ACIT2515

Write the `Pokemon` class

In this assignment, you will create a class that represents a Pokemon.

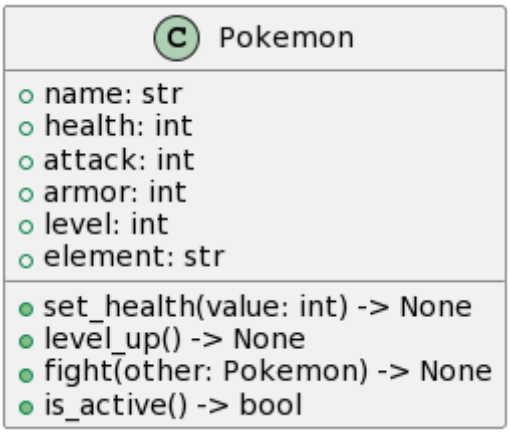
> The mechanics of the Pokemon class are completely made up and do not reflect any realistic gameplay.

A Pokemon is a fictional creature that has the following characteristics:

- a name: the name of the creature (for example, `Pikachu`)
- an element: the name of an element. It can only be `water`, `fire`, `grass` or `electric`.
- the name and the elements are received as arguments by the constructor

The other attributes are:

- "health" points: an integer. More points = healthier. A new Pokemon has 100 health.
- "attack" points: an integer. More points = stronger "attack". A new Pokemon has 0 attack.
- "armor" points: an integer. More points = stronger "defense". A new Pokemon has 0 armor.
- a "level": an integer. Higher level = more "advanced" Pokemon. A new Pokemon has level 1.



Pokemon can attack each other (always with respect and honor). The outcome of the attack is determined by each Pokemon's health, attack and armor points (see below). Pokemon can also become more powerful and advanced by "levelling up".

Leveling up

When a new Pokemon is created, its level is set to 1. You can level up a Pokemon by calling the `level_up()` method on it. There are no limitations to when, how and why you can level up: just call the method.

At anytime, calling the `level_up()` method will:

- add 1 to the current level

- automatically reset the health of the Pokemon to `level * 100` (a Pokemon levelling up from 2 to 3 will have 300 health)

Health and "active" status

- The health of the Pokemon should not go below 0. In order for that to happen, create a `set_health` method.
- This method receives an argument - if this argument is a positive integer, use it to set the health points.
- Otherwise, set the health points to 0.

> Make sure you **ALWAYS** use `set_health` when changing the health of a Pokemon.

- Create a method `is_active()`.
- This method must return `True` if the Pokemon has more than 0 health points, and `False` otherwise.

Fight

When a Pokemon A fights a Pokemon B, the following happens:

- B takes damage. The value of the damage is `(attack points of A) - (armor points of B)`. If this value is negative, use 0.
  - Substract this damage to the health points of B.
- A takes damage too. The value of the damage is `(attack points of B) - (armor of A) - (attack points of A)`. If this value is negative, use 0.
  - Substract this damage to the health points of A.

Example:

- Pikachu has 200 health, 50 attack, 0 armor.
- Squirtle has 100 health, 20 attack, 10 armor.
- Pikachu fights Squirtle:
  - Squirtle takes `50 - 10` damage, and now has 60 health.
  - Pikachu takes `0` damage (`20 - 0 - 50 < 0`), and still has 200 health.
- Then, Squirtle fights Pikachu:
  - Pikachu takes `20 - 0` damage, and now has 180 health.
  - Squirtle takes `50 - 20 - 10` (20) damage, and now has 40 health (it had 60 from the previous attack!)

Additional question

In the docstring of the `Pokemon` class, write a few sentences explaining how you would improve the `Pokemon` class and why. Make sure you add `I READ THE TESTS AND INSTRUCTIONS` in the docstring of your Pokemon class to get a free mark. It can be anywhere in the docstring.

Submission and grading

- Make sure all the tests pass.
- Submit your Python file to D2L.
- 1 mark per test = 10 marks
- 2 marks for the additional question
- **= 12 marks total**