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CMSC335: Object Oriented Programming

University of Maryland Global Campus

Professor Mujeye

**UML Diagram:**

Diagram

Description automatically generated

**Test Cases:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test Case | Input | Expected Output | Actual Output | Pass? |
| 1 | **New Car:5**  **Speed:7** |  |  | **Yes** |
| 2 | **New Car:6**  **Speed:9** |  |  | **Yes** |
| 3 | **New Car:4**  **Speed:12** |  |  | **Yes** |

**Snapshots of Test Run:**

Graphical user interface

Description automatically generated

Graphical user interface

Description automatically generated

**Lessons Learned:**

For this project, I used IntelliJ IDE. Most of this project was reliant on Threads and Concurrency. I learned that a thread is the path followed when running a program. I worked with multithreading, which is a process of executing two or more threads simultaneously for maximum use of the CPU. I had three threads to use during this project, one for the time, one for the traffic lights, and one for the cars. It is assumed that the car stops on a dime for a red light, while driving on green and yellow lights, as physics are not concerned in this case. I was fortunately able to make the program display the three threads in the GUI, add new cars, and even start, stop, pause, and resume the threads. The car thread will continuously update the positions and speeds of each vehicle, unless a user stops or pauses the threads. The only thing I was not able to do was add or remove the intersections. I have not experienced any deadlocks while running the program. However, this project was the most difficult out of all that I have worked on during this course. I felt that the time in learning about threads was a little too condensed. If I had had more time to learn and work on them, I probably would not have struggled as much. Fortunately, I did seek tutoring and that really helped me accomplish overall what I needed to do for the thread assignment. I do, however, wish that I could have spent more time on this project. It took surprisingly longer than anticipated.