Design Document

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**Abstract**

This program work as a Traffic Intersection Simulator. It reads a file with data about the configuration of a Traffic Grid and some cars, does multiple iterations and simulates the situation of the Traffic Grid in each iteration.

This program contains five classes: TrafficTesterView, TrafficTesterModel, Intersection, Lane, Car; one Requirements file: Requirements; one analysis file: Analysis; two tester files: data1\_for\_TrafficTesterView, data2\_for\_TrafficTesterView.

**Description:**

TrafficTesterView.java: This file is a main driver class that reads in the data file and parse the variables to an instance of TrafficTesterMode class.

TrafficTesterModel.java: This file does the general simulation work that set the initial environment for the Traffic Grid and calls functions in Intersection class to process the incoming and outgoing lanes in the Traffic Grid.

Intersection.java: This class contains functions that use instances in Lane class and calls functions in Car class to process the incoming lanes and outgoing lanes in one iteration of simulation.

Lane.java: This class contains functions for lanes in the Traffic Grid.

RegisterTable: This class contains functions for cars in the Traffic Grid.

Input: There are 2 input test files, each of which contains configuration information about the Traffic Grid and cars. Each tester file should follow the rules with: a line of numIntersectionsInOneDirection and its value, a line of lengthOfSimulation and its value, a line of maxLaneCapacity and its value, a line of minTimeToTravelLane (this variable influences the cars speed in a lane) and its value, a line of maxQuarterRoundaboutCapacity (not applicable for now but required) and its value, a line of minTimeToTravelQuarterRoundabout (not applicable for now but required) and its value, a line of number of cars created for the test and its value. Then data for each car in the number of cars created is also needed and should follow the rules as shown in example.

**Program Operation**

Run the program:

First javac all the java files.

Run java TrafficTesterView < dataX\_for\_Traffic\_Tester\_View.

Output:

The output would first show the number of iterations. Then for each intersection, information for each incoming lane from 4 directions, and then outgoing lane from 4 directions would be shown until all the cars have gone out of the Traffic Grid.