Programming Practice (PRP), Coursework Exercise 2 (14%, 20 marks)

Please read the document marked 'Continuous Assessment Guidelines' carefully, before attempting any piece of coursework.

This assignment counts for 14% of your mark for PRP continuous assessment, and is the second of four.

The release week for this assignment starts 10th October, at 23:55, and ends 17th October, at 23:55. All submissions must occur before the end of the release week.

If you have any questions about the structure of this assessment, please email martin.chapman@kcl.ac.uk.

For this week's assessment, consider the following scenario, and then complete the tasks that follow it:

Two superheroes, _HeroOne_ and _HeroTwo_, disagree over the Superhuman Registration Act. Therefore, Civil War breaks out and the pair of them fight. Based upon their individual strength, we need to determine who will win this fight.

1. Model this scenario based upon the following requirements:

   (a) Create a class to represent a `Superhero`. Every `Superhero` has a `name`. Every `Superhero` can also have a `strength`, but this should be optional. If a `Superhero` does not have a `strength`, their default `strength` should be 10. (5 marks)

   (b) Every `Superhero` can receive a `powerUp`, whereby their strength is *increased* by a specified amount. (3 marks)

(c) Every `Superhero` has the ability to `fight` another `Superhero`. The result of this `fight` is the winning `Superhero`. The winner of a fight is determined by which hero has the highest `strength`. If two heroes have the same `strength`, then the opponent wins. (It might be helpful to know that the keyword `this` returns a copy of the current object.) (4 marks)

(d) When a `Superhero` is printed, their name appears on the terminal. (2 marks)

The best solutions will *not* provide *any* way of retrieving a `Superhero`'s `strength` from outside the `Superhero` class.

2. Create a class called `Fight`, which can be compiled and run from the command line. Use this class to do the following (in order):

(a) Create a `Superhero` named _HeroOne_. (1 mark)

(b) Create a `Superhero` named _HeroTwo_. _HeroTwo_ has a strength of _Strength_. (1 mark)

(c) Make _HeroOne_ `fight` _HeroTwo_. Print the winner to the terminal. (2 marks)

(d) Give _HeroOne_ a `powerUp` of 100. (1 mark)

(e) Make _HeroOne_ `fight` _HeroTwo_, again. Print the winner to the terminal.

Clearly comment your code to explain your solution (1 mark).

Once you have completed these questions, you must place all the code you have produced into a folder, name this folder 'Exercise2', compress it (to one of a .zip, .rar or .tar.gz file) and submit it to KEATS. Please note that you should only submit plain text files with a .java extension for assessment (so no proprietary formats such as PDF or Rich Text).