Part B: Problem 3

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Problem Set due Dec 2, 2022 07:30 +08 Completed

Part B: Problem 3: Implementing a Simulation With Drugs

10.0/10.0 points (graded)

In this problem, we consider the effects of both administering drugs to the patient and the ability of virus particle offsprings to inherit or mutate genetic traits that confer drug resistance. As the virus population reproduces, mutations will occur in the virus offspring, adding genetic diversity to the virus population. Some virus particles gain favorable mutations that confer resistance to drugs.

ResistantVirus class

In order to model this effect, we introduce a subclass of `SimpleVirus` called `ResistantVirus`. `ResistantVirus` maintains the state of a virus particle's drug resistances, and accounts for the inheritance of drug resistance traits to offspring. Implement the `ResistantVirus` class.

Hint: `reproduce` function child resistances

If you are really unsure about how to think about what each child resistances should be changed to, here is a different approach. If the probability `mutProb` is successful, the child resistance switches. Otherwise, the child resistance stays the same as the parent resistance.

Note: If you want to use numpy arrays, you should add the following lines at the beginning of your code for the grader:

```
import os
os.environ["OPENBLAS_NUM_THREADS"] = "1"
```

Then, do `import numpy as np` and use `np.METHOD_NAME` in your code.

```
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```

Press ESC then TAB or click outside of the code editor to exit

Correct

Test results

See full output

CORRECT

See full output

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? third key in dict with two keys?

Calculator

7

I am struggli… e … with tw…

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confused **possible spoiler** probably not

bit confused. Your output: virus = ResistantVirus(0.0, 1.0, {"drug1":True, "drug2":False}, 0.0) Traceback (most recent call last): File "s... 4

Test: ResistantVirus 7: Test for positive mutability.

I think I don't understand the requirements on this one... the test goes: virus = ResistantVirus(1.0, 0.0, {"drug2": True}, 1.0) so, the wa... 8

How to gain resistance?

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