**Pet Shop Problem Statement and Reflection**

**Problem:**

Jerry is the manager of a small, brand-new pet shop which is owned by a large company and is given a starting budget of $10,000. Every month, Jerry can order pets, choosing their name and what species he wants. However, he only discovers their price and attributes (and by extension the probability of them being bought) once they are sent to him. He can then decide whether he wants to keep the pets for his shop or send them back to the large company for another pet shop to sell. If he chooses to send them, it will cost him a delivery fee. After he has bought his pets for the month, he can choose how many months to let the shop run without buying more pets. The pets are sold at a higher price than what he paid for them, and it takes a certain amount of money per month for the shop to run. Jerry hires someone to make a game that is similar to what his pet shop will be like in order to prepare himself for the real deal.

My program will allow the user to create animals with random prices and attributes, and a price that depends on its attributes. They will then be able to accept or decline the animal after seeing its price and chance of being bought. If they choose to buy it, it will be added to their shop’s inventory and its cost will be subtracted from their net worth. They can then run the shop for however many months they want, to sell the pets in their inventory, before repeating this cycle. If a pet is sold, it will be removed from the inventory and stored in the sold list and the change will be broadcasted to the user. A scatter plot of their net worth over time will also be shown after each iteration.

My program will allow Jerry to gauge how his shop will operate once it opens.

**Reflection:**

I decided to create 3 classes, one to create animals, one to store animals in the shop’s inventory and one to store the animals that had been sold. For the shop inventory, I made functions that added and removed animals, as well as one that printed the inventory list and one that ran the shop for a month. For the shop sold, I made functions that added animals, printed the list of sold animals and plotted a graph of the shop’s net worth($) over time (months) (using matplotlib).

Because I used user input to create animal objects, it was difficult to set it to a variable, as I would need multiple unique variables that could be recalled. With some research, however, I was able to find a way to set the name of the animal as the key in a dictionary and the value as the animal object. I could improve the results by plotting more graphs or by further improving the scatter plot I already graphed. This would also improve my skills as I would be learning more about how to plot graphs with matplotlib. I think it would have been beneficial if more time was spent on explaining how classes work/practicing as it took some time for me to wrap my head around it as I am not too familiar with classes.