Python based Assignment 01

Data Science and Machine Learning using R and Python

Deadline: 17 May 2020

1. In an examination less than 40 marks is considered fail, from 40 to 59 marks is considered as C grade, from 60 to 80 is considered as B grade, and above 80 marks is considered as A grade. Write a program using if-elif-else statements that will take marks as input from console and display grade corresponding to the inputted marks.

2. Ask user to enter two numbers a and b and write a function to compute "a" to the power "b". [**Note**: Please do not use any inbuilt function.]

3. Write a program that takes a sentence as input from user (let us assume user provides statement of question 2 as input) and performs the followings:
   (a) Determine size of the string.
   (b) Find and count the substring, "to".
   (c) From the third whitespace, split the string in two parts.
   (d) Replace a and b by A and B
   (e) Remove all whitespace from the original string.

4. Take two coordinate points as input and write function(s) that performs the following task:
   (a) Find out the equation of a straight line (y = mx + c where m is the slope and c is the intercept) joining the two points.
   (b) Check if a coordinate or point is on the straight line.
   (c) For a certain x, determine y.
   (d) Find out the distance between the two points.

5. You have two heterogenous lists as follows:
   [4, 8, 2, 5, 11, 10, 13, "Banana", 17] and
   [3, 7, 12, "Apple", 1, 0, 14, 19, "ABX", 5].
   Form three separate lists that will hold odd number, even number, and string.

6. Take 15 numbers from user, write function(s) to perform the following tasks:
   (a) Form a list to keep all the 15 user inputs.
   (b) Identify those elements that occur more than once and count their number of occurrences.
   (c) Arrange it in increasing order.
   (d) Determine mean, median, mode, and standard deviation of the data kept in the list [**Note**: Please do not use any inbuilt function].

(e) Remove the middle element(s) and determine mean, median, mode, and standard deviation of the data kept in the list [**Note**: Please do not use any inbuilt function].