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#### Homework 5 Reflection

1. In attempting to get the first part of the assignment working, I made a decision to switch the triggerPoint and exitPoint variables into 4 variables called triggerPointR, triggerPointL, exitPointR and exitPointL. I did this because the trains move in opposite directions so the trigger point for one train will be the exit point for the other train on the same gate. In theory, I could have kept the original variable names, since exitPointR is the same as triggerPointL, but in my mind it was a lot easier to keep in check. Also, for the Train constructor, I decided to change the constructor to take in a speed variable. This allowed the two trains to share the same move function instead of having to implement two move functions for the two trains moving in opposite directions. I also added in a set that keeps track of the trains in range of the gates so the gates know when they should or should not be open. In attempting to get the second part of the assignment working, I made a decision to add another set to the Car class in an attempt to have the cars know when they would or would not be able to leave the east-west road and exit onto the west road. However, this did not work and I realize that I should have attempted to add another class that could handle junctions or added something else in the Road class that would know what is on the road it is looking at.
2. If the mayor wished to use this simulation to build a simulation of traffic in South Bend, I do believe that this simulation would scale up, with a minimal amount of rework. The gates crossing system would work if we could add another block in the update() function of CrossingGate, as long as we knew the y coordinate of the new trains to be added. As of now, the cars will sometimes run over each other and not use the Observer pattern, and I am not sure why this happens. Also, my attempt to have cars crossing the roads know about the cars on the other road so that it did not run over cars after turning onto that road does not work, so that aspect would require some rework. However, with this rework, it would scale up.