

Homework 4 Reflection

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To implement a new railway for a train moving East to West, I simply used some of the existing methods to create a new track object and to add a new train. I modified the direction that the train traveled, flipped the image and added the gates as observers to the new train. To make the gates open and close correctly, I first added a new trigger point and exit point. Next, I added if statements in the CrossingGate update method to check if the train being observed was traveling East or West, and if it was passing through its respective trigger and exit points. Since the update method would check the position of only one train at a time, I added two boolean variables to indicate whether each of the trains were passing through the road. This way, even if the update method was triggered by the first train, the function has knowledge of the second train's position. I think the design decisions I made worked well as they were easy to implement and seemed to work correctly in all cases.

To add a connecting road, I created a new road between the existing roads and assigned Gate2 to it (since the road only traveled East to West, there was no necessity to also assign Gate1). Next I modified the CarFactory to add the notion of turning to cars. I randomly assigned which cars would turn by setting the turn variable to true. For the cars that would turn on the new road, I added them as observers to Gate2 (since they would never reach Gate1). I then modified the move method in the Car class. For cars that had the turn variable set to true, I made them travel horizontally on the new road until they reached the Western road. Although the design decisions I made worked correctly, the design could be improved by making the observer and observable pattern among the cars more robust. On many instances the cars failed to observe the car in front of it.

I believe that the way the gates work would scale up well. The design appeared to be robust with two roads and two tracks. It would also be relatively simple to add more gates, tracks or trains. The design would probably not scale up well in terms of intersecting roads and cars. As previously mentioned, the cars did not observe each other correctly. If this design were to model real life traffic, it would probably require a more complex and robust way of cars not running into each other.