creativecapsule

Foundation Training '25

CC Programming-Foundations

Instructions

- Write Pseudo code for the below problems
- Test the Pseudo code with the tests provided in the problem statements to validate the logic
- Start coding only after the first two steps are completed.

Overview

Complete all problems in each section before attempting new section.

Section 1

Section 2

Task 1: Sum of all items in a Dictionary

Problem Statement

Write a function to find the sum of all items in the dictionary.

Expected output

Examples

```
Input: {'a': 400, 'b':200, 'c':300}
Output : 900

Input: {'x': 35, 'y':18, 'z':45}
Output : 98
```

Task 2: Interchange first and last elements in a List

Problem Statement

Given a list, write a function to swap first and last element of the list.

Expected output

Examples

```
Input : [12, 35, 9, 56, 24]
Output : [24, 35, 9, 56, 12]

Input : [1, 2, 3]
Output : [3, 2, 1]
```

Task 3: Area of Rectangle

Problem Statement

Create a class Rectangle and set width and height in constructor. Write a method CalculateArea in the Rectangle class to calculate area of rectangle.

Expected output

Examples

```
Input: rectangleObject.CalculateArea(10,12)
Output: 120

Input: rectangleObject.CalculateArea(14,15)
Output: 210
```

Task 4: Pattern Formation: Diamond

Problem Statement

Print the following pattern.

Expected output

Examples

```
Input :
Number: 4

Output:
        *
       ***
      *****
     *******
      *****
       ***
        *
```

Task 5: Number Exists in Array

Problem Statement

You are given two arrays (lists) of different lengths. Each array contains numbers in sorted order.

Write a program that checks whether a given number is present in:

- Both arrays
- Only one of the arrays
- Neither of the arrays Based on the result, print an appropriate message.

Expected output

Examples

Example 1

```
Input:
array_one = [1, 5, 8, 9, 10]
array_two = [5, 8, 9, 10, 12, 20, 40, 60, 70]
input_number = 10

Output:
number 10 found in both arrays
```

Example 2

```
Input:
array_one = [1, 5, 8, 9, 10]
array_two = [5, 8, 9, 10, 12, 20, 40, 60, 70]
input_number = 70

Output:
number 70 found in array_two
```

Example 3

```
Input:
array_one = [1, 5, 8, 9, 10]
array_two = [5, 8, 9, 10, 12, 20, 40, 60, 70]
input_number = 1

Output:
number 1 found in array_one
```

Example 4

```
Input:
array_one = [1, 5, 8, 9, 10]
array_two = [5, 8, 9, 10, 12, 20, 40, 60, 70]
input_number = 99

Output:
number 99 not found in any array
```

Task 6 : Sum of 2 Numbers

Problem Statement

Given an array of integers numbers and an integer target, return indices of the two numbers such that they add up to target.

You may assume that each input would have exactly one solution, and you may not use the same element twice.

You can return the answer in any order.

Constraints:

- 2 <= nums.length <= 104
- -109 <= nums[i] <= 109
- -109 <= target <= 109
- Only one valid answer exists.

Expected output

Example 1

```
Input: nums = [2,7,11,15], target = 9
Output: [0,1]
```

```
Output: Because nums[0] + nums[1] == 9, we return [0, 1].
```

Example 2

```
Input: nums = [3,2,4], target = 6
Output: [1,2]
```

Example 3

```
Input: nums = [3,3], target = 6
Output: [0,1]
```

Task 7 : Product Catalog System (Class, Object, List)

Problem Statement

Create a class `Product` with:

- Attributes: `name`, `price`, `category`
- Method: `display_info()` to print product details

Create multiple products and store them in a list.
Then:

- Print all products in a specific category
- Find the product with the **highest price**

Expected output

Example:

```
Input:
Enter product details: Phone, 30000, Electronics
Enter product details: Pen, 20, Stationery

Output:
Highest price product is Phone costing ₹30000
```

Task 8 : Unique Words Extractor (Set)

Problem Statement

Take a paragraph of text input and print all **unique words** using a `set`.

- Ignore case
- Ignore punctuation (`.,!?`)
- Sort and print unique words alphabetically

Expected output

Example:

```
Input:
Enter a paragraph: Hello world! Hello Python.

Output:
Unique words: ['hello', 'python', 'world']
```
