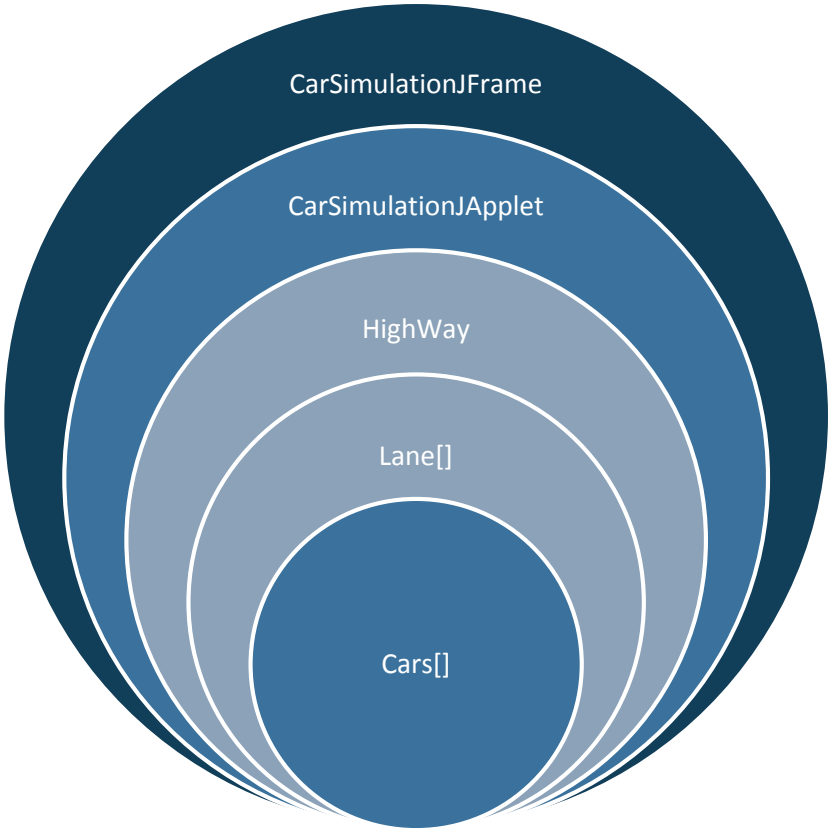
OOP HW5 REPORT

1 THE ARCHITECTURE



Highway have multiple lanes, and each lane have multiple cars.

The Above architecture is “have a” relation, and i don’t have any extended class except “CarSimulationJApplet”, “CarSimulationJFrame”, and Highway which extends JPanel in this project.

2 THE ADVANTAGE IN TERMS OF SOFTWARE ENGINEERING

1. Cars have its lane_id of previous and current lane, so the highway can draw the appropriate image to JPanel based on the information got from lanes and cars.

2. Each Car is a thread, which means, car can decide its own decision with the information provided from lane and highway. This ability makes it a more independent class.
3. Car speed up/down with acceleration. A good acceleration value help human visualize what happened.

3 THE DISADVANTAGE IN TERMS OF SOFTWARE ENGINEERING

1. Acceleration makes the car change its speed slowly but instantly, which makes the computer waste some computation power.
2. Cars won't remove them from lanes unless lane do it themselves which means some car may finished running but still in lane.
3. Can't dynamically add the lane, technically can, but not implemented yet.
4. Doesn't check the crash during lane changing animation.

4 BONUS PART

1. Colorize based on the car's speed, if in max speed of current lane, red, if stop, white.
2. Each Lane have different max speed, The outer the slower
3. Each car have its max speed bias based on the driver
4. Human awareness of acceleration and deceleration.
5. The ability of pause and resume the CarSimulationJApplet
6. The ability of restart the highway state without restart the program
7. The ability to add car on interchange
8. The ability to stop/start auto add cars into highway for real highway simulation
9. Self-executable Jar file
10. AutoGenerate index.html Makefile
11. Simple Readme.md file
12. Simple manifest.mf file auto-generation by Makefile
13. The ability to choose the number of lane
14. Car Simulation rate changeable