

07 – Tuple/Set



Ex. No. : 7.1

Date: 18.05.24

Register No.: 230701397

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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 = "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)
```

| | Input | Expected | Got | |
|---|---------------------------------|------------------------|------------------------|---|
| ✓ | AAAAACCCCCAAAAACCCCCAAAAAGGGTTT | AAAAACCCC CCCCAAAAA | AAAAACCCC CCCCAAAAA | ✓ |
| ✓ | AAAAAAAAAAAAA | AAAAAAAAA | AAAAAAAAA | ✓ |



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".

| | | | | | | | | | | | | | |
|----------------|---------|--------|--------|---------|--------|--------|--------|--------|--------|--------|------------|-------------|------------|
| ~ 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 |

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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 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 | ✓ |

