CSE3OAD/CSE4OAD – Lab 1

Introduction to Java FX

How to run JavaFX applications on latcs8

- Start **X-Win 32 2014** (before starting PuTTY; choose Windows tab and press OK, if there is no Windows tab you have probably run **XWin Server** which is not the right program)
- Start PuTTY
- Log into latcs8
- Compile your program as usual
- Run your program with `java -Dprism.useFontConfig=false your_program`
- Click 'always allow' if needed

  (Ignore warning messages)

Question 1– Sample Program

Create and run the following program on latcs8. The program is intended to be used as a template for our JavaFX applications.

```
import javafx.application.Application;
import javafx.stage.Stage;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;

public class SampleFX extends Application
{
  public void start(Stage stage)
  {
    build(stage);
    stage.setTitle(getClass().getName());
    stage.show();
  }

  public void build(Stage stage)
  {
    // Define controls and layout
    VBox root = new VBox();

    // To add elements:
    // root.getChildren().addAll(element1, element2, )


    // Set scene and stage
    Scene scene = new Scene(root, 400, 300);
    stage.setScene(scene);
  }
```

```
}
```

Question 2– Positioning and Sizing the Window

a. Make a copy of the sample program and call it `PositionStage`, say. Modify it so that the window (stage) is displayed with the left-top corner at position (100, 100) (the measurements are in pixel).

   Hint: See the lecture notes for Chapter 3 on LMS, or use Google search, if necessary.

b. Modify the program so that it displays a center-adjusted window with the width and height being half of those of the computer screen.

   Hint: The dimensions of the screen can be obtained by

```
java.awt.Dimension screenSize =
  java.awt.Toolkit.getDefaultToolkit().getScreenSize();
double width = screenSize.getWidth();
double height = screenSize.getHeight();
```

Question 3– Hello JavaFX – Specifying Style Rules

a. Make a copy of the sample program and call it `HelloFX`, say. Modify the program to add a label display the message `Hello JavaFX!` on the stage.

b. Modify the program to display the message in the middle of the stage.

   Hint: Consult the JavaFX CSS Reference Guide at:

   `https://docs.oracle.com/javafx/2/api/javafx/scene/doc-files/cssref.html`

c. Make the message bigger and in some color other than black.

Question 4– Button that Changes Color

a. Write a program to display a button labeled "Click Me to Change Color" on a stage. Place the button in the middle of the stage. Make the text on the button bigger than the default size.

b. Modify the program so that when we click on the button, the button's text changes to a random color.

   Hint:

   - Which FX CSS style rule can we use for this task?
   - How do we pass random color (e.g. through RGB components) to the style rule?

   You may choose to implement the event handler by using a lambda expression. But make sure you will try all other options below:

   - A separate class
   - An inner class
   - An anonymous class

Question 5– Appending Text to Text File

a. Write a program that shows

   - text field to enter a sentence (If you wish, you can use method `setMinWidth` to set the width.)
   - a button. When we click on the button, it will append the line in the text field to the text file named `Test.txt`.

   Use the following statement to open the file

   ```
   new PrintWriter(new FileWriter("Test.txt", true), true);
   ```

   The first `true` stands for "append", the second for "auto flush".

   Issue: Where should we open and close the file?

b. Modify the program to do something a little more interesting. Your call.

Question 6– Calculator

Write an application that displays a window containing the following:

- 10 buttons representing the numbers `0-9`.
- Buttons with each of the following symbols: `+, -, *, /, =, Clear.`
- label (empty to start).

Implement appropriate events for each button to make the application behave as a calculator.

Note: Don't worry about the layout of the window elements at this stage. You can come back to that later. In fact, we will do this in Lab 2.

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