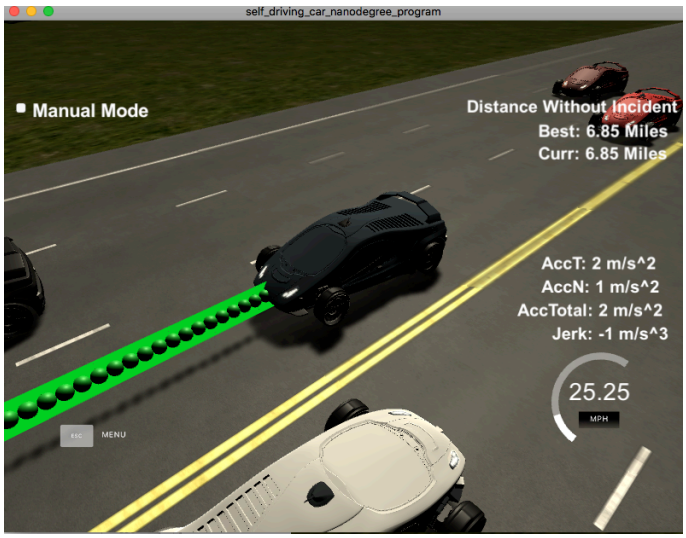
Compilation

CRITERIA	MEETS SPECIFICATIONS

The code compiles correctly.	`aup-mac:build AUP$ make`
	`Scanning dependencies of target path_planning`
	`[ 50%] Building CXX object CMakeFiles/path_planning.dir/src/main.cpp.o`
	`[100%] Linking CXX executable path_planning`
	`ld: warning: directory not found for option '-L/usr/local/Cellar/libuv/1.11.0/lib'`
	`[100%] Built target path_planning`

Valid Trajectories

CRITERIA	MEETS SPECIFICATIONS
The car is able to drive at least 4.32 miles without incident..	
The car drives according to the speed limit.	Code does not allow going faster than 49.5 checked in lines 348 – 353 red speed limit messages.
Max Acceleration and Jerk are not Exceeded.	Not exceeded
Car does not have collisions.	No collisions see above picture.
The car stays in its lane, except for the time between changing lanes.	Stays in the center lane for most of time
The car is able to change lanes	Car changes lanes when there is traffic and there is no car blocking the lane

Reflection

Most of the code implemented from the video of project walkthrough. First trials made with the code provided. Car can drive smoothly in the path by the use of implementation provided in the project walk through. But once vehicle goes the left most lane it cannot go back. It can drive for a while in that line. But with the code provide car was able to drive around 2.5 miles

without incident. Faster cars coming from the behind or cars try to get to left lane creates collision. To avoid that algorithm improved to use all the lanes and get back to the center lane.

In the first part of additional code other cars in front, left or right of ego-vehicle which blocks our way is determined. As explained the project walkthrough distance of 30m assumed to be unsafe. (lines 256 – 326)

After determination of environment decision depending on surrounding cars is made (lines 326 – 353)

- If there is a car front of us:
    - if left of ego-vehicle is empty and we are not at the left most lane we change to left
    - else if there is no car right of ego-vehicle and we are not at the right most lane we can change to right
    - otherwise we should slow down
- if there is no car front of us
    - if we are not on the center lane we move to center line if it is possible
    - We can go faster if we are still under the maximum speed of 49.5 mph

Also, boundary conditions for the speed is checked to avoid going faster than the speed limit.

Rest of the code for trajectory generation is same as described in project walkthrough.