Exercise 2B Optimistic Greedy

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Exercise 2.2B: Optimistic Greedy

In this exercise, you will implement the optimistic greedy policy.

Make sure that you have:

1. Completed the setup requirements as described in the Set Up Lab Environments section
2. Completed the previous exercises in this lab

Now, run jupyter notebook and open the "Ex2.2B Optimistic Greedy.ipynb" notebook under **Module 2** folder.

1. Examine the notebook.
2. Your task is to implement an optimistic greedy policy: that is initialize the $\hat{r}_a$ to a large initial value R, which is implemented in the init() function, and then play the greedy algorithm.
3. We have given you some boiler plate code, you only need to modify the part as indicated.
4. Once you have done that, prepare a simulation. Don't change any other parameter, that is:
   - evaluation_seed = 5016
   - num_actions = 10
   - trials = 10000
   - distribution = "bernoulli"
5. Set the R to zero.
6. Run the simulation, observe the results, and answer the following questions.

Lab Question

1/1 point (graded)

With R set to zero, what do you observe?

- ○ The optimistic greedy behaves randomly
- ○ The optimistic greedy behaves like the epsilon greedy algorithm
- ◉ The optimistic greedy behaves like the greedy algorithm ✔

Submit You have used 1 of 2 attempts Save Show Answer

✔ Correct (1/1 point)

Set the R to a very, very large number, let's use 10000, which is the same number with the number of trials. Run the simulation again and observe the results.

Lab Question

1/1 point (graded)

With R set to 10000, what do you observe?

- ◉ The optimistic greedy behaves randomly ✔
- ○ The optimistic greedy behaves like the optimistic greedy algorithm
- ○ The optimistic greedy behaves like the greedy algorithm

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✔ Correct (1/1 point)

Now, try several different number of R (1, 3, 5). Make sure the other parameters stay the same, that is:

- evaluation_seed = 5016
- num_actions = 10
- trials = 10000
- distribution = "bernoulli"

Run the simulations and observe the results.

Lab Question

1/1 point (graded)

Which is the smallest R that allow the optimistic greedy to find the optimal arm?

- ○ 1
- ◉ 3 ✔
- ○ 5

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✔ Correct (1/1 point)

Now let's prepare another simulation by setting a different seed, so your parameters should look like this:

- evaluation_seed = 1239
- num_actions = 10
- trials = 10000
- distribution = "bernoulli"

Run the simulations with different number of R (1, 3, 5) and observe the results.

Lab Question

1/1 point (graded)

Which is the smallest R that allow the optimistic greedy to find the optimal arm?

- ◉ 1 ✔
- ○ 3
- ○ 5

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✔ Correct (1/1 point)

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