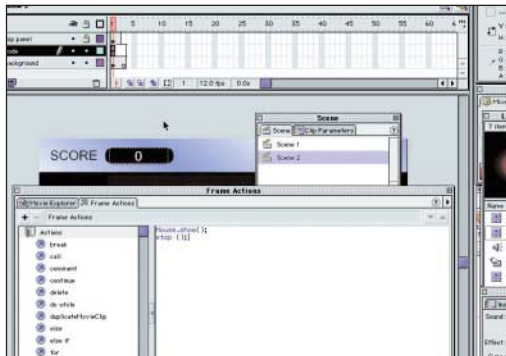

35 A WINNING SCENE

Go to 'Windows', 'Panels' and select the scene panel. Select scene 1 and hit the 'duplicate scene' icon at the bottom, rename the copied scene to Scene 2. Now delete every layer except the background and the top panel. On the top panel delete the timer symbol.

FLASH OF INSPIRATION

USEFUL TIPS AND SHORTCUTS

Sound
When sound is brought into Flash, it is automatically placed in the library. To get the sound to the relevant place, create a keyframe and select the necessary sound from the panel as shown. An event sound plays independent of the timeline, and is useful for button presses. Streaming sound plays with the timeline and will drop frames if necessary from playback, to keep the two in sync.

Optimising movies
When you export your movie you get various options about your movie. Generate a size report if you want to see what is taking up a lot of bandwidth so that you can try to downsize it. Reduce the JPEG quality for bitmaps and then take down the MP3 sound to 8bit to help keep files small.

Text options
Text options allow you to change what is displayed in your text box. Dynamic text allows text to be placed by Flash by assigning a variable. You could type anything into the text box on the stage but the only thing to be displayed would be the variable from ActionScript. Input text allows users to input details and this will be stored as a variable in Flash.

---

36 NEW CODE LAYER

Create a new layer and label this layer 'code'. Press 'F6' to create a new keyframe and then double-click frame 1 to bring up the 'Frame Action' Panel. Type in 'Mouse.show();' and 'stop ();' as above to restore our mouse and stop the movie here.
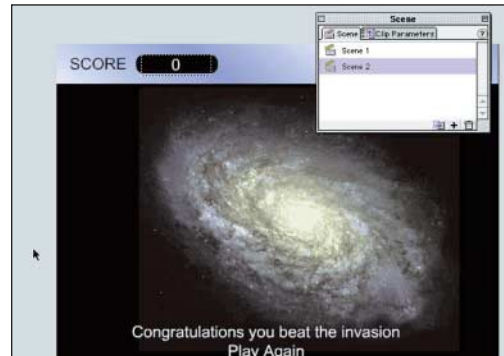

37 A WINNING MESSAGE

On the top panel layer select the 'type' tool and type the text as in our screen above. We have added a congratulations message – you can add various options here to take visitors back to your Web site as well as play again.
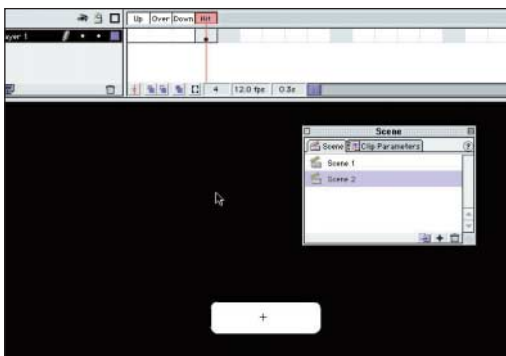
38 INVISIBLE BUTTON

Create a new symbol called 'invisible button'. In the hit state, draw a rectangle, then drag this off the library and place it over the text 'play again'. You may have to scale the button to fit the text. Notice that because it was only in the hit state that it is semi transparent.
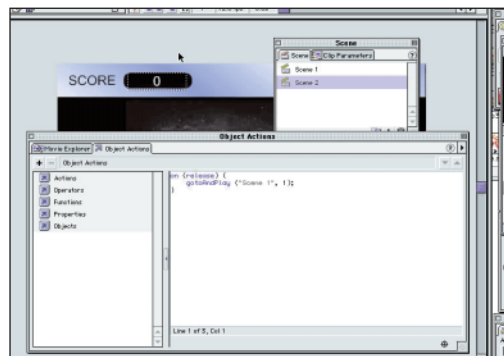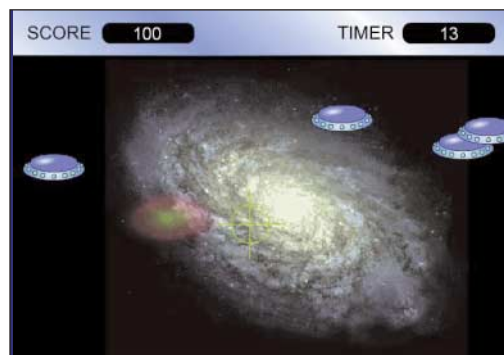

39 RETURN ACTION

With the invisible button selected, bring up the 'Object Action' panel. Type in the code as shown in the above screenshot. This will take the user back to scene 1 and will begin the movie again from frame 1.
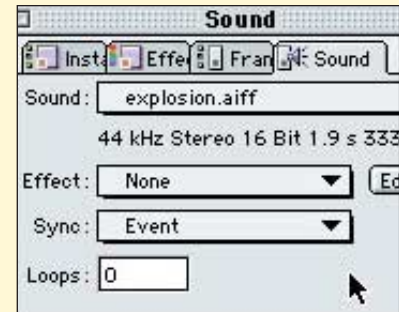

40 FINAL SCENE

In the 'Scene' Panel copy scene 2 and rename it scene 3. Change the text to a losing message and keep everything else the same. Now you have all your scenes completed, all you have to do is publish the movie and place it on a html page in your site.
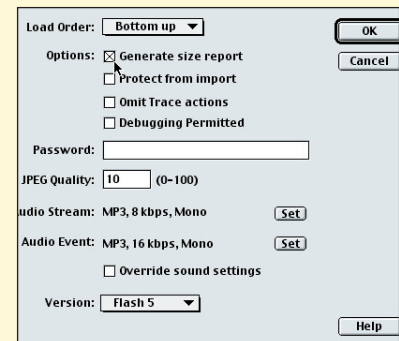

41 MAKING IT HARDER

We made the game far too easy by only having to score 500. To make it harder, modify 500 to 1500 in step 32 and 33. In step 20 you can up the number of enemies you want to display, or increase the speed in step 17 by increasing 10 to a higher number at '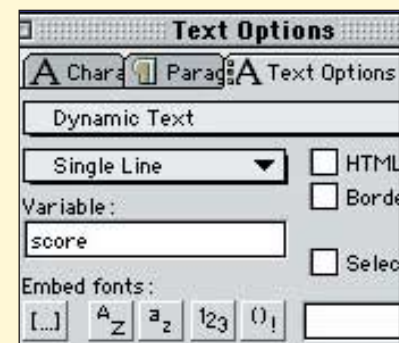enemySpeed = random(20)+10'. And that's it!