Announcements
Put Me in the Zoo

• Develop classes: Animal, Bird, Fish, Penguin, Parrot
• Instances can **swim**, **fly**, and **speak** based on class membership
• Track:
  - # of animals created (**Q1**)
  - **name**, **tag #**, **weight** for each animal (w/default weights)
• Methods:
  - print words if animal speaks
  - animal eats: print eating sounds and gain 1 pound
• Read the skeleton zoology.py
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 methods?
• What does a "stringified" Animal look like?
  \texttt{str(a)}
Q1: What is the best way to keep track of the number of Animals that have been created?

A: a global variable that you increment each time you call the Animal constructor
B: a class attribute inside the Animal class that is incremented by the Animal's __init__ method
C: an instance attribute inside each Animal that is incremented by the Animal's __init__ method
D: A & B both work, but B is better
E: A & B & C all work, but C is best
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 methods?
• What does a "stringified" Animal look like?

`str(a)`
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
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 methods?
- What does a "stringified" Animal look like?

```
str(a)
```
• Implement class Penguin
  ▪ Penguins cannot fly but can swim
  ▪ Let’s say the default weight is 25 units
  ▪ You decide what it sound it makes when it eats
• Experiment! It’s the best way to learn
• In lieu of pre-lecture reading for Thurs, read, run, and experiment with module zoo, which sets up a Zoo and lets you interact with the animals. Check out how the module uses Animal and its subclasses