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TrafficSimulator.java

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```

/*
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 * and open the template in the editor.
 */
package trafficsimulator;

import javafx.application.Application;
import javafx.application.Platform;
import javafx.collections.FXCollections;
import javafx.collections.ObservableList;
import javafx.event.ActionEvent;
import javafx.event.EventHandler;
import javafx.geometry.Insets;
import javafx.scene.Scene;
import javafx.scene.canvas.Canvas;
import javafx.scene.canvas.GraphicsContext;
import javafx.scene.control.Button;
import javafx.scene.control.ComboBox;
import javafx.scene.control.RadioButton;
import javafx.scene.control.TextField;
import javafx.scene.control.ToggleGroup;
import javafx.scene.layout.BorderPane;
import javafx.scene.layout.HBox;
import javafx.scene.layout.Pane;
import javafx.scene.layout.StackPane;
import javafx.scene.layout.VBox;
import javafx.scene.paint.Color;
import javafx.scene.text.Text;
import javafx.stage.Stage;
import javafx.stage.WindowEvent;
import trafficsimulator.gui.SimulationRenderer;
import trafficsimulator.gui.SimulationResults;
import trafficsimulator.simulations.Simulation1;
import trafficsimulator.simulations.Simulation2;

/**
 *
 * @author balazs
 */
public class TrafficSimulator extends Application {

    @Override
    public void start(final Stage primaryStage) {

        //main layout
        BorderPane root = new BorderPane();
        //canvas layout (white bg)
        StackPane canvas_holder = new StackPane();
        canvas_holder.setStyle("-fx-background-color: white");
        //create a control panel
        StackPane control_panel = new StackPane();
        control_panel.setStyle("-fx-backgrond-color: blue");
        //create canvas
        Canvas canvas = new Canvas(800,600);
        //add canvas to its holder
        canvas_holder.getChildren().add(canvas);
        //create a GraphicsContext
        GraphicsContext gc = canvas.getGraphicsContext2D();
    }

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//add canvas layout into main layout
root.setLeft(canvas_holder);
//create set of option selectors (buttons, textfields, radio buttons...)
final Button startSim = new Button("Start");
startSim.setPrefSize(100, 50);
BorderPane button_pane = new BorderPane();
final Button showResults = new Button("Result");
showResults.setPrefSize(100, 50);
//showResults.setDisable(true);
HBox button_box = new HBox();
button_box.setPadding(new Insets(10,15,10,15));
button_box.setSpacing(25);
button_box.getChildren().addAll(startSim, showResults);
button_pane.setCenter(button_box);

ToggleGroup policies_selector = new ToggleGroup();
RadioButton fixed_time = new RadioButton("Fixed time policy");
RadioButton congestion_control = new RadioButton("Congestion control policy");
fixed_time.setToggleGroup(policies_selector);
congestion_control.setToggleGroup(policies_selector);
fixed_time.setSelected(true);
VBox policy_radio_box = new VBox();
policy_radio_box.setSpacing(15);
policy_radio_box.getChildren().addAll(fixed_time, congestion_control);
HBox policy_box = new HBox();
policy_box.setPadding(new Insets(10,15,10,15));
policy_box.setSpacing(10);
policy_box.getChildren().add(new Text("Policy: "));
policy_box.getChildren().add(policy_radio_box);

HBox duration_box = new HBox();
duration_box.setPadding(new Insets(10,15,10,15));
duration_box.setSpacing(10);
duration_box.getChildren().add(new Text("Duration: "));
TextField duration_field = new TextField();
duration_box.getChildren().add(duration_field);
duration_box.getChildren().add(new Text("seconds"));

HBox map_box = new HBox();
map_box.setPadding(new Insets(10,15,10,15));
map_box.setSpacing(10);
map_box.getChildren().add(new Text("Map: "));
ObservableList<String> options = FXCollections.observableArrayList("Map 1", "
Map 2", "Map 3");
ComboBox map_list = new ComboBox(options);
map_list.setValue("Map 1");
map_box.getChildren().add(map_list);

VBox container = new VBox();
container.setPadding(new Insets(10,15,10,15));
container.setSpacing(15);
container.getChildren().addAll(policy_box, duration_box, map_box, button_pane);
//add control panel into main layout
root.setCenter(container);
//create simulation
final Simulation1 simulation = new Simulation1();

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SimulationRenderer renderer = new SimulationRenderer(gc, simulation);
simulation.setRenderer(renderer);
//simulation.start();

//add function to option selectors
startSim.setOnAction(new EventHandler<ActionEvent>() {

    @Override
    public void handle(ActionEvent event) {
        simulation.start();
        startSim.setDisable(true);
    }
});
showResults.setOnAction(new EventHandler<ActionEvent>(){

    @Override
    public void handle(ActionEvent event){
        new SimulationResults(primaryStage, simulation);
        showResults.setDisable(true);
    }
});
//set stage config
primaryStage.setOnCloseRequest(new EventHandler<WindowEvent>() {

    @Override
    public void handle(WindowEvent event) {
        System.exit(0);
    }
});
primaryStage.setTitle("TrafficSimulator");
primaryStage.setScene(new Scene(root,1200,700,Color.LIGHTGRAY));
//show stage
primaryStage.show();

}

/**
 * @param args the command line arguments
 */
public static void main(String[] args) {
    launch(args);
}

}

```