Exercise 3 The Random Agent

THE RANDOM AGENT

In this exercise, you will examine one implementation of an agent in the reinforcement learning setting.

The agent that you will examine is a random agent. It basically just acts randomly in the environment. For example, if the environment allows four different actions, then the agent will randomly execute one of those four actions, for each step it takes, in the environment. The goal of this lab is to show the construct of the environment, agent, and simulation, that we will use throughout this course.

Make sure that you have completed the setup requirements as described in the Set Up Lab Environments section.

Before we go to the Random agent implementation, let's examine the **simulation.py** file which is located under the **lib** folder. Here you will fine the **Experiment** class, which hosts the **run_agent()** function, among other functions.

The **run_agent()** function is where the simulation for the random agent will run. You can set the number of episodes you'd like to run.

- An episode starts when the agent take the first step in that episode.
- An episode ends when the agent reach a terminal state, whether it is the goal, or other terminal state(s) such as a cliff, or the maximum steps allowed per episode by the environment.
- Once an episode ends, the environment will reset, and the next episode will start.
- The simulation will end until the number of episodes you specified.

The **run_agent()** function also captures the statistics of the resulting simulation and plots the necessary graphs to analyze the results. You can either view the result interactively, or upon completion. If you choose to view it interactively, make sure you only select a low number of episodes. Otherwise, the simulation may take a very long time. The **Experiment** class also contains other functions which will be used to run simulation for other modules.

Now, let's take a look at the random agent implementation.

1. Run jupyter notebook and open the “Ex1.3 Random.ipynb” notebook under **Module 1** folder.
2. Examine the notebook. We have given you an implementation of a Random agent.
3. Once you have studied the notebook, run it (don't change any parameter), observe the results, and answer the following questions.

Lab Question

1/1 point (graded)

How does the random agent perform in the SimpleRoomsEnv environment after 100 episodes?

- The agent never/almost never reach the goal
- ✔ The agent manages to reach the goal a number of times
- The agent always reach the goal after certain number of episodes

Submit You have used 1 of 2 attempts

✔ Correct (1/1 point)

Lab Question

1/1 point (graded)

How does the random agent perform in the CliffWalkingEnv environment after 100 episodes?

- ✔ The agent never reach the goal

- The agent manages to reach the goal a number of times
- The agent always reach the goal after certain number of episodes

Submit You have used 1 of 2 attempts

✔ Correct (1/1 point)