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'''
            Experiment 2.2 : Implementing Functions in Python.

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                                    2021-2022
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THEORY:
        Functions are the most important aspect of an application. A
function can be defined as the organized block of reusable code, which
can be called whenever required. Python allows us to divide a large
program into the basic building blocks known as a function. The function
contains the set of programming statements enclosed by {}. A function can
be called multiple times to provide reusability and modularity to the
Python program. Python provide us various inbuilt functions like range()
or print(). Although, the user can create its functions, which can be
called user-defined functions.
There are mainly two types of functions.
        1)User-define functions - The user-defined functions are those
define by the user to perform the specific task.
        2)Built-in functions - The built-in functions are those functions
that are pre-defined in Python.
Python provides the def keyword to define the function. The syntax of the
define function is
        def my_function(parameters):
            function_block
        return expression
In this programwe have used 3 diffrent functions fact(factorial),
Palin(Palindrome) and fibo(fibonacci)

Factorial:
        Factorial is a non-negative integer. It is the product of all
positive integers less than or equal to that number you ask for
factorial. It is denoted by an exclamation sign (!).
Example:
    n! = n* (n-1) * (n-2) *........1
    4! = 4x3x2x1 = 24

Palindrome:
        A palindrome is a number or letter that remains the same even if
the number and letters are inverted.
For example:
121, 11, 414, 1221, 74747 are the palindrome numbers.
12, 41, 12332, are not the palindrome numbers.
MOM, DAD, MADAM, REFER are the palindrome letters.
THE, PROGRAM, are not the palindrome letters.

Fibonacci:
        Fibonacci sequence specifies a series of numbers where the next
number is found by adding up the two numbers just before it.
0 and 1 are default numbers.

```python
'''
def fact(num):
    f=1
    for i in range(1,num+1):
        f=f*i
    return f
def fibo(num):
    a=0
    b=1
    if num==1:
        print(a)
    else:
        print(a)
        print(b)
        for i in range(2,num):
            c=a+b
            a=b
            b=c
            print(c)
def palin(num):
    rev=0
    q=num
    while q>0:

        rev=rev*10+q%10
        q=q//10

    if num==rev:
        print(f"{n} is a Palindrome number")
    else:
        print(f"{n} is not a palindrome number")


if __name__=='__main__':
    while True:

print("Menu:\n\t1.Factorial\n\t2.Fibonacci\n\t3.Palindrome\n\t4.Exit")
        ch=int(input("Please Enter Your Choice ::"))
        if ch==1:
            n=int(input("Enter a number::"))
            print(f"The factorial of {n} is {fact(n)}")
        elif ch==2:
            f=int(input("Enter a number::"))
            print(f"The fibonacci series of {f} is ")
            fibo(f)
        elif ch==3:
            n=int(input("Enter a number::"))
            palin(n)
        elif ch==4:
            print("Thank you!")
            exit()
        else:
            print("Please enter a correct number")
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'''
OUTPUT:
Menu:
        1.Factorial
        2.Fibonacci
        3.Palindrome
        4.Exit
Please Enter Your Choice ::1
Enter a number::5
The factorial of 5 is 120
Menu:
        1.Factorial
        2.Fibonacci
        3.Palindrome
        4.Exit
Please Enter Your Choice ::2
Enter a number::6
The fibonacci series of 6 is
0
1
1
2
3
5
Menu:
        1.Factorial
        2.Fibonacci
        3.Palindrome
        4.Exit
Please Enter Your Choice ::3
Enter a number::25
25 is not a palindrome number
Menu:
        1.Factorial
        2.Fibonacci
        3.Palindrome
        4.Exit
Please Enter Your Choice ::3
Enter a number::121
121 is a Palindrome number
Menu:
        1.Factorial
        2.Fibonacci
        3.Palindrome
        4.Exit
Please Enter Your Choice ::4
Thank you!



CONCLUSION:
      In this perticular experiment we have sucessfully implemented
functions in python.The Function helps to programmer to break the program
into the smaller part. It organizes the code very effectively and avoids
the repetition of the code. As the program grows, function makes the
program more organized.
'''
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