Homework 2.1Icon

Description automatically generated

==========

Question 1

Write a calculator function for two numbers based on the list of elements and mathematical operations provided. The function must accept three lists as input: a list of first elements, a list of second elements, and a list of operations (eg "plus", "minus", "multiply", "divide", "power"). The function should return another list with the results of the calculations. Example: \

num\_list1 = [10, 5, 8, 2]\

num\_list2 = [2, 3, 1, 5]\

operations\_list = ["plus", "multiply", "minus", "power"]-->[12, 15, 7, 32]

============

Question 2

Write a function that takes a string and converts every odd (odd) letter in each word to uppercase. Example: func("some sentence for testing")--->SoMe SeNtEnCe FoR TeStInG.

===========

Question 3

Write a function that takes a 2-dimensional square (3x3, 4x4, etc.) array (list of lists) and displays the elements below the diagonal and the diagonal itself. Others should be replaced by 0. Example: \

matrix = \

[[1, 2, 3],\

[4, 5, 6],\

[7, 8, 9]]\

-->\

1 0 0 \

4 5 0 \

7 8 9

HINT: pay attention to list indexing.

============

Question 4

Write a function that will take a list, multiply all even numbers by 2, divide all odd numbers by 2, and find the sum at the end. This function should have 1 line of code. Here you need to use advanced Python functions (but there is another option). Example: [1, 2, 3, 4]-->1/2 + 2\\*2 + 3/2 + 4\\*2=14

=========

Question 5

Write a function that takes any number of lists (2,3,4, etc.) and creates a list of all possible combinations of values from these given lists. Shuffle the list randomly before returning. It should also print the number of combinations Example: \

list1=[55, 86, 41, 77]\

list2=['a', 'b', 'c']\

list3=['x', 'y', 'z']\

func(list1, list2, list3)-->\

There are 36 combinations\

[(55, 'b', 'z'),\

(41, 'c', 'z'),\

(77, 'a', 'y'),\

...\

(77, 'c', 'x'),\

(41, 'b', 'x'),\

(77, 'c', 'y')]\

func(list1, list2)-->\

There are 12 combinations\

=======

Question 6

Write a function that will take a date in String format (for example, "May 22, 2023") and find the difference between the given date and the current date in year-month-day format. Example: \

date\_str="22 May 2023"\

func(date\_str)-->'Difference between 2023-05-22 and today: 0 years, 2 months, 17 days'

========

Question 7

Write a function that will calculate the diameter, circumference, and area of a circle given the radius. pi must be exact (just not user defined as 3.14)

========