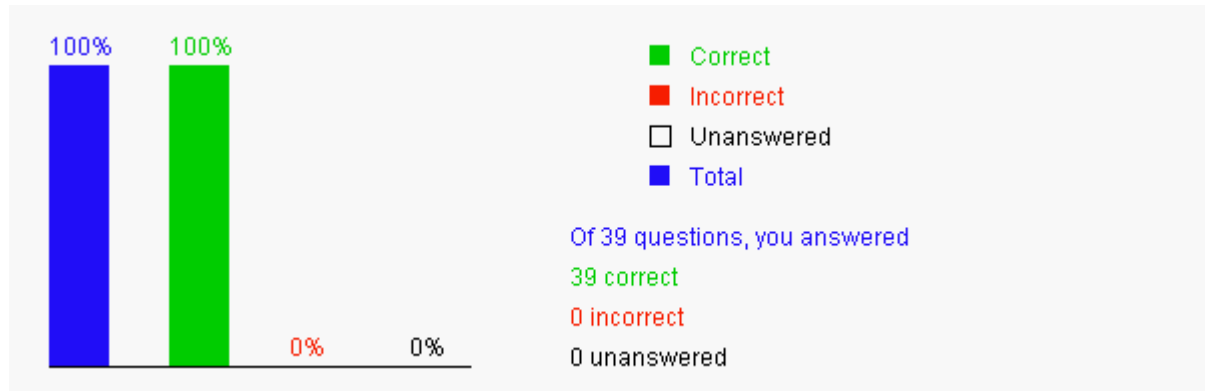


This quiz is for students to practice. A large number of additional quiz is available for instructors using Quiz Generator from the Instructor's Resource Website. Videos for Java, Python, and C++ can be found at <https://yongdanielliang.github.io/revelvideos.html>.

Chapter 14 JavaFX Basics



Please send suggestions and errata to Dr. Liang at y.daniel.liang@gmail.com. Indicate which book and edition you are using. Thanks!

Section 14.2 JavaFX vs Swing and AWT

14.1 Why is JavaFX preferred?

- ☒ A. JavaFX is much simpler to learn and use for new Java programmers.
- ☒ B. JavaFX provides a multi-touch support for touch-enabled devices such as tablets and smart phones.
- ☒ C. JavaFX has a built-in 3D, animation support, video and audio playback, and runs as a standalone application or from a browser.
- ☒ D. JavaFX incorporates modern GUI technologies to enable you to develop rich Internet applications.

Your answer is correct



Section 14.3 The Basic Structure of a JavaFX Program

14.2 Every JavaFX main class _____.

- ☐ A. implements `javafx.application.Application`
- ☒ B. extends `javafx.application.Application`
- ☒ C. overrides `start(Stage s)` method
- ☐ D. overrides `start()` method

Your answer is correct



14.3 Which of the following statements are true?

- ☒ A. A primary stage is automatically created when a JavaFX main class is launched.
- ☒ B. You can have multiple stages displayed in a JavaFX program.
- ☒ C. A stage is displayed by invoking the `show()` method on the stage.
- ☐ D. A scene is placed in the stage using the `addScene` method
- ☒ E. A scene is placed in the stage using the `setScene` method

Your answer is correct



14.4 What is the output of the following JavaFX program?

```
import javafx.application.Application;
import javafx.stage.Stage;

public class Test extends Application {
    public Test() {
        System.out.println("Test constructor is invoked.");
    }

    @Override // Override the start method in the Application class
    public void start(Stage primaryStage) {
        System.out.println("start method is invoked.");
    }

    public static void main(String[] args) {
        System.out.println("launch application.");
        Application.launch(args);
    }
}
```

- ☐ A. launch application. start method is invoked.

- ☐ B. start method is invoked. Test constructor is invoked.
- ☐ C. Test constructor is invoked. start method is invoked.
- ☐ D. launch application. start method is invoked. Test constructor is invoked.
- ☒ E. launch application. Test constructor is invoked. start method is invoked.

Your answer is correct 

Section 14.4 Panes, UI Controls, and Shapes

14.5 Which of the following statements are true?

- ☐ A. A Scene is a Node.
- ☒ B. A Shape is a Node.
- ☐ C. A Stage is a Node.
- ☒ D. A Control is a Node.
- ☒ E. A Pane is a Node.

Your answer is correct 

14.6 Which of the following statements are true?

- ☒ A. A Node can be placed in a Pane.
- ☐ B. A Node can be placed in a Scene.
- ☐ C. A Pane can be placed in a Control.
- ☐ D. A Shape can be placed in a Control.

Your answer is correct 

14.7 Which of the following statements are correct?

- ☒ A. `new Scene(new Button("OK"));`
- ☐ B. `new Scene(new Circle());`
- ☐ C. `new Scene(new ImageView());`
- ☒ D. `new Scene(new Pane());`

Your answer is correct 

14.8 To add a circle object into a pane, use _____.

- ☐ A. `pane.add(circle);`
- ☐ B. `pane.addAll(circle);`
- ☒ C. `pane.getChildren().add(circle);`
- ☒ D. `pane.getChildren().addAll(circle);`

Your answer is correct 

14.9 Which of the following statements are correct?

- ☒ A. Every subclass of Node has a no-arg constructor.
- ☒ B. Circle is a subclass of Node.
- ☒ C. Button is a subclass of Node.
- ☒ D. Pane is a subclass of Node.
- ☐ E. Scene is a subclass on Node.

Your answer is correct 

Section 14.5 Binding Properties

14.10 Which of the following are binding properties?

- ☐ A. Integer
- ☐ B. Double
- ☒ C. IntegerProperty
- ☒ D. DoubleProperty
- ☐ E. String

Your answer is correct 

14.11 Which of the following can be used as a source for binding properties?

- ☐ A. Integer

- ☐ B. Double
- ☒ C. IntegerProperty
- ☒ D. DoubleProperty
- ☐ E. String

Your answer is correct



14.12 Suppose a JavaFX class has a binding property named weight of the type DoubleProperty. By convention, which of the following methods are defined in the class?

- ☒ A. public double getWeight()
- ☒ B. public void setWeight(double v)
- ☒ C. public DoubleProperty weightProperty()
- ☐ D. public double weightProperty()
- ☐ E. public DoubleProperty WeightProperty()

Your answer is correct



14.13 What is the output of the following code?

```
import javafx.beans.property.IntegerProperty;
import javafx.beans.property.SimpleIntegerProperty;

public class Test {
    public static void main(String[] args) {
        IntegerProperty d1 = new SimpleIntegerProperty(1);
        IntegerProperty d2 = new SimpleIntegerProperty(2);
        d1.bind(d2);
        System.out.print("d1 is " + d1.getValue()
            + " and d2 is " + d2.getValue());
        d2.setValue(3);
        System.out.println(", d1 is " + d1.getValue()
            + " and d2 is " + d2.getValue());
    }
}
```

- ☒ A. d1 is 2 and d2 is 2, d1 is 3 and d2 is 3
- ☐ B. d1 is 2 and d2 is 2, d1 is 2 and d2 is 3
- ☐ C. d1 is 1 and d2 is 2, d1 is 1 and d2 is 3
- ☐ D. d1 is 1 and d2 is 2, d1 is 3 and d2 is 3

Your answer is correct



14.14 What is the output of the following code?

```
import javafx.beans.property.IntegerProperty;
import javafx.beans.property.SimpleIntegerProperty;

public class Test {
    public static void main(String[] args) {
        IntegerProperty d1 = new SimpleIntegerProperty(1);
        IntegerProperty d2 = new SimpleIntegerProperty(2);
        d1.bindBidirectional(d2);
        System.out.print("d1 is " + d1.getValue()
            + " and d2 is " + d2.getValue());
        d1.setValue(3);
        System.out.println(", d1 is " + d1.getValue()
            + " and d2 is " + d2.getValue());
    }
}
```

- ☒ A. d1 is 2 and d2 is 2, d1 is 3 and d2 is 3
- ☐ B. d1 is 2 and d2 is 2, d1 is 2 and d2 is 3
- ☐ C. d1 is 1 and d2 is 2, d1 is 1 and d2 is 3
- ☐ D. d1 is 1 and d2 is 2, d1 is 3 and d2 is 3

Your answer is correct



Section 14.6 Common Properties and Methods for Nodes

14.15 Which of the following statements correctly sets the fill color of circle to black?

- ☒ A. circle.setFill(Color.BLACK);
- ☐ B. circle.setFill(Color.black);
- ☒ C. circle.setStyle("-fx-fill: black");

- ☐ D. `circle.setStyle("fill: black");`
☐ E. `circle.setStyle("-fx-fill-color: black");`

Your answer is correct



14.16 Which of the following statements correctly rotates the button 45 degrees counterclockwise?

- ☐ A. `button.setRotate(45);`
☐ B. `button.setRotate(Math.toRadians(45));`
☒ C. `button.setRotate(360 - 45);`
☒ D. `button.setRotate(-45);`

Your answer is correct



Section 14.7 The Color Class

14.17 Which of the following statements correctly creates a Color object?

- ☐ A. `new Color(3, 5, 5, 1);`
☒ B. `new Color(0.3, 0.5, 0.5, 0.1);`
☐ C. `new Color(0.3, 0.5, 0.5);`
☒ D. `Color.color(0.3, 0.5, 0.5);`
☒ E. `Color.color(0.3, 0.5, 0.5, 0.1);`

Your answer is correct



Section 14.8 The Font Class

14.18 Which of the following statements correctly creates a Font object?

- ☒ A. `new Font(34);`
☒ B. `new Font("Times", 34);`
☒ C. `Font.font("Times", 34);`
☒ D. `Font.font("Times", FontWeight.NORMAL, 34);`
☒ E. `Font.font("Times", FontWeight.NORMAL, FontPosture.ITALIC, 34);`

Your answer is correct



14.19 Which of the following statements are correct?

- ☒ A. A Color object is immutable.
☒ B. A Font object is immutable.
☒ C. You cannot change the contents in a Color object once it is created.
☒ D. You cannot change the contents in a Font object once it is created.

Your answer is correct



Section 14.9 The Image and ImageView Classes

14.20 Which of the following statements correctly creates an ImageView object?

- ☒ A. `new ImageView("http://www.cs.armstrong.edu/liang/image/us.gif");`
☒ B. `new ImageView(new Image("http://www.cs.armstrong.edu/liang/image/us.gif"));`
☒ C. `new ImageView("image/us.gif");`
☒ D. `new ImageView(new Image("image/us.gif"));`

Your answer is correct



14.21 Analyze the following code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.layout.HBox;
import javafx.scene.layout.Pane;
import javafx.geometry.Insets;
import javafx.stage.Stage;
import javafx.scene.image.Image;
import javafx.scene.image.ImageView;

public class Test extends Application {
    @Override // Override the start method in the Application class
    public void start(Stage primaryStage) {
        // Create a pane to hold the image views
        Pane pane = new HBox(10);
```

```

pane.setPadding(new Insets(5, 5, 5, 5));
Image image = new Image("www.cs.armstrong.edu/liang/image/us.gif");
pane.getChildren().addAll(new ImageView(image), new ImageView(image));

// Create a scene and place it in the stage
Scene scene = new Scene(pane);
primaryStage.setTitle("ShowImage"); // Set the stage title
primaryStage.setScene(scene); // Place the scene in the stage
primaryStage.show(); // Display the stage
}

/**
 * The main method is only needed for the IDE with limited
 * JavaFX support. Not needed for running from the command line.
 */
public static void main(String[] args) {
    launch(args);
}
}

```

- ☐ A. The program runs fine and displays two images.
- ☒ B. `new Image("www.cs.armstrong.edu/liang/image/us.gif")` must be replaced by `new Image("http://www.cs.armstrong.edu/liang/image/us.gif")`.
- ☐ C. The image object cannot be shared by two ImageViews.
- ☐ D. The `addAll` method needs to be replaced by the `add` method.

Your answer is correct 

Section 14.10 Layout Panes

14.22 To add a node into a pane, use _____.

- ☐ A. `pane.add(node);`
- ☐ B. `pane.addAll(node);`
- ☒ C. `pane.getChildren().add(node);`
- ☒ D. `pane.getChildren().addAll(node);`

Your answer is correct 

14.23 To add two nodes `node1` and `node2` into a pane, use _____.

- ☐ A. `pane.add(node1, node2);`
- ☐ B. `pane.addAll(node1, node2);`
- ☐ C. `pane.getChildren().add(node1, node2);`
- ☒ D. `pane.getChildren().addAll(node1, node2);`

Your answer is correct 

14.24 To remove a node from the pane, use _____.

- ☐ A. `pane.remove(node);`
- ☐ B. `pane.removeAll(node);`
- ☒ C. `pane.getChildren().remove(node);`
- ☒ D. `pane.getChildren().removeAll(node);`

Your answer is correct 

14.25 To remove two nodes `node1` and `node2` from a pane, use _____.

- ☐ A. `pane.remove(node1, node2);`
- ☐ B. `pane.removeAll(node1, node2);`
- ☐ C. `pane.getChildren().remove(node1, node2);`
- ☒ D. `pane.getChildren().removeAll(node1, node2);`

Your answer is correct 

14.26 Which of the following statements are correct to create a `FlowPane`?

- ☒ A. `new FlowPane()`
- ☒ B. `new FlowPane(4, 5)`
- ☒ C. `new FlowPane(Orientation.VERTICAL);`
- ☒ D. `new FlowPane(Orientation.VERTICAL, 4, 5);`

Your answer is correct 

14.27 To add a node to the first row and second column in a `GridPane` pane, use _____.

- ☐ A. `pane.getChildren().add(node, 1, 2);`
- ☐ B. `pane.add(node, 1, 2);`
- ☐ C. `pane.getChildren().add(node, 0, 1);`
- ☐ D. `pane.add(node, 0, 1);`
- ☒ E. `pane.add(node, 1, 0);`

Your answer is correct



14.28 To add two nodes `node1` and `node2` to the the first row in a `GridPane` pane, use _____.

- ☒ A. `pane.add(node1, 0, 0); pane.add(node2, 1, 0);`
- ☐ B. `pane.add(node1, node2, 0);`
- ☒ C. `pane.addRow(0, node1, node2);`
- ☐ D. `pane.addRow(1, node1, node2);`
- ☐ E. `pane.add(node1, 0, 1); pane.add(node2, 1, 1);`

Your answer is correct



14.29 To place a node in the left of a `BorderPane` p, use _____.

- ☐ A. `p.setEast(node);`
- ☐ B. `p.placeLeft(node);`
- ☒ C. `p.setLeft(node);`
- ☐ D. `p.left(node);`

Your answer is correct



14.30 To place two nodes `node1` and `node2` in a `HBox` p, use _____.

- ☐ A. `p.add(node1, node2);`
- ☐ B. `p.addAll(node1, node2);`
- ☐ C. `p.getChildren().add(node1, node2);`
- ☒ D. `p.getChildren().addAll(node1, node2);`

Your answer is correct



14.31 Analyze the following code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.stage.Stage;
import javafx.scene.layout.HBox;
import javafx.scene.shape.Circle;

public class Test extends Application {
    @Override // Override the start method in the Application class
    public void start(Stage primaryStage) {
        HBox pane = new HBox(5);
        Circle circle = new Circle(50, 200, 200);
        pane.getChildren().addAll(circle);

        circle.setCenterX(100);
        circle.setCenterY(100);
        circle.setRadius(50);
        pane.getChildren().addAll(circle);

        // Create a scene and place it in the stage
        Scene scene = new Scene(pane);
        primaryStage.setTitle("Test"); // Set the stage title
        primaryStage.setScene(scene); // Place the scene in the stage
        primaryStage.show(); // Display the stage
    }

    /**
     * The main method is only needed for the IDE with limited
     * JavaFX support. Not needed for running from the command line.
     */
    public static void main(String[] args) {
        launch(args);
    }
}
```

- ☒ A. The program has a compile error since the circle is added to a pane twice.
- ☐ B. The program has a runtime error since the circle is added to a pane twice.
- ☐ C. The program runs fine and displays one circle.
- ☐ D. The program runs fine and displays two circles.

Your answer is correct 

Section 14.11 Shapes

14.32 The _____ properties are defined in the javafx.scene.shape.Shape class.

- ☒ A. stroke
- ☒ B. strokeWidth
- ☒ C. fill
- ☐ D. centerX

Your answer is correct 

14.33 The _____ properties are defined in the javafx.scene.text.Text class.

- ☒ A. text
- ☒ B. x
- ☒ C. y
- ☒ D. underline
- ☒ E. strikethrough

Your answer is correct 

14.34 The _____ properties are defined in the javafx.scene.shape.Line class.

- ☒ A. startX
- ☒ B. startY
- ☒ C. endX
- ☒ D. endY
- ☐ E. strikethrough

Your answer is correct 

14.35 The _____ properties are defined in the javafx.scene.shape.Rectangle class.

- ☒ A. width
- ☒ B. x
- ☒ C. y
- ☒ D. height
- ☒ E. arcWidth

Your answer is correct 

14.36 The _____ properties are defined in the javafx.scene.shape.Ellipse class.

- ☒ A. centerX
- ☒ B. centerY
- ☒ C. radiusX
- ☒ D. radiusY

Your answer is correct 

14.37 To construct a Polygon with three points x1, y1, x2, y2, x3, and y3, use _____.

- ☒ A. new Polygon(x1, y1, x2, y2, x3, y3)
- ☐ B. new Polygon(x1, y2, x3, y1, y2, y3)
- ☒ C. Polygon polygon = new Polygon(); polygon.getPoints().addAll(x1, y1, x2, y2, x3, y3)
- ☐ D. Polygon polygon = new Polygon(); polygon.getPoints().addAll(x1, y2, x3, y1, y2, y3)

Your answer is correct 

14.38 To construct a Polyline with three points x1, y1, x2, y2, x3, and y3, use _____.

- ☒ A. new Polyline(x1, y1, x2, y2, x3, y3)
- ☐ B. new Polyline(x1, y2, x3, y1, y2, y3)
- ☒ C. Polyline polyline = new Polygon(); polyline.getPoints().addAll(x1, y1, x2, y2, x3, y3)
- ☐ D. Polyline polyline = new Polygon(); polyline.getPoints().addAll(x1, y2, x3, y1, y2, y3)

Your answer is correct 

14.39 Assume p is a Polygon, to add a point (4, 5) into p, use _____.

- ☐ A. `p.getPoints().add(4); p.getPoints().add(5);`
- ☒ B. `p.getPoints().add(4.0); p.getPoints().add(5.0);`
- ☐ C. `p.getPoints().addAll(4, 5);`
- ☒ D. `p.getPoints().addAll(4.0, 5.0);`

Your answer is correct



Explanation: Note that the `getPoints()` method in Polygon returns an `ObservableList<Double>` (see Figure 14.39). When you add a value to the list, the value must be a double value. It will be an error if it is int value. For example, `Double d = 4` is wrong. It should be `Double d = 4.0`.