Second

Lecture

Images and 3D shapes

Images

You can load and modify images using the classes provided by JavaFX in the package **javafx.scene.image**. JavaFX supports the image formats like **Bmp, Gif, Jpeg, Png**. This lecture teaches you how to load images in to JavaFX, how to project an image in multiple views and how to alter the pixels of an image.

Loading an Image

You can load an image in JavaFX by instantiating the class named **Image** of the package **javafx.scene.image**. To the constructor of the class, you have to pass either of the following –

An **InputStream** object of the image to be loaded or, A string variable holding the URL for the image.

```
//Passing FileInputStream object as a parameter
FileInputStream inputstream = new FileInputStream ("C:\\images\\image.jpg");
Image image = new Image(inputstream);
```

```
//Loading image from URL
//Image image = new Image(new FileInputStream("url for the image));
```

After loading the image, you can set the view for the image by instantiating the **ImageView** class and passing the image to its constructor as follows –

```
ImageView imageView = new ImageView(image);
```

```
package javafxapplication35;

import javafx.application.Application;
import javafx.stage.Stage;
import javafx.scene.Scene;
import javafx.scene.Group;

import javafx.scene.image.Image;
import javafx.scene.image.ImageView;
import java.io.FileInputStream;
import java.io.FileNotFoundException;

public class JavaFXApplication35 extends Application {

   @Override
   public void start(Stage stage) throws FileNotFoundException{


      //Creating an image
      Image image = new Image(new FileInputStream("C:\\Users\\D. Salma\\Desktop\\sab.jpg"));
```

```
//Setting the image view
ImageView imageView1 = new ImageView(image);

//Setting the position of the image
imageView1.setX(50);
imageView1.setY(25);

//setting the fit height and width of the image view
imageView1.setFitHeight(455);
imageView1.setFitWidth(500);

//Setting the preserve ratio of the image view
imageView1.setPreserveRatio(true);

//Setting the image view 3
ImageView imageView2 = new ImageView(image);

//Setting the position of the image
imageView2.setX(350);
imageView2.setY(25);

//setting the fit height and width of the image view
imageView2.setFitHeight(150);
imageView2.setFitWidth(250);

//Setting the preserve ratio of the image view
imageView2.setPreserveRatio(true);

//Setting the image view 3
ImageView imageView3 = new ImageView(image);

//Setting the position of the image
imageView3.setX(350);
imageView3.setY(200);

//setting the fit height and width of the image view
imageView3.setFitHeight(100);
imageView3.setFitWidth(100);


//Setting the preserve ratio of the image view
imageView3.setPreserveRatio(true);
```

```
    //Creating a Group object
    Group root = new Group();

    root.getChildren().addAll(imageView1,imageView2,imageView3 );

    //Creating a scene object
    Scene scene = new Scene(root, 600, 500);

    //Setting title to the Stage
    stage.setTitle("Loading an image");

    //Adding scene to the stage
    stage.setScene(scene);

    //Displaying the contents of the stage
    stage.show();
  }
}
```

Writing Pixels

JavaFX provides classes named PixelReader and PixelWriter classes to read and write pixels of an image. The WritableImage class is used to create a writable image. Following is an example which demonstrates how to read and write pixels of an image. Here, we are reading the color value of an image and making it darker.

```
package javafxapplication36;

import javafx.application.Application;
import javafx.stage.Stage;
import javafx.scene.Scene;
import javafx.scene.Group;
import javafx.scene.paint.Color;

import javafx.scene.image.Image;
import javafx.scene.image.ImageView;
import javafx.scene.image.PixelReader;
import javafx.scene.image.PixelWriter;
import javafx.scene.image.WritableImage;
import java.io.FileInputStream;
import java.io.FileNotFoundException;

public class JavaFXApplication36 extends Application {

  @Override
  public void start(Stage stage) throws FileNotFoundException {
```

```
//Creating an image
Image image = new Image(new FileInputStream("C:\\Users\\D. Salma\\Desktop\\sab.jpg"));

//Setting the image view
ImageView imageView1 = new ImageView(image);

//Setting the position of the image
imageView1.setX(50);
imageView1.setY(25);

//setting the fit height and width of the image view
imageView1.setFitHeight(455);
imageView1.setFitWidth(500);

//Setting the preserve ratio of the image view
//imageView1.setPreserveRatio(true);

int width = (int)image.getWidth();
int height = (int)image.getHeight();

//Creating a writable image
WritableImage wImage = new WritableImage(width, height);

//Reading color from the loaded image
PixelReader pixelReader = image.getPixelReader();

//getting the pixel writer
PixelWriter writer = wImage.getPixelWriter();

//Reading the color of the image
for(int y = 0; y < height; y++) {
  for(int x = 0; x < width; x++) {
    //Retrieving the color of the pixel of the loaded image
    Color color = pixelReader.getColor(x, y);

    //Setting the color to the writable image
    writer.setColor(x, y, color.darker());
  }
}

//Creating a Group object
Group root = new Group();
root.getChildren().add(imageView1);
//Creating a scene object
Scene scene = new Scene(root, 600, 500);
```

```
   //Setting title to the Stage
    stage.setTitle("Loading an image");

    //Adding scene to the stage
    stage.setScene(scene);

    //Displaying the contents of the stage
    stage.show();
  }
  }
```