

## 07 – Tuple/Set

Ex. No. : 7.1

Date: 18.05.24

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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, "ACGAATTCGG" 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 CCCCAAAAA	AAAAACCCCC CCCCAAAAA	✓
✓	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".

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	1
3	
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	✓