PRACTICAL IV

DATE: 24/02/24

Functions in python

AIM: To learn and execute Functions in python.

INTRODUCTION:

- A function is a block of code which only runs when it is called.
- You can pass data, known as parameters, into a function.
- A function can return data as a result.

Creating a Function

In Python a function is defined using the def keyword:

```
def my_function():
  print("Hello from a function")
```

Calling a Function

To call a function, use the function name followed by parenthesis:

```
def my_function():
  print("Hello from a function")
my_function()
```

Arguments

Information can be passed into functions as arguments.

Arguments are specified after the function name, inside the parentheses. You can add as many arguments as you want, just separate them with a comma.

The following example has a function with one argument (fname). When the function is called, we pass along a first name, which is used inside the function to print the full name:

```
def my_function(fname):
  print(fname + " Refsnes")

my_function("Emil")
my_function("Tobias")
my_function("Linus")
```

Parameters or Arguments?

The terms *parameter* and *argument* can be used for the same thing: information that are passed into a function.

From a function's perspective:

A parameter is the variable listed inside the parentheses in the function definition.

An argument is the value that is sent to the function when it is called.

Number of Arguments

By default, a function must be called with the correct number of arguments. Meaning that if your function expects 2 arguments, you have to call the function with 2 arguments, not more, and not less.

This function expects 2 arguments, and gets 2 arguments:

```
def my_function(fname, lname):
  print(fname + " " + lname)

my_function("Emil", "Refsnes")
```

Types of Functions in Python

There are mainly two types of functions in Python.

- **Built-in library function:** These are Standard functions in Python that are available to use.
- **User-defined function:** We can create our own functions based on our requirements.

Q1. Write a Python function to find the Max of three numbers.

```
def maximum(a, b, c):
    largest = max(a,b,c)
    return largest
d = input("Enter a number: ")
e = input("Enter a number: ")
f = input("Enter a number: ")
print("The maximum number out of three is: ", maximum(d, e, f))
```

```
Enter a number: 1
Enter a number: 5
Enter a number: 9
The maximum number out of three is:  9
```

Figure 1: Output of Q1

Q2. Write a Python function to multiply all the numbers in a list.

```
def multiplyList(myList):
        result = 1
        for x in myList:
                result = result * x
        return result
list1=[]
for i in range (0,5):
   a=int(input("Enter a number to append in the list:"))
   list1.append(a)
print("The elements of the list are:",list1)
print("The multiplication of all the numbers in the list is: ", multiplyList(list1))
```

```
Enter a number to append in the list: 1
Enter a number to append in the list: 2
Enter a number to append in the list: 3
Enter a number to append in the list: 4
Enter a number to append in the list: 5
The elements of the list are:  [1, 2, 3, 4, 5]
The multiplied list:  120
```

Figure 2: Output of Q2

Q3. Write a Python function to calculate the factorial of a number (a non-negative integer). The function accepts the number as an argument.

```
def factorial(num):
   fact = 1
```

```
    for i in range (1,num+1):
        fact = fact*i
    return fact
num= int(input("Enter a number: "))
if num < 0:
    print("Entered number is not positive")
elif num == 0:
    print("The factorial of 0 is 1")
else:
    print("The factorial of", num, "is", factorial(num))
```

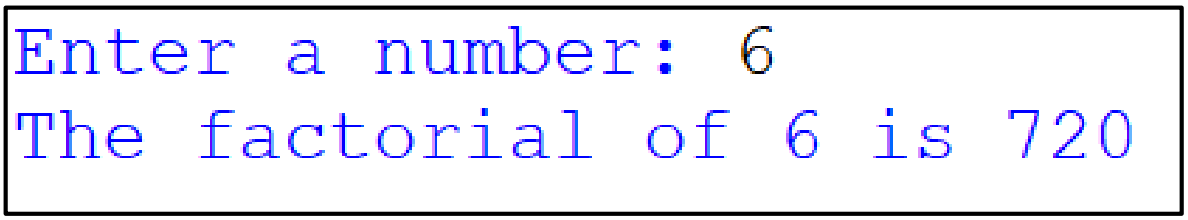

Figure 3: Output of Q3

Q4. Write a Python function that accepts a string and calculate the number of upper-case letters and lower-case letters.

```
def char_count(x):
    u =0
    l =0
    for i in x:
     if i>='a' and i<='z':
        l+=1
     elif i>='A' and i<='Z':
        u+=1
    print("The number of Lowercase is",l)
    print("The number of Uppercase is",u)
x = input("Enter a string")
char_count(x)
```

```
Enter a string: Anitya Sonawane
The number of Lowercase is:  12
The number of Uppercase is:  2
```

Figure 4: Output of Q4

Q5. Write a Python function that takes a list and returns a new list with unique elements of the first list.

```
def unique_list(l):
    x = []
    for a in l:
        if a not in x:
            x.append(a)
    return x
list1=[]
for i in range (0,5):
    a=int(input("Enter a number to append in the list:"))
    list1.append(a)
print("The elements of the list are: ",list1)
print("The elements of the list are: ",unique_list(list1))
```

```
Enter a number to append in the list:2
Enter a number to append in the list:3
Enter a number to append in the list:4
Enter a number to append in the list:5
Enter a number to append in the list:5
The elements of the list are:  [2, 3, 4, 5, 5]
The elements of the unique list are:  [2, 3, 4, 5]
```

Figure 5: Output of Q5