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Object Oriented Programming  
Metric Converter JavaFX GUI

The "Metric Converter" application is a JavaFX GUI program designed to convert measurements between various metric units. Users can select the conversion type from a dropdown menu, enter the value to be converted in a text field, and then click the "Convert" button to display the result. The supported conversions include centimeters to inches, inches to centimeters, inches to feet, feet to inches, feet to meters, and meters to feet.

import javafx.application.Application;

import javafx.geometry.Insets;

import javafx.geometry.Pos;

import javafx.scene.Scene;

import javafx.scene.control.Button;

import javafx.scene.control.ChoiceBox;

import javafx.scene.control.Label;

import javafx.scene.control.TextField;

import javafx.scene.image.Image;

import javafx.scene.image.ImageView;

import javafx.scene.layout.GridPane;

import javafx.scene.layout.VBox;

import javafx.stage.Stage;

public class MetricTranConvGUI extends Application {

private TextField inputField;

private Label outputLabel;

private ChoiceBox<String> choiceBox; // Declare choiceBox as a class-level field

public static void main(String[] args) {

launch(args);

}

@Override

public void start(Stage primaryStage) {

primaryStage.setTitle("Metric Converter");

// Set application icon

primaryStage.getIcons().add(new Image(getClass().getResourceAsStream("/MetricConvLogo.jpg")));

// Icon and Title

ImageView iconImageView = new ImageView(new Image(getClass().getResourceAsStream("/MetricConvLogo.jpg")));

Label titleLabel = new Label("MetricTran");

titleLabel.setStyle("-fx-font-weight: bold; -fx-text-fill: black;");

VBox titleBox = new VBox(iconImageView, titleLabel);

titleBox.setAlignment(Pos.CENTER);

// Input components

choiceBox = new ChoiceBox<>(); // Initialize choiceBox

choiceBox.getItems().addAll(

"Centimetres to Inches",

"Inches to Centimetres",

"Inches to Feet",

"Feet to Inches",

"Feet to Meters",

"Meters to Feet"

);

choiceBox.setValue("Centimetres to Inches");

inputField = new TextField();

inputField.setPromptText("Enter value");

inputField.setMaxWidth(100);

Button convertButton = new Button("Convert");

convertButton.setOnAction(e -> convert());

// Output components

outputLabel = new Label();

// Layout

GridPane gridPane = new GridPane();

gridPane.setPadding(new Insets(10, 10, 10, 10));

gridPane.setVgap(8);

gridPane.setHgap(10);

GridPane.setConstraints(titleBox, 0, 0, 3, 1);

GridPane.setConstraints(choiceBox, 0, 1);

GridPane.setConstraints(inputField, 1, 1);

GridPane.setConstraints(convertButton, 2, 1);

GridPane.setConstraints(outputLabel, 0, 2, 3, 1);

gridPane.getChildren().addAll(titleBox, choiceBox, inputField, convertButton, outputLabel);

Scene scene = new Scene(gridPane, 500, 500); // Set a fixed size for the scene

primaryStage.setScene(scene);

primaryStage.show();

}

private void convert() {

try {

String conversion = inputField.getText();

float value = Float.parseFloat(conversion);

String selectedConversion = choiceBox.getValue();

String result = "";

switch (selectedConversion) {

case "Centimetres to Inches":

result = String.format("%.2f inches", value \* 0.3937f);

break;

case "Inches to Centimetres":

result = String.format("%.2f centimetres", value \* 2.54f);

break;

case "Inches to Feet":

result = String.format("%.2f feet", value \* 0.0833f);

break;

case "Feet to Inches":

result = String.format("%.2f inches", value \* 12f);

break;

case "Feet to Meters":

result = String.format("%.2f meters", value \* 0.3048f);

break;

case "Meters to Feet":

result = String.format("%.2f feet", value \* 3.28084f);

break;

}

outputLabel.setText(result);

} catch (NumberFormatException e) {

outputLabel.setText("Invalid input. Please enter a number.");

}

}

}