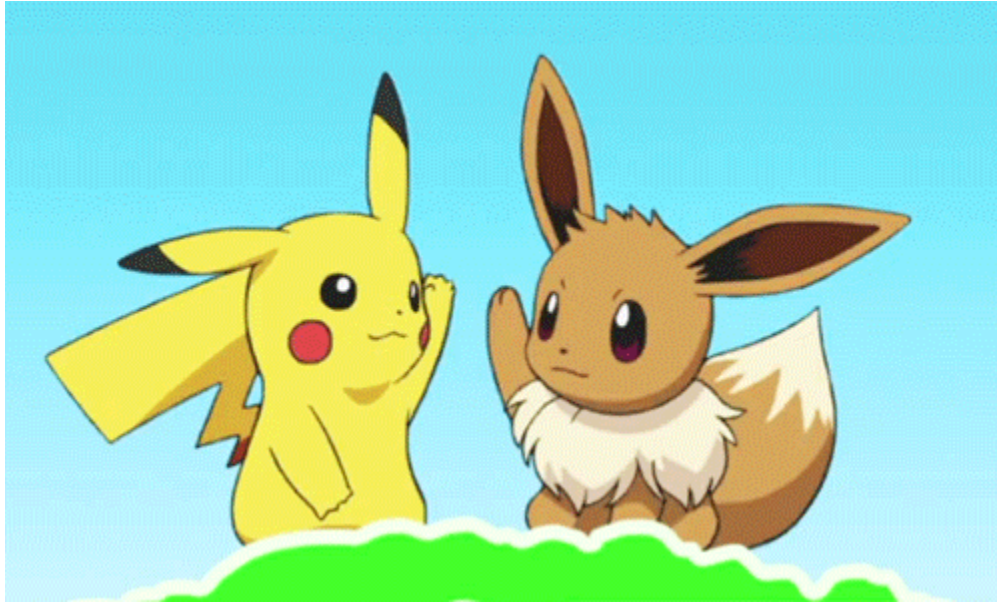


CMPUT 174 Lab 10

Theme of this lab: Pokémon Battle!



In this lab, you will implement a battle between two Pokémon using object-oriented programming.

You MUST use user-defined classes in this lab. You can NOT use dictionaries instead of classes.

Learning Outcomes

- Employ user-defined classes to represent objects and solve computational problems
- Identify appropriate parameters and return values for user-defined functions
- Apply evolutionary prototyping to design programs step by step

Software Quality Requirements

For this lab, you must apply **all** [software quality requirements](#)

Pay extra attention to Section 7 (User-defined Classes)!

Tasks

The following tasks are **versions** of the same problem. Please do the tasks in order, starting with the first one.

1. [Version 1: Initializing a Pokémon](#)
2. [Version 2: Adding and testing Pokémon methods](#)
3. [Version 3: Reading Pokémon from a file](#)
4. [Version 4: Battle!](#)

In this lab, Version 4 is pretty challenging!

Reflection Questions

Once you're done coding, use these questions to think about your code. It's an essential part of learning because we can never write good code if we don't **think** about the problem and consider different ways of solving it.

When you demo your lab, a TA may ask some of these questions.

1. Imagine you need to implement this program without using user-defined classes. How would you approach it? In particular, how would you store and pass around the health of the two battling Pokémon (if global variables are not allowed)?
2. Why do you think it's better to use the `__str__()` method instead of printing the necessary attributes directly in each method?
3. Open the provided [unit tests](#). Why do we need multiple unit tests for the `lose_health()` method? What is the difference between the tests?
4. Some of the `Pokemon` class methods are very short (one or two lines). Why do you think we need to implement such simple methods instead of simply doing the same thing in `main()`?
5. The `read_pokemon_from_file()` function returns a list of `Pokemon` objects. It works fine for this lab, but can you see any potential disadvantages of this approach? (hint: you need only two random Pokémon, but what if the dataset has 1000000 lines?)

Resources

- For this lab, we used The Complete Pokemon Dataset. You can find the dataset [here](#). More interesting datasets can be found at [Kaggle](#).

Marking

The are no part marks, no in-between marks

4/4	Your code clearly meets all requirements of Version 4 and all software quality requirements. You clearly understand your code and your answers are correct.
3/4	One of the following: <ul style="list-style-type: none">a) Your code meets all requirements of Version 3 and all related software quality requirements. You clearly understand your code and your answers are correct.b) Your code meets most Version 4 requirements and most software quality requirements; it runs and does what is expected. However, some minor requirements are missing, or some details in your answers are missing or incorrect.
2/4	One of the following: <ul style="list-style-type: none">a) Your code meets all requirements of Version 2 and all related software quality requirements. You clearly understand your code and your answers are correct.b) Your code meets most Version 3 requirements and most software quality requirements; it runs and does what is expected. However, some minor requirements are missing, or some details in your answers are missing or incorrect.
1/4	One of the following: <ul style="list-style-type: none">a) Your code meets all requirements of Version 1 and all related software quality requirements. You clearly understand your code and your answers are correct.b) Your code meets most Version 2 requirements and most software quality requirements; it runs and does what is expected. However, some minor requirements are missing, or some details in your answers are missing or incorrect.c) You put effort into your lab assignment, but your code doesn't run at all or runs with major problems. Missing major requirements, or your answers are mainly incorrect.
0/4	One of the following: <ul style="list-style-type: none">a) Incomplete, or very insufficient code, or no submission.b) Code submitted but no show, or no answers, or irrelevant answers.

Copyright

I. Akhmetov, J. Schaeffer, M. Morris and S. Ahmed, Department of Computing Science, Faculty of Science, University of Alberta (2023).