Lab 2 - It's Super Effective!

> Updated: 2/8/2024

> Due Date: iLearn

Building Blocks

You will be building off of your code from Lab 1. There will be a skeleton for Lab 2 given that has comments at the locations to place code, but most of this can be copied over from Lab 1.

We will be importing the library *random* that allows us to generate random numbers.

```
import random
```

This allows us to call functions and variables from the random library using dot notation.

Variables

The variables we created in Lab 1 will stay the same. Our existing variables should look roughly like this:

```
# python code

# pokemon 1 information: name, hit points, attack points
pokemon_1_name = 'Pikachu'
pokemon_1_hp = 100  # Hit Points
pokemon_1_ap = 20   # Attack Points

# pokemon 2 information: name, hit points, attack points
pokemon_2_name = 'Charmander'
pokemon_2_hp = 90
pokemon_2_ap = 25

# multiplier for when a critical hit is landed
crit_multiplier = 1.5
```

We will also be adding a variable named *turns* that will be set to 4.

Functions

We will be adding several functions that will replace most of our existing code. We will simply be migrating some of our existing code into modular functions to be called.

You will have function names and operations as follows:

```
# python code

# prints a fun welcome message
def welcome():
    # do the following:
    # print a welcome message
    # print 50 #'s (use one of the string operations we learned)

# calculates damage output. Crit multiplier should be 1 for
# normal damage
def calcDamage(ap, crit):
    # this function is complete
    # returns attack power minus a random integer between 1 and 5.
    # this is then multiplied by passed crit_multiplier
    return (ap - random.randint(1,5)) * crit

# applies damage to attacked pokemon
def applyDamage(hp, damage):
    # do the following:
    # code to return hp - damage

# print the outcome of the turn
def printOutcome(attacker, defender, damage, defender_hp):
    # this function is complete
    print(f"{attacker} attacks {defender} for {damage} damage.")
    print(f"{defender}'s HP is now {defender_hp}.")
```

Important: you will be wrapping the "main" part of your code in a main() function and then call this at the very bottom. This will be included in the skeleton file.

The Rest of Main

The rest of your code will be a for loop in main(). This will be at the bottom of main. Your for loop will look like the following pseudo-code/real-code mix:

```
# for loop to simulate a full battle with turns
for i in range(turns):
        print("-"*50)
        print(f"Turn {i}")
        ## pokemon_1 attacks pokemon_2
        # damage = call calcDamage() with correct arguments;
        # pokemon_1 will use crit_multiplier
        # pokemon_2_hp = call applyDamage() with correct arguments
        # call printOutcome() with the correct arguments

        ## pokemon_2 attacks pokemon_1
        # damage = call calcDamage() with correct arguments;
        # pokemon_2 will use normal damage so crit_multiplier will be 1
        # pokemon_1_hp = call applyDamage() with correct arguments
        # call printOutcome() with the correct arguments
```

Example Output

Note: your attack values will change each time the program is run, so your values might not look exactly like mine.

```
Welcome to the Python Pokemon Battle Simulator!
##################################################
--------------------------------------------------
Turn 0
Pikachu attacks Charmander for 27.0 damage.
Charmander's HP is now 63.0.
Charmander attacks Pikachu for 24 damage.
Pikachu's HP is now 76.
--------------------------------------------------
Turn 1
Pikachu attacks Charmander for 27.0 damage.
Charmander's HP is now 36.0.
Charmander attacks Pikachu for 20 damage.
Pikachu's HP is now 56.
--------------------------------------------------
Turn 2
Pikachu attacks Charmander for 25.5 damage.
Charmander's HP is now 10.5.
Charmander attacks Pikachu for 22 damage.
Pikachu's HP is now 34.
--------------------------------------------------
Turn 3
Pikachu attacks Charmander for 22.5 damage.
Charmander's HP is now -12.0.
Charmander attacks Pikachu for 24 damage.
Pikachu's HP is now 10.
```

Turning in Assignment

Please zip your file before turning it in through iLearn. This is to prevent iLearn from deleting your file (it can happen).

How to zip file on Windows: https://support.microsoft.com/en-us/windows/zip-and-unzip-files-8d28fa72-f2f9-712f-67df-f80cf89fd4e5

How to zip file on MacOS: https://support.apple.com/guide/mac-help/zip-and-unzip-files-and-folders-on-mac-mchlp2528/mac