Lecture 24:
Programming with Subclasses

CS 1110
Introduction to Computing Using Python

Put Me in the Zoo

- Classes: Animal, Bird, Fish, Penguin, Parrot
- Instances can swim, fly, and speak based on class membership
- Track:
  - # of animals created
  - name, tag #, weight for each animal (w/default weights)
- Methods:
  - print words if animal speaks
  - animal eats: print eating sounds and gain 1 pound

Questions to ask

- What does the class hierarchy look like?
- What are class attributes? What are instance attributes? What are constants?
- What does the __init__ function look like?
- How do we support default weights?
- How do we implement the class methods?
- What does a "stringified" Animal look like? str(a)

speak(words)

If `speak` is defined by the `Animal` Class like this:
```python
def speak(self, words):
    if self.CAN_SPEAK:
        print(words)
```
Q2: Which subclasses need to provide their own version of this method?

A: Bird, Fish, Penguin, and Parrot
B: Bird and Parrot
C: just Parrot
D: none
E: I don't know

If `eat` is defined by the `Animal` Class like this:
```python
def eat(self):
    print("NOM NOM NOM")
    self.weight += 1
```
Q3: We want Fish to say nothing and Birds to make a pecking sound. Which subclasses need to provide their own version of this method?

A: Bird, Fish, Penguin, and Parrot
B: Bird and Fish
C: just Bird
D: just Fish
E: I don’t know