Programming 1-Graph Neural Network

Table 1

Number of Hidden Layers	8 (6 GCN Conv and 2 Linear)
Hidden Layer Size-GCN Conv	512,256,128,64,32,16
Hidden Layer Size-Linear	16,8
Activation Function	Leaky ReLU
Learning Rate	0.001
Optimizer	Adam
Loss	Mean Square Error
Number of epoch	50
MSE of the test set	171.10967211496984 (<200)

Result Plots:

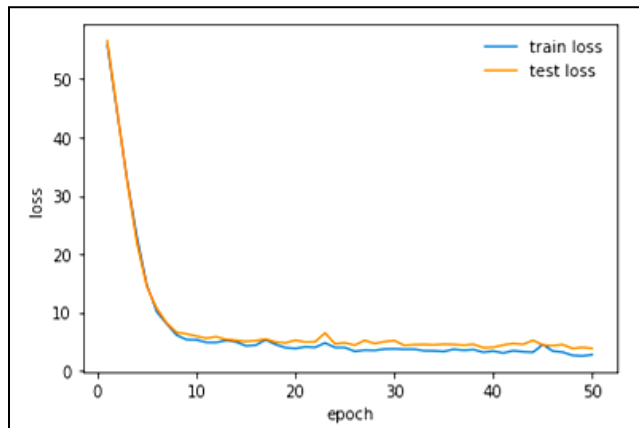1) Train and Test Loss Vs Epoch

Figure 1

From Figure 1 it can be seen that the loss decreases during training and testing process steeply in the beginning and after a point there is not much change in the loss.
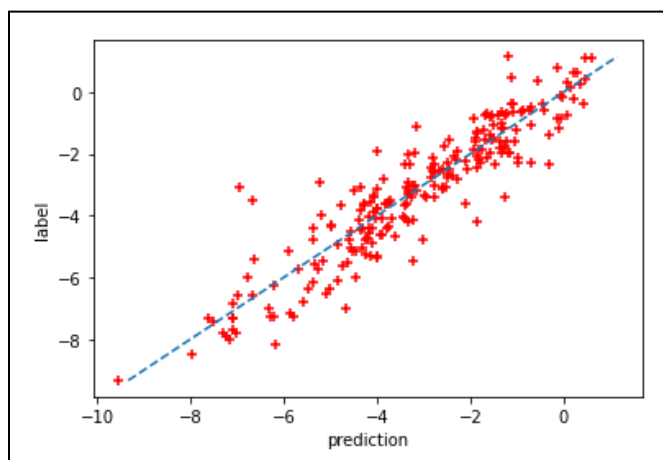
2) Label Vs Prediction

Figure 2

From Figure 2 it can be seen that the label and prediction points follow a linear trend. This means that the model is predicting well.

Programming 2-DQN

Table 2

Number of Hidden Layers	3
Hidden Layer Size-Linear	64,64,64
Activation Function	ReLU
Batch_size	128
Eps_start	0.9
Eps_decay	2000
Eps_end	0.05
Target_update	10
Memory_capacity	10000
Gamma	0.999
Number of episodes (training)	1000

Performance of 10 Test Episodes (train episodes=500):

Mean duration of test episodes =213.1 (>200)

Figure 3

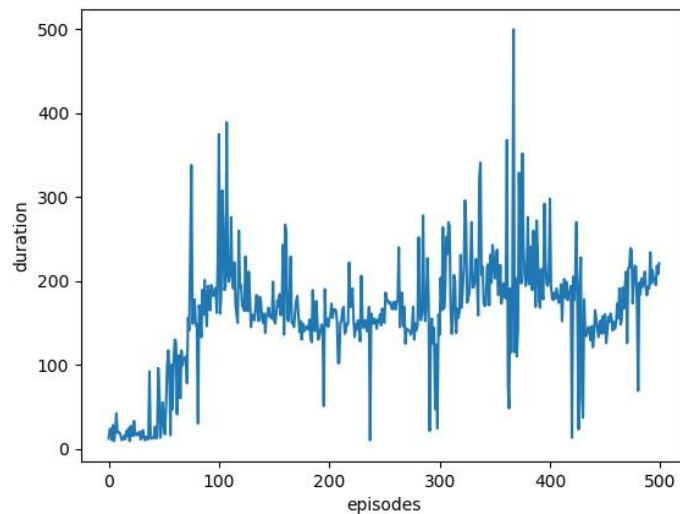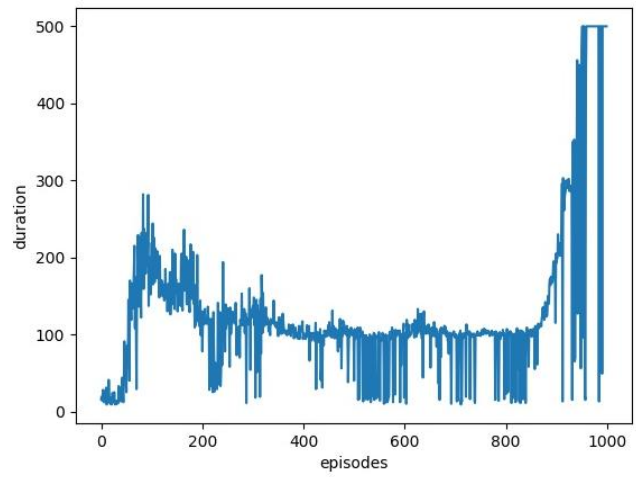Duration Vs Episodes Plot (Training Process, train episodes=500)

From Figure 4 we can see that in duration of most of the episodes are greater than 200

Figure 4

Performance of 10 Test Episodes (train episodes=1000):

Figure 5

Figure 6

As the number of training episodes is increased the mean test duration increases