

Simulating Traffic Congestion on Route 1

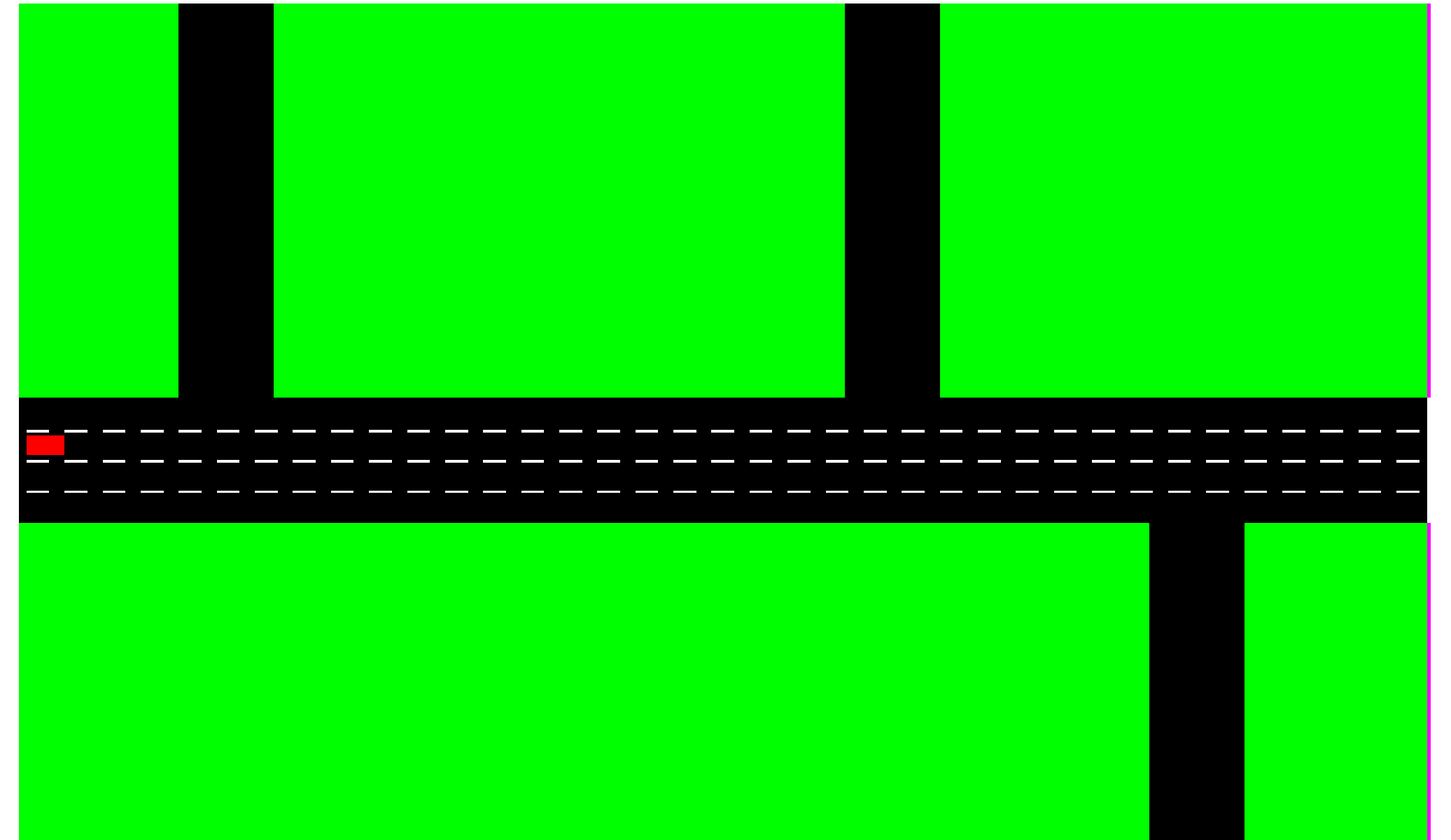
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Abstract

Route 1 in Alexandria, VA is a constant nightmare for drivers trying to navigate it during rush hour. The road is not capable of holding the amount of traffic that travels on it on a daily basis. The purpose of this project is to create a realistic simulation of this congestion and then to define traffic management solutions that can ease the current congestion. Hopefully, this project will create a viable solution to increase traffic flow during peak hours that can save drivers both time and money.

Introduction and Background

Currently, Route 1 has trouble with traffic congestion during rush hours, when many people use it to commute to their workplaces. I will create an accurate model of the traffic congestion on Route 1, based on traffic count data from the Virginia Department of Transportation. With this model in place I will find the cost to each driver on the current system using a variety of factors such as: average speed, cost of gas, and travel time. Using the cost per driver on the current system as a control, I will then manipulate the traffic system in order to find ways that can ease both the congestion and the cost to the driver. Some solutions that could be viable to this process are: adding an additional lane, creating a bus-only lane, naked intersections, and round-a-bouts. The system will allow these solutions to be implemented together as well such as adding an additional lane and converting to naked intersections. The goal of this will be to find a viable solution to the congestion problem on Route 1.



Results

Right now the road system is created to scale with mileage data found in the Virginia Department of Transportation paper. The car is able to drive forward and change speeds. The car can also change lanes both up and down in a realistic manner. The car is still having trouble turning realistically, but this should be fixed soon. The different classes and panels interact correctly and create an efficient system. The next step is to complete the turning method in the Car class, and then to begin to add additional cars to the system and having them interact with each other. The final step in this process would be to accurately create the traffic lights at intersections. This would include their timing with each other as well as how long each light is green.