● Assignment 2

Para 1:

- First, we import all the relevant libraries like numpy, pandas, matplotlib.pyplot, seaborn, tensorflow, etc.
- I had to create a separate environment for tensorflow and download all the libraries in this new environment in order to use tensorflow.

Para 2:

- Second, now we fetch the required data of “CLOROX” (Januray 2009 to December 2017) from yahoo finance.
- This step had no errors while implementing.

Para 3:

- Third, now we define our Q-Learning Agent using Greedy Epsilon scheme.
- . We define the hyper parameters like discount factor (gamma), epsilon decay.
- Then we define the conditions for exploration-exploitation.
- Then, we get the states. Followed by, we define a replay function which stores a mini batch of data which will help improve our DQN even further.
- Followed by, we define our buy function, in which we define three conditions which leads to our DQN signalling buy, sell or hold.
- Lastly, we define our train function, which will be used later on to train our agent.
- There were some logical errors and conditional errors that I had to deal with, and I tried to play around with hyper-parameters to make the model more efficient, but after about an 1 hour of debugging, it was up and running.

Para 4:

- Fourth, now we train our dataset using initial_money of 10,000$, batch_size = 32 and window_size = 30.
- Then we observe the total rewards, cost and total money achieved at each iteration starting from 10 to 730 with a checkpoint at every 10 iterations.
- We found out that at 730th iteration (from Jan 2018 to Dec 2019), we have achieved a reward of around 75$ and total money rose to 10,075$. (testing the dataset)
- I had no problems to implement this step.

Para 5:

- Fifth, now we are testing the agent showcasing every stock we bought, sold or hold on to with its connected investment and total balance after the action.
- Now, at the end of 730 days, we have achieved a total balance of around 9979$ with a loss of 21$. (Jan 2018 to Dec 2019)
- But in the long run, after 2264 days, we have achieved a total balance of 10,077$ with a total profit of 77.
- This step took a long time to implement. At one point, I thought it was in an infinite loop, but then after a very long time, it actually gave results.

Part 6:

- Sixth, now we are plotting all our signals and showcasing our plot in the end.
- This step was implemented without any problems.

(Note: The DeepLizard videos shared were truly helpful to create a basic template for this code. I thank you guys for guiding us till the end, with which we were able to finally achieve something amazing.