

## **P3 Tutorial 3.2:**

### **Basic Animation using Direct3D**

This tutorial aims to take you through the basics of Direct3D animation. These basics break down into 4 specifics:

- How all types of animation work
- The general process needed to perform computer animation
- How to use Direct3D to create an animation sequence
- Timing animation sequences

### **Animation Mechanics**

The world is filled with different kinds of animation – movies, flip books, games. All these things have one thing in common: the appearance of motion comes from rapidly projecting a series of images.

### **DirectX Display Details**

We already know how to draw (or display) the animation sequence. The tutorials last week covered the necessary stages:

- 1) Load animation images into memory
- 2) Draw animation image to back buffer
- 3) Display the back buffer
- 4) Repeat stages 2 and 3

### **Frames and Lingo**

Just to mention that the technical term for images that are part of an animation sequence is “frame”. So that is what I will be referring to when I use the word frame – A single image that is part of an animation sequence

### **Coding the Animation Sequence**

There are two ways to code the animation sequence:

- Using the DirectX defined Sprite and series of RECTS
- Load an series of surfaces

*Often in animation, certainly professional animation, bitmap frames are all part of one image. Maths is then used to determine which part of the bitmap to display for each frame.*

*In DirectX we use a RECTS structure to specify what part of the image to use; this is similar to grabbing animation frames as shown in Programming 2. The 2D code example “Explosions” shows an example of this.*

### **Note on the Tutorial Code**

This follows the same principles of the other tutorials; it includes all the code for building a working application of the type we wish to demonstrate.

Comments are included to highlight the areas we need our attention drawing to. Remember though that a lot of the code remains relatively static, such as the message loop. It is therefore ideal to put such code in separate source files with prototypes in the headers. The header can then be added to the source file that defines **WinMain()** and the other necessary functions.

### **Using Surfaces**

This tutorial is going to focus on loading a series of surfaces that give the appearance of animation.

#### Exercises

- 1) Modify the code so that the animation runs at half speed
- 2) Modify the program so that it displays only a 200x200 image from the centre of each frame
- 3) Move the display so that the animation runs in the lower left corner of the screen
- 4) Modify the code so that the white background on the image is transparent