Exercise 2 The CliffWalking Environment

The CliffWalking Environment

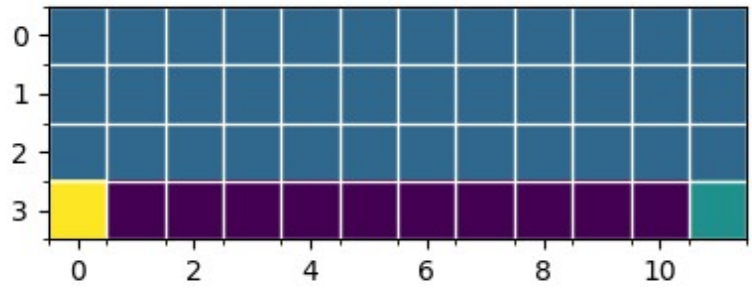
In this exercise, you will examine another implementation of a grid world type environment, with a different reward structure.

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

Credit to Denny Britz for the implementation of the CliffWalking Environment

---

The CliffWalking environment is a simple environment of a 4x12 tiles, which has “cliffs” or terminal states on it. The initial state has the agent starting at the tile on bottom left corner, with the goal to reach the tile at the bottom right corner, avoiding the cliffs in the process.



Examine the **cliff_walking.py** file under the **lib\envs** folder. Specifically, take a look at the **CliffWalkingEnv** class. The **CliffWalkingEnv** class implements the **DiscreteEnv** class from open AI's gym.envs.toy_text.discrete.

Take some time to study the implementation of this environment. Start by examining how the states are represented in this environment. Also, look at how the CliffWalkingEnv class implements the reset() and step() functions as these two are the ones used to interact with an agent.

Once you are familiar with the code, answer the following questions.

Lab Question

1.0/1.0 point (graded)

How many unique states does the CliffWalkingEnv environment has?

- ○ 0
- ○ 1
- ○ 2
- ○ 4
- ○ 16
- ◉ 48 ✔
- ○ 256

Submit You have used 1 of 2 attempts

Lab Question

1.0/1.0 point (graded)

How many unique actions can an agent perform in the CliffWalkingEnv environment?

- ○ 0
- ○ 1
- ○ 2
- ◉ 4 ✔

Submit You have used 1 of 2 attempts

Lab Question

1.0/1.0 point (graded)

How is the states represented in the CliffWalkingEnv environment? HINT: Take a look at the step() function and check how is state returned by that function.

- ○ Using an integer between zero and the number of unique states
- ○ Using an integer between zero and the number of unique states minus 1
- ◉ Using a sets of X, Y coordinates ✔
- ○ Using arrays of one-hot encoding

Submit You have used 1 of 2 attempts

Lab Question

1.0/1.0 point (graded)

In the CliffWalkingEnv environment, what is the reward given to the agent for each step taken, when the goal is not yet reached and the cliff is not encountered?

- ○ -100
- ○ -50
- ◉ -1 ✔
- ○ 0
- ○ 1
- ○ 50
- ○ 100

Submit You have used 1 of 2 attempts

Lab Question

1.0/1.0 point (graded)

In the CliffWalkingEnv environment, what is the reward given to the agent, when the goal is reached?

- ○ -100
- ○ -50

- (●) -1 ✔
- ( ) 0
- ( ) 1
- ( ) 50
- ( ) 100

Submit You have used 1 of 2 attempts

Lab Question

1.0/1.0 point (graded)

When will an episode ends in the CliffWalkingEnv environment (when will the environment reset)?

- [ ] When the agent has taken 5 steps
- [ ] When the agent has taken 50 steps
- [ ] When the agent hits a wall
- [x] When the agent moves to one of the cliffs
- [x] When the agent has reached the goal
- [ ] When the agent has reached the goal 5 times
- [ ] When the agent has reached the goal 50 times

✔

Submit You have used 2 of 2 attempts