CS662
Mobile Virtual Reality And Artificial Intelligence
ASSIGNMENT 3
GROUP 3

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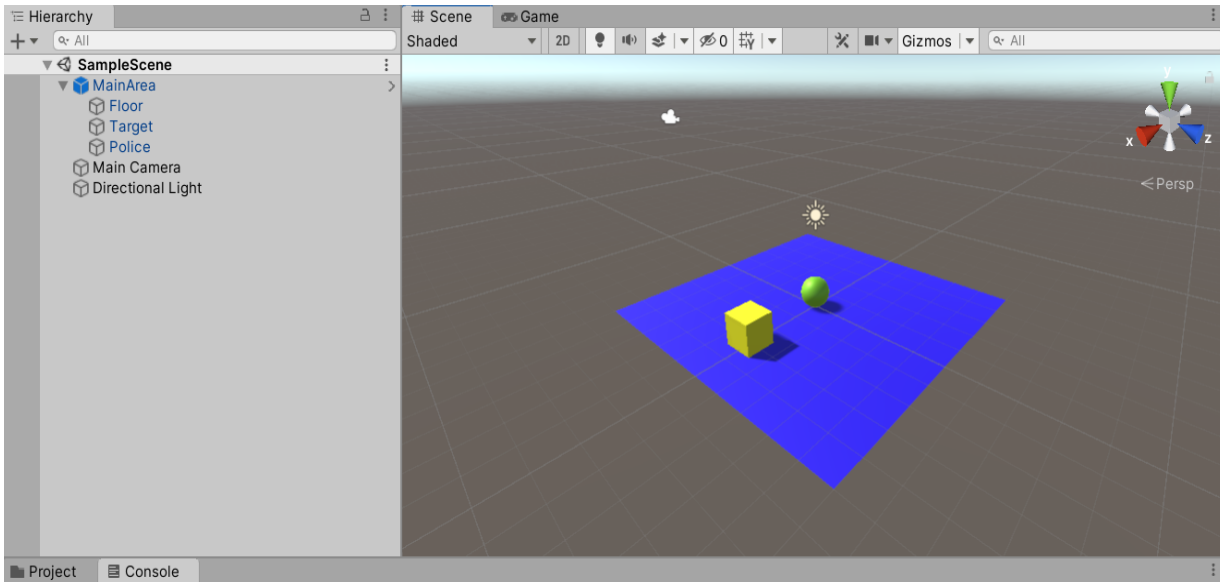
Question 1

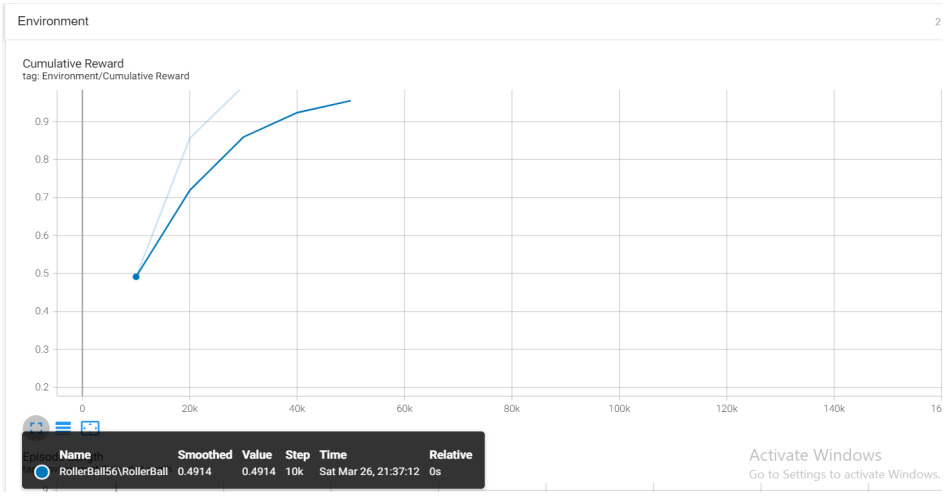
Part a : Make the RollerBall environment as shown in the lecture consisting of a blue floor, green sphere, and a yellow cube.



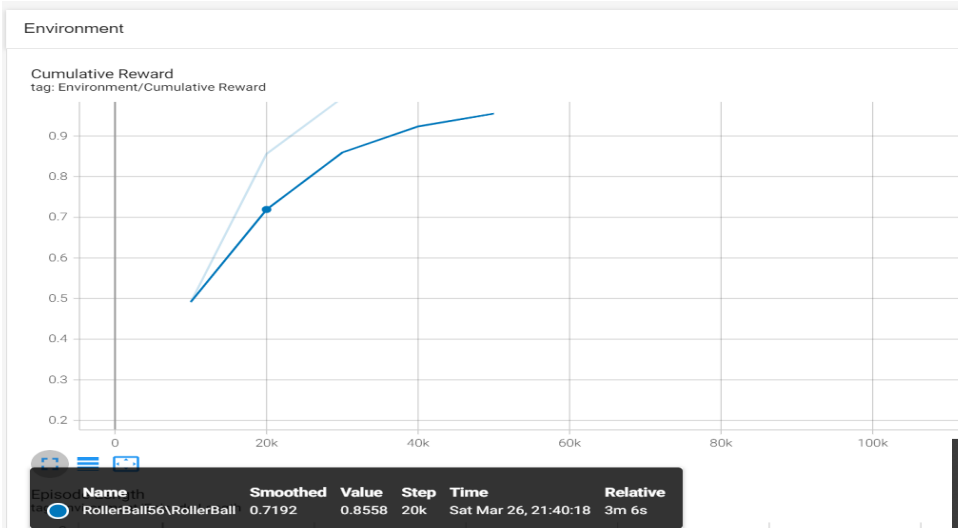
Part b, c, d : All the codes, observation details and parameter details are placed in the zip folder which is uploaded on the google drive. (link is on the last page of this document)

Part e : We got following results after

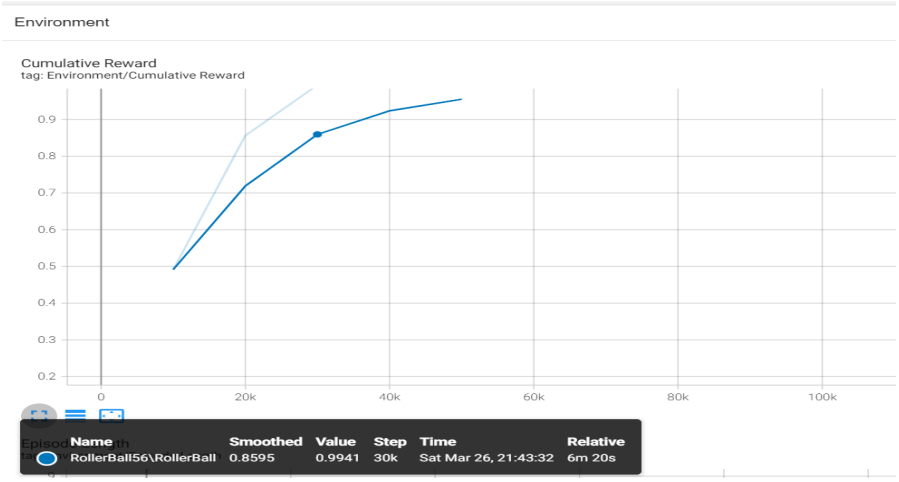
i) 10k steps



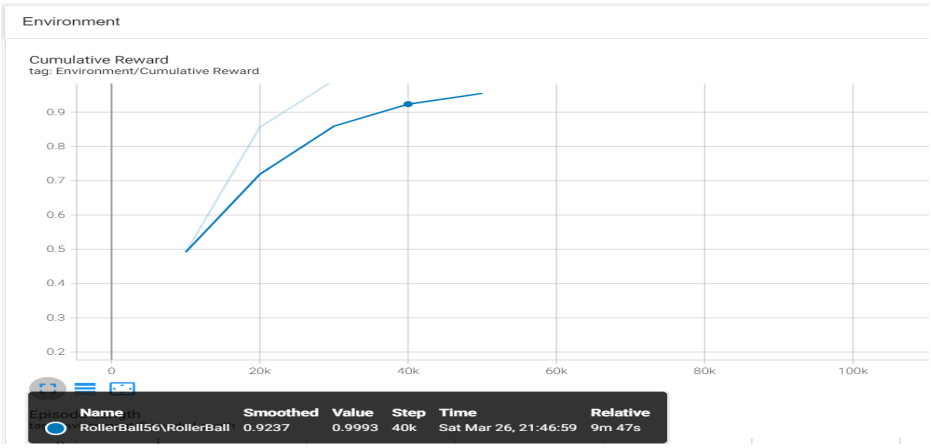
ii) 20k steps



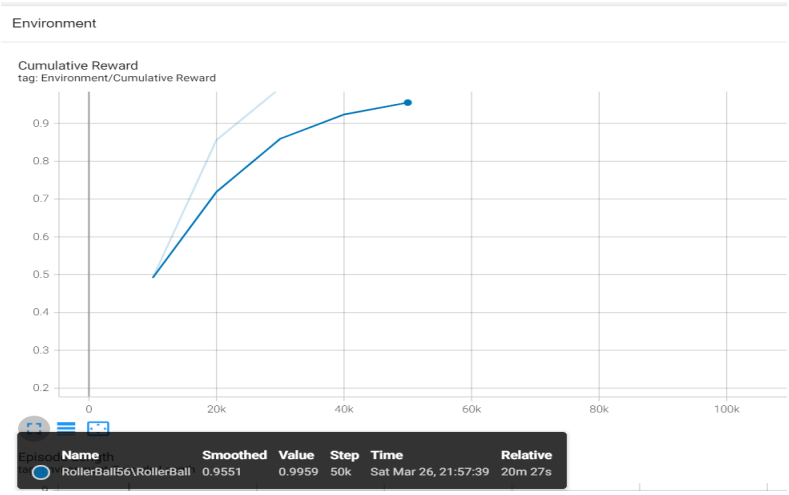
iii) 30k steps



iv) 40k steps



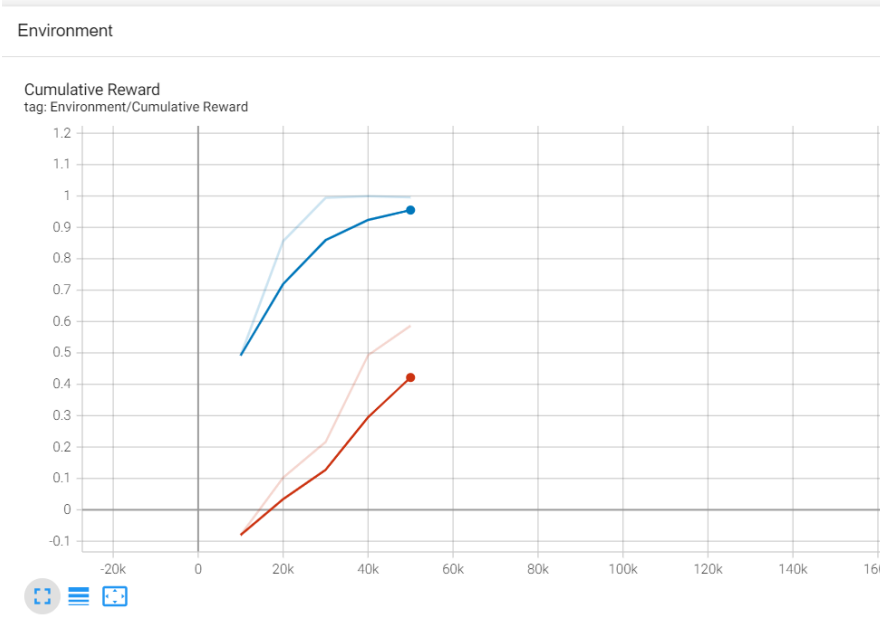
v) 50k steps



Question 2

Part a : we have applied all the changes mentioned in the assignment to our model that is
i) Change in the reward benefits
ii) Change in neural network (nodes and number of layers)

Below figure shows the cumulative reward vs number of steps taken to train the model in both question 1 (blue line) and question 2 (red line).



As you can see in the above plot we have first the blue one representing the training in the using the parameters mentioned in question 1 and the red line plot represents the result for the model after making the changes mentioned in question 2.

Part b :

Inferences :
i) As we can see in the diagram, the plot corresponding to the first set of parameters (question 1) starts from positive cumulative reward value whereas the red-line-plot (question 2) starts from a negative cumulative reward value due to negative reward value for the case of falling of sphere from the floor.

ii) As we can see in the diagram, the plot corresponding to the first set of parameters (question 1) converges at 1 cumulative reward value after 50k steps whereas in the red-line-plot (question 2) the cumulative reward value reaches to 0.45 only. This denotes that we require more steps if we decrease the number of hidden nodes, number of layers in the neural network or add negative cumulative reward value.

Q1 drive link :

https://drive.google.com/file/d/1yLyGLKHKBiPbfLdkQmgXswAn9zc0HvDL/view?usp=sharing

Q2 drive link :

https://drive.google.com/file/d/1icQw_dK4aZPannU7o2AP0nD02d_E8-yK/view?usp=sharing