**User Stories**

**User 1**

As User 1, I want to create various road designs by adding new roads in different positions. I also want to be able to delete the roads if I added them by mistake. At least vertical and horizontal roads should be available for adding.

**User 2**

As User 2, I want to add the direction for the vehicle to move on the road so I can create different sides of the road in order to make it more realistic. The vehicle should be heading either east or west for horizontal roads and either north or south for vertical roads.

**User 3**

As User 3, I want to change the length of road for different situations. I also want to manually input desired positions by changing the x and y positions of the simulations so I can add roads with different lengths at desired positions.

**User 4**

As User 4, I want different types of vehicles with different characteristics for each vehicle such as their lengths. Supposedly a long vehicle like a bus and a shorter vehicle like a sedan.

**User 5**

As User 5, I don’t want my vehicles colliding or intercepting each other. The vehicles should be a bit separate from each other and if the road is not long enough to fit the vehicles, it should be wide enough to add additional vehicles on the extra space.

**User 6**

As User 6, I want to be able to change the traffic light as I see fit. There should be options for the traffic light to turn green or red. I also want to run the simulation with and without traffic lights.

**Developer User Stories**

**Developer 1**

As Developer 1, I can add additional roads at different angles instead of just horizontal and vertical roads. I can change the angle value for roads.

**Developer 2**

As Developer 2, I can modify the vehicles. I can modify speed or the length of the vehicles. To avoid collision, all the vehicles should be at same speed. Therefore, I can’t modify the vehicles to have different speed, but I can change the speed for all vehicles. As for length it doesn’t affect collision so I can change them freely.

**Developer 3**

As Developer 3, I can place traffic lights in different places and also have multiple traffic lights. I can also change the rate that the traffic lights change from green to red.

**Developer 4**

As Developer 4, I can add more types of vehicles which have different attributes than the original ones.

**Developer 5**

As Developer 5, I can put a save function so that users can save their road designs to use them for later. I can add more functions such as clear all so that the user can restart their simulation. I can also add several save slots so the users can make multiple designs and save them.

**Developer 6**

As Developer 6, I can add attributes to the roads such as slippery roads in winter or during rain or slow traffic caused by snow. Multiple situations can be observed from the simulation with additional road attributes, which makes it more realistic to real life.

**UML Diagram**

A screenshot of a computer

Description automatically generated with medium confidence

**Git Hub**

Git Hub Link: <https://github.com/khtkht1001/CP2406-Assignment2-KhantHtetThar>

