Assignment 5

This assignment is **individual** effort.

Problem Definition

Let's say we have 5 users, User P and User Q, and they have rated 7 different cell phone brands on a scale of 1 to 10. Note that not all users have rated all cell phones.

```
UserPRatings = {'Motorola':8, 'LG':5, 'Sony':1, 'Apple':1, 'Samsung':5, 'Nokia':7}
UserQRatings = {'Apple':7, 'Samsung':1, 'Nokia':4, 'LG':4, 'Sony':6, 'Blackberry':3}
```

Requirement for this Assignment

You have been provided with a framework "Assignment 5 – Framework.py", which defines a Class called ***similarity***. It includes a class initialization method which takes two rating dictionaries ***ratingP*** and ***ratingQ*** as parameters. You must use the initialization method as-is with no changes.

Your task in this assignment is to extend the framework as follows:

Steps 1.1 through 1.4
Code up the Class method called ***minkowski*** which takes a single parameter ***r*** (no additional parameters must be included in the method call), and returns the Minkowki Distance between the two dictionaries (that the Class object is instantiated with). Note: you must include a phone rating in the distance calculation only if the phone was rated by both users.

Steps 2.1 through 2.7
Code up the Class method called ***pearson*** which takes no parameters (no additional parameters must be included in the method call), and returns the Pearson Correlation between the two dictionaries (that the Class object is instantiated with). Note: you must include a phone rating in the correlation calculation only if the phone was rated by both users.

Steps 3.1 through 3.5
Create an object of class similarity. Initialize it with rating dictionaries ***UserPRatings*** and ***UserQRatings***. Call the ***minkowski*** and ***pearson*** class methods to calculate and print the following measures between the two dictionaries:

- Manhattan Distance
- Euclidean Distance
- Minkowski Distance (r=3)
- Pearson Correlation

Assignment Submission

Some things to keep in mind as you code:

- Make your code readable – for instance, use meaningful variable names and comments.
- Make your code elegant – for instance, balance the number of variables you introduce – too many or too few make your code difficult to debug, read, and maintain.
- Make your output readable and user-friendly

Once you have written up the script, save it as follows.

<FirstName><LastName>Assignment5.py.
[Example: HinaAroraAssignment5.py]

Submit the script by uploading the above python script. Note: upload the actual script – DO NOT attach a screenshot of the script!

Once you have made your submission, you can check the posted solution for this assignment in the next module, and self-grade your submission.

Hint

If you have coded up this assignment correctly, you should end up with Manhattan Distance of 19.0, Euclidean Distance of 9.3274, Minkowski Distance (r=3) of 7.5654, and Pearson Correlation of -0.7123.