

## **07 – Tuple/Set**

**Ex. No. : 7.1**

**Date: 18.05.24**

**Register No.: 231801087**

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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

**Program:**

```
a = input()
try:
    c = int(a)
    print("Yes")
except:
    print("No")
```

	Input	Expected	Got	
✓	01010101010	Yes	Yes	✓
✓	REC123	No	No	✓
✓	010101 10101	No	No	✓

Ex. No. : 7.2

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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 = "AAAAACCCCCAAAAACCCCCAAAAAGGGTTT"

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

### Example 2:

**Input:** s = "AAAAAAAAAAAA"

**Output:** ["AAAAAAAAAA"]

**For example:**

Input	Result
AAAAACCCCCAAAAACCCCCAAAAAGGGTTT	AAAAACCCCC CCCCCAAAAA

**Program:**

```

def findRepeatedSequences(s):
    sequences = {}
    result = []
    for i in range(len(s) - 9):
        seq = s[i:i+10]
        sequences[seq] = sequences.get(seq, 0) + 1
        if sequences[seq] == 2:
            result.append(seq)
    return result

s1 = input()
for i in findRepeatedSequences(s1):
    print(i)

```

	Input	Expected	Got	
✓	AAAAACCCCCAAAAACCCCCAAAAAGGGTTT	AAAAACCCCC CCCCCAAAAA	AAAAACCCCC CCCCCAAAAA	✓
✓	AAAAAAAAAAAAA	AAAAAAAAAA	AAAAAAAAAA	✓

Ex. No. : 7.3

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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".

~	!	@	#	\$	%	^	&	*	(	)	-	+	← Backspace
1	2	3	4	5	6	7	8	9	0	-	=		
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

**Program:**

```
def findWords(words):
```

```
    row1 = set('qwertyuiop')
```

```
    row2 = set('asdfghjkl')
```

```
    row3 = set('zxcvbnm')
```

```
    result = []
```

```
    for word in words:
```

```
        w = set(word.lower())
```

```
        if w.issubset(row1) or w.issubset(row2) or w.issubset(row3):
```

```
            result.append(word)
```

```
    if len(result) == 0:
```

```
        print("No words")
```

```
    else:
```

```
        for i in result:
```

```
            print(i)
```

```
a = int(input())
```

```
arr = [input() for i in range(a)]
```

```
findWords(arr)
```

	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	✓



Ex. No. : 7.4

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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

### Program:

```
n=input().split(" ")
n = list(n)
for i in range(len(n)):
    for j in range(i+1,len(n)):
        if n[i] == n[j]:
            print(n[i])
            exit(0)
```

	Input	Expected	Got	
✓	1 3 4 4 2	4	4	✓
✓	1 2 2 3 4 5 6 7	2	2	✓

Ex. No. : 7.5

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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

### Program:

```
def count_distinct_pairs(t, K):
```

```
    distinct_pairs = set()
```

```
    for i in range(len(t)):
```

```
        for j in range(i + 1, len(t)):
```

```
            if t[i] + t[j] == K:
```

```
                distinct_pairs.add((min(t[i], t[j]), max(t[i], t[j])))
```

```
    return len(distinct_pairs)
```

```
t_input = input()
```

```
t = tuple(map(int, t_input.split(',')))
```

```
K = int(input())
```

```
print(count_distinct_pairs(t, K))
```

	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	✓