

## Java FX: Frame Based Animation

Learning Goal: Display a sequence of images in rapid succession to create the illusion of movement

- Another commonly needed game programming component is frame-based animation
- Frame-Based Animation refers to displaying a sequence of images in rapid succession to create the illusion of movement.
- We are going to add a little moving UFO using 6 slightly different UFO images (similar idea to a flip book)



- First step is to copy and paste your code from Exercise 05 – Animation Timer into a **new class** called FrameBasedAnimation. Use the same Java project in order to have access to the same image files as before.
- Make sure that you can run your animation before we add the new part!
- You will need to add second new class to your project called AnimatedImage. Copy and pasting the provided code is fine for this class. Feel free to use this exact class in any project you create. Notice that this class doesn't have a main method, and will never be run as an application.

```
import javafx.scene.image.Image;

public class AnimatedImage
{
    // assumes animation loops,
    // each image displays for equal time
    public Image[] frames;
    public double duration;

    public Image getFrame(double time)
    {
        int index = (int)((time % (frames.length * duration)) /
duration);
        return frames[index];
    }
}
```

## ICS3U JavaFX 06: Frame Based Animation

- Once this second class is included in the project, we can return to the FrameBasedAnimation class and create an animated UFO, by using this code (place it below the code that creates the three images earth, sun and space):

```
AnimatedImage ufo = new AnimatedImage();
Image[] imageArray = new Image[6];
for (int i = 0; i < 6; i++)
    imageArray[i] = new Image( "ufo_" + i + ".png" );
ufo.frames = imageArray;
ufo.duration = 0.100;
```

- And finally, within the AnimationTimer() add the following single line of code:

```
gc.drawImage( ufo.getFrame(t), 450, 25 );
```

Add this right under the other three „drawImage“ statements

### **Programming Exercise:**

- Open up Paint and create a sequence of 6 images that are all slightly different from each other
- Save them each with identical file names except for the number (such as smile0.jpg, smile1.jpg, smile2.jpg etc.)
- Add this as a frame based animation to your project
- Change the way that the earth travels in the animation, it doesn't have to make sense, but it should be neat!

Hand this small project into the dropbox please!