

Pranav H

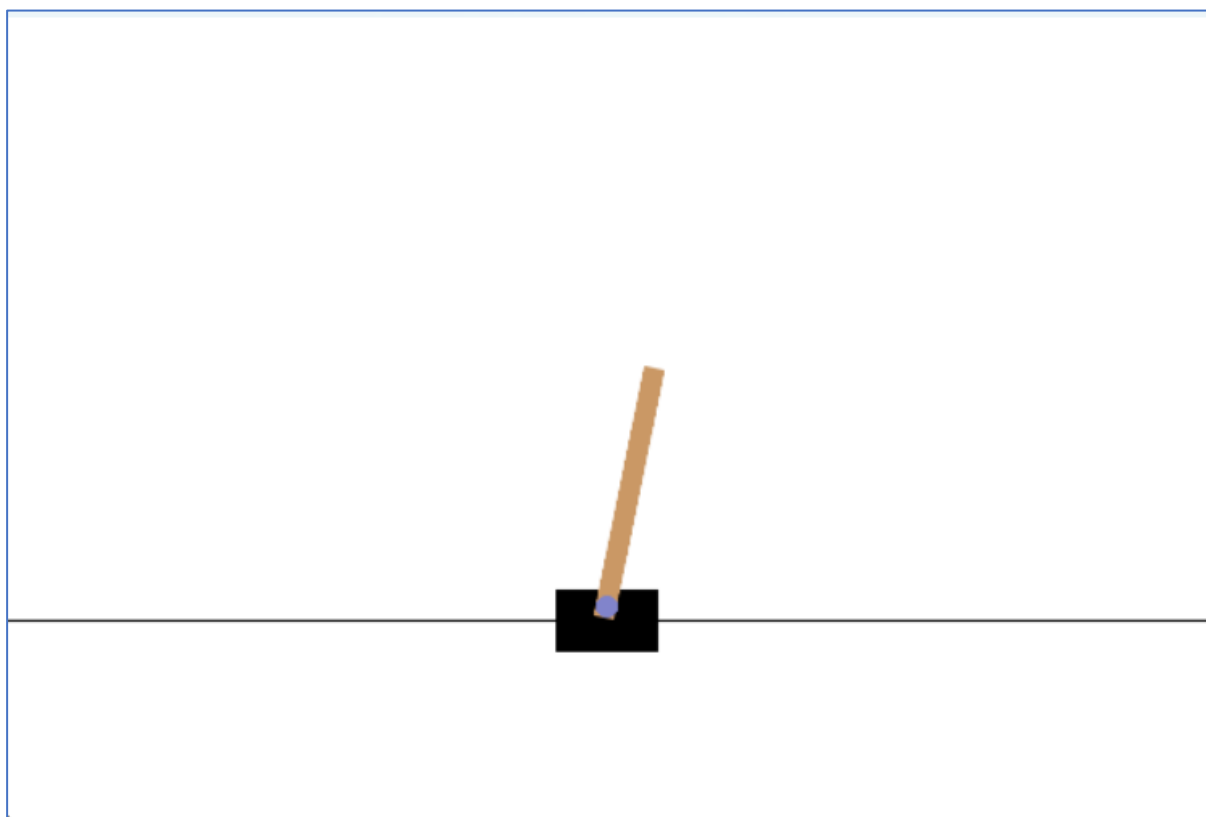
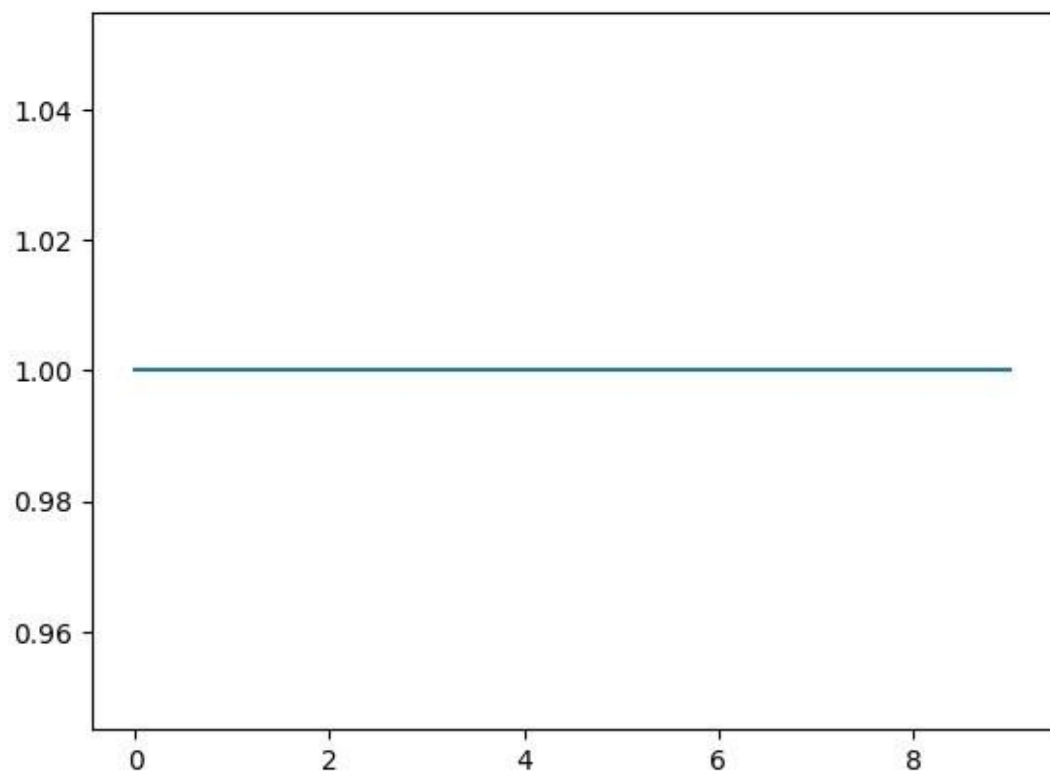
BL.EN.U4AIE21105

- Lab - 2

```
import gymnasium as gym
import time
import matplotlib.pyplot as plt
```

- Environment : CartPole-v1

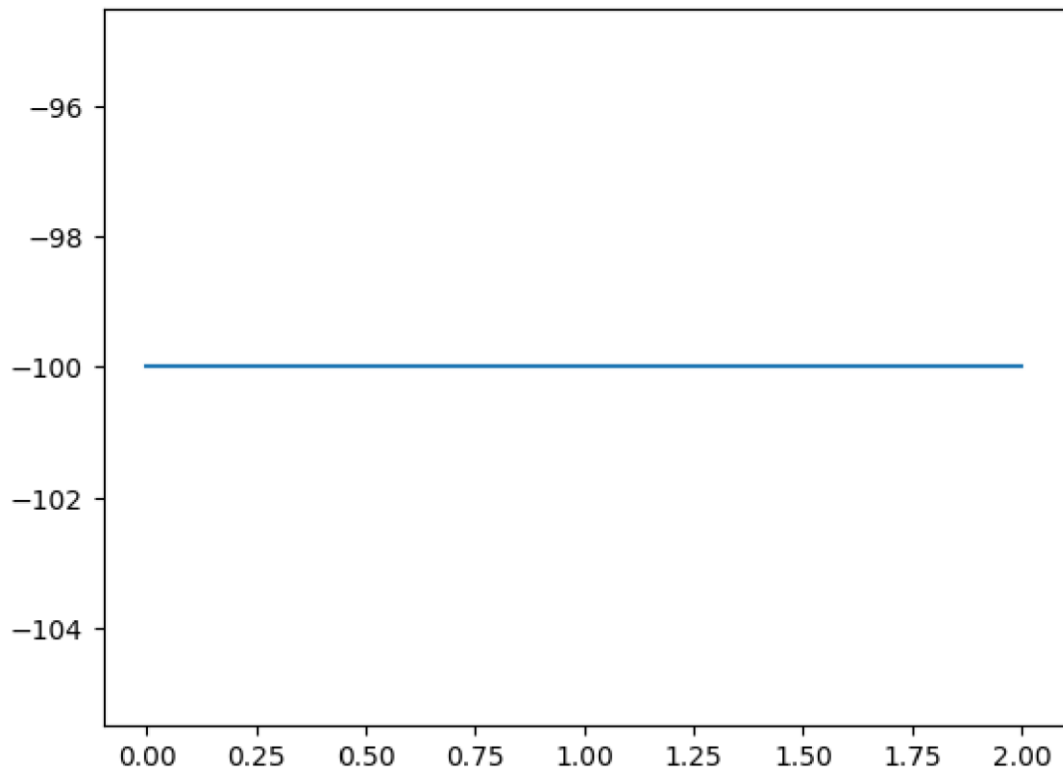
```
env = gym.make('CartPole-v1', render_mode='human')
rewards = [] for _ in range(10):
    env.reset() done = False while not
done: action = env.action_space.sample()
obs,reward,done,x,info = env.step(action)
env.render() time.sleep(0.01)
rewards.append(reward) env.close() for i,r in
enumerate(rewards): print(f"Episode: {i+1}
\tReward: {r}") plt.plot(rewards)
Episode: 1 Reward: 1.0
Episode: 2 Reward: 1.0
Episode: 3 Reward: 1.0
Episode: 4 Reward: 1.0
Episode: 5 Reward: 1.0
Episode: 6 Reward: 1.0
Episode: 7 Reward: 1.0
Episode: 8 Reward: 1.0
Episode: 9 Reward: 1.0
Episode: 10 Reward: 1.0
[<matplotlib.lines.Line2D at 0x2df47ce9dc0>]
```



- Environment : LunarLander-v2

```
env = gym.make('LunarLander-v2', render_mode='human')
rewards = [] for _ in range(3): env.reset()
done = False while not done: action =
env.action_space.sample()
obs, reward, done, x, info = env.step(action)
env.render() time.sleep(0.01)
rewards.append(reward) env.close() for i, r in
enumerate(rewards): print(f"Episode: {i+1}
\tReward: {r}") plt.plot(rewards)
Episode: 1 Reward: -100
Episode: 2 Reward: -100
Episode: 3 Reward: -100
[<matplotlib.lines.Line2D at 0x2df4affd850>]
```





- Environment : MountainCar-v0

```
env = gym.make('MountainCar-v0', render_mode='human')
rewards = []
for _ in range(10):
    env.reset()
    done = False
    while not done:
        action = env.action_space.sample()
        obs, reward, done, x, info = env.step(action)
        env.render()
        time.sleep(0.01)
    rewards.append(reward)
env.close()
for i, r in enumerate(rewards):
    print(f"Episode: {i+1} \t Reward: {r}")
plt.plot(rewards)
```

```
-----
-----
KeyboardInterrupt                                Traceback (most recent call
last)
Cell In[10], line 8
      6 while not done:
      7     action = env.action_space.sample()
----> 8     obs, reward, done, x, info = env.step(action)
```

```
9     env.render()
10    time.sleep(0.01)
```

File

c:\Users\harish\AppData\Local\Programs\Python\Python312\Lib\sitepackages\gymnasium\wrappers\time_limit.py:57, in TimeLimit.step(self, action)

```
46 def step(self, action):
47     """Steps through the environment and if the number of steps
    elapsed exceeds ``max_episode_steps`` then truncate.
48
49     Args:
50     (...)
51
52     55
53     56     """
--> 57     observation, reward, terminated, truncated, info =
self.env.step(action)
58     self._elapsed_steps += 1
60     if self._elapsed_steps >= self._max_episode_steps:
```

File

c:\Users\harish\AppData\Local\Programs\Python\Python312\Lib\sitepackages\gymnasium\wrappers\order_enforcing.py:56, in OrderEnforcing.step(self, action)

```
54 if not self._has_reset:
55     raise ResetNeeded("Cannot call env.step() before calling
    env.reset()")
--> 56 return self.env.step(action)
```

File

c:\Users\harish\AppData\Local\Programs\Python\Python312\Lib\sitepackages\gymnasium\wrappers\env_checker.py:51, in PassiveEnvChecker.step(self, action)

```
49     return env_step_passive_checker(self.env, action)
50     else:
--> 51     return self.env.step(action)
```

File

c:\Users\harish\AppData\Local\Programs\Python\Python312\Lib\sitepackages\gymnasium\envs\classic_control\mountain_car.py:148, in MountainCarEnv.step(self, action)

```
146 self.state = (position, velocity)
147 if self.render_mode == "human":
--> 148     self.render()
149 return np.array(self.state, dtype=np.float32), reward,
terminated, False, {}
```

File

c:\Users\harish\AppData\Local\Programs\Python\Python312\Lib\sitepackages\gymnasium\envs\classic_control\mountain_car.py:266, in

MountainCarEnv.render(self)

```
    264     if self.render_mode == "human":
    265         pygame.event.pump()
--> 266     self.clock.tick(self.metadata["render_fps"])
    267     pygame.display.flip()
```

```
    269 elif self.render_mode == "rgb_array":
```

KeyboardInterrupt:

