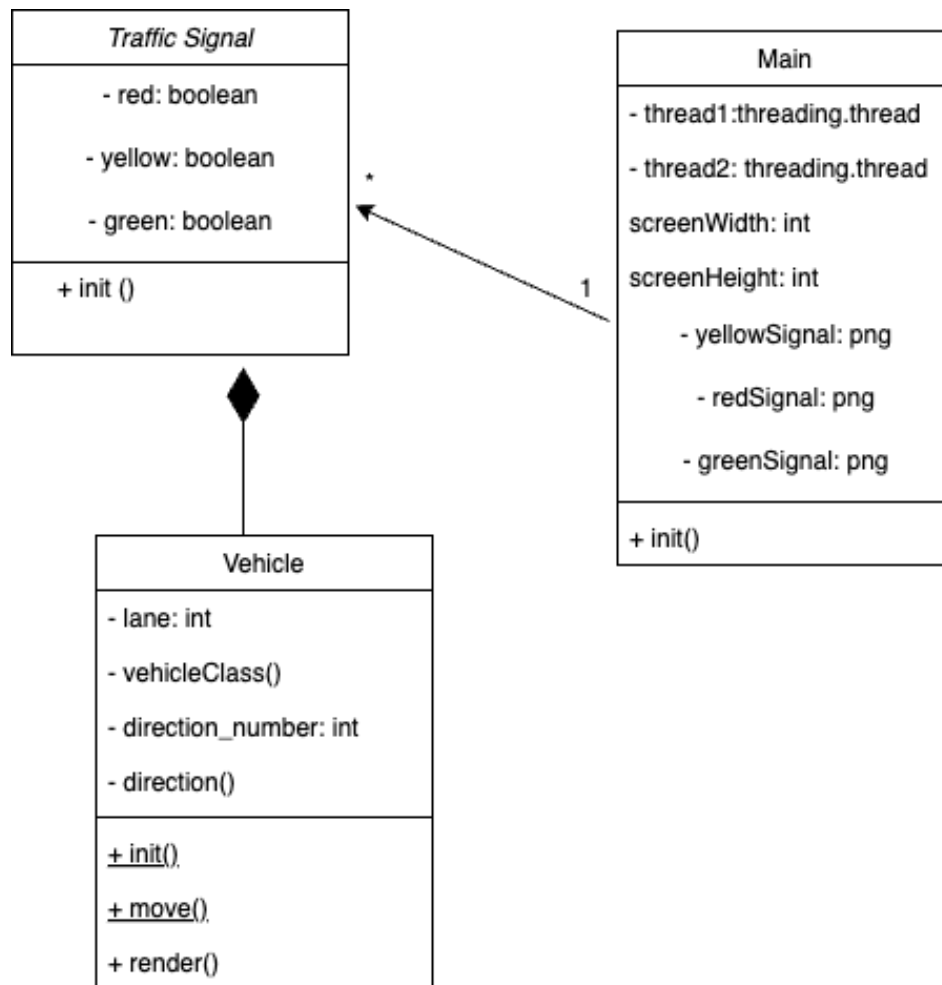


Design Documentation

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1 UML Diagram



[1]

1.1 Description

The UML diagram illustrates the class structure for the traffic simulation system. The primary classes are **TrafficSignal**, **Vehicle**, and **Main**. The **TrafficSignal** class is initialized with attributes for the respective signal colors (red, yellow, green).

The **Vehicle** class is built using Pygame, an open-source Python library designed for creating multimedia applications and video games. Pygame is used to render the 2D .png images for the vehicles

within the Main class.

There is a composition relationship between the Vehicle and TrafficSignal classes because the TrafficSignal exists only as long as the Vehicle class is active. The Vehicle class includes the move method to update the vehicle's position and the render method to display the vehicle on the screen.

The Main class initializes the simulation, manages threads, and handles the simulation loop, continuously rendering vehicles. It depends on both the TrafficSignal and Vehicle classes to perform its operations.

References

- [1] Mihir Gandhi. Traffic intersection simulation using pygame). *Medium*, 2021.