CSE514, Fall 2022, HW 4 Name: Student ID:
Note: This homework is worth a total of 15 points

Please refer to the
petNB classifier.xlsx
file posted on Canvas to find the probability values needed for the first three questions.

Q1 (4pts): Use the Naïve Bayes Classifier to label the following pet:

Color	Size	Temp	Baths	Pet type:
Yellow	2lb	Warm-blooded	Everyday	-

Q2 (4pts): A quick google search reveals that the number of pets in America is about:

Cats	= 58.4 mil
Dogs	= 76.8 mil
Small mammal	= 6.2 mil
Reptile	= 6.0 mil
Fish/amphibian	= 76.3 mil
Birds	= 22.9 mil
Other	= 4.7 mil

Explain how this would change your classifier, and then re-classify the pet.

Q3 (4pts): Imagine that the size of the test pet was actually unit-less. The data collector forgot to record whether the pet was 2oz, 2g, 2lb, 2kg, or even 2tons. As such, your supervisor tells you to treat this value as missing. Explain how this would change your classification approach, and then re-classify the pet.
Ignore the information from Q2 for this problem.

Q4 (3pts): Describe the difference between hard vs. soft margin classifiers, and give one advantage for each
(ie. Why would you pick a hard margin classifier over a soft margin classifier, and vice-versa)