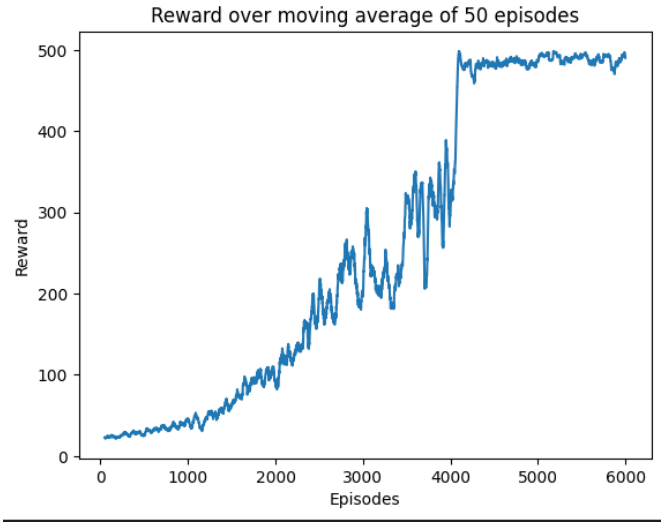
Q-Learning in Reinforcement Learning

Task 1 & 2:

I did the tasks and plotted the results and got:



Task 3: My observations and the final result:

Gamma should almost never be changed, since from my observations, gamma will affect the reward amount a lot. The less we have so far, I've seen a linear trend of it going down to some degree in maximum reward attainable. Gamma should stay at around 0.95 - 0.99 range.

The higher alpha is from what I've seen the more erratic the result can be, and it gets typically worse results than if it was lower.

I've tried multiple alphas, and I've concluded that one run wouldn't be enough to determine if the value is effective or not. So far, I've noticed alpha = 0.0001 having the best result. Getting to 500 before the 4000 mark. It seems to take longer to simulate, though.

The results I got from gamma = 0.99 and alpha = 0.0001: