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Console Traffic Simulation

Problem specification

What exactly is the problem?

The problem attempting to be solved will be for a traffic simulation. This problem will be judged on two parts. Part 1 is the part being attempted at the moment, this is a console simulation using 1 car, 1 traffic light, and two roads. This will be used test the logic of the design to be used. The second part of this simulation will be to implement a G.U.I (Graphical User Implementation) and incorporate the ability to allow the user to choose road types, place traffic light, and allow the user to spawn vehicles from pre-determined locations.

How will the program be used?

The console simulation will be started from the start demo and will run multiple iterations to check car movement, stopping when red light is reached and not before, moving to the next road, checking that the stop light triggers randomly.

How will the program behave

Problem decomposition using UML class diagrams: What objects will be used and how will they interact?

For the console simulation four classes have been created they are the **StartDemo (Main), Car, Road, and TrafficLight** these have been given a visual representation through the UML attached to the java file found in the Design directory**.** The UML was created through **VIOLET UML** and saved to the Design directory.

In the simulation the member fields were created private so they can only be accessed by the functions which were created with public access. The roles each class performs is as follows

StartDemo

The StartDemo class initialises the object and calls the traffic light class

Car

The Car class can set and get its member fields and can use the move function. The move function will get the cars position and if its < 5 move the car Irregardless to the colour of the traffic light, if the car position is 5 and the traffic light is red the car will not move, if the car position is five and the light is green and the car is on road 1 the car will move to beginning position of road 2, or if the car position is 5 and the road is two it will start another iteration

Road

The Road class can set and get its member fields

TrafficLight

The TrafficLight class can set and get its member fields and has the tl method, the tl method randomly determines the traffic light colour between red and green and then triggers the Car move function

Resources Used