Darshan UNIVERSITY

योगः कर्मसु कौशलम्

Python Programming - 2301CS404

Lab - 5

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1) Character Category Counter

Problem: Count uppercase, lowercase, digits, and special characters in a string.

Sample Inputs & Outputs:

- Input: `Python3@Lab` → Uppercase: 2, Lowercase: 7, Digits: 1, Special: 1
- Input: `HELLO123` → Uppercase: 5, Lowercase: 0, Digits: 3, Special: 0
- Input: `hi@#9` → Uppercase: 0, Lowercase: 2, Digits: 1, Special: 2

In [3]:
```
s = input("Enter Something :")
up = 0
lw = 0
digit = 0
spe = 0
for i in s:
    if(i.isupper()):
        up += 1
    elif(i.islower()):
        lw += 1
    elif(i.isdigit()):
        digit += 1
    elif not (i.isalnum()):
        spe += 1
    else:
        print("Enter Valid Input.")
print("Total Number Of Uppercase :", up)
print("Total Number Of Lowercase :", lw)
print("Total Number Of Digit :", digit)
print("Total Number Of Special :", spe)
```

```
Total Number Of Uppercase : 2
Total Number Of Lowercase : 7
Total Number Of Digit : 1
Total Number Of Special : 1
```

2) Reverse Each Word

- Input: `Python is Easy` → `nohtyP si ysaE`
- Input: `Hello World` → `olleH dlroW`
- Input: `Learn Python Fast` → `nraeL nohtyP tsaF`

In [5]:
```python
s = input("Enter Something : ")
l1 = s.split()
res = []
for i in l1:
    res.append(i[::-1])
res = " ".join(res)
print(res)
# res = " ".join([i[::-1] for i in s.split()])
```

```
nohtyP si ysaE
```

3) Case Pattern Identifier

- `PYTHON` → Uppercase
- `python` → Lowercase
- `Python Programming` → Title Case

In [8]:
```python
s = input("Enter Something : ")
if s.isupper():
    print("Uppercase")
elif s.islower():
    print("Lowercase")
elif s.istitle():
    print("Tital Case")
elif s.isdigit():
    print("Special Char")
else:
    print("Enter Valid Input")
```

```
Tital Case
```

4) First and Last Occurrence Finder

- `programming` , `g` → First:3 Last:10
- `banana` , `a` → First:1 Last:5
- `hello` , `z` → Not found

In [9]:
```python
s = input("Enter  Something :")
find = input("Enter Find Char :")
print(f"First Occurance : {s.find(find)}")
print(f"Last Occurance : {s.rfind(find)}")
```

```
First Occurance : 3
Last Occurance : 10
```

5) Word Frequency Counter (ignore the case)

- `Python is easy and Python is powerful` → python: 2
- `Java is popular but java is verbose` → java: 2
- `C is fast` → c:1

In [10]:
```
s1 = input("Enter Something :")
print(f"Count python: {s1.lower().count("python")}")
s2 = input("Enter Something :")
print(f"Count java: {s2.lower().count("java")}")
s3 = input("Enter Something :")
print(f"Count c: {s3.lower().count("c")}")
```

```
Count python: 2
Count java: 2
Count c: 1
```

6) Remove Extra Spaces

- `  Python   is   fun  ` → `Python is fun`
- `  Hello   World` → `Hello World`
- `NoExtraSpace` → `NoExtraSpace`

In [13]:
```
s = input("Enter Something :")
res = " ".join(s.split())
print(res)
```

```
Python is fun
```

7) Prefix and Suffix Removal

- `unhappy.txt` → `happy`
- `pretest.py` → `test`
- `unwanted.doc` → `wanted`

In [18]:
```
# s.removeprefix(prefix)
# s.removesuffix(suffix)
s = input("Enter Something: ")
res = s.removeprefix('un').removesuffix('.txt')
print(res)
```

```
happy
```

8) Replace Vowels

- `Programming` → `Pr*gr*mm*ng`
- `Education` → `*d*c*t**n`
- `Sky` → `Sky`

In [29]:
```
s1 = input("Enter Something: ")
vowels = 'aeiouAEIOU'
res = ""
for i in s1:
```

```
    if i in vowels:
        res += "*"
    else:
        res += i
print(res)

str2 = input("Enter Something (STR): ")

for v in "aeiouAEIOU":
    str2 = str2.replace(v, "*")

print(str2)
```

```
Pr*gr*mm*ng
*d*c*t**n
```

9) String Compression

- `aaabbcccc` → `a3b2c4`
- `xxxyyyz` → `x3y3z1`
- `abcd` → `a1b1c1d1`

In [52]:
```
s = input("Enter Something: ")
res = ''
count = 1

for i in range(len(s)):
    if i + 1 < len(s) and s[i] == s[i + 1]:
        count += 1
    else:
        res += s[i] + str(count)
        count = 1

print(res)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[52], line 9
      7         count += 1
      8     else:
----> 9         res += s[i] + str(count)
     10         count = 1
     12 print(res)

TypeError: 'str' object is not callable
```

10) Toggle Case (without using str.swapcase())

- `PyThOn` → `pYtHoN`
- `HELlo` → `helLO`
- `Python` → `pYTHON`

In [35]:
```
s = input("Enter Something :")
res = ''
for i in s:
    if i.islower():
        res += i.upper()
```

```
    elif i.isupper():
        res += i.lower()
print(res)
```

```
pYTHON
```

11) Username Validation

valid username rules:

1. only alphabets and digits
2. does not start with a digit
3. length ≥ 6

- `User123` → Valid
- `123User` → Invalid
- `Us@12` → Invalid

In [53]:
```
un = input("Enter Username: ")

if (
    un.isalnum() and          # only letters & digits
    not un[0].isdigit() and   # first character not digit
    len(un) >= 6              # minimum length
):
    print("Valid Username")
else:
    print("Invalid Username")
```

```
Valid Username
```

12) Palindrome Checker (ignore the case)

- `Madam` → Palindrome
- `Level` → Palindrome
- `Python` → Not Palindrome

In [39]:
```
s = input("Enter Something: ")
s = s.lower()
if s == s[::-1]:
    print("Palindrom")
else:
    print("not palindrom")
```

```
Palindrom
```

13) Longest Word Finder

- `Python programming is interesting` → programming
- `I love coding` → coding
- `Data structures and algorithms` → structures

In [45]:
```
s = input("Enter Sentence: ")
words = s.split()
longest = words[0]
```

```
for w in words:
    if len(w) > len(longest):
        longest = w
print("Longest word:", longest)
```

```
Longest word: programming
```

14) Case Conversion

- `python programming`
  - Upper: PYTHON PROGRAMMING
  - Lower: python programming
  - Title: Python Programming
  - Capitalize: Python programming

In [40]:
```
s = input("Enter Something: ")
print("Upper : ", s.upper())
print("Lower : ", s.lower())
print("Tital : ", s.title())
print("Capitalize : ", s.capitalize())
```

```
Upper :  PYTHON PROGRAMMING
Lower :  python programming
Tital :  Python Programming
Capitalize :  Python programming
```

15) Custom Split

- `apple,banana,grape`
- `10|20|30`
- `A-B-C-D`

In [44]:
```
# s = input("Enter Something: ")
# l1 = s.split("|")
# print(l1)

s = input("Enter String: ")
sep = input("Enter Separator: ")
res = []
temp = ""
for ch in s:
    if ch == sep:
        res.append(temp)
        temp = ""
    else:
        temp += ch
res.append(temp)   # add last part
print(res)
```

```
['apple', ' banana', ' grape']
```

In [ ]:
```

```