159.172 Computational Thinking

Week 4: Exercises on Python classes

Problem set 1

1. Write code to create an instance of this class and set its attributes:

```
class Dog():
    age = 0
    name = ""
    weight = 0
```

2. Write code to create *two different* instances of this class and set attributes for both objects:

```
class Person():
    name = ""
    cellPhone = ""
    email = ""
```

3. For the code below, write a class that has the appropriate class name and attributes that will allow the code to work.

```
myBird = Bird()
myBird.color = "green"
myBird.name = "Sunny"
myBird.breed = "Parrot"
```

4. Define a class that would represent a character in a simple 2D game. Include attributes for the position, name, and strength.
5. The following code runs, but it is not correct. Correct this code.

```
class Person():
    name = ""
    money = 0

nancy = Person()
name = "Nancy"
money = 100
```

6. The following code does not run. Correct this code so that it prints out **`Bob has 0 dollars.`**

```
class Person():
    name = ""
    money = 0

bob = Person()
print (bob.name, "has", money, "dollars.")
```

Problem set 2

To answer the next four questions, create one program. In that program will be the answers for all four questions.

You should have a program that starts with three class definitions, one each for the first three questions. Then code that will create instances of each class, and that will be the answer to the last problem.

1. Write code that defines a class named **`Animal`**:
    - Add an attribute for the animal name.
    - Add an **`eat()`** method for Animal that prints ``Munch munch.''
    - A **`makeNoise()`** method for Animal that prints ``Grrr says [animal name].''
    - Add a constructor for the Animal class that prints ``An animal has been born.''
2. A class named **`Cat`**:
    - Make Animal the parent class for Cat (in other words, Cat inherits from Animal.)
    - A **`makeNoise()`** method for Cat that prints ``Meow says [animal name].''
    - A constructor for Cat that prints ``A cat has been born.'' and it calls the parent constructor.
3. A class named **`Dog`**:
    - Make Animal the parent class for Dog (in other words, Dog inherits from Animal.)
    - A **`makeNoise()`** method for Dog that prints ``Bark says [animal name].''
    - A constructor for **`Dog`** that prints ``A dog has been born.'' and it calls the parent constructor.
4. A main program with:
    - Code that creates a cat, two dogs, and an animal.
    - Sets the name for each animal.
    - Code that calls **`eat()`** and **`makeNoise()`** for each animal.