

Flash CS3

Flash CS3 is used to create vector based interactive animations. Flash CS3 uses ActionScript 3. ActionScript 3 is a full-blown object oriented language. Flash movies can be played on a web page or as a stand-alone application.

Vector Drawing vs. Bitmaps

When you draw a line in Flash, the line is stored as a line between point A and point B. Additional information about the line such as its width, style, and color is also stored. Flash makes it easy to change the line, or vector, later. Programs such as Paint on the PC create bitmapped drawings. When you draw a line in Paint, it is stored as a series of dots, or bits. You can change the color of the line, but it is not easy to change the style or length of the line. When you change the size of a vector based drawing, it scales very nicely. In fact, you cannot tell that the size has been changed. A bitmapped drawing does not scale well: when you increase the size you get a jagged line or steps.

You can import jpg, bmp, and gif files into Flash. (*Animated gifs are imported with their animation as a series of bitmapped pictures.*) Flash considers all of these formats as bitmaps. If you import Adobe Illustrator or wmf (*Window Meta Files*) files, they are imported as vector drawings. Be aware that when you use bitmap pictures, they will not scale well.

Interactivity

Flash can be made interactive by writing code in ActionScript. You can determine the position of the cursor, which key was pressed, when a button is clicked, and more. You can use this information to determine what the Flash movie does next. You can also add various types of buttons and other components such as sliders, radio buttons, list boxes and text input. Text input can be used to allow the user to enter their name or the answer to a question. Flash can also allow the user to open a file dialog window to select a file to import into flash, or to save a file that is downloaded.

Animation

The animation is based on frames. Each frame can have a slightly different picture. This pictures are displayed one at a time, the same way cartoons and movies are done to create motion. Most Flash movies use 12 frames per second, but you can change this. The Flash developer can work with the timeline to insert, delete and modify the frames.

The use of “tweening” facilitates the creation of the animation. If you have a red square on the left and want it to move to the right while changing into a blue circle, tweening can do that for you automatically.

Another aspect of animation is the movie clip. A movie clip has its own timeline and one movie clip can be placed inside another. You may create a movie clip of a twinkling star and then place several instances of the twinkling star inside another movie.

Events

Flash movies are event driven. We write functions in ActionScript3 that tell the movie what to do when a particular event happens. Events include clicking a button, moving the mouse, pressing a key, when a file finishes loading, when a sound finishes playing, or when a frame is entered. If we do not specify what to do when an event occurs, it does nothing to handle that event.

ActionScript

ActionScript is the programming language used by Flash. In the early versions of Flash it was fairly limited, but it has grown into a full-blown object-oriented programming language. When we talk about object-oriented programming, it means that you can define a class with properties and methods, then quickly create instances of that class. In addition to many classes that are built-in to Flash, you can also create new classes. Some of the classes that are built-in to Flash include arrays, strings, date and time, movie clips, text boxes, radio buttons, sliders and other components, a math class with functions to find a random number, to round, and so on. Like any modern programming language, Flash has primitive operations like variable declaration, if-else statements, and loops.

Without any other directions a Flash movie plays the frames in sequence and starts over when it gets to the end. We can add ActionScript to a frame to tell it to stop or go to a different frame. Let's suppose that we have a movie with 20 frames. Instead of playing the movie over from the beginning, we would like to play from the beginning the first time, but play from frame 5 when it gets to the end. We could add the following code in frame 20: **gotoAndPlay(5);** We could add the command **stop();** in frame 20 if we wanted the movie to just play once.

Displaying the Movie

Flash has built-in tools for testing and debugging the movie and publishing it to the web. You can choose from various options depending on whether it will be imbedded in a web page or run independently. You can also export it in several formats such as gif, bmp, or wmf, but it will lose its interactive capability in those formats.

Object Oriented Programming

Modern programming languages use objects to make it easier to write large applications. An object is an instance of a class. A class is a definition that includes both properties and methods, or functions. Buttons, and movie clips are examples of objects. They have properties such as color, size, and position on the screen. They have functions that tell what to do when they are clicked, when the mouse moves over them, and other events. After we have defined a class, we can create an instance of that class called an object. There are many classes built-in to Flash such as buttons, movie clips, strings, date and time, etc.