

Initial Report

Group Project 7CCSMGPR

King's Traffic Control

February 9, 2016

1 Project Description

To design an efficient Traffic Simulator System to demonstrate traffic flow and interaction under different traffic policies.

1.1 Project Aims and Strategy

Strategy: To complete a fully functioning Traffic Simulation System (Mandatory Level 1 specification). Complete Level 2 and 3 of the Aims as time permits. The whole project will be designed using the Agile model (scrum).

The simulation will be programmed in Java with the use of GitHub repository. JUnit framework will be used for testing. The working branch will be used to hold committed code on a regular basis of everyone's daily changes. A 'master' branch is made to act as the container of the main code. At the end of each sprint the completed and tested objectives will be merge into the master branch. This is done to prevent changes being made to the main branch with conflicts.

1.1.1 Project Strategy - Scrum

Scrum is a management framework for incremental product development using one or more cross-functional, self-organizing teams. It provides a structure of roles, meetings and rules. Our team is responsible for creating and adapting our processes within this framework. Scrum uses fixed-length iterations, called Sprints. Each of our sprints are two weeks long. We have intermediate meetings between each sprints to ensure that we are on target. Sprint review will be done at a Thursday meeting in the middle of each 2 week sprint. The project tasks mentioned in the next section are the backlogs.

1.1.2 Project Tasks:

See Gantt chart under 1.3 Project Schedule, for when each tasks is planned to be accomplished.

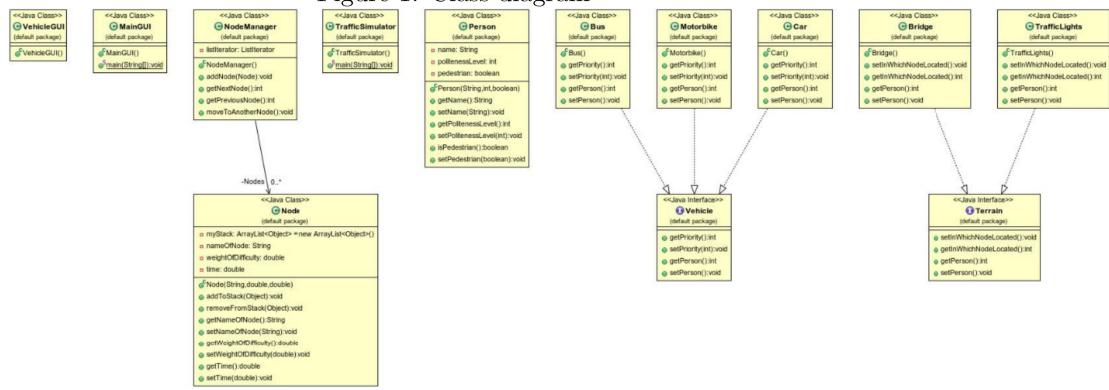
Level 1 Mandatory Specification (1) Individual vehicles (a) Cars, lorries, bike, buses, coaches, motorbikes (b) Reckless driver, cautious, normal (2) Road network including traffic lights (3) Entrance to road networks and exists (4) Individual behaviours (5) Timing of journeys - rush hours (6) Emergency services - police, ambulance, fire truck (7) Management policies - divert traffic or roadworks (8) Time granularity

Level 2 Optional Specification (1) People crossings (2) Politeness level (3) Map scale user interface (4) Congestion rate user interface (5) Pause, stop, resume, play (6) Speed limit option (7) Scenery

Level 3 Optional Specification (1) Configurable map (2) Road types (a) Bridge (b) Crossings (c) Traffic lights mechanism (d) Junctions (e) Single carriageways (f) Dual (g) Roundabouts (h) Tolls gates (i) Uphill/downhill (j) Ramps (3) Parking (street) (4) Changing lanes (5) Weather conditions

1.2 Project Design

Figure 1: Class diagram

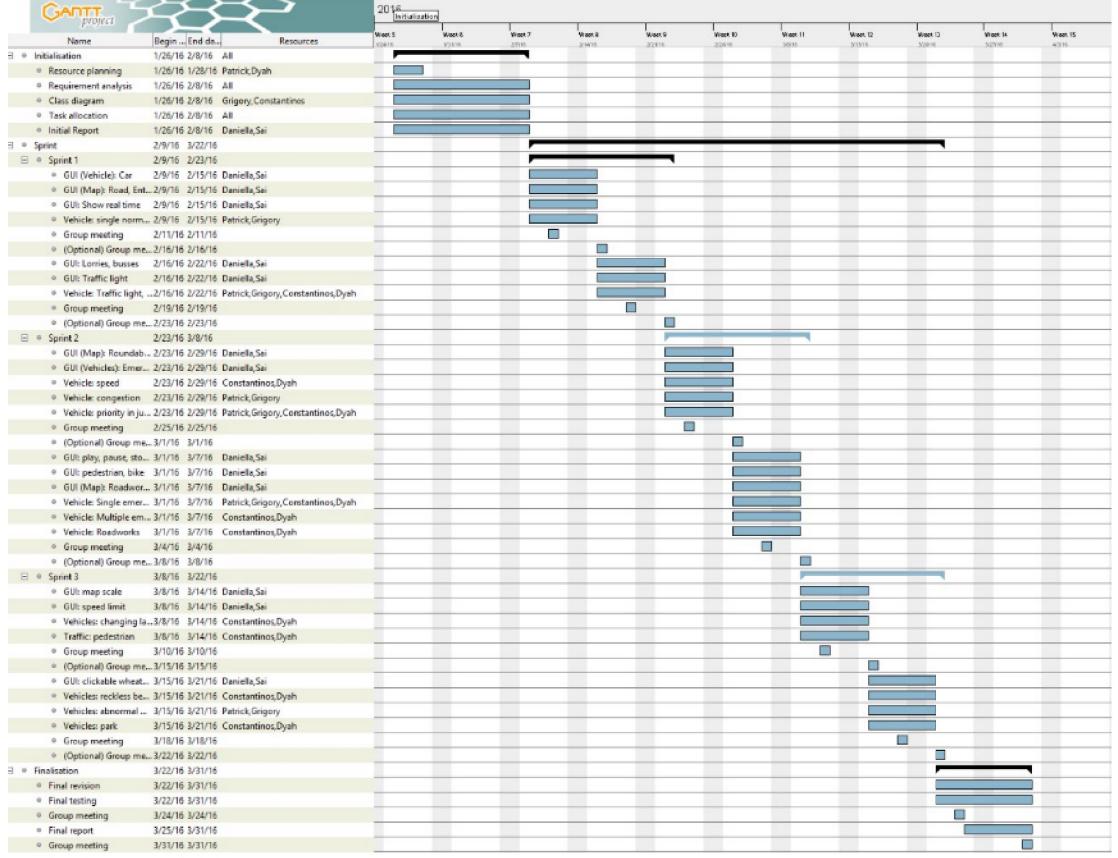


1.3 Project Schedule

1.3.1 Rudimentary Timetable

The figure bellow is the GANTT Chart. This shows the critical tasks the group must accomplish for the project to remain on target. From this, a risk management section is also created as shown below on 2.3 Risk Management. The GANTT Chart highlights how the scrum agile method has been incorporated into the project. If issues arise they will be addressed in the Sprint review.

Figure 2: Gantt chart



1.4 Initial Progression

Level 1 GUI Based:

- (a) GUI Road network, buttons, slider, etc.
- (b) Object classes
- (c) Using swing Library

Level 2 Algorithm:

- (a) Network node libraries
- (b) Node diagram
- (c) Pseudo codes, Implementation of algorithms.

Level 3 Management:

- (a) Everything is represented as a vehicle.
- (b) Vehicle behaviour depends on the priority.
- (c) Approach based on attributes of an object in different threads.

2 Project Organisation

2.1 Project Role and Responsibilities

As shown in Figure 1, on the 1.3.1 Rudimentary Timetable section of this report, level 1 of the project will be the first to be implemented. Level 1 of the project has been split into three parts. As a group of six, two persons are allocated for each part. The task distribution are as follows:

- GUI, Objects and Report: Sai Kurdukar and Daniella Bacud
- Algorithms: Patrick Martins - Yedenu, Grigorios Pavlidis and (Daniella Bacud)
- Management Policies: Dyah Damapusita and Constantinos Hasikos

2.2 Communication

Physical meetings are held on Thursday at 13:00 or Fridays at 13:30 each week. Additional meetings may be conducted as required. Main communication tools used are Whatsapp, Email, Trello, Slack and GitHub. All the documents are maintained on the Google drive.

Conflicts and disagreements are solved through the majority voting in the group. The tasks are allocated in such a way that each member of the team has the same amount of workload and contributes equally to the project. In cases where tasks cannot be fairly distributed, members with less load will take up the workload required to complete the reports and/or presentations.

2.3 Peer assessment

Peer assessment is handled by equal work distribution. In case if any member is not able to complete the task allocated to him/her and some other member has to take on the task the member loses his marks to the person who takes on the task.

2.4 Risk Management

At each weekly meeting, tasks for the next are set and the progress of the team is marked. In situations whereby a member is having difficulties in completing their tasks, it will be immediately identified and resolved either through mitigation (the help of another member) or through reallocation of tasks, or through avoidance.