# P4: Train a Smartcab to Drive

## Section 1 – Implement a basic driving agent

The agents.py file was altered to include a randomized selection of action for the smartcab. On each iteration, None, forward, left, or right were randomly selected. This was run 10 times with the following results.

|  |  |
| --- | --- |
| Iteration | Number of Steps to Goal |
| 1 | 10 |
| 2 | 90 |
| 3 | 22 |
| 4 | 172 |
| 5 | 52 |
| 6 | 33 |
| 7 | 192 |
| 8 | 7 |
| 9 | 40 |
| 10 | 105 |
| Average | 72.3 |
|  |  |

There appears to be no improvement in the driving agent behavior, which is to be expected if we are picking random actions. On average, it took the driving agent 72.3 moves to make it to the destination.

### States

When run out of the box, the code returns an input dictionary of general format:

{'light': state[0], 'oncoming': state[1], 'right': state[2], 'left': state[3 ]}

Where state[n] is a generalized state list at each waypoint. I would remake this state list as follows:

{'light': state[0], 'oncoming': state[1], 'right': state[2], 'left': state[3], ‘deadline’:state[4]}

It was mentioned on the Udacity forums (<https://discussions.udacity.com/t/guidance-please-on-states/44187)> to include “next waypoint” in the state dictionary, I don’t believe that is a state. I believe choosing the next waypoint is actually part of the model.