Programming for Data Analytics

Note: When completing these exercises all the code you write should appear within functions.

Question 1.

Please note that you should write a function called main. You will call each of the functions you write below from this main function.

(i)

Write a function called powerV1. When you call this function (from your main function) it should ask the user for a base number and a power number. It should then print out the result of raising the base number to the power of the second number. Sample output below:

```
Please enter base number: 3
Please enter power number: 2
The value 3 raised to the power of 2 is : 9
```

(ii)

Given the following equation: $A = B^C$
Write a function called powerV2. When you call this function (from your main function) it should ask the user for the power number (C) and the result (A). It should then print out the base number. (Hint you need to use math module).

```
Please enter power number: 2
Please enter result number: 8
The logarithm of 8 with base 3 is: 3
```

Question 2.

Write a guessing game for a user. This program should initially generate a random number between 1 and 100.

It should then repeatedly ask the user to guess the random number.

Each time the user enters a guess the program should tell them that their guess was too high, too low or correct.

When the user finally guesses the correct number the program should tell the user how many guesses they made before arriving at the correct number.

Your program should make use of the following methods:

- generateRandomNumber. This function will generate a random number between 0, 100 and return the result.
- askUser. This function will ask the user to enter a guess and will return the result
- checkGuess. This function will take in the users guess and the random number as parameters and will return True if the user entered the correct value and False otherwise.

```
Program has generated a random number:
Please enter your guess: 50
Too high
Please enter your guess: 25
Too low
Please enter your guess: 38
Correct. You made a total of 3 guesses.
```

Question 3.

Write a program that calculates the factorial of a given value ***n*** without using any loop. Hint: You should use recursive functions.

Question 4.

Write 4 functions in one python file as follows:

a) Takes 5 numbers and return their average.
b) Takes 5 numbers and return the maximum
c) Takes 5 numbers and return the minimum
d) Takes 5 numbers and return those 5 numbers in sorted order (Max to Min)
e) Takes 5 numbers and returns the sum of those numbers

The file needs to be saved and used as a module in another python file, so that all the functions can be called by some given numbers.

Question 5.

Write a program that takes two number as x and y coordinates of a point in a Cartesian system and then calculate the Euclidean distance between the origin of the Cartesian system and the point specified by x and y.

Note: Use math module.

```
Enter X: 5
Enter Y: 3

Euclidean distant: 9.43
```