

## **07 – Tuple/Set**



**Ex. No. : 7.1**

**Date: 18.05.24**

**Register No.: 231901054**

**Name: Sudharsan S**

## **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")
```



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 = "AAAAACCCCCAAAAACCCCCCAAAAAGGGTTT"

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

### Example 2:

**Input:** s = "AAAAAAAAAAAAA"

**Output:** ["AAAAAAAAAA"]

**For example:**

Input	Result
AAAAACCCCCAAAAACCCCCCAAAAAGGGTTT	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)
```



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	
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	

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- **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	Alaska
Hello	Dad
Alaska	
Dad	
Peace	

### 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)
```

**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)
```





## 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))
```

