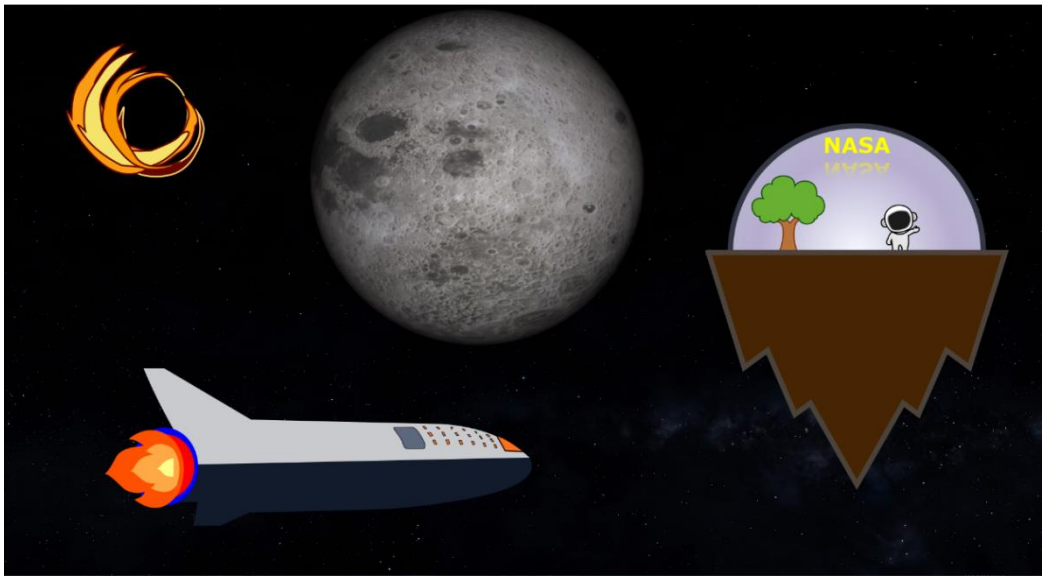
技职教育系
Department of Vocational Education

软件工程与移动应用程序开发课程
Software Engineering and Application Developer (SEMD)

个人作业
Assignment

科目 Subject	Multimedia Programming in Java
科目编号 Subject Code	SEMD019
中文姓名 Chinese Name	卢诚禧
英文姓名 English Name	Loo Zhen Xi
学号 Student ID	1850170
分数 Marks	



Source Code

```
package multimedia2;

import javafx.animation.AnimationTimer;
import javafx.animation.FillTransition;
import javafx.animation.KeyFrame;
import javafx.animation.KeyValue;
import javafx.animation.PathTransition;
import javafx.animation.PauseTransition;
import javafx.animation.RotateTransition;
import javafx.animation.ScaleTransition;
import javafx.animation.SequentialTransition;
import javafx.animation.Timeline;
import javafx.animation.TranslateTransition;
import javafx.application.Application;
import javafx.beans.property.DoubleProperty;
import javafx.beans.property.SimpleDoubleProperty;
import javafx.scene.Camera;
import javafx.scene.Cursor;
import javafx.scene.Group;
import javafx.scene.ImageCursor;
import javafx.scene.Node;
import javafx.scene.PerspectiveCamera;
import javafx.scene.Scene;
import javafx.scene.control.Button;
import javafx.scene.effect.Blend;
import javafx.scene.effect.BlendMode;
import javafx.scene.effect.ColorInput;
import javafx.scene.effect.Reflection;
import javafx.scene.image.Image;
import javafx.scene.image.ImageView;
```

```
import javafx.scene.input.MouseEvent;
import javafx.scene.input.ScrollEvent;
import javafx.scene.paint.Color;
import javafx.scene.paint.CycleMethod;
import javafx.scene.paint.PhongMaterial;
import javafx.scene.paint.RadialGradient;
import javafx.scene.paint.Stop;
import javafx.scene.shape.Circle;
import javafx.scene.shape.Ellipse;
import javafx.scene.shape.Polyline;
import javafx.scene.shape.Rectangle;
import javafx.scene.shape.SVGPath;
import javafx.scene.shape.Sphere;
import javafx.scene.text.Font;
import javafx.scene.text.FontPosture;
import javafx.scene.text.FontWeight;
import javafx.scene.text.Text;
import javafx.scene.text.TextAlignment;
import javafx.scene.transform.Rotate;
import javafx.scene.transform.Transform;
import javafx.scene.transform.Translate;
import javafx.stage.Stage;
import javafx.util.Duration;

public class Assignment2 extends Application{

	private double anchorX, anchorY;
	private double anchorAngleX = 0;
	private double anchorAngleY = 0;
	private final DoubleProperty angleX = new SimpleDoubleProperty(0);
	private final DoubleProperty angleY = new SimpleDoubleProperty(0);

	private final Sphere moon = new Sphere(306);
	private final Sphere moon2 = new Sphere(306);

	Group root,moonBus,Moon;

	SVGPath tree;

	Stage assignment2;
	Scene scene, scene2;

	public void start(Stage assignment2) throws Exception{
		///Group
		Group root = new Group();

		Group moonBus = new
Group(moonBus(),moonBus2(),moonBus1(),moonBus11(),moonBusFire1(),moonBusFire2(),moonBus
```

```
Fire3(),windows1(),windows2(),windows3(),windows4(),windows5(),windows6(),windows7(),windo
ws8(),windows9(),windows10(),windows11(),windows12(),windows13(),windows14(),windows15(),
windows16(),windows17(),windows18(),windows19(),door());
                Group moonBus2 = new
Group(moonBus(),moonBus2(),moonBus1(),moonBus11(),moonBusFire1(),moonBusFire2(),moonBus
Fire3(),windows1(),windows2(),windows3(),windows4(),windows5(),windows6(),windows7(),windo
ws8(),windows9(),windows10(),windows11(),windows12(),windows13(),windows14(),windows15(),
windows16(),windows17(),windows18(),windows19(),door());
                Group blackHole = new Group(blackHole());
                Group blackHole1 = new
Group(blackHole1(),blackHole2(),blackHole3(),blackHole4());
                Group blackHole2 = new Group(blackHole,blackHole1);
                Group blackHoleR31 = new Group(blackHole());
                Group blackHoleR32 = new
Group(blackHole1(),blackHole2(),blackHole3(),blackHole4());
                Group Base = new
Group(prepareBase(),Tree2(),HumanBody(),Ear1(),Ear2(),Head(),Head2(),Head3(),prepareBase1(),Tr
ee(),BaseText("NASA"));
                Group Base2 = new
Group(prepareBase(),Tree2(),HumanBody(),Ear1(),Ear2(),Head(),Head2(),Head3(),prepareBase1(),Tr
ee(),BaseText("NASA"));

                //SmartGroup
                SmartGroup Moon = new SmartGroup();
                Moon.setTranslateX(876.503);
                Moon.setTranslateY(323.54);
                Moon.getChildren().add(prepareMoon());

                //Arangge XY
                blackHole1.setTranslateX(20);
                blackHole1.setTranslateY(30);
                Base.setTranslateY(-100);

                moonBus.setLayoutY(100);

                //add root
                root.getChildren().add(prepareImageView());
                root.getChildren().add(Base);
                root.getChildren().add(moonBus);
                root.getChildren().add(blackHole2);
                root.getChildren().add(Moon);

                //camera
                Camera camera  = new PerspectiveCamera();

                //Scene
                Scene scene = new Scene(root, 1920,1080,true);
```

```
scene.setCamera(camera);

//Mouse Control Moon Drag Click Scroll
MouseControl(Moon,scene,assignment2);

assignment2.setTitle("Assignment 2");
assignment2.setScene(scene);
assignment2.show();

//Moon Move/Rotate X-axis
prepareAnimation(moon);

//add Animation
moonBusMove(moonBus);
blackHoleRotate(blackHole1);
baseMovement(Base);

// Moon2 - for scene2
SmartGroup Moon2 = new SmartGroup();
Moon2.setTranslateX(756.503);
Moon2.setTranslateY(523.54);
Moon2.getChildren().add(prepareMoon2());

prepareAnimation(moon2);

//Group2 - Moon
Group root2 = new Group();
root2.getChildren().add(prepareImageView());
root2.getChildren().add(Moon2);
root2.getChildren().add(TextBox());
root2.getChildren().add(Title("Moon"));
root2.getChildren().add(Detail("The Moon is an astronomical body that orbits the
Earth as its only "
        + "permanent natural satellite. It is the fifth-largest satellite in the
Solar System, and "
        + "the largest among planetary satellites relative to the size of the
planet that it orbits "
        + "(its primary). The Moon is, after Jupiter's satellite Io, the second-
densest satellite in"
        + " the Solar System among those whose densities are known."));
root2.getChildren().add(Back(assignment2,scene));

//Group3 - blackHole2
Group root3 = new Group();
blackHoleR31.setTranslateX(300.503);
blackHoleR31.setTranslateY(300.54);
blackHoleR31.setScaleX(2.5);
blackHoleR31.setScaleY(2.5);
```

```
                blackHoleR32.setTranslateX(320.503);
                blackHoleR32.setTranslateY(330.54);
                blackHoleR32.setScaleX(2.5);
                blackHoleR32.setScaleY(2.5);

                blackHoleRotate(blackHoleR32);
                root3.getChildren().add(prepareImageView());
                root3.getChildren().addAll(blackHoleR31,blackHoleR32);
                root3.getChildren().add(Back(assignment2,scene));
                root3.getChildren().add(TextBox());
                root3.getChildren().add(Title("Black Hole"));
                root3.getChildren().add(Detail("A black hole is a region of spacetime exhibiting
gravitational "
                                + "acceleration so strong that nothing—no particles or even
electromagnetic radiation such "
                                + "as light—can escape from it. The theory of general relativity
predicts that a "
                                + "sufficiently compact mass can deform spacetime to form a black
hole."
                                + " The boundary of the region from which no escape is possible is
called the event horizon."
                                + " Although the event horizon has an enormous effect on the fate
and circumstances of an "
                                + "object crossing it, no locally detectable features appear to be
observed. In many ways,"
                                + " a black hole acts like an ideal black body, as it reflects no light.
Moreover, "
                                + "quantum field theory in curved spacetime predicts that event
horizons emit Hawking "
                                + "radiation, with the same spectrum as a black body of a
temperature inversely proportional"
                                + " to its mass."));

                //Group4 - Base
                Group root4 = new Group();

                Base2.setTranslateX(-1000);
                baseMovement(Base2);
                root4.getChildren().add(prepareImageView());
                root4.getChildren().add(Base2);
                root4.getChildren().add(Back(assignment2,scene));
                root4.getChildren().add(TextBox());
                root4.getChildren().add(Title("Nasa Base"));
                root4.getChildren().add(Detail("An Island/Planet discover by NASA in space with Air.
NASA started planting "
                                + "Make it as a Space Base to explore the Galaxy"));

                //Group5 - MoonBus
```

```
                Group root5 = new Group();
                moonBus2.setTranslateY(-300);
                moonBus2.setTranslateX(-100);

                MoonBusMovement2(moonBus2);
                root5.getChildren().add(prepareImageView());
                root5.getChildren().add(moonBus2);
                root5.getChildren().add(Back(assignment2,scene));
                root5.getChildren().add(TextBox());
                root5.getChildren().add(TitleBus("Space X Moon Bus"));
                root5.getChildren().add(Detail("The #dearMoon project is a lunar tourism mission
and art project"
                                + " conceived and financed by Japanese billionaire Yusaku Maezawa.
It will make use of a"
                                + " SpaceX Starship on a private spaceflight flying a single
circumlunar trajectory around"
                                + " the Moon. The passengers will be Maezawa, several artists, and
one or two crew members."
                                + " The project was unveiled in September 2018 and the flight is
expected to occur no "
                                + "earlier than 2023."));

                //Camera2 - Moon2
                Camera camera2 = new PerspectiveCamera();
                Camera camera3 = new PerspectiveCamera();
                Camera camera4 = new PerspectiveCamera();
                Camera camera5 = new PerspectiveCamera();

                //Scene2
                Scene scene2 = new Scene(root2, 1920,1080,true);
                scene2.setCamera(camera2);

                //Scene3
                Scene scene3 = new Scene(root3,1920,1080,true);
                scene3.setCamera(camera3);

                //Scene4
                Scene scene4 = new Scene(root4,1920,1080,true);
                scene4.setCamera(camera4);

                //Scene5
                Scene scene5 = new Scene(root5,1920,1080,true);
                scene5.setCamera(camera5);

                //Moon2 Move
                MouseControl(Moon2,scene2,assignment2);

                //Moon OnClick
```

```
		Moon.setOnMouseClicked(event ->{
			assignment2.setScene(scene2);
		});

		//BlackHole2 OnClick
		blackHole2.setOnMouseClicked(event->{
			assignment2.setScene(scene3);
		});

		//Base OnClick
		Base.setOnMouseClicked(event ->{
			assignment2.setScene(scene4);
		});

		//MoonBus OnClick
		moonBus.setOnMouseClicked(event ->{
			assignment2.setScene(scene5);
		});

	}

	private void prepareAnimation(Sphere sphere) {
		AnimationTimer timer = new AnimationTimer() {
			public void handle(long now) {
				sphere.rotateProperty().set(sphere.getRotate() + 0.2);
			}
		};
		timer.start();
	}
	private void moonBusMove(Group group) {
			ScaleTransition scaleTransition = new ScaleTransition(Duration.millis(500));
			scaleTransition.setNode(group);
			scaleTransition.setByX(0.5);
			scaleTransition.setByY(0.5);

			scaleTransition.setCycleCount(2);
			scaleTransition.setAutoReverse(true);

			TranslateTransition translateTransition = new TranslateTransition();
			translateTransition.setDuration(Duration.millis(10000));
			translateTransition.setNode(group);
			translateTransition.setByX(2000);
			translateTransition.setAutoReverse(false);


			SequentialTransition seqTransition = new SequentialTransition
(scaleTransition,new PauseTransition(Duration.millis(500)),translateTransition);
			seqTransition.setCycleCount(translateTransition.INDEFINITE);
```

```
                        seqTransition.play();
        }

        private Circle prepareBase() {
                Circle Base = new Circle(1577.5,483.5,234);


           Stop[] stops = new Stop[] {
                new Stop(0.0, Color.web("#F4FAFF")),
                new Stop(0.3, Color.web("#B7ADCF")),
                new Stop(1.0, Color.web("#B9E8D3"))
              };

                RadialGradient radialGradient = new RadialGradient(0, 0, 1577, 483.5,600, false,
CycleMethod.NO_CYCLE, stops);
                Base.setFill(radialGradient);
                Base.setStroke(Color.web("#333745"));
                Base.setStrokeWidth(10);

                return Base;
        }

        private void MoonBusMovement2(Group group) {
                TranslateTransition move = new TranslateTransition();
                move.setByY(100);
                move.setDuration(Duration.millis(6000));
                move.setAutoReverse(true);
                move.setCycleCount(move.INDEFINITE);
                move.setNode(group);
                move.play();
        }

        private SVGPath Tree() {
                SVGPath tree = new SVGPath();
                tree.setContent("M 1420.75 357.09 C 1417.17 340.362 1462.745 332.702 1462.872
360.532 C 1470.66 346.106 1507.043 346.617 1503.085 378.787 C 1518.013 378.277 1526.064
408.66 1505 415.553 C 1504.617 421.043 1501.681 422.319 1499 421.681 C 1501.553 428.447
1477.123 438.936 1469.168 420.16 C 1463.638 421.426 1455.468 415.298 1457.128 410.064 C
1455.34 417.468 1443.851 432.021 1434.915 421.681 C 1430.191 429.34 1419.085 429.979
1417.553 425.255 C 1411.426 430.775 1395.34 428.574 1398.149 416.702 C 1384.617 421.17
1371.34 379.681 1404.404 383.511 C 1393.681 366.277 1413.34 352.617 1420.745 357.085");
                tree.setFill(Color.rgb(103,176,49));
                tree.setStroke(Color.web("#134611"));
                tree.setStrokeWidth(2);

                return tree;
        }
```

```
	private SVGPath Tree2() {
		SVGPath tree2 = new SVGPath();
		tree2.setContent("M 1434.787 416.702 C 1434.787 416.702 1445.383 418.757
1453.681 428.83 Q 1463.383 417.596 1469 417.34 L 1472.064 423.468 C 1456.362 426.532
1457.128 475.936 1476.66 495.085 Q 1464.915 495.085 1455.34 490.489 Q 1456.362 497.255
1454.702 498.396 Q 1450.362 491.228 1445.255 489.468 Q 1435.553 495.213 1425.085 494.319 C
1438.489 486.915 1450.749 428.447 1430.83 426.915 L 1434.787 416.702");
		tree2.setFill(Color.rgb(184, 115, 60));
		tree2.setStroke(Color.web("#813405"));
		tree2.setStrokeWidth(2);

		return tree2;
	}

	private SVGPath HumanBody() {
		SVGPath body = new SVGPath();
		body.setContent("M 1642.83 445.426 C 1646.957 448.106 1660.617 452.83
1671.723 443.766 Q 1678.362 440.191 1680.66 439.681 L 1681.809 440.574 Q 1684.532 435.426
1686.872 435.043 C 1688.915 435.468 1688 437.553 1686.872 437.681 C 1686.021 437.979
1686.574 439.553 1690.106 437.383 C 1693.553 436.234 1695.766 446.787 1683.468 446.234 C
1683.979 447.255 1681.426 448.021 1681.298 447.638 L 1672.83 452.234 Q 1674.064 469.681
1671.34 474.277 L 1671.043 477.638 Q 1674.404 482.362 1672.702 484.872 C 1671 487.383
1659.17 490.064 1659 482.106 Q 1660.957 477.851 1661.255 477.681 L 1661.085 475 Q 1658.351
469.426 1657.426 469.596 C 1656.851 469.617 1654.745 470.489 1654.489 477.34 Q 1657.426
481.553 1656.149 485.128 C 1654.872 488.702 1647.468 489.085 1644.66 487.298 Q 1643.383
473.128 1641.851 459.979 L 1640.064 463.681 L 1641.468 467.511 Q 1641.255 468.915 1640.064
468.489  C 1639.553 470.234 1629.638 470.234 1633.383 461.085 Q 1633.213 460.021 1634.745
458.872 C 1634.66 456.787 1639.681 445.809 1642.83 445.426");
		body.setFill(Color.rgb(230, 230, 230));
		body.setStroke(Color.BLACK);
		body.setStrokeWidth(2);

		return body;
	}

	private SVGPath Head() {
		SVGPath head = new SVGPath();
		head.setContent("M 1642.277 444.489 Q 1657.851 455.168 1671.723 443.233 Q
1671.723 441.851 1671.383 441.75 Q 1680.83 437.596 1681 425.596 C 1681.17 413.596 1678.191
405.085 1670.021 399.979 C 1661.851 394.872 1643.144 392.745 1632.54 407.809 C 1621.936
422.872 1637.936 444.66 1642.277 444.489");
		head.setFill(Color.WHITE);
		head.setStroke(Color.BLACK);
		head.setStrokeWidth(2);

		return head;
	}
```

```
	private SVGPath Head2() {
		SVGPath head2 = new SVGPath();
		head2.setContent("M 1642.362 444.596 C 1650.915 447.851 1664.255 445.362
1671.404 441.723 L 1671.979 443.233 Q 1658.957 455.319 1642.362 444.596");
		head2.setFill(Color.rgb(230,230,230));
		head2.setStroke(Color.BLACK);
		head2.setStrokeWidth(2);

		return head2;
	}

	private SVGPath Head3() {
		SVGPath head3 = new SVGPath();
		head3.setContent("M 1669.809 407.383 C 1680.809 414.787 1678.625 433.813
1667.894 438.915 C 1659.213 442.617 1644.915 444.915 1640.957 439.553 C 1637 434.191
1630.234 419.511 1637.383 414.149 Q 1652.702 402.277 1669.809 407.383");
		head3.setFill(Color.rgb(27,27,27));
		head3.setStroke(Color.rgb(184,184,184));
		head3.setStrokeWidth(2);

		return head3;
	}

	private SVGPath Ear1() {
		SVGPath ear1 = new SVGPath();
		ear1.setContent("M 1629.213 420.787 Q 1623.596 421.489 1622.766 426.404 C
1621.936 431.319 1625.255 438.915 1633.426 435.787");
		ear1.setFill(Color.rgb(194,194,194));
		ear1.setStroke(Color.BLACK);
		ear1.setStrokeWidth(2);

		return ear1;
	}

	private SVGPath Ear2() {
		SVGPath ear2 = new SVGPath();
		ear2.setContent("M 1678.681 410.319 Q 1686.66 407.894 1688.638 417.213 Q
1689.021 426.021 1680.809 425.638");
		ear2.setFill(Color.rgb(194, 194, 194));
		ear2.setStroke(Color.BLACK);
		ear2.setStrokeWidth(2);

		return ear2;
	}

	private SVGPath prepareBase1() {
		SVGPath Base2 = new SVGPath();
```

```
        Base2.setContent("M 1302.845 483.5 L 1852.2 483.5 L 1785.9 695.8 L 1743.0 664.2 L
1691.5 782.7 L 1663.3 762.0 L 1577.5 912.4 L 1491.7 762.0 L 1463.1 782.7 L 1412.122 664.234 L
1369.228 695.894 L 1302.845 483.468");
        Base2.setFill(Color.web("#472502"));
        Base2.setStroke(Color.web("#4C443C"));
        Base2.setStrokeWidth(10);

        return Base2;
    }

    private void blackHoleRotate(Group group) {
        RotateTransition rotateTransition = new RotateTransition();
        rotateTransition.setDuration(Duration.millis(500));
        rotateTransition.setNode(group);
        rotateTransition.setByAngle(-360);
        rotateTransition.setCycleCount(rotateTransition.INDEFINITE);
        rotateTransition.setAutoReverse(false);
        rotateTransition.play();
    }

    private void baseMovement(Group group) {

        TranslateTransition line = new TranslateTransition();
        line.setByY(100);
        line.setAutoReverse(true);
        line.setCycleCount(line.INDEFINITE);
        line.setDuration(Duration.millis(10000));
        line.setNode(group);
        line.play();
    }

    private Node prepareMoon() {
        PhongMaterial moonMap = new PhongMaterial();
        moonMap.setDiffuseMap(new Image("8k_moon.jpg"));

        moon.setRotationAxis(Rotate.Y_AXIS);
        moon.setMaterial(moonMap);
        return moon;
    }

    private Node prepareMoon2() {
        PhongMaterial moonMap2 = new PhongMaterial();
        moonMap2.setDiffuseMap(new Image("8k_moon.jpg"));

        moon2.setRotationAxis(Rotate.Y_AXIS);
        moon2.setMaterial(moonMap2);
        return moon2;
    }
```

```
	private ImageView prepareImageView() { //BackGround
		Image image = new Image("8k_stars.jpg");
		ImageView imageView = new ImageView(image);
		imageView.getTransforms().add(new Translate(-image.getWidth()/4,-
image.getHeight()/4,1600));
		imageView.setPreserveRatio(true);

		return imageView;
	}

	private SVGPath moonBusFire1() {
		SVGPath fire1 = new SVGPath();
		fire1.setContent("M 316.412 708.195 Q 343.694 745.855 324.431 800.651 Q
290.284 851.643 240.878 814.812 Q 258.591 809.273 260.006 800.417 C 248.04 805.094 231.381
801.808 222.448 795.306 C 213.515 788.803 196.887 768.049 186.031 767.172 C 196.201 761.195
206.079 735.595 210.746 731.188 C 215.412 726.781 224.773 717.236 259.569 715.673 Q 244.325
703.532 230.476 703.278 C 249.67 685.447 287.307 674.697 316.412 708.195");
		fire1.setFill(Color.web("#FE5100"));

		return fire1;
	}

	private SVGPath moonBusFire2() {
		SVGPath fire2 = new SVGPath();
		fire2.setContent("M 312.813 721.243 Q 332.024 747.734 319.692 787.962 Q 303.42
810.114 271.423 793.605 Q 278.003 789.759 279.04 784.939 Q 267.153 786.334 256.289 778.543 C
245.425 770.753 239.978 762.492 233.807 762.664 C 245.162 755.129 242.418 736.082 275.519
731.755 Q 269.395 728.284 262.658 725.593 Q 284.836 700.746 312.813 721.243");
		fire2.setFill(Color.web("#FFA946"));

		return fire2;
	}

	private SVGPath moonBusFire3() {
		SVGPath fire3 = new SVGPath();
		fire3.setContent("M 313.658 739.363 L 313.658 772.34 Q 306.427 773.459 298.105
769.815 C 289.502 762.922 291.53 761.131 281.74 757.331 C 290.349 755.905 288.014 749.955
299.462 743.505 Q 310.91 737.055 313.658 739.363");
		fire3.setFill(Color.web("#FFFF8D"));

		return fire3;
	}

	private void MouseControl(SmartGroup group,Scene scene,Stage stage) {
		Rotate xRotate;
		Rotate yRotate;
```

```
        group.getTransforms().addAll(
                        xRotate = new Rotate(0, Rotate.X_AXIS),
                        yRotate = new Rotate(0, Rotate.Y_AXIS)
                        );
        xRotate.angleProperty().bind(angleX);
        yRotate.angleProperty().bind(angleY);

        scene.setOnMousePressed(event ->{
                anchorX = event.getSceneX();
                anchorY = event.getSceneY();
                anchorAngleX = angleX.get();
                anchorAngleY = angleY.get();
        });

        group.setOnMouseDragged(event ->{
                angleX.set(anchorAngleX - (anchorY - event.getSceneY()));
                angleY.set(anchorAngleY + anchorX - event.getSceneX());
        });

        group.addEventHandler(ScrollEvent.SCROLL, event ->{
                double delta = event.getDeltaY();
                group.translateZProperty().set(group.getTranslateZ() + delta);
        });
}

class SmartGroup extends Group{
        Rotate r;
        Transform t = new Rotate();

        void rotateByX(int ang) {
                r = new Rotate(ang, Rotate.X_AXIS);
                t = t.createConcatenation(r);
                this.getTransforms().clear();
                this.getTransforms().addAll(t);
        }

        void rotateByY(int ang) {
                r = new Rotate(ang, Rotate.Y_AXIS);
                t = t.createConcatenation(r);
                this.getTransforms().clear();
                this.getTransforms().addAll(t);
        }
}

public static void main(String[]args) {
        launch(args);
}
```

```
	private SVGPath blackHole1() {
		SVGPath blackhole1 = new SVGPath();
		blackhole1.setContent("M 334 169 Q 351 192 347 212 Q 342 232 333 247 Q 318 275
292 285 C 266 294 224 290 208 273 C 191 257 183 239 184 217 S 185 196 197 168 S 195 183 200
200 S 199 220 208 230 L 220 251 L 226 261 Q 248 274 264 273 C 280 272 311 265 323 247 Q 353 210
334 169");
		blackhole1.setFill(Color.rgb(102, 6, 0));
		blackhole1.setStroke(Color.rgb(252, 213, 107));
		blackhole1.setStrokeWidth(3);

		return blackhole1;
	}

	private SVGPath blackHole2() {
		SVGPath blackhole2 = new SVGPath();
		blackhole2.setContent("M 314.8 144.7 L 329 162 Q 344 189.8 332.5 199.5 C 331 209
324.9 233.7 304.5 245 C 284 256 277.7 268.3 248.7 270.9 C 228.9 281 206.9 290.9 174 273 C 141.5
255 106.3 203.4 98.7 174.6 Q 91 145.9 104.8 174.6 Q 105.8 120.9 129 101 C 145.6 78 170.8 50.9
192.2 46.3 C 213.59 41.766 211.9 35.6 183.9 65.7 Q 155.89 95.89 149.7 112.2 Q 177.8 219.4 207.9
229.6 C 238 239.8 241.6 247.5 274.8 233.2 C 308 218.9 312.6 204.1 318.7 189 Q 324.9 174.5 316.7
158 ");
		blackhole2.setFill(Color.rgb(252, 157, 22));
		blackhole2.setStroke(Color.rgb(102, 6, 0));
		blackhole2.setStrokeWidth(3);

		return blackhole2;
	}

	private SVGPath blackHole3() {
		SVGPath blackhole3 = new SVGPath();
		blackhole3.setContent("M 228 57 L 203.8 79.7 L 179.8 105 Q 157.4 128.2 158.4
155.8 C 159.4 183.3 160.4 197.7 166.6 202.8 C 172.7 207.9 187.7 227.6 201.3 235.2 Q 215 242.7
248.7 241 Q 292.8 226.7 301 217.5 C 309.3 208.4 335.5 200.2 306.5 231.4 Q 277.5 262.5 245.5 269.9
Q 266.8 277.2 192.2 265.6 Q 146 239.5 125.2 206.3 Q 103.8 173.1 128.8 199.5 Q 126.2 187.4 128.8
162.7 C 131.3 138 143.6 122.6 166.1 92 Q 188.5 61.3 228.4 57.2");
		blackhole3.setFill(Color.rgb(246, 227, 105));
		blackhole3.setStroke(Color.rgb(102, 6, 0));
		blackhole3.setStrokeWidth(3);

		return blackhole3;
	}

	private SVGPath blackHole4() {
		SVGPath blackhole4 = new SVGPath();
		blackhole4.setContent("M 245.7 86.1 Q 205.9 105.5 194.7 123.4 C 199.2 110.6 274.8
80.5 292.7 109.1 C 281.5 103.5 251.3 101.4 230.2 114.7 C 209 128 191.1 137.2 189.5 168.3 C 188
199.5 204.8 224.8 219.7 251.1 C 234.6 277.4 276.2 272.3 298.2 265.5 C 285.9 277.4 249.8 279.1 234
```

```
273 C 218.1 267 215.1 265.3 203.9 254.6 C 192.7 243.9 170.1 212.7 164.6 196.4 Q 159 180.1 164.6
159.2 Q 167.1 137.7 183.8 113.7 Q 200.6 89.7 245.7 86.1");
                blackhole4.setFill(Color.rgb(248, 150, 1));
                blackhole4.setStroke(Color.rgb(102, 6, 0));
                blackhole4.setStrokeWidth(3);

                return blackhole4;
        }

        private Circle blackHole() {
                Circle blackhole = new Circle(267,200,73);
                blackhole.setStroke(Color.rgb(252,213,107));
                blackhole.setStrokeWidth(3);

                return blackhole;
        }

        private SVGPath moonBus() {
                SVGPath moonbus = new SVGPath();
                moonbus.setContent("M 258 572 L 296 572 L 457 667 L 810 675 Q 912 682 972 737
Q 1012 808 705.851 832.745 L 454 839 L 401 863 L 350 863 L 358 819 L 321 820 C 344.468 770.745
332.817 719.432 312.149 682.617 Q 278.824 623.259 258.532 572.319");

                ColorInput MoonBusColor2 = new
ColorInput(258.532,737.766,750.4,200,Color.rgb(17,27,44));
                Blend blend2 = new Blend();
                blend2.setTopInput(MoonBusColor2);
                blend2.setMode(BlendMode.SRC_ATOP);

                moonbus.setEffect(blend2);

                return moonbus;
        }

        private SVGPath moonBus2() {
                SVGPath moonbus2 = new SVGPath();
                moonbus2.setContent("M 258 572 L 296 572 L 457 667 L 810 675 Q 912 682 972 737
Q 1012 808 972 737 L 333.576 750.389 C 314.098 703.408 316.677 690.682 312.149 682.617 Q
278.824 623.259 258 572");

                ColorInput MoonBusColor1 = new
ColorInput(240,570,732.4,200,Color.rgb(201,202,205));
                Blend blend1 = new Blend();
                blend1.setTopInput(MoonBusColor1);
                blend1.setMode(BlendMode.SRC_ATOP);

                moonbus2.setEffect(blend1);
```

```
            return moonbus2;
        }

        private Ellipse moonBus1() {
            Ellipse moonbus1 = new Ellipse(297,754,62,72);
            moonbus1.setFill(Color.BLUE);

            return moonbus1;
        }

        private Ellipse moonBus11() {
            Ellipse moonbus11 = new Ellipse(297,754,55,60);
            moonbus11.setFill(Color.RED);

            return moonbus11;
        }

        private SVGPath windows1() {
            SVGPath windows1 = new SVGPath();
            windows1.setContent("M 911.514 697.086 L 926.957 724.489 L 961.776 726.254 Q
926.875 699.347 911.514 697.086");

            windows1.setStroke(Color.BLACK);
            windows1.setStrokeWidth(2);
            windows1.setFill(Color.web("#FF6F1C"));

            return windows1;
        }

        private SVGPath windows2() {
            SVGPath windows2 = new SVGPath();
            windows2.setContent("M 891.468 694.617 L 895.298 694.518 L 899.128 698.702 L
895.298 698.702 L 891.468 694.617");

            windows2.setStroke(Color.BLACK);
            windows2.setStrokeWidth(1);
            windows2.setFill(Color.web("#FF6F1C"));

            return windows2;
        }

        private SVGPath windows3() {
            SVGPath windows3 = new SVGPath();
            windows3.setContent("M 899.128 702.532 L 902.191 702.532 L 906.021 707.894 L
902.574 707.894 L 899.128 702.532");

            windows3.setStroke(Color.BLACK);
            windows3.setStrokeWidth(1);
```

```
                windows3.setFill(Color.web("#FF6F1C"));

                return windows3;
        }

        private SVGPath windows4() {
                SVGPath windows4 = new SVGPath();
                windows4.setContent("M 906.021 713.255 L 910.106 713.255 L 911.514 719.128 L
908.768 719.128 L 906.021 713.255");

                windows4.setStroke(Color.BLACK);
                windows4.setStrokeWidth(1);
                windows4.setFill(Color.web("#FF6F1C"));

                return windows4;
        }

        private SVGPath windows5() {
                SVGPath windows5 = new SVGPath();
                windows5.setContent("M 870.787 688.745 L 872.957 688.745 L 875.128 692.319 L
873.34 692.319 L 870.787 688.745");

                windows5.setStroke(Color.BLACK);
                windows5.setStrokeWidth(1);
                windows5.setFill(Color.web("#FF6F1C"));

                return windows5;
        }

        private SVGPath windows6() {
                SVGPath windows6 = new SVGPath();
                windows6.setContent("M 878.702 697.086 L 881.511 697.086 L 884.83 702.532 L
882.787 702.532 L 878.702 697.086");

                windows6.setStroke(Color.BLACK);
                windows6.setStrokeWidth(1);
                windows6.setFill(Color.web("#FF6F1C"));

                return windows6;
        }

        private SVGPath windows7() {
                SVGPath windows7 = new SVGPath();
                windows7.setContent("M 885.851 710.447 L 889.681 710.447 L 891.468 716.191 L
888.66 716.191 L 885.851 710.447");

                windows7.setStroke(Color.BLACK);
                windows7.setStrokeWidth(1);
```

```
                windows7.setFill(Color.web("#FF6F1C"));

                return windows7;
        }

        private SVGPath windows8() {
                SVGPath windows8 = new SVGPath();
                windows8.setContent("M 847.553 684.149 L 850.489 684.149 L 853.426 687.468 L
850.872 687.468 L 847.553 684.149");

                windows8.setStroke(Color.BLACK);
                windows8.setStrokeWidth(1);
                windows8.setFill(Color.web("#FF6F1C"));

                return windows8;
        }

        private SVGPath windows9() {
                SVGPath windows9 = new SVGPath();
                windows9.setContent("M 857.511 694.518 L 860.574 694.518 L 863.638 698.702 L
860.319 698.702 L 857.511 694.518");

                windows9.setStroke(Color.BLACK);
                windows9.setStrokeWidth(1);
                windows9.setFill(Color.web("#FF6F1C"));

                return windows9;
        }

        private SVGPath windows10(){
                SVGPath windows10 = new SVGPath();
                windows10.setContent("M 864.66 706.936 L 868.617 707.255 L 870.787 712.936 L
867.213 713.255 L 864.66 706.936");

                windows10.setStroke(Color.BLACK);
                windows10.setStrokeWidth(1);
                windows10.setFill(Color.web("#FF6F1C"));

                return windows10;
        }

        private SVGPath windows11() {
                SVGPath windows11 = new SVGPath();
                windows11.setContent("M 826.064 680.957 L 827.255 680.511 L 830.447 681.149 L
827.957 685.043 L 826.064 680.957");

                windows11.setStroke(Color.BLACK);
                windows11.setStrokeWidth(1);
```

```
		windows11.setFill(Color.web("#FF6F1C"));

		return windows11;
	}

	private SVGPath windows12() {
		SVGPath windows12 = new SVGPath();
		windows12.setContent("M 833.894 691.553 L 836.957 690.979 L 840.979 696.149 L
837.66 696.61 L 833.894 691.553");

		windows12.setStroke(Color.BLACK);
		windows12.setStrokeWidth(1);
		windows12.setFill(Color.web("#FF6F1C"));

		return windows12;
	}

	private SVGPath windows13() {
		SVGPath windows13 = new SVGPath();
		windows13.setContent("M 841.298 705.532 L 845.894 705.532 L 848.83 712.362 L
844.553 713.255 L 841.298 705.532");

		windows13.setStroke(Color.BLACK);
		windows13.setStrokeWidth(1);
		windows13.setFill(Color.web("#FF6F1C"));

		return windows13;
	}

	private SVGPath windows14() {
		SVGPath windows14 = new SVGPath();
		windows14.setContent("M 799.362 680.511 L 802.936 680.511 L 806.511 683.894 L
803.83 684.723 L 799.362 680.511");

		windows14.setStroke(Color.BLACK);
		windows14.setStrokeWidth(1);
		windows14.setFill(Color.web("#FF6F1C"));

		return windows14;
	}

	private SVGPath windows15() {
		SVGPath windows15 = new SVGPath();
		windows15.setContent("M 809.702 690.532 L 813.149 690.213 L 816.596 696.61 L
813.149 697.234 L 809.702 690.532");

		windows15.setStroke(Color.BLACK);
		windows15.setStrokeWidth(1);
```

```
		windows15.setFill(Color.web("#FF6F1C"));

		return windows15;
	}

	private SVGPath windows16() {
		SVGPath windows16 = new SVGPath();
		windows16.setContent("M 817.17 704.702 L 822.149 703.809 L 824.383 711.915 L
820.362 712.872 L 817.17 704.702");

		windows16.setStroke(Color.BLACK);
		windows16.setStrokeWidth(1);
		windows16.setFill(Color.web("#FF6F1C"));

		return windows16;
	}

	private SVGPath windows17() {
		SVGPath windows17 = new SVGPath();
		windows17.setContent("M 774.787 679.809 L 778.298 679.809 L 781.961 683.769 L
778.553 684.404 L 774.787 679.809");

		windows17.setStroke(Color.BLACK);
		windows17.setStrokeWidth(1);
		windows17.setFill(Color.web("#FF6F1C"));

		return windows17;
	}

	private SVGPath windows18() {
		SVGPath windows18 = new SVGPath();
		windows18.setContent("M 783.468 691.426 L 789.213 690.979 L 792.979 696.277 L
788.957 698.128 L 783.468 691.426");

		windows18.setStroke(Color.BLACK);
		windows18.setStrokeWidth(1);
		windows18.setFill(Color.web("#FF6F1C"));

		return windows18;
	}

	private SVGPath windows19() {
		SVGPath windows19 = new SVGPath();
		windows19.setContent("M 792.979 705.149 L 797.298 704.957 L 800.702 712.447 L
796.745 712.872 L 792.979 705.149");

		windows19.setStroke(Color.BLACK);
		windows19.setStrokeWidth(1);
```

```
		windows19.setFill(Color.web("#FF6F1C"));

		return windows19;
	}

	private SVGPath door() {
		SVGPath door = new SVGPath();
		door.setContent("M 721.939 681.63 L 753.426 681 Q 757.681 680.787 761.596
684.723 C 765.511 686.66 778.319 708.489 778.553 712.404 C 778.787 716.319 778.617 719.723
776.574 720.319 Q 774.532 720.915 745.426 720.83 Q 739.979 719.298 738.277 712.404 C 733.936
696.745 716.234 682.106 721.939 681.63");

		door.setStroke(Color.BLACK);
		door.setStrokeWidth(1);
		door.setFill(Color.web("#5D687C"));

		return door;
	}

	private Rectangle TextBox() {
		Rectangle textbox = new Rectangle();
		textbox.setX(1100);
		textbox.setY(150);
		textbox.setWidth(600);
		textbox.setHeight(700);
		textbox.setFill(Color.web("#A599B5"));
		textbox.setOpacity(0.5);

		return textbox;
	}

	private Text Title(String string) {
		Text text = new Text();
		text.setWrappingWidth(500);
		text.setTextAlignment(TextAlignment.CENTER);
		text.setText("" + string +"");
		text.setX(1150);
		text.setY(220);
		text.setFill(Color.YELLOW);
		text.setFont(Font.font("verdana", FontWeight.BOLD, FontPosture.REGULAR, 50));

		Reflection r = new Reflection();
		r.setBottomOpacity(0.0);
		r.setTopOpacity(0.7);
		r.setTopOffset(0.0);
		r.setFraction(0.7);
		text.setEffect(r);
```

```
        return text;
}

private Text TitleBus(String string){
        Text text = new Text();
        text.setWrappingWidth(500);
        text.setTextAlignment(TextAlignment.CENTER);
        text.setText("" + string +"");
        text.setX(1150);
        text.setY(220);
        text.setFill(Color.YELLOW);
        text.setFont(Font.font("verdana", FontWeight.BOLD, FontPosture.REGULAR, 30));

        Reflection r = new Reflection();
        r.setBottomOpacity(0.0);
        r.setTopOpacity(0.7);
        r.setTopOffset(0.0);
        r.setFraction(0.7);
        text.setEffect(r);

        return text;
}

private Text Detail(String string) {
        Text text = new Text();
        text.setText("" + string + "");
        text.setWrappingWidth(500);
        text.setX(1150);
        text.setY(320);
        text.setFill(Color.web("#558C8C"));
        text.setFont(Font.font("verdana", FontWeight.BOLD, FontPosture.REGULAR, 20));

        return text;
}

private Button Back(Stage stage,Scene scene) {
        Button button = new Button();
        button.setTranslateX(70);
        button.setTranslateY(50);
        button.setFont(Font.font("verdana", FontWeight.BOLD, FontPosture.REGULAR, 40));
        button.setText("Back");
        button.setStyle("-fx-text-fill: green");

        button.setOnMouseClicked(event ->{
                stage.setScene(scene);
        });
        return button;
}
```

```
	private Text BaseText(String string) {
		Text text = new Text();
		text.setX(1515);
		text.setY(300);

		text.setFont(Font.font("verdana", FontWeight.BOLD, FontPosture.REGULAR, 40));
		text.setFill(Color.YELLOW);
		text.setText(""+ string +"");

		Reflection r = new Reflection();
		r.setBottomOpacity(0.0);
		r.setTopOpacity(0.7);
		r.setTopOffset(0.0);
		r.setFraction(0.7);
		text.setEffect(r);

		return text;
	}
}
```