Assignment 7_2021-batch

1. Write a simple calculator program with the options 1. Addition, 2. Subtraction, 3. Multiplication and 4. Division. Following is a sample output:

Sample Output:

===== Calculator =====
1 - Addition
2 - Subtraction
3 - Multiply
4 - Division
Any other number to exit
Enter your choice: 3
Enter the two operands
Enter 1st operand: 3.4
Enter 2nd operand: 5.1
Result =
17.34
===== Calculator =====
1 - Addition
2 - Subtraction
3 - Multiply
4 - Division
Any other number to exit
Enter your choice: 2
Enter the two operands
Enter 1st operand: 5.3
Enter 2nd operand: 88.2
Result = -82.9
Enter your choice: 0
Exiting..

2. Write a function distance(x, y) that would take two point coordinates x and y as input and returns the Euclidean distance between them.

Input:
Enter point 1: 4 0
Enter point 2: 6 6
Output: The distance between them: 6.32
Input:
Enter point 1: 2 2
Enter point 2: 5 6
Output: The distance between them: 5.0

3. In UEFA Champions League, the winner gets 2 points and both teams get 1 each in case of a draw. If a team loses a game, that team gets 0 points. Write a program that takes the number of wins, draws and losses by a team and calculates the number of points a team has obtained so far.

Input: Enter the number of wins, loose, draw (space separated): 4 0 2

Output: The point of the team is: 10
Input: Enter the number of wins, loose, draw (space separated): 2 3 1
Output: The point of the team is: 5

4. An RNA string is a string formed by the alphabets 'A', 'C', 'G', and 'U'. Given a DNA string D corresponding to a coding strand, its transcribed RNA string R is formed by replacing all occurrences of 'T' with 'U'. Write a program that takes a DNA string D as input and outputs the RNA sequence. See the example below.
Input: GATGGAACTTGACTACGTAAATT
Output: GAUGGAACUUGACUACGUAAAUU

5. A strand of deoxyribose nucleic acid (DNA), in which the sugar is called deoxyribose has only four choices for nucleobases where the molecules are called adenine (A), cytosine (C), guanine (G), and thymine (T). Given a DNA string of length at most 1000 nucleotide, write a program that outputs the count of the respective nucleobases A,T,G,C. To check your code, you can take the following sequence as input but your code should be general enough to take any input DNA sequence and return the number of A,T,G,C.
Input: AGCTTTTCATTCTGACTGCAACGGGCAATATGTCTCTGTGTGGATTAAAAAAA-GAGTGTCTGATAGCAGC
Output: A:20 C:12 G:17 T:21

6. Write a program that accepts a sequence of whitespace-separated words as input and prints the words after removing all duplicate words and sorting them alphanumerically.
Input: hello world and practice makes perfect and hello world again
Output: again and hello makes perfect practice world

7. Given a list, a dictionary and a key K, print the value of K from the dictionary only if the key K present in both, list and dictionary. See example below:

lst = ['I','think','therefore','I', 'am','said','Rene','Descartes']
dct = {'Rene' : 0, 'Descartes' : 1, 'I' : 2, 'think': 3}

If K = 'Descartes', then the output should be

Value of Richard in dictionary is 7

If K='Rene', output should be

Key: Rene not found in either list or dictionary