Programs on Immutable Data Structure:

1. Write a Python function to Find length of a string in python without using len function.

❖ **Solution:**

```
❖ def findLen(str):
❖     counter = 0
❖     for i in str:
❖         counter += 1
❖     return counter
❖ str=input("Enter the string:")
❖ print("Length of the string:",findLen(str))
```

❖ **Output:**

```
❖ Enter the string: Arman
❖ Length of the string: 5
```

2. Write a Python program to check if a string is palindrome or not using function

❖ **Example:**

❖ **Input : malayalam Output : Yes Input : geeks Output : No**

❖ **Solution:**

```
❖ # function which return reverse of a string
❖ def isPalindrome(s):
❖     return s == s[::-1]
❖ s = input(“Enter String”)
❖ ans = isPalindrome(s)
❖ if ans==1:
❖     print("Yes")
❖ else:
❖     print("No")
```

3. Write a program to remove i'th character from string in Python

❖ **Solution:**

```
❖ test_str = "Hello welcome"
❖ # Printing original string
❖ print ("The original string is : " + test_str)
❖ new_str = ""
❖ print("Enter index number which you want to skip")
❖ j=int(input())
❖ for i in range(len(test_str)):
❖         if i != j:
❖                 new_str = new_str + test_str[i]
❖ # Printing string after removal
❖ print ("The string after removal of i'th character : " + new_str)
```

❖ **Output:**

```
❖ The original string is : Hello welcome
❖ Enter index number which you want to skip
❖ 2
❖ The string after removal of i'th character : Helo welcome
```

4. Create a string made of the first, middle and last character

❖ **Solution:**

```
❖ str1 = 'James'
❖ print("Original String is", str1)
❖ # Get first character
❖ res = str1[0]
❖ # Get string size
```

❖ l = len(str1)

❖ # Get middle index number

❖ mi = int(l / 2)

❖ # Get middle character and add it to result

❖ res = res + str1[mi]

❖ # Get last character and add it to result

❖ res = res + str1[l - 1]

❖ print("New String:", res)

❖ **Output:**

❖ Original String is James
❖ New String: Jms

5. Count all letters, digits, and special symbols from a given string.

❖ **Solution:**

❖ def find_digits_chars_symbols(sample_str):

❖ char_count = 0

❖ digit_count = 0

❖ symbol_count = 0

❖ for char in sample_str:

❖ if char.isalpha():

❖ char_count += 1

❖ elif char.isdigit():

❖ digit_count += 1

❖ # if it is not letter or digit then it is special symbol

❖ else:

❖ symbol_count += 1

❖ print("Chars =", char_count, "Digits =", digit_count, "Symbol =", symbol_count)

- sample_str = "P@yn2at&#i5ve"
- print("total counts of chars, Digits, and symbols \n")
- find_digits_chars_symbols(sample_str)
- **Output:**
- total counts of chars, Digits, and symbols
- Chars = 8 Digits = 2 Symbol = 3

6. Write a Python program that accepts a string and calculate the number of uppercase letters and lowercase letters.

- **Solution:**

```
n=input("Enter String ")
upper_counter=0
lower_counter=0
for x in n:
    if x.isupper():
        upper_counter+=1
    elif x.islower():
        lower_counter+=1
    else:
        pass
print("The number of uppercase letters is ",upper_counter)
print("The number of lowercase letters is ",lower_counter)
```

- **Output:**
- Enter String : TeJaS ThAkkAR
- The number of uppercase letters is 7
- The number of lowercase letters is 5

7. Find all occurrences of a substring in a given string by ignoring the case.

❖ **Solution:**

```
❖ str1 = "Welcome to USA. usa awesome, isn't it?"
❖ sub_string = "USA"
❖ # convert string to lowercase
❖ temp_str = str1.lower()
❖ # use count function
❖ count = temp_str.count(sub_string.lower())
❖ print("The USA count is:", count)
```

❖ **Output:**

❖ The USA count is: 2

8. Calculate the sum and average of the digits present in a string.

❖ **Solution:**

```
❖ input_str = "PYnative29@#8496"
❖ total = 0
❖ cnt = 0
❖ for char in input_str:
❖     if char.isdigit():
❖         total += int(char)
❖         cnt += 1
❖ # average = sum / count of digits
❖ avg = total / cnt
❖ print("Sum is:", total, "Average is ", avg)
```

❖ **Output:**

❖ Sum is: 38 Average is 6.333333333333333

9. Write a program to Reverse a given string.

❖ **Solution:**

❖ str1 = "PYnative"

❖ print("Original String is:", str1)

❖ str1 = str1[::-1]

❖ print("Reversed String is:", str1)

❖ **Output:**

❖ Original String is: PYnative

❖ Reversed String is: evitanYP

10. Split a string on hyphens.

❖ **Given:**

❖ str1 = Emma-is-a-data-scientist

❖ **Expected Output:**

❖ Displaying each substring
❖ Emma
❖ is
❖ a
❖ data
❖ scientist

❖ **Solution:**

❖ str1 = "Emma-is-a-data-scientist"

❖ print("Original String is:", str1)

❖ # split string

❖ sub_strings = str1.split("-")

❖ print("Displaying each substring")

❖ for sub in sub_strings:

❖ print(sub)

❖ **Output:**

❖ Original String is: Emma-is-a-data-scientist

❖ Displaying each substring

❖ Emma

❖ is

❖ a

❖ data

❖ scientist

11. Replace each special symbol with # in the following string.

❖ **Given:**

❖ str1 = '/*Jon is @developer & musician!!'

❖ **Expected Output:**

❖ ##Jon is #developer # musician##

❖ **Solution:**

❖ import string

❖ str1 = '/*Jon is @developer & musician!!'

❖ print("The original string is : ", str1)

❖ # Replace punctuations with #

❖ replace_char = '#'

❖ # string.punctuation to get the list of all special symbols

❖ for char in string.punctuation:

❖ str1 = str1.replace(char, replace_char)

❖ print("The strings after replacement : ", str1)

❖ **Output:**

❖ The original string is : /*Jon is @developer & musician!!

❖ The strings after replacement : ##Jon is #developer # musician##

12. Write a Python program to demonstrate the negative index in a Tuple .

❖ **Solution:**

❖ my_tuple = ('p', 'e', 'r', 'm', 'i', 't')

❖ print(my_tuple[-1])

❖ print(my_tuple[-2])

❖ print(my_tuple[-3])

❖ print(my_tuple[-4])

❖ print(my_tuple[-5])

❖ print(my_tuple[-6])

❖ **Output:**

❖ t

❖ i

❖ m

❖ r

❖ e

❖ P

13. Write a program to do sum of tuple elements.

❖ **Solution:**

❖ test_tup = (1, 2, 3)

❖ sum=0

❖ for i in test_tup:

❖ sum=sum+i

❖ print(sum)

❖ **Output**: 6

14. Write a program to print Maximum and Minimum elements in given Tuple

❖ **Solution:**

```
❖ test_tup = (1, 2, 3)
❖ max=test_tup[0]
❖ min=test_tup[0]
❖ for i in test_tup:
❖     if (i>max):
❖         max=i
❖     if (i<min):
❖         min=i
❖ print(max)
❖ print(min)
```

❖ **Output:**

❖ 3

❖ 1

15. Write a program to print even numbers from given tuple.

❖ **Solution:**

```
❖ test_tup = (1, 2, 3, 4, 5, 6)
❖ for i in test_tup:
❖     if (i%2==0):
❖         print(i)
```

❖ **Output:**

❖ 2

❖ 4

❖ 6

16. Write a program to print sum of even numbers and sum of odd numbers from elements given in tuple.

❖ **Solution:**

```
❖ test_tup = (1, 2, 3, 4, 5, 6)
❖ odd=0
❖ even=0
❖ for i in test_tup:
❖         if (i%2==0):
❖                 even+=i;
❖         else:
❖                 odd+=i
❖ print("Odd sum: ",odd)
❖ print("Even sum: ",even)
```

❖ **Output:**

```
❖ Odd sum: 9
❖ Even sum: 12
```