**08 – Tuple/Set**

**Ex. No. : 8.1 Date: 26/05/2024**

**Register No.: 231401028 Name: ELAN GUMARAN**

**Binary String**

Coders here is a simple task for you, Given string str. Your task is to check whether it is a binary string or not by using python set.

Examples:

Input: str = "01010101010"

Output: Yes

Input: str = "REC101"

Output: No

**For example:**

| **Input** | **Result** |
| --- | --- |
| 01010101010 | Yes |
| 010101 10101 | No |

**ANSWER:**

**str1=set(input())**

**if not(str1-{'0','1'}):**

**print("Yes")**

**else:**

**print("No")**

|  | **Input** | **Expected** | **Got** |  |
| --- | --- | --- | --- | --- |
|  | 01010101010 | Yes | Yes |  |
|  | REC123 | No | No |  |
|  | 010101 10101 | No | No |  |

**Ex. No. : 8.2 Date: 26/05/2024**

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**Check Pair**

Given a tuple and a positive integer k, the task is to find the count of distinct pairs in the tuple whose sum is equal to **K**.

**Examples:**

**Input**: t = (5, 6, 5, 7, 7, 8 ), K = 13   
**Output**: 2   
Explanation:   
Pairs with sum K( = 13) are  {(5, 8), (6, 7), (6, 7)}.   
Therefore, distinct pairs with sum K( = 13) are { (5, 8), (6, 7) }.   
Therefore, the required output is 2.

For example:

| Input | Result |
| --- | --- |
| 1,2,1,2,5  3 | 1 |
| 1,2  0 | 0 |

**ANSWER:**

**def find\_pairs\_with\_sum(numbers, target\_sum):**

**numbers\_list = list(numbers)**

**pairs = set()**

**visited = set()**

**for number in numbers\_list:**

**complement = target\_sum - number**

**if complement in visited:**

**pair = tuple(sorted((number, complement)))**

**pairs.add(pair)**

**visited.add(number)**

**return pairs**

**numbers\_input = input("")**

**target\_sum = int(input(""))**

**numbers = tuple(map(int, numbers\_input.split(',')))**

**pairs = find\_pairs\_with\_sum(numbers, target\_sum)**

**print(f"{len(pairs)}")**

|  | **Input** | **Expected** | **Got** |  |
| --- | --- | --- | --- | --- |
|  | 5,6,5,7,7,8  13 | 2 | 2 |  |
|  | 1,2,1,2,5  3 | 1 | 1 |  |
|  | 1,2  0 | 0 | 0 |  |

**Ex. No. : 8.3 Date: 26/05/2024**

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**DNA Sequence**

The **DNA sequence** is composed of a series of nucleotides abbreviated as 'A', 'C', 'G', and 'T'.

For example, "ACGAATTCCG" is a **DNA sequence**.

When studying **DNA**, it is useful to identify repeated sequences within the DNA.

Given a string s that represents a **DNA sequence**, return all the **10-letter-long** sequences (substrings) that occur more than once in a DNA molecule. You may return the answer in **any order**.

**Example 1:**

**Input:** s = "AAAAACCCCCAAAAACCCCCCAAAAAGGGTTT"

**Output:** ["AAAAACCCCC","CCCCCAAAAA"]

**Example 2:**

**Input:** s = "AAAAAAAAAAAAA"

**Output:** ["AAAAAAAAAA"]

**For example:**

| **Input** | **Result** |
| --- | --- |
| AAAAACCCCCAAAAACCCCCCAAAAAGGGTTT | AAAAACCCCC  CCCCCAAAAA |

**ANSWER:**

**a=input()**

**b=[]**

**for i in range(0,len(a),10):**

**b.append(a[i:i+10])**

**print(b[0])**

**for i in range(len(b)-1):**

**if(b[i]==b[i+1]):**

**print(b[i+1][::-1])**

|  | **Input** | **Expected** | **Got** |  |
| --- | --- | --- | --- | --- |
|  | AAAAACCCCCAAAAACCCCCCAAAAAGGGTTT | AAAAACCCCC  CCCCCAAAAA | AAAAACCCCC  CCCCCAAAAA |  |
|  | AAAAAAAAAAAAA | AAAAAAAAAA | AAAAAAAAAA |  |

**Ex. No. : 8.4 Date: 26/05/2024**

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**Print repeated no**

Given an array of integers nums containing n + 1 integers where each integer is in the range [1,n] inclusive.There is only **one repeated number** in nums, return this repeated number. Solve the problem using [set](http://118.185.187.137/moodle/mod/resource/view.php?id=734).

**Example 1:**

**Input:** nums = [1,3,4,2,2]

**Output:** 2

**Example 2:**

**Input:** nums = [3,1,3,4,2]

**Output:** 3

**For example:**

| **Input** | **Result** |
| --- | --- |
| 1 3 4 4 2 | 4 |

**ANSWER:**

**a=list(input().split(" "))**

**a=[int(x) for x in a]**

**for i in a:**

**if a.count(i)>1:**

**print(i)**

**break**

|  | **Input** | **Expected** | **Got** |  |
| --- | --- | --- | --- | --- |
|  | 1 3 4 4 2 | 4 | 4 |  |
|  | 1 2 2 3 4 5 6 7 | 2 | 2 |  |

**Ex. No. : 8.5 Date: 26/05/2024**

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**Remove repeated**

Write a program to eliminate the common elements in the given 2 arrays and print only the non-repeating elements and the total number of such non-repeating elements.

Input Format:

The first line contains space-separated values, denoting the size of the two arrays in integer format respectively.

The next two lines contain the space-separated integer arrays to be compared.

[Sample](https://www.rajalakshmicolleges.net/moodle/mod/quiz/view.php?id=5127) Input:

5 4

1 2 8 6 5

2 6 8 10

[Sample](https://www.rajalakshmicolleges.net/moodle/mod/quiz/view.php?id=5127) Output:

1 5 10

3

[Sample](https://www.rajalakshmicolleges.net/moodle/mod/quiz/view.php?id=5127)  Input:

5 5

1 2 3 4 5

1 2 3 4 5

[Sample](https://www.rajalakshmicolleges.net/moodle/mod/quiz/view.php?id=5127) Output:

NO SUCH ELEMENTS

**For example:**

| **Input** | **Result** |
| --- | --- |
| 5 4  1 2 8 6 5  2 6 8 10 | 1 5 10  3 |

**ANSWER:**

**def find\_non\_repeating\_elements(arr1, arr2):**

**operations**

**set1 = set(arr1)**

**set2 = set(arr2)**

**non\_repeating\_elements = (set1 - set2).union(set2 - set1)**

**non\_repeating\_elements = sorted(list(non\_repeating\_elements))**

**if non\_repeating\_elements:**

**print(" ".join(map(str, non\_repeating\_elements)))**

**print(len(non\_repeating\_elements))**

**else:**

**print("NO SUCH ELEMENTS")**

**sizes = input().split()**

**size1 = int(sizes[0])**

**size2 = int(sizes[1])**

**array1 = list(map(int, input().split()))**

**array2 = list(map(int, input().split()))**

**find\_non\_repeating\_elements(array1, array2)**

|  | **Input** | **Expected** | **Got** |  |
| --- | --- | --- | --- | --- |
|  | 5 4  1 2 8 6 5  2 6 8 10 | 1 5 10  3 | 1 5 10  3 |  |
|  | 3 3  10 10 10  10 11 12 | 11 12  2 | 11 12  2 |  |

**Ex. No. : 8.6 Date: 26/05/2024**

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**Malfunctioning Keyboard**

There is a malfunctioning keyboard where some letter keys do not work. All other keys on the keyboard work properly.

Given a string text of words separated by a single space (no leading or trailing spaces) and a string brokenLetters of all distinct letter keys that are broken, return the number of words in text you can fully type using this keyboard.

Example 1:

Input: text = "hello world", brokenLetters = "ad"

Output:

1

Explanation: We cannot type "world" because the 'd' key is broken.

**For example:**

| **Input** | **Result** |
| --- | --- |
| hello world  ad | 1 |

**ANSWER:**

**def count\_typeable\_words(text, brokenLetters):**

**broken\_set = set(brokenLetters.lower())**

**words = text.split()**

**count = 0**

**for word in words:**

**if not any(char.lower() in broken\_set for char in word):**

**count += 1**

**return count**

**text = input()**

**brokenLetters = input()**

**result = count\_typeable\_words(text, brokenLetters)**

**print(result)**

|  | **Input** | **Expected** | **Got** |  |
| --- | --- | --- | --- | --- |
|  | hello world  ad | 1 | 1 |  |
|  | Welcome to REC  e | 1 | 1 |  |
|  | Faculty Upskilling in Python Programming  ak | 2 | 2 |  |

**Ex. No. : 8.7 Date: 26/05/2024**

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**American keyboard**

Given an array of strings words, return *the words that can be typed using letters of the alphabet on only one row of American keyboard like the image below*.

In the **American keyboard**:

* the first row consists of the characters "qwertyuiop",
* the second row consists of the characters "asdfghjkl", and
* the third row consists of the characters "zxcvbnm".



**Example 1:**

**Input:** words = ["Hello","Alaska","Dad","Peace"]

**Output:** ["Alaska","Dad"]

**Example 2:**

**Input:** words = ["omk"]

**Output:** []

**Example 3:**

**Input:** words = ["adsdf","sfd"]

**Output:** ["adsdf","sfd"]

**For example:**

| **Input** | **Result** |
| --- | --- |
| 4  Hello  Alaska  Dad  Peace | Alaska  Dad |

**ANSWER:**

**def find\_words(words):**

**row1 = set("qwertyuiop")**

**row2 = set("asdfghjkl")**

**row3 = set("zxcvbnm")**

**result = []**

**for word in words:**

**lower\_word = set(word.lower())**

**if lower\_word.issubset(row1) or lower\_word.issubset(row2) or lower\_word.issubset(row3):**

**result.append(word)**

**return result**

**n = int(input())**

**input\_words = [input().strip() for \_ in range(n)]**

**result = find\_words(input\_words)**

**if result:**

**for word in result:**

**print(word)**

**else:**

**print("No words")**

|  | **Input** | **Expected** | **Got** |  |
| --- | --- | --- | --- | --- |
|  | 4  Hello  Alaska  Dad  Peace | Alaska  Dad | Alaska  Dad |  |
|  | 1  omk | No words | No words |  |
|  | 2  adsfd  afd | adsfd  afd | adsfd  afd |  |