Assignment 10 – OOP Part 2 (Superheroes)

Goals

- More practice writing multiple classes with attributes and methods
- Creating and using instance variables
- Creating and using classes containing objects of another class type

Requirements

Using classes, you will be writing a program that simulates superheroes with superpowers and having them interact to battle each other. You will be defining a superhero class to represent superhero objects in your main program.

Requirements for the **Superhero** class, defined in a python file **Superhero.py**:

- A **Superhero** has the following class attributes. Be sure to make all of these attributes **private**:
  - name (a **string**, representing the name of the superhero)
  - type (a **string**, either hero or villain)
  - attack (an **integer**, representing the strength of the superhero's attack)
  - health (an **integer**, representing the hero's remaining health points)
- Define the following methods:
  - **__init__**
    - Inputs (3): name (a string), type (a string, either "hero" or "villain"), attack (an integer)
    - Return value: none
    - Initialize the first three attributes using the three input values. Always initialize health to 100.
  - **getName**:
    - Input: none
    - Return value: the name of the superhero
  - **getAttack**

        - Input: none
        - Return value: the attack value of the superhero
    - **getHealth**
        - Input: none
        - Return value: the current health points of the superhero
    - **getType:**
        - Input: none
        - Return value: the type of the superhero
    - **loseHealth**
        - Input: an integer representing the attack value of the opponent
        - Return value: none
        - Decrease the superhero's health points by the attack value of the opponent (where negative health is okay)
    - **isDead**
        - Input: none
        - Return value: a boolean (True or False)
        - Return True if the superhero's health is less than or equal to 0
        - Return False otherwise
    - **__str__**
        - Input: none
        - Return value: a string containing a message about the superhero
        - Format the message to include information about the superhero's name, type, superpower, and health
        - Examples:
            - **Iron Man the hero has 10 attack points and currently has 65 points of health.**
            - **Harley Quinn the villain has 15 attack points and currently has 80 points of health.**

Requirements for **main** method, to be defined in a python file **SuperheroProgram.py**:

- Recall that in order to use a class defined in another file, you must include an import statement at the top of your code.

- Ask the user for the name, type, and attack value of Superhero #1 and then for Superhero #2.
- Create two **Superhero** objects (call them *player1* and *player2*) and pass in the appropriate arguments *(You might need temporary variables to store the user input.)*
- After that, create a **while** loop where the players "fight" **as long as neither player is dead.**
  - Hint: For the condition for this **while**, remember the **Superhero** class has a method called **isDead()**
  - Every time the players fight, they should each have their health decrease by the amount of the other players attack value, and also print out **the round number** and each hero's information.
    - For example:
      player1 has **healthPoints** = 10 and **attackValue** = 1, and
      player2 has **healthPoints** = 20 and **attackValue** = 2
    - Then, after one round:
      player1 has **healthPoints** = 8 (which is 10-2), and
      player2 has **healthPoints** = 19 (which is 20-1)
- After the fight is finished and one player is injured, determine who the winner is and print out the result
  - The loser is the player who is injured, and the winner is the other player.
  - It is possible that both players are injured. In this case, you must say there was a tie.
- Ask the user if they would like to play another round. Continue looping the program as long as the user wants to play another round.

Sample Output

```
Enter fighter #1's name:
Batman
Is fighter #1 a hero or a villain?:
hero
Enter fighter #1's attack points:
17

Enter superhero #2's name:
```

```
Superman
Is fighter #1 a hero or a villain?:
hero
Enter fighter #1's attack points:
9

FIGHTERS

Batman the hero has 17 attack points and currently has 100 points of
health
Superman the hero has 9 attack points and currently has 100 points of
health

BEGINNING BATTLE!

====== Round 1 ======
Batman the hero has 17 attack points and currently has 91 points of
health
Superman the hero has 9 attack points and currently has 83 points of
health

====== Round 2 ======
Batman the hero has 17 attack points and currently has 82 points of
health
Superman the hero has 9 attack points and currently has 66 points of
health

====== Round 3 ======
Batman the hero has 17 attack points and currently has 73 points of
health
Superman the hero has 9 attack points and currently has 49 points of
health

====== Round 4 ======
Batman the hero has 17 attack points and currently has 64 points of
health
Superman the hero has 9 attack points and currently has 32 points of
health

====== Round 5 ======
```

```
Batman the hero has 17 attack points and currently has 55 points of
health
Superman the hero has 9 attack points and currently has 15 points of
health

====== Round 6 ======
Batman the hero has 17 attack points and currently has 46 points of
health
Superman the hero has 9 attack points and currently has -2 points of
health

Batman won!

Would you like to play again? (y/n) n
Goodbye!
```

Deliverables and Submission Instructions

- Create a folder on your computer called
  ITP115_a#_lastname_firstname
  (replace # with this lab number)
- Inside the folder, include your python source code
- Compress the folder (make a zip file) called
  ITP115_a#_lastname_firstname.zip
  (replace # with this assignment number)
- Upload zip file to Blackboard site for our course

Grading

Item	Points
	30
Total*	**30**

** Points will be deducted for poor code style, or improper submission.*