

## **08 – Tuple/Set**

Ex. No. : 8.1

Date: 26/05/2024

Register No.: 231401006

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## **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

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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

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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	
AAAAACCCCCAAAAACCCCCAAAAAGGGTTT	AAAAACCCCC CCCCCAAAAA	AAAAACCCCC CCCCCAAAAA	
AAAAAAAAAAAAA	AAAAAAAAAA	AAAAAAAAAA	

Ex. No. : 8.4

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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](#).

### 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

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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 Input:

```
5 4
1 2 8 6 5
2 6 8 10
```

Sample Output:

```
1 5 10
3
```

Sample Input:

```
5 5
1 2 3 4 5
1 2 3 4 5
```

Sample 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

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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

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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".

~ 1	! 2	@ 3	# 4	\$ 5	% 6	^ 7	& 8	* 9	( 0	) -	+ =	 Backspace	
Tab 	Q	W	E	R	T	Y	U	I	O	P	{ [	} ]	 \ 
Caps Lock 	A	S	D	F	G	H	J	K	L	: ;	" '	Enter 	
Shift 	Z	X	C	V	B	N	M	< ,	> .	? /	Shift 		
Ctrl	Win Key	Alt								Alt	Win Key	Menu	Ctrl

**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	