# Practical work-11. Using Layouts in JavaFX.

In this practical work, use the Stage and Scene classes and their methods to create a JavaFX GUI program, create and use multiple Stages and Scene in the program, place various templates (layout) on the Scene to develop the program interface, including Vbox, Hbox, Pane , Using containers such as GridPane, ScrollPane, AnchorPane, and developing the ability to place various UI elements on them.

Example to create stages.

When we create new JavaFX project, we can see the following project structure with files (*HelloApplication.java, HelloController.java and hello-view.fxml*)
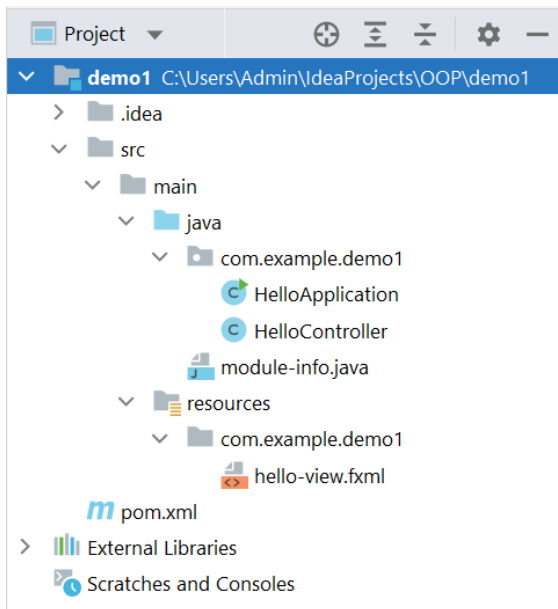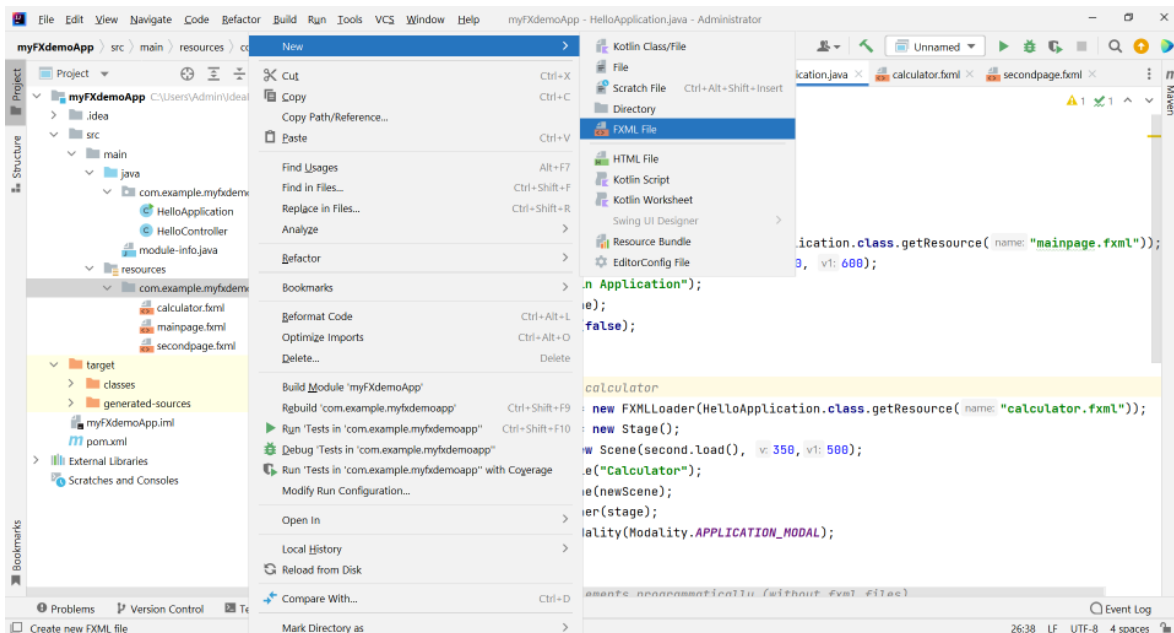

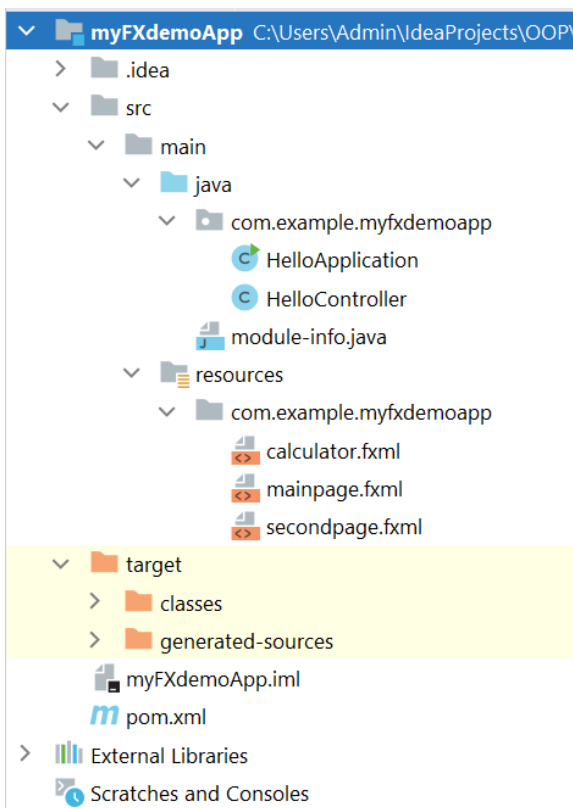Run this project and the following window
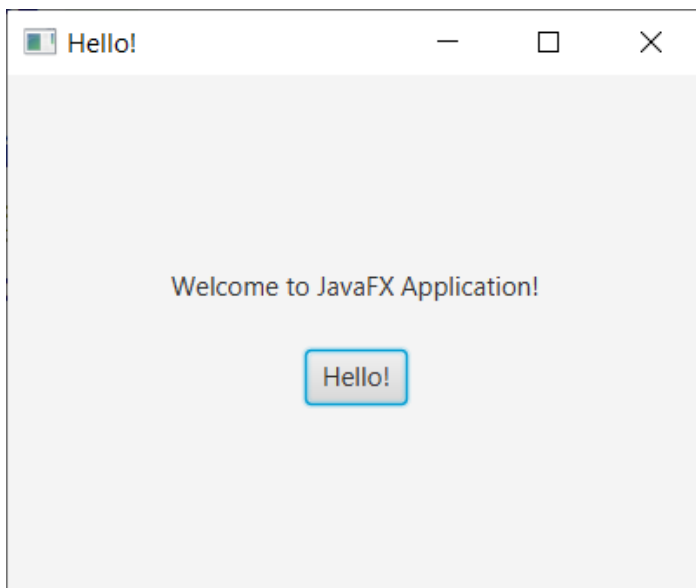
So, in the next step we should add more fxml files to the project, in some cases we can rename the fxml file names and Controllers.

Add new fxml file to the project

Here, FXML file is renamed from *hello-view.fxml* to *mainpage.fxml*, and created two new fxml files (*calculator.fxml, secondpage.fxml*)

Change the content of start() method in HelloApplication class (HelloApplication.java) with following code.

```
FXMLLoader fxmlLoader = new
FXMLLoader(HelloApplication.class.getResource("mainpage.fxml"));
Scene scene = new Scene(fxmlLoader.load(), 600, 600);
stage.setTitle("Main Application");
stage.setScene(scene);
stage.setResizable(false);
stage.show();

//Create stage for calculator
FXMLLoader second = new
FXMLLoader(HelloApplication.class.getResource("calculator.fxml"));
Stage secondStage = new Stage();
Scene newScene = new Scene(second.load(), 350,500);
secondStage.setTitle("Calculator");
secondStage.setScene(newScene);
secondStage.initOwner(stage); // set owner stage
secondStage.show();

//Creating scene elements programmatically (without fxml files)
Label label = new Label("This is second Stage content");
Button button = new Button("Create User");
HBox hBox = new HBox(label, button);
hBox.setSpacing(50);
hBox.setAlignment(Pos.CENTER);

label.setStyle("-fx-text-fill: red; -fx-font-size: 18pt;");
Stage thirdStage = new Stage();
Scene thirdScene = new Scene(hBox, 400,400);
thirdStage.setTitle("Manual created Scene");
thirdStage.setScene(thirdScene);
thirdStage.show();
```

In this code, it is created two more stages and scenes to show calculator and second page on the screen.
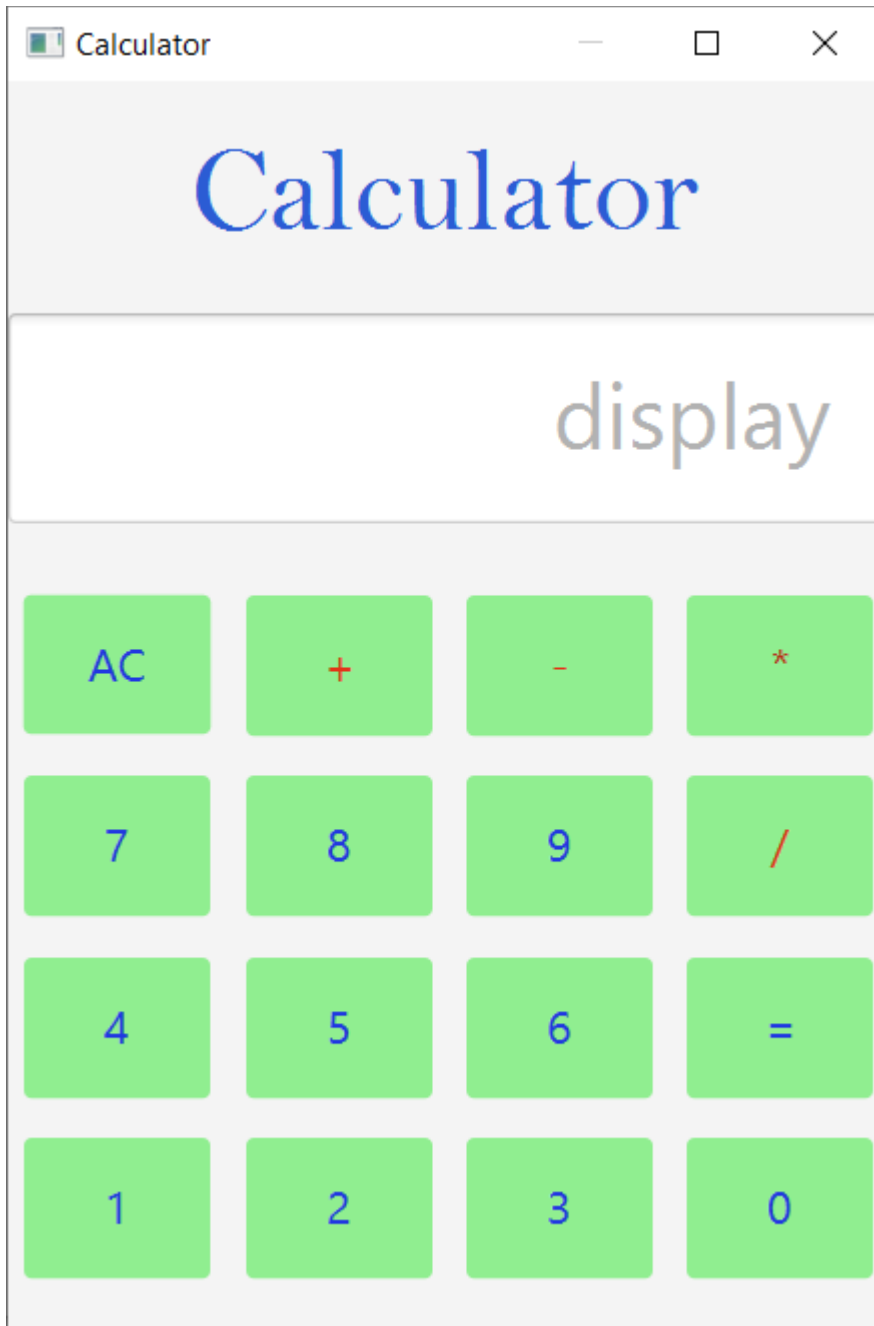
If you have fxml file which is generated by SceneBuilder tool, please use FXMLLoader class for setting it to the Scene. If you want to create scene elements programmatically without fxml files, create your UI controls and layouts inside of the start method (*see the Second page part*).
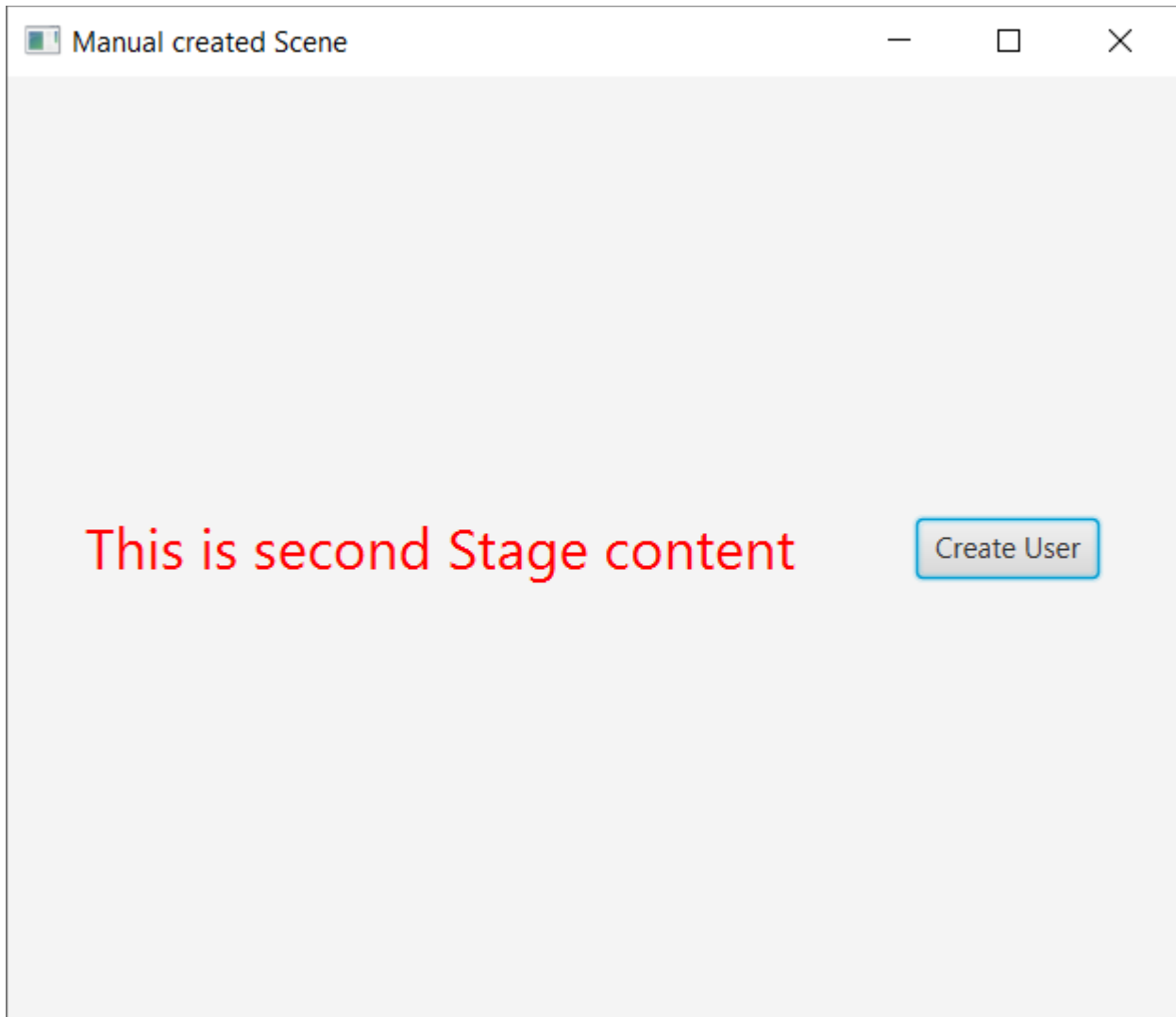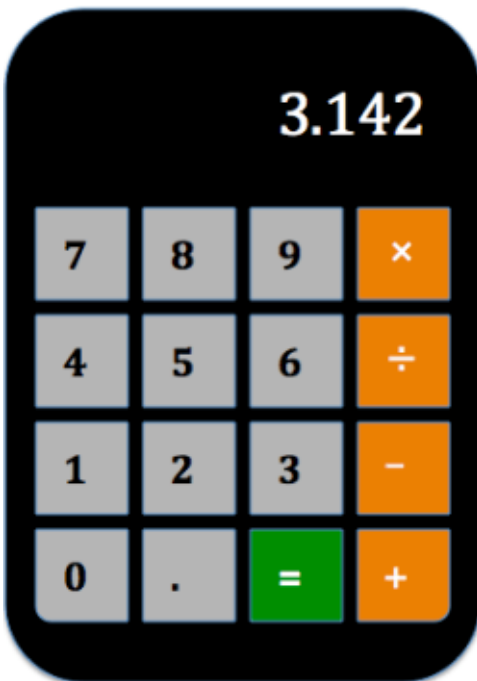
Result
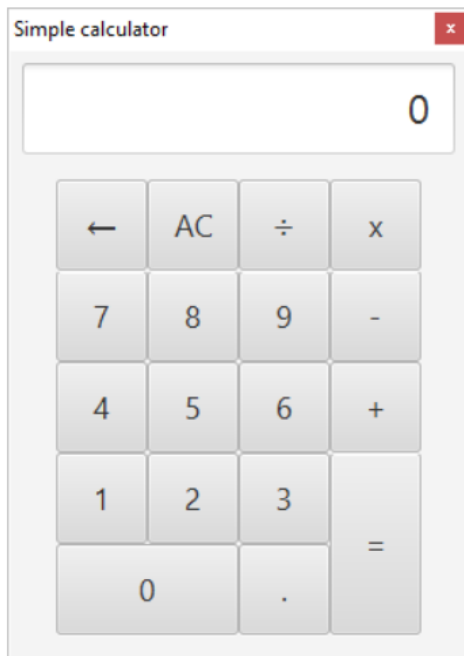1) Main stage;
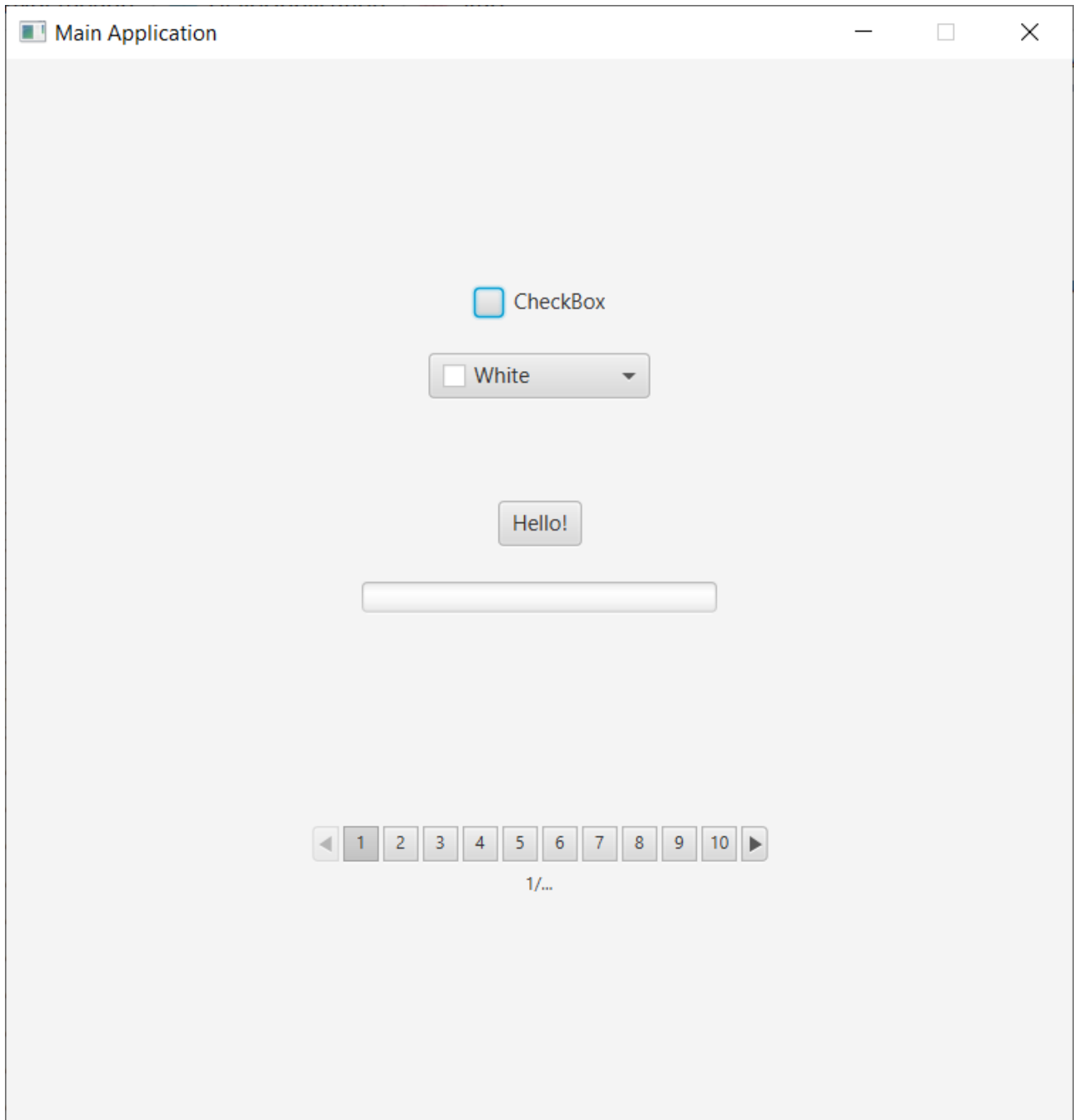
2) Calculator page;

3) Second page which is created programmatically (without fxml files)

Task. Use following layout and UI controls to create Calculator and Login page

Use VBox, GridPane, HBox,, Pane and other layouts to create following interfaces

1) Calculator
2) Login Page

Sample for Calculators

Sample for Login page