Darshan UNIVERSITY

योगः कर्मसु कौशलम्

Python Programming - 2301CS404

Lab - 5

Roll No.: 24010101034

Name: Prince S. Chandpa

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 [ ]:  s = input('Enter String: ')
         upper_count = 0
         lower_count = 0
         digit_count = 0
         special_count = 0

         for i in s:
           if i.isupper():
             upper_count += 1
           elif i.islower():
             lower_count += 1
           elif i.isdigit():
             digit_count += 1
           else:
             special_count += 1

         print(f'Uppercase: {upper_count}, Lowercase: {lower_count}, Digits: {digi
```

```
Enter String: Python3@Lab
Uppercase: 2, Lowercase: 7, Digits: 1, 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 [ ]:
```python
s = input('Enter String: ')
words = s.split()
for i in range(len(words)):
  words[i] = words[i][::-1]
print(' '.join(words))
```

```
Enter String: Python is Easy
nohtyP si ysaE
```

3) Case Pattern Identifier

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

In [ ]:
```python
s = input('Enter Sting: ')

if s.isupper():
  print('Uppercase')
elif s.islower():
  print('Lowercase')
elif s.istitle():
  print('Title Case')
else:
  print('Something else')
```

```
Enter Sting: Python Programming
Title Case
```

4) First and Last Occurrence Finder

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

In [ ]:
```python
s = input('Enter String: ')
char = input('Enter Charecter: ')

print(f'First: {s.find(char)} Last: {s.rfind(char)}')
```

```
Enter String: programming
Enter Charecter: g
First: 3 Last: 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 [ ]:  string = input('Enter String: ').lower()
         word = input('Enter Word to find: ')

         print(f'{word}: {string.count(word.lower())}')
```

```
Enter String: Python is easy and Python is powerful
Enter Word to find: python
python: 2
```

6) Remove Extra Spaces

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

```
In [ ]:  s = input('Enter String: ');
         s = s.split()
         s = ' '.join(s)
         print(s)
```

```
Enter String:    Python    is    fun
Python is fun
```

7) Prefix and Suffix Removal

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

```
In [ ]:  s = input('Enter String: ')
         suffix = input('Enter Suffix: ')
         prefix = input('Enter Prefix: ')

         s = s.removeprefix(prefix)
         s = s.removesuffix(suffix)

         print(s)
```

```
Enter String: unhappy.txt
Enter Suffix: .txt
Enter Prefix: un
happy
```

8) Replace Vowels

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

```
In [ ]:  s = input('Enter String: ')
         vowels = ['a','e','i','o','u']

         for i in s:
           if i.lower() in vowels:
```

```
    s = s.replace(i,'*')
print(s)
```

```
Enter String: Programming
Pr*gr*mm*ng
```

9) String Compression

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

In [12]:
```python
s = input('Enter String: ')

ans = ''
count = 1

for i in range(1,len(s)):
  if s[i] == s[i-1]:
    count += 1
  else:
    ans += s[i - 1] + str(count)
    count = 1

ans += s[-1] + str(count)

print(ans)
```

```
Enter String: xxxyyyz
x3y3z1
```

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

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

In [ ]:
```python
s = input('Enter String: ')
ans = ''
for i in s:
  if i.isupper():
    ans += i.lower()
  else:
    ans += i.upper()

print(ans)
```

```
Enter String: PyThOn
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 [ ]:  user_name = input('Enter Your user name: ')

         if (not user_name.isalnum()) or (user_name.startswith(('1','2','3','4','5
           print('Invalid')
         else:
           print('Valid')
```

```
Enter Your user name: 123User
Invalid
```

12) Palindrome Checker (ignore the case)

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

```
In [6]:  s = input('Enter String: ').lower()

         i = 0
         j = len(s) - 1

         while i < j:
           if s[i] != s[j]:
             print('Not Palindrome')
             break
           i += 1
           j -= 1
         else:
           print('Palindrome')
```

```
Enter String: Level
Palindrome
```

13) Longest Word Finder

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

```
In [14]:  s = input('Enter string: ').split()
          max = 0
          for i in s:
            count = len(i)
            if count > max:
              max = count
              max_index_string = i

          print(max_index_string)
```

```
Enter string: Python programming is interesting
programming
```

14) Case Conversion

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

```python
In [ ]:  s = input('Enter String: ')
         print(f'''Upper: {s.upper()}
         Lower: {s.lower()}
         Title: {s.title()}
         Capitalize: {s.capitalize()}''')
```

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

15) Custom Split

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

```python
In [ ]:  s = input('Enter String: ')
         seprater = input('enter sep:')

         print(s.split(seprater))
```

```
Enter String: apple,banana,grape
enter sep:,
['apple', 'banana', 'grape']
```