

# JAVA PROGRAMMING COURSE (SWE2023)

## FALL SEMESTER 2022

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COLLEGE OF SOFTWARE

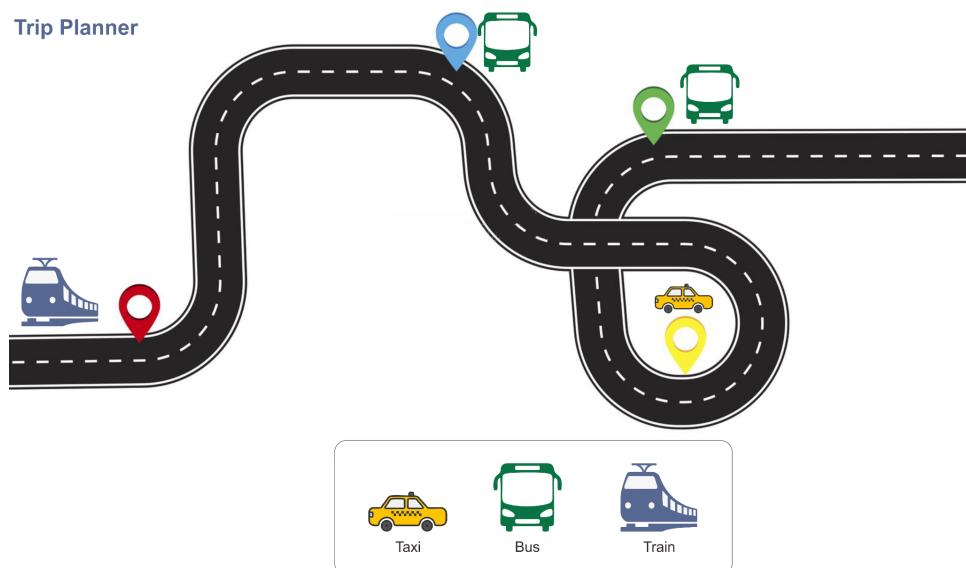
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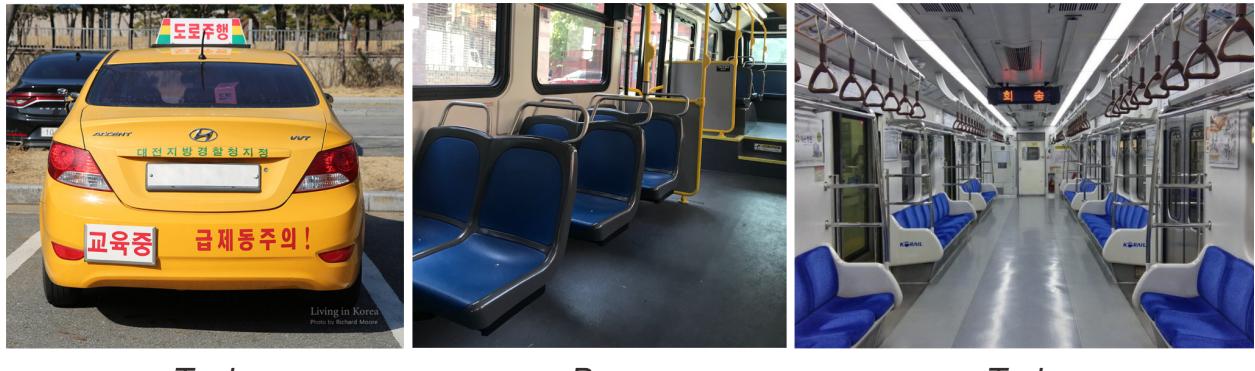
### Midterm Assignment

In this midterm assignment, create a Java program called **[Trip planner Program]** to help students to plan their trips! Guidelines for submission format are given at the end of the assignment file.

#### ***Trip planner Program***

The main purpose of the application is to plan the transportation methods for your trip and calculate the trip's overall cost. For example, In the following figure, we have a trip that includes a train, bus, taxi, and bus to reach your destination.



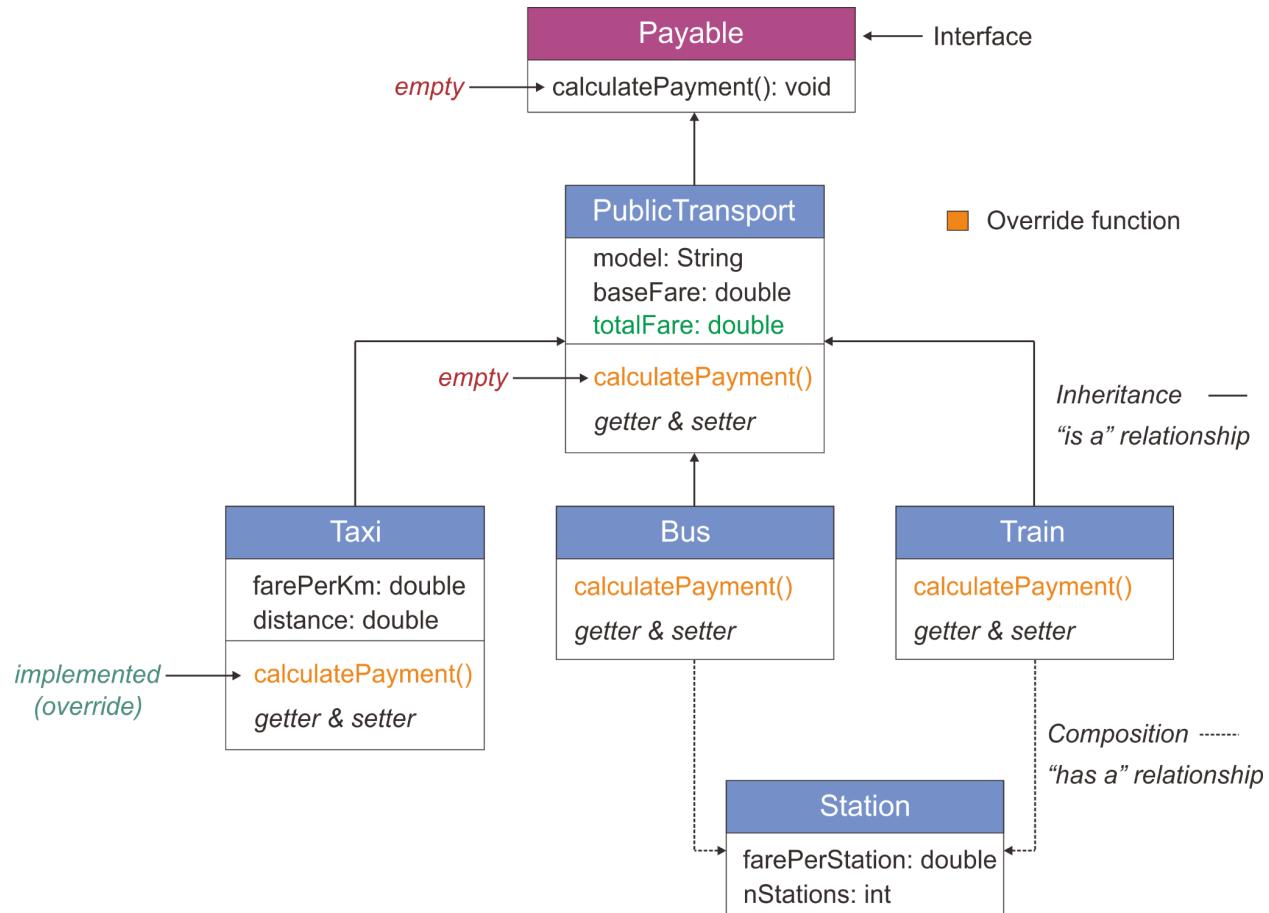


Taxi

Bus

Train

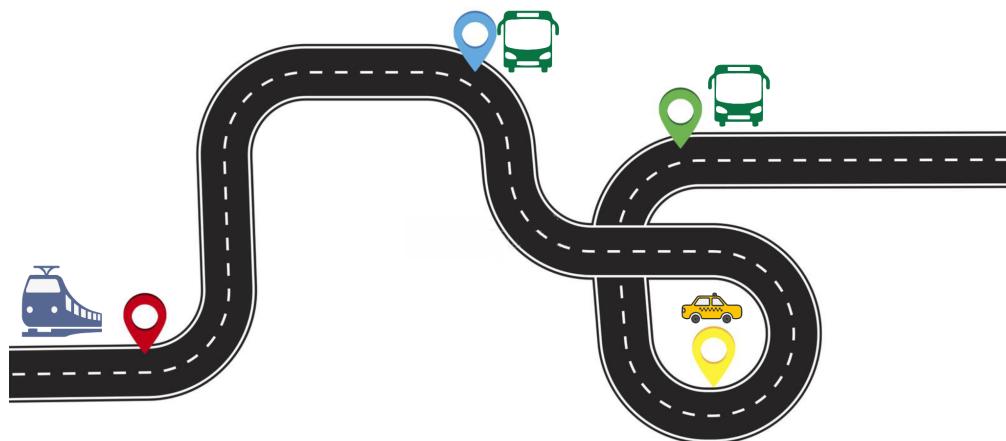
We have included with the midterm assignment a video for the application output. The program includes one interface called **Payable**. There is also a super abstract class called **PublicTransport** with three subclasses: **Taxi**, **Bus**, and **Train**. Finally, the program must include the **Station** class. Provide constructors for each class. Provide a set and a get method for **all** instance variables. Create all interfaces and classes with the given variables and methods.



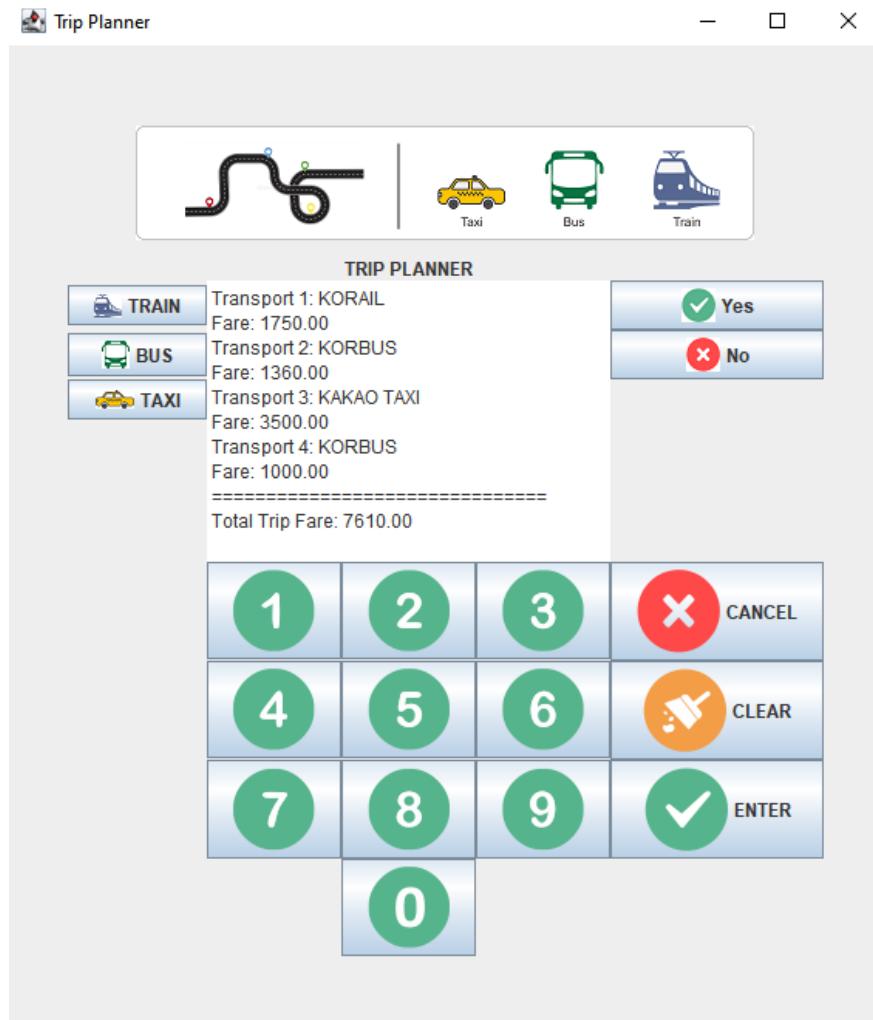
## **Program Flow:**

**For getting the whole program description, please watch the attached video.**

- In the video, there are 4 transfers (as shown in the image below: train -> bus -> taxi -> bus):



- The user can cancel the trip in the middle (as shown in the video). If the user cancels the trip, the program prints "Cancelled" and create a new plan. (first part of the video)
- If the user does not cancel the trip and finishes entering all transfer information (second part of the video), at the end the program prints the total trip fare with a detailed description and exits the program.



### Instructions:

For calculating **taxi fare**: **total fare = (base fare) + distance \* (fare per km)**

For calculating **bus fare**:

If the number of stations is less than 5: **total fare = (base fare)**

If the number of stations is more than 5:

**total fare = (base fare) + ((number of station) - 5) \* (fare per station)**

Calculating **train fares** is the same as calculating bus fares.

## **Requirements (your program has to contain the following topics):**

- GUI
- Inheritance
- Inference
- Polymorphism
- Composition
- List (for listing objects of transport)
- Following all requirements (creating all classes, interface, variables, and methods)
- Coding style (meaningful naming variables and methods)
- Correctness of code (should be run without errors)
- Comments (for important lines)

**Note:** all images and icons are in the “assets” folder. You can use your own custom icons as well.

### **Hints:**

- You can use flag to control the states:

```
 } else if (state == 8) {  
     welcomeTextPane.setText("Thank you for banking with us! \npress ENTER...");  
     state = 1;  
 }
```

- For getting only digits from the text field, you can use the following code:

```
String text = welcomeTextPane.getText();  
int pin = Integer.parseInt(text.replaceAll( regex: "[^0-9]", replacement: ""));
```

**Submission format:** Submit the whole project folder as a zip file with the same video as the attached video. All the files should be submitted as a **zip** file.

**Name of zip file:** {student ID}\_{Student name}\_midterm\_assignment.zip

**Example:** 2020712837\_Frank\_Thomas\_midterm\_assignment.zip

**Important: Plagiarism is strictly prohibited. If there is any plagiarism found in the code, you will be given an “F” for the midterm assignment evaluation.**

**Since this is a midterm assignment, questions should be for issues or missing info, and you can ask as usual in the discussion section or by contacting the TAs directly.**

**Good luck!**