

CS 213 – Software Methodology

Spring 2017

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Lecture 4 – Jan 26
Graphical User Interface
Programmatic Design

Preparing to build GUIs in Java FX

- Need to have Java 8 installed (get latest Eclipse: Neon)

- Install e(fx)plugin, see:

<https://www.eclipse.org/efxclipse/install.html>

- To create FX project in Eclipse, do:

File -> New -> Other -> JavaFX -> JavaFX Project

- Class containing main must be a subclass of `javafx.application.Application`

Fahrenheit-Celsius Converter

Version 1

Programmatic Layout

Programmatic Layout – Widgets/ Layout

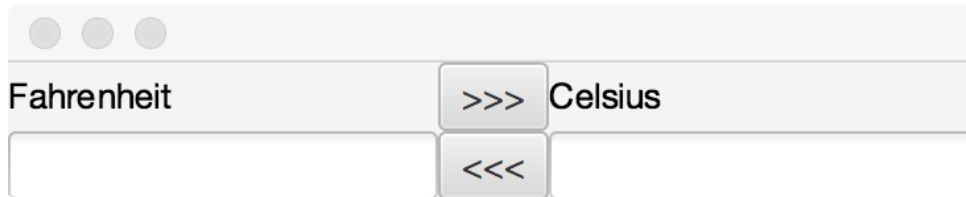
```
@Override
public void start(Stage primaryStage) {
    GridPane root = makeGridPane();
    Scene scene = new Scene(root);
    primaryStage.setScene(scene);
    primaryStage.show();
}

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

private static GridPane makeGridPane() {
    // all the widgets
    Text fText = new Text("Fahrenheit");
    Text cText = new Text("Celsius");
    TextField f = new TextField();
    TextField c = new TextField();
    Button f2c = new Button(">>>");
    Button c2f = new Button("<<<");

    GridPane gridPane = new GridPane();
    gridPane.add(fText, 0, 0);
    gridPane.add(f2c, 1, 0);
    gridPane.add(cText, 2, 0);
    gridPane.add(f, 0, 1);
    gridPane.add(c2f, 1, 1);
    gridPane.add(c, 2, 1);

    return gridPane;
}
```



Programmatic Layout – Gaps/Alignment

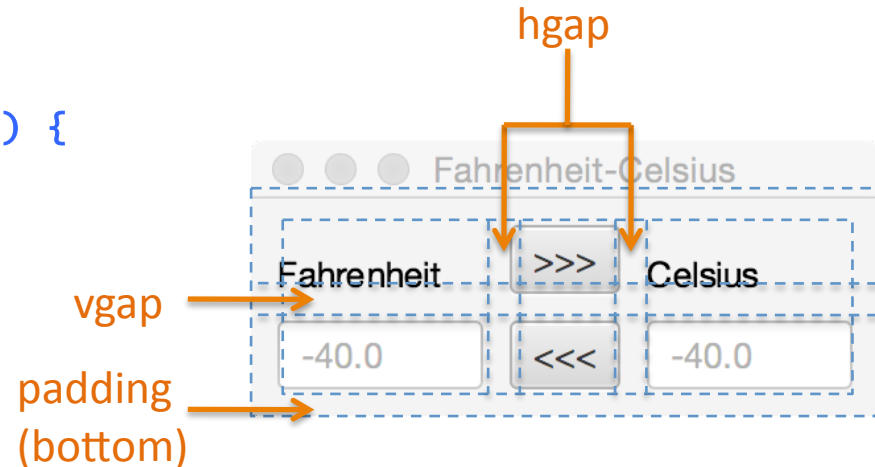
```
@Override
public void start(Stage primaryStage) {
    ...
    primaryStage.setTitle("Fahrenheit-Celsius");
    primaryStage.setResizable(false);
    primaryStage.show();
}
```

```
private static GridPane makeGridPane() {

    // all the widgets
    ...

    f.setPrefColumnCount(5);
    f.setPromptText("-40.0");
    c.setPrefColumnCount(5);
    c.setPromptText("-40.0");
    gridPane.setHgap(10);
    gridPane.setVgap(10);
    gridPane.setPadding(new Insets(10,10,10,10));
    GridPane.setAlignment(fText, VPos.BOTTOM);
    GridPane.setAlignment(cText, VPos.BOTTOM);

    return gridPane;
}
```



t r b l

text aligned with bottom
of its grid cell

Programmatic Layout – Event Handling

```
private static GridPane makeGridPane() {  
  
    ... // all the widgets  
  
    ... // gaps and alignment  
  
    // event handling  
    f2c.setOnAction(new EventHandler<ActionEvent>() {  
        public void handle(ActionEvent e) {  
            float fval = Float.valueOf(f.getText());  
            float cval = (fval-32)*5/9;  
            c.setText(String.format("%.1f", cval));  
        }  
    });  
  
    c2f.setOnAction(new EventHandler<ActionEvent>() {  
        public void handle(ActionEvent e) {  
            float cval = Float.valueOf(c.getText());  
            float fval = cval*9/5+32;  
            f.setText(String.format("%.1f", fval));  
        }  
    });  
  
    return gridPane;  
}
```

