Design Decisions

1.

There were a few design decisions I made to the given code. Originally, trigger and exit points for the single train with the gates were given. However, when the second train was added, I expanded the variables from “triggerPoint” and “exitPoint” to “trigger/exitLeft” and “trigger/exitRight”. This allowed the gates to see when the train moving East to West was approaching or leaving a gate and when the train moving West to East was approaching or leaving a gate. This variable change was also important for the next change. In office hours with Ankit, he said to find a way to monitor both trains in a data structure. So I created a set that had trains added to it when they were within the closed range – set by the given “anchor points”. Once the set was empty, the gate could be opened and the cars could pass. This needed the updated trigger and exit points so that the two gates could both monitor the two trains. Another update for the trains was passing in the speed instead of hard-coding (as said in lecture) that allowed the speed to be set with every instantiation of the train, instead of setting the speed elsewhere. Finally, the last issue remaining in the project revolves around the cars crossing between the roads. Right now the cars move across the ”T” successfully, but do not stop for the cars already on the other street. I attempted to handle this by creating a set in the ”Car” class – in the same vein as the train set – but I couldn’t get the range to work. I believe this is because the set isn’t taking in all of the cars on the other road, so the car crossing thinks the road is empty and it can continue. To remedy this with more time, I would create a junction class that takes the cars on the opposite road, puts them into this set, then returns whether or not the car is able to enter the opposite road.

Design Decisions

2.

This design would be able to scale up with a few modifications. Currently, the train locations and how their observers view each individual train are determined by conditionals with the trains' locations on the scene. To scale up, a bit of work to add the new track and train positions would be needed. Additionally, once the trains are added, scaling up and fixing the bugs in the cars with regards to both the gates and the crossing would be able to be expanded. Both of these would require a bit of work to add the necessary information to scale.