

CS 101 - Attendance

Spring 2017

Algorithm Due : **April 16th, 2017**

Program Due : **April 23rd, 2017**

All work submitted must be your own.

Deliverables : You only need to submit your solution. You must use functions to modularize your work. You should use exception handling where necessary as well.

Pykemon Creatures

We're going to write a version of a popular battle game with python. You should use your new skills of creating objects. Each creature will have a name, hp (which stands for hit points, once they reach zero or below then the creature is in a coma and can no longer be used.), dmg which is the amount of damage the creature can do, their attack type and weakness type. Each creature has a unique attack type (blade, fire, ice). They also have a weakness to a given type (blade, fire, ice). During a battle if Animal A, has a dmg of 5 and attack type of fire is going against animal B that has 10 hp, and a weakness of fire. When A attacks, it gets a random # for the amount of damage he will do in this particular attack. Since the damage is 5, the damage will be from 1 to 5 in this case, we got a 3. Since his attack is the same as B's weakness we double the damage to 6. The hp's for B will go down by 6, leaving them with 4.

Creature Class

Attributes :

name : str - The name of the creature
hp : int - The amount of hit points they have
dmg : int - The amount of max damage they will do when they attack
attack_type : str - The damage type that will be done (blade, fire ice)
weakness : str - The creature's weakness (if hit by that attack type the damage will double)

Methods :

__init__ - Initialize the new instance with all the attributes
__str__ - return a string representation of creature. It should be the name left justified by 10, the hit points, and then the attack type. (first character is fine)

```
>>> m = Creature("Test", 5, 10, "Fire", "Ice")
```

```
>>> str(m)
```

```
'Test      (5) - F'
```

```
>>>
```

attack : This method has 2 parameters; self, and the victim (the creature they are attacking). It will return a string of what happened. The method will calculate the damage the creature will do, and then reduce the hp of the victim by the rules given above.

```
>>> A = Creature("A", 5, 10, "Fire", "Ice")
```

```
>>> B = Creature("B", 4, 12, "Blade", "Fire")
```

```

>>> print(A)
A          (5) - F
>>> print(B)
B          (4) - B
>>> result = A.attack(B)
>>> print(result)
A          (5) - F does 2 pt(s) of Fire damage to B          (2) - B
>>> print(B)
B          (2) - B
>>>

```

copy : Returns a duplicate copy of the creature. You can use the copy module with the copy function. You may have several Idlesaur's and you want them to all be different instances.

```

>>> Idlesaur_original = Creature("Idlesaur", 15, 4, "Blade", "Fire")
>>> print(Idlesaur_original)
Idlesaur   (15) - B
>>> is_copy = Idlesaur_original.copy()
>>> is_copy.hp -= 10
>>> print(is_copy)
Idlesaur   (5) - B
>>> print(Idlesaur_original)
Idlesaur   (15) - B
>>>

```

Is_alive : Returns True if the creatures hp is greater than 0, False otherwise.

Pykemonindex.csv

This csv file has all the different Pykemon creatures that are possible. Each row is the name, hp, damage, attack type and weakness.

```

Idlesaur,15,4,Blade,Fire
Pymander,15,2,Fire,Ice
Rooizard,14,4,Ice,Blade
pyurtle,18,4,Blade,Ice
Caterlees,16,4,Fire,Blade
Adapod,17,3,Fire,Ice
Turingchu,10,7,Ice,Fire
ButterWifi,10,5,Blade,Ice
BabbagePuff,18,2,Fire,Blade
Knuthbat,10,8,Ice,Blade
Binape,17,2,Blade,Fire
Boolem,17,4,Ice,Fire

```

Pykemon Game

Your program should read from the pykemonindex file to get all the possible creatures. The name of the file will be constant so you don't need to ask the user, but you do need to have proper error handling in case the file isn't provided.

You will then display a menu letting the user choose from playing a game against the AI, or quit the program. When playing a game each player (AI and the user) gets 3 creatures. It is possible to get 2 creatures that are the same type (Idlesaur for instance). That's why you need to make a shallow copy of creature. For each round each player decides which creature to put into battle. Whether the AI creature or player creature goes first will be random. Once the first creature attacks the second creature attacks back and forth until one of their hp's is zero or less. If a players creature is the loser in a round (hp is less than zero.) then it is removed from their stable of creatures. They then each choose another creature to go into battle until one of the players no longer has a creature, in which case they are the loser and the other is the winner. Initially the user does not know what creatures the ai has. But if you know they have a Idlesaur left because it beat one of your creatures earlier, then choosing a creature that has fire attack might be wise, since fire is its weakness.

Sample Program

```
>>> ===== RESTART =====
>>>
        Pymon Creature Game
1. Play against AI
Q. Quit Game
==> e
You must enter a valid choice of 1,Q
        Pymon Creature Game
1. Play against AI
Q. Quit Game
==> 1
Please choose the first of 2 choices from your hand
0. BabbagePuff (18) - F
1. ButterWifi (10) - B
2. Knuthbat (10) - I
===> e
You must enter a valid choice of 0,1,2
Please choose the first of 2 choices from your hand
0. BabbagePuff (18) - F
1. ButterWifi (10) - B
2. Knuthbat (10) - I
===> 5
You must enter a valid choice of 0,1,2
Please choose the first of 2 choices from your hand
0. BabbagePuff (18) - F
1. ButterWifi (10) - B
2. Knuthbat (10) - I
===> 1
Player creature gets first hit
(player) ButterWifi (10) - B does 5 pt(s) of Blade damage to pyurtle (13) - B
```

```

(ai) pyurtle    (13) - B does 4 pt(s) of Blade damage to ButterWifi (6) - B
(player) ButterWifi (6) - B does 4 pt(s) of Blade damage to pyurtle    (9) - B
(ai) pyurtle    (9) - B does 2 pt(s) of Blade damage to ButterWifi (4) - B
(player) ButterWifi (4) - B does 3 pt(s) of Blade damage to pyurtle    (6) - B
(ai) pyurtle    (6) - B does 1 pt(s) of Blade damage to ButterWifi (3) - B
(player) ButterWifi (3) - B does 1 pt(s) of Blade damage to pyurtle    (5) - B
(ai) pyurtle    (5) - B does 3 pt(s) of Blade damage to ButterWifi (0) - B
Your ButterWifi (0) - B was beaten by the ai pyurtle    (5) - B

```

Please choose the first of 2 choices from your hand

0. BabbagePuff (18) - F

1. Knuthbat (10) - I

==> 1

AI creature gets first hit

```

(ai) pyurtle    (5) - B does 1 pt(s) of Blade damage to Knuthbat    (9) - I
(player) Knuthbat    (9) - I does 3 pt(s) of Ice damage to pyurtle    (2) - B
(ai) pyurtle    (2) - B does 1 pt(s) of Blade damage to Knuthbat    (8) - I
(player) Knuthbat    (8) - I does 5 pt(s) of Ice damage to pyurtle    (-3) - B
Your Knuthbat    (8) - I was victorious over the ai pyurtle    (-3) - B

```

Please choose the first of 2 choices from your hand

0. BabbagePuff (18) - F

1. Knuthbat (8) - I

==> 1

AI creature gets first hit

```

(ai) Turingchu   (10) - I does 5 pt(s) of Ice damage to Knuthbat    (3) - I
(player) Knuthbat    (3) - I does 1 pt(s) of Ice damage to Turingchu   (9) - I
(ai) Turingchu   (9) - I does 5 pt(s) of Ice damage to Knuthbat    (-2) - I
Your Knuthbat    (-2) - I was beaten by the ai Turingchu   (9) - I

```

AI creature gets first hit

```

(ai) pyurtle    (18) - B does 2 pt(s) of Blade damage to BabbagePuff (16) - F
(player) BabbagePuff (16) - F does 1 pt(s) of Fire damage to pyurtle    (17) - B
(ai) pyurtle    (17) - B does 3 pt(s) of Blade damage to BabbagePuff (13) - F
(player) BabbagePuff (13) - F does 1 pt(s) of Fire damage to pyurtle    (16) - B
(ai) pyurtle    (16) - B does 2 pt(s) of Blade damage to BabbagePuff (11) - F
(player) BabbagePuff (11) - F does 1 pt(s) of Fire damage to pyurtle    (15) - B
(ai) pyurtle    (15) - B does 6 pt(s) of Blade damage to BabbagePuff (5) - F
(player) BabbagePuff (5) - F does 2 pt(s) of Fire damage to pyurtle    (13) - B
(ai) pyurtle    (13) - B does 2 pt(s) of Blade damage to BabbagePuff (3) - F
(player) BabbagePuff (3) - F does 1 pt(s) of Fire damage to pyurtle    (12) - B
(ai) pyurtle    (12) - B does 2 pt(s) of Blade damage to BabbagePuff (1) - F
(player) BabbagePuff (1) - F does 2 pt(s) of Fire damage to pyurtle    (10) - B
(ai) pyurtle    (10) - B does 1 pt(s) of Blade damage to BabbagePuff (0) - F
Your BabbagePuff (0) - F was beaten by the ai pyurtle    (10) - B

```

The computer won!. Try again and do better!

Pymon Creature Game

1. Play against AI

Q. Quit Game

==> q

>>>

Specification

- The user must choose a valid menu item.

- If the user chooses quit from the menu the program ends
- If the user chooses 1,
 - The program will randomly choose 3 creatures for the user and 3 for the AI. They can be the same creature, but need to be different instances
- As long as each player still has creatures left the game will continue.
 - The player is allowed to choose one of their creatures with validation of their choice and the ai will choose one of theirs. Then they will both battle.
 - If the player or ai has no choices then it will default to their last creature.
- Randomly choose which players creature battles first. Each creature then takes turns attacking the other creature until one of them has hp at 0 or lower. That creature is removed from the whichever player played it and the round is over.

Point Breakdown - May be modified as needed

Points	Requirement
5	Header
10	Readability, variable naming, comments
5	Data Structures
5	Proper functions
10	Create proper Creature class as described above
6	Load creatures from csv
2	Show Menu and get users proper input
2	Get 3 random creatures for each player
3	Ask user for which of their creatures should battle in a round
6	Battle creatures until only one remains
6	Once one player no longer has any creatures then declare a winner and go back to the main menu

30 points off for programs that crash on expected input.

Up to 5 bonus points. Instead of randomly choosing which creature the AI will use in a battle, come up with some logic for which one they should choose. The computer may “cheat” by knowing which creature the player choose.

References

1. Csv Module <https://docs.python.org/3/library/csv.html>

2. Copy module <https://docs.python.org/3.6/library/copy.html>