

LAB-2-YUE CHENGHAO-227154

CCS3104-G4

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```
package com.example.demo1;
import javafx.application.Application;
import javafx.stage.Stage;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.GridPane;
import javafx.geometry.Insets;

public class SpeedFineCalculator extends Application {

    @Override
    public void start(Stage primaryStage) {
        // 车辆类型 (单选按钮)
        Label lblType = new Label("Vehicle Type:");
        RadioButton rbCar = new RadioButton("Car");
        RadioButton rbBike = new RadioButton("Bike");

        // 把两个按钮放进一个组, 只能选一个
        ToggleGroup tgVehicle = new ToggleGroup();
        rbCar.setToggleGroup(tgVehicle);
        rbBike.setToggleGroup(tgVehicle);

        // 默认选中 Car
        rbCar.setSelected(true);

        // 输入框
        Label lblSpeed = new Label("Vehicle Speed (km/h):");
        TextField tfSpeed = new TextField();

        Label lblLimit = new Label("Speed Limit (km/h):");
        TextField tfLimit = new TextField();

        // 按钮与结果
        Button btCalc = new Button("Calculate");
        Label lblResult = new Label("Fine: RM 0.00");

        // 布局
    }
}
```

```

GridPane pane = new GridPane();
pane.setPadding(new Insets(20));
pane.setHgap(20);
pane.setVgap(20);

pane.add(lblType, 0, 0);
pane.add(rbCar, 1, 0);
pane.add(rbBike, 2, 0);
pane.add(lblSpeed, 0, 1);
pane.add(tfSpeed, 1, 1);
pane.add(lblLimit, 0, 2);
pane.add(tfLimit, 1, 2);
pane.add(btCalc, 0, 3);
pane.add(lblResult, 1, 3);

// 按钮事件
btCalc.setOnAction(e -> {
    try {
        double speed = Double.parseDouble(tfSpeed.getText());
        double limit = Double.parseDouble(tfLimit.getText());
        double fine = 0;

        if (speed > limit) {
            if (rbCar.isSelected())
                fine = 0.5 * Math.pow(speed - limit, 2);
            else if (rbBike.isSelected())
                fine = 30 + (speed - limit);
        }
    }

    lblResult.setText(String.format("Fine: RM %.2f", fine));
} catch (NumberFormatException ex) {
    lblResult.setText("Please enter valid numbers!");
}
});

// 场景与显示
Scene scene = new Scene(pane, 450, 200);
primaryStage.setTitle("Speed Fine Calculator");
primaryStage.setScene(scene);
primaryStage.show();
}

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

```

- output

no speeding

The screenshot shows a window titled "Speed Fine Calculator". It has three radio buttons for "Vehicle Type": "Car" (unchecked), "Bike" (checked), and another option (unchecked). Below these are two input fields: "Vehicle Speed (km/h)" containing "10" and "Speed Limit (km/h)" containing "20". A blue "Calculate" button is on the left, and the result "Fine: RM 0.00" is on the right.

speeding

The screenshot shows a window titled "Speed Fine Calculator". It has three radio buttons for "Vehicle Type": "Car" (checked), "Bike" (unchecked), and another option (unchecked). Below these are two input fields: "Vehicle Speed (km/h)" containing "20" and "Speed Limit (km/h)" containing "10". A blue "Calculate" button is on the left, and the result "Fine: RM 50.00" is on the right.

Speed Fine Calculator

Vehicle Type: Car Bike

Vehicle Speed (km/h):

Speed Limit (km/h):

Fine: RM 40.00

This screenshot shows a user interface for a speed fine calculator. At the top, there are three window control buttons (red, yellow, green). Below them is the title 'Speed Fine Calculator'. Underneath the title are two radio buttons for 'Vehicle Type': 'Car' (unchecked) and 'Bike' (checked). There are two text input fields: 'Vehicle Speed (km/h)' containing '20' and 'Speed Limit (km/h)' containing '10'. A blue-outlined button labeled 'Calculate' is positioned to the left of the fine amount. To the right of the calculate button is the text 'Fine: RM 40.00'. The entire interface is contained within a light gray rectangular box.

invalid input

Speed Fine Calculator

Vehicle Type: Car Bike

Vehicle Speed (km/h):

Speed Limit (km/h):

Please enter valid numbers!

This screenshot shows the same speed fine calculator interface as the previous one, but with invalid input. The 'Vehicle Speed (km/h)' field now contains the string 'aaa' instead of a numerical value. The 'Speed Limit (km/h)' field contains '10'. The 'Calculate' button is still present, and the message 'Please enter valid numbers!' is displayed to the right of the calculate button. The overall layout remains consistent with the first screenshot.

decimal

 **Speed Fine Calculator**

Vehicle Type: Car Bike

Vehicle Speed (km/h):

Speed Limit (km/h):

Calculate Fine: RM 30.50