

## Project 2

**Car Pooling System is an application that helps managing cars scheduling and bookings. The system consists of Cars, Routes, and Passengers.**

- **Car Class** has: a code, a fixed route, a maximum capacity of passengers per trip.
- **Route Class** has: start pick up address, destination address, and trip price .
- **Passenger (parent class)** has: name, ID, reserved Car object, trip cost. Also, it has an abstract function that takes a car object to reserve it to the passenger and compute the trip cost and a function that should be overridden to display their information along with the car code and route price .

There are two types of Passengers (subclasses) :

- **Subscribers passengers:** take 50% discount on trip cost when they reserve a car .
- **Non-Subscribers passengers:** have boolean value named discount coupon and gets a 10% discount on the trip cost if they have it.

The function that reserves a car and calculates the trip cost uses the following equation:

$\text{Trip cost} = \text{car\_object.route\_object.price} - (\text{car\_object.route\_object.price} \times 0.1)$  --> in case the non-subscribers passengers have a discount coupon.

$\text{Trip cost} = \text{car\_object.route\_object.price}$  --> in case the non-subscribers passengers don't have a discount coupon.

### **Note that :**

The function used to reserve a car for a passenger should throw an exception if the maximum capacity of the car was equal to zero In .

**In the main function do the following:**

- Create 2 routes and assign each of them to a different Car object. Note that one of those cars should have a maximum capacity equal to zero .
- Create an array of Passengers containing 1 Subscriber and 1 non-Subscriber.
- Assign a different car object to each passenger and then display their information.