JavaFX in 4 Days

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Day 1.3 SceneGraph

SceneGraph

- ❖ What is JavaFX?

- ❖ About SceneGraph

- ❖ How to build Scene

- ❖ Building UI with SceneBuilder

What is JavaFX?

❖ one of Java base GUI API

❖ written by Java Codes

❖ can create UI by XML

❖ can style by CSS

❖ can run on Web or desktop or mobile

Major Keywords

- Web View

- 3D Graphic Features

- Canvas API

- Printing API

- Multi Touch Support

- Hardware Accelerated Graphic Pipeline

- High Performance Media Engine

About SceneGraph

- The underlying framework that renders GUI to screen

- A tree data structure commonly used in 2D, 3D and Video Game Engine

- It maintains internal model of Graphical Objects in your application

- By using scene graph API, system automatically handle the rendering details

Nodes

❖ The individual items that hold in Scene Graph are nodes

Root Node

Branch Node   Branch Node   Branch Node

Leaf Node   Leaf Node   Leaf Node
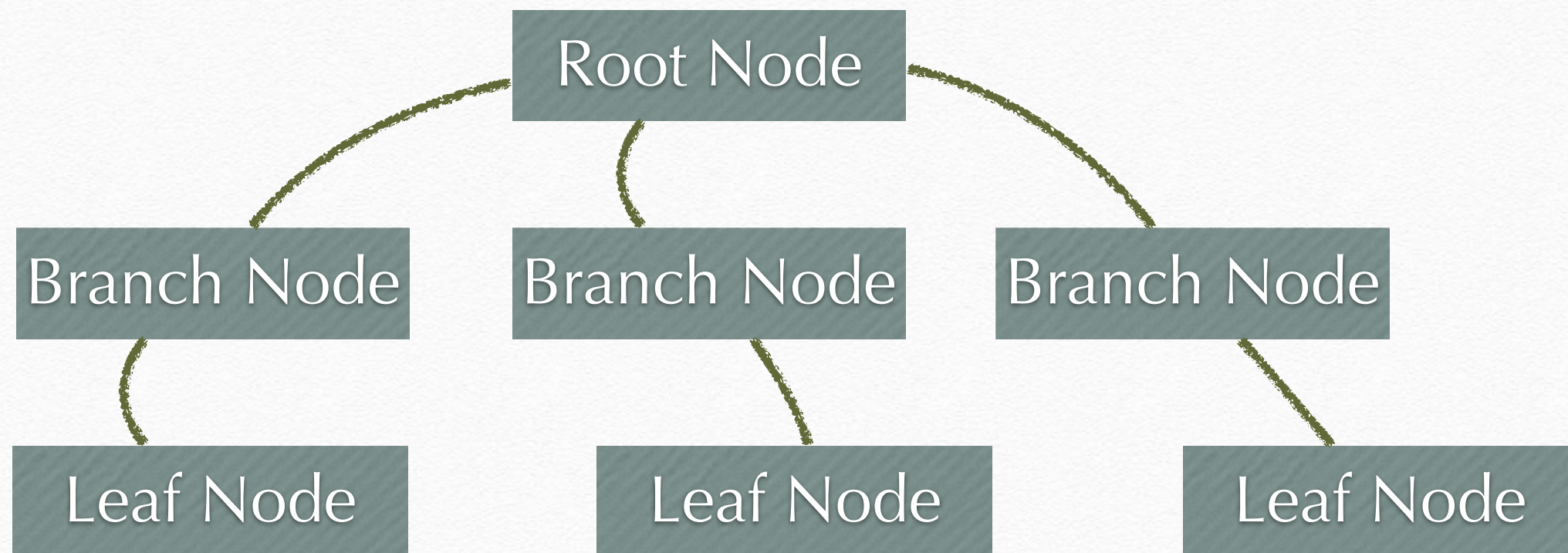
Nodes
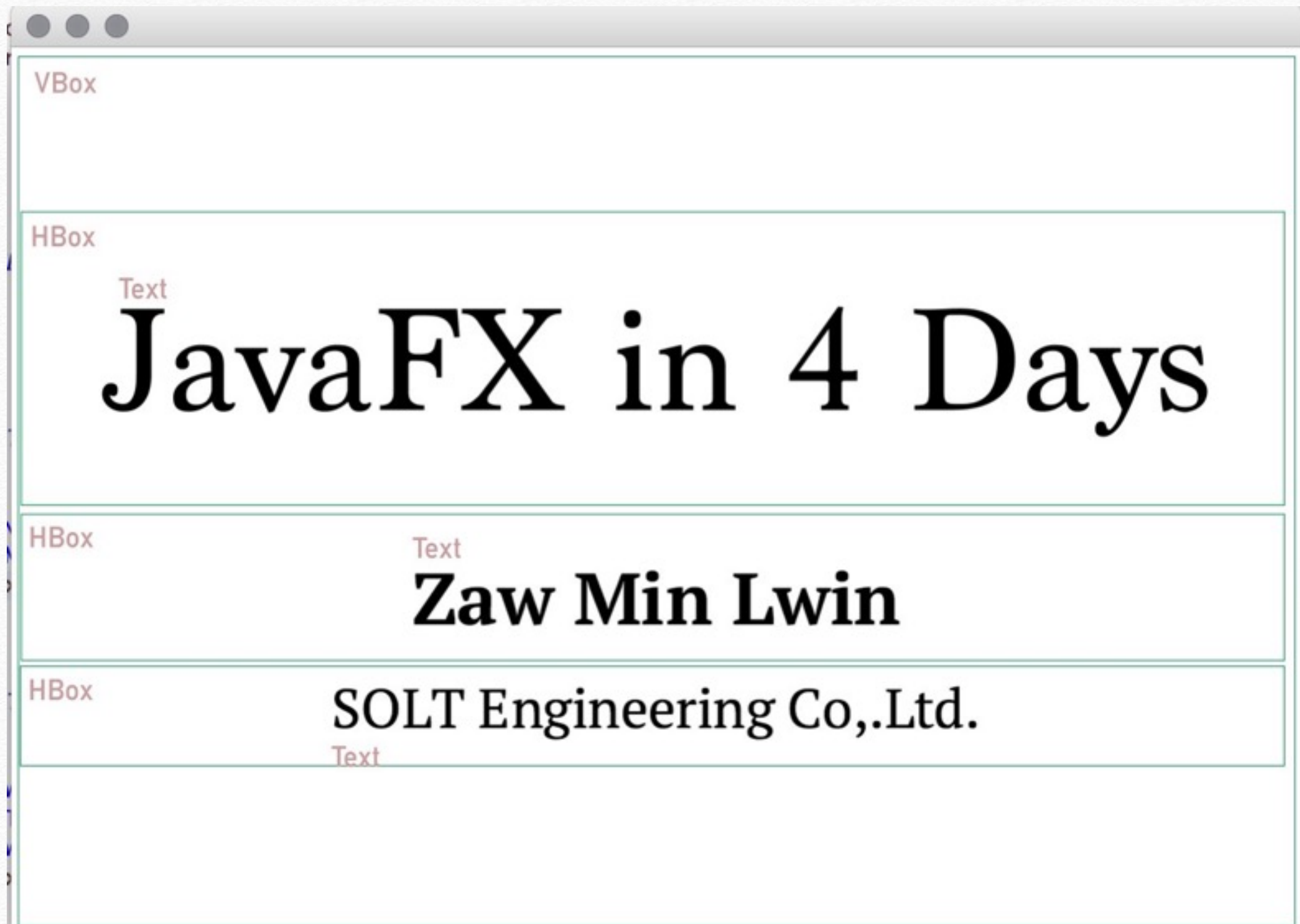
Building UI

- SceneGraph can be written by two ways

    - Writing by Java Objects

  - Writing by FXML

Building UI with Java Objects

❖ JavaFX components are represented by Java Objects

❖ All these elements are sub class of javafx.scene.Node Class.

❖ You can define style, effect, transform and translate to the node by setting these attributes

Building Nodes

```java
VBox box = new VBox();
box.setAlignment(Pos.CENTER);
box.setPrefHeight(453);
box.setPrefWidth(660);

// heading
HBox box1 = new HBox();
box1.setAlignment(Pos.CENTER);
box1.setPrefHeight(154);

Text text1 = new Text("JavaFX in 4 Days");
text1.setFont(Font.font("Marion", 78));
box1.getChildren().add(text1);
```

Building Nodes

```java
// name
HBox box2 = new HBox();
box2.setAlignment(Pos.CENTER);
box2.setPrefHeight(69);

Text text2 = new Text("Zaw Min Lwin");
text2.setFont(new Font("PT Serif", 37));
text2.setStyle("-fx-font-weight:bold");
box2.getChildren().add(text2);

// company
HBox box3 = new HBox();
box3.setAlignment(Pos.CENTER);
box3.setPrefHeight(45);
```

Building Nodes

```java
Text text3 = new Text("SOLT Engineering Co,.Ltd.");
text3.setFont(new Font("PT Serif", 28));
box3.getChildren().add(text3);

box.getChildren().addAll(box1, box2, box3);

return box;
```

Written By FXML

- As Scene Graph is using tree model, it can be represent by XML

- XML using for JavaFX Scene is called FXML

- FXMLLoader class is used for load xml file to Java Object

- As using xml, it is possible to use visual editors. SceneBuilder.

SceneBuilder
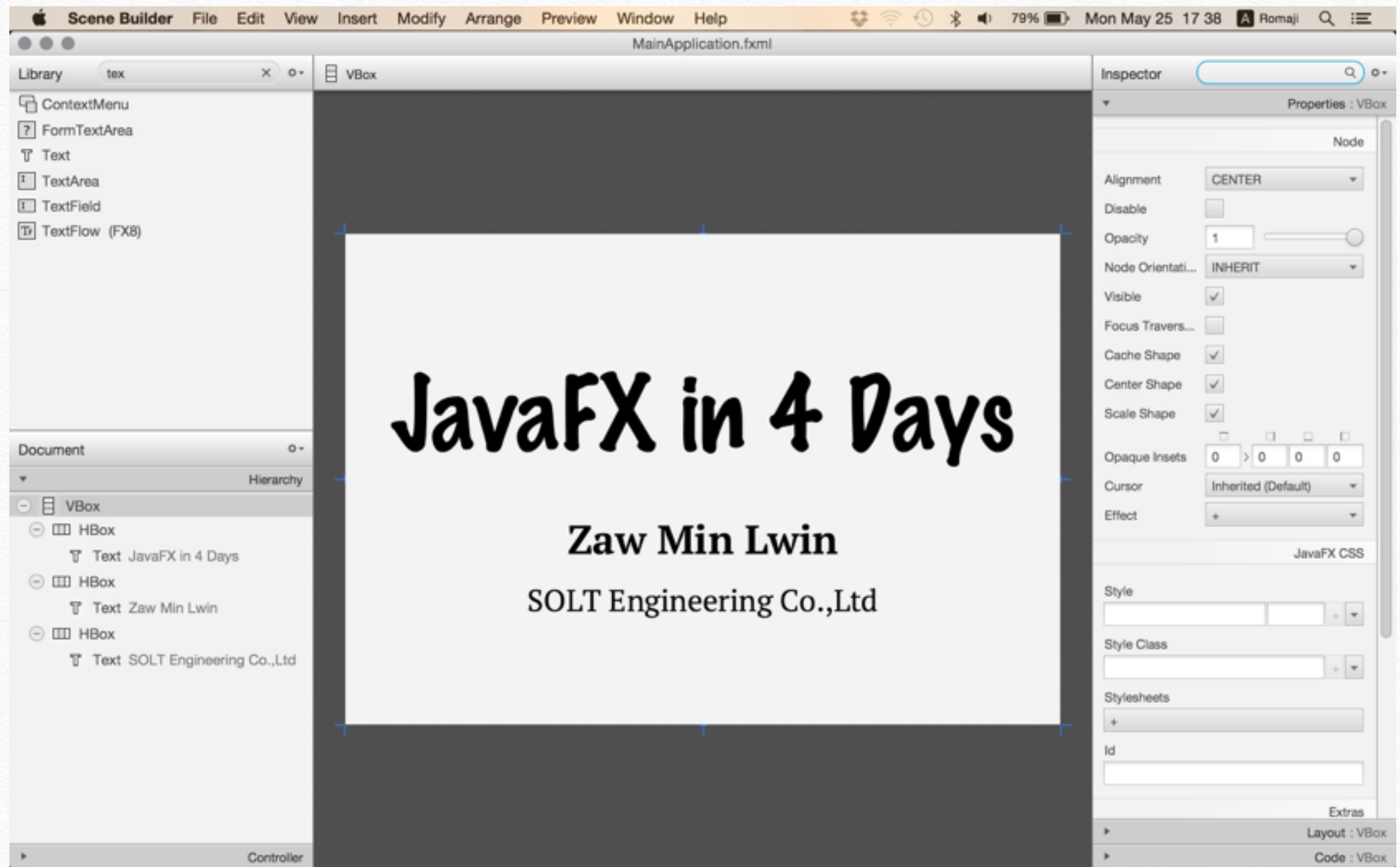
JavaFX Main Class

```java
public class SampleApp1 extends Application{

    @Override
    public void start(Stage primaryStage) throws Exception {
        Parent root = this.getView();
        Scene scene = new Scene(root);
        primaryStage.setScene(scene);
        primaryStage.show();
    }

    // codes

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

JavaFX Main Class

```java
public class SampleApp2 extends Application{

    private static final String FXML_FILE = "MainApplication.fxml";

    @Override
    public void start(Stage primaryStage) throws Exception {
        Parent root = FXMLLoader.load(getClass().getResource(FXML_FILE));
        Scene scene = new Scene(root);
        primaryStage.setScene(scene);
        primaryStage.show();
    }

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

}
```

Stage & Scene

- JavaFX use the concept of Opera

- Stage represent main application window

- All the items are putting in a Scene

- By changing Scene we can see a story

My Question

- how to write a JavaFX Project?

- how to write a JavaFX Main Class?

- how to write FXML file and edit by Scene Builder?

- how to load FXML file from JavaFX main class?

Please write this view with Scene Builder