

Ex. No: 11

Aim: Write a Python script that prints prime numbers less than 20.

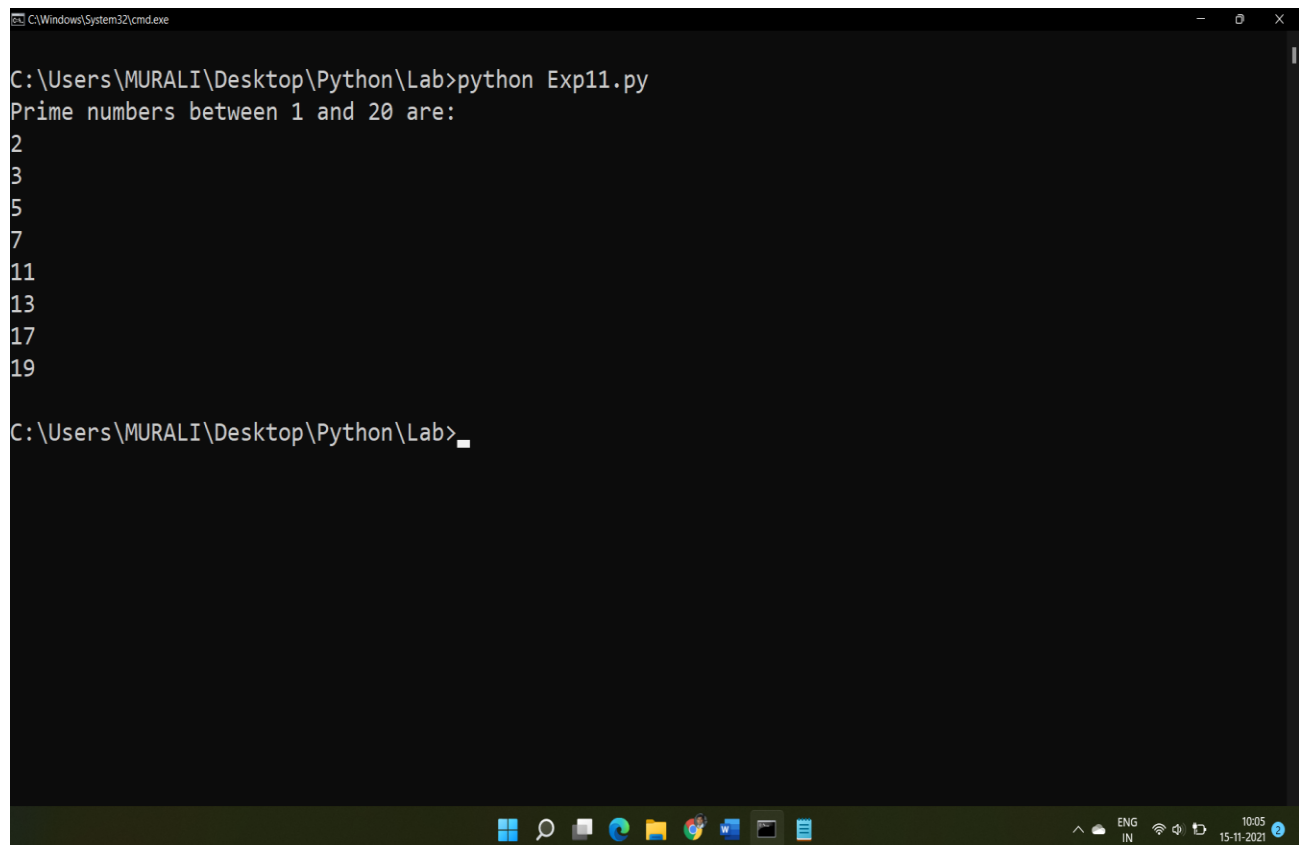
Theory:

Prime Number: A number greater than 1 with exactly two factors, i.e., 1 and the number itself is defined as a prime number.

Source Code:

```
print("Prime numbers between 1 and 20 are:")
for num in range(20):
    if num>1:
        for i in range(2,num):
            if(num%i)==0:
                break
        else:
            print(num)
```

Output:



```
C:\Windows\System32\cmd.exe

C:\Users\MURALI\Desktop\Python\Lab>python Exp11.py
Prime numbers between 1 and 20 are:
2
3
5
7
11
13
17
19

C:\Users\MURALI\Desktop\Python\Lab>_
```

The screenshot shows a Windows Command Prompt window with a black background and white text. The title bar at the top reads "C:\Windows\System32\cmd.exe". The command prompt shows the user running the command "python Exp11.py" in the directory "C:\Users\MURALI\Desktop\Python\Lab". The output of the script is displayed as "Prime numbers between 1 and 20 are:" followed by the prime numbers 2, 3, 5, 7, 11, 13, 17, and 19, each on a new line. The prompt then shows a cursor waiting for the next command. The Windows taskbar is visible at the bottom of the screen, showing various icons and the system clock indicating 10:05 on 15-11-2021.

Ex. No: 12

Aim: Write a python program to find factorial of a number using Recursion.

Theory:

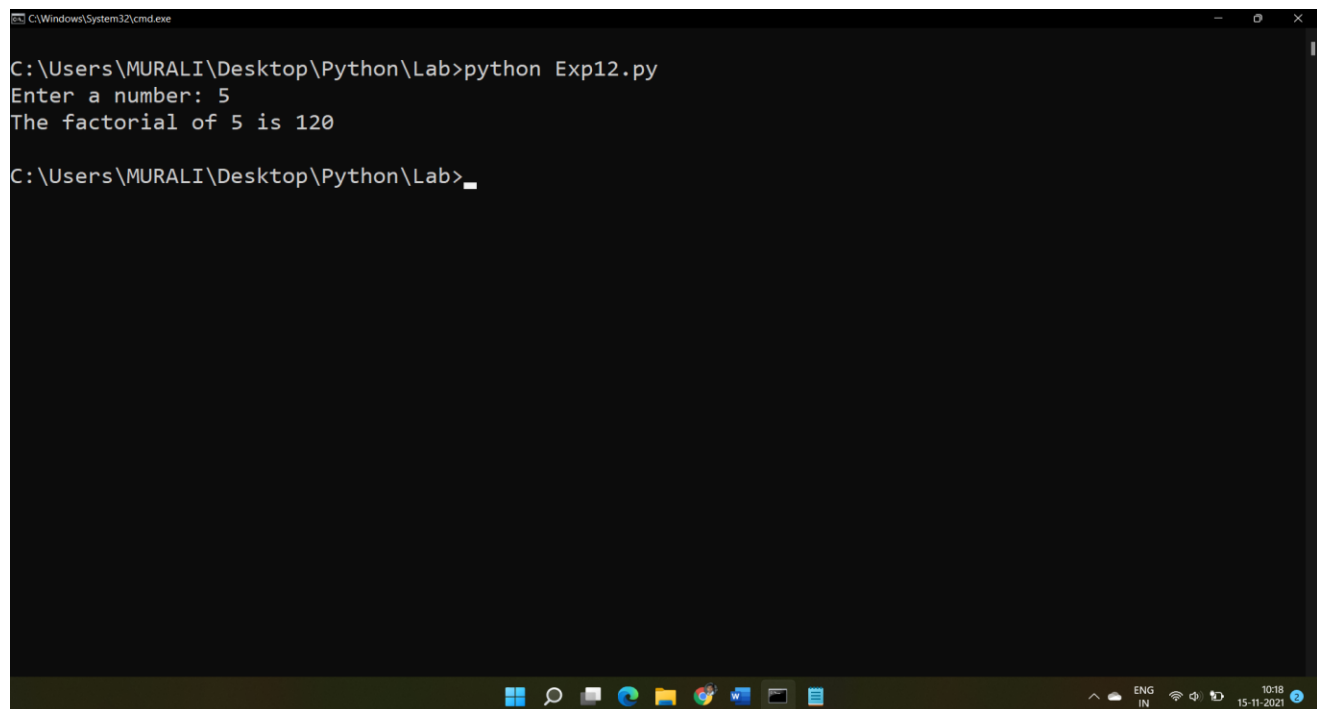
Factorial: The factorial of a number is the function that multiplies the number by every natural number below it.

Recursion: The process in which a function calls itself directly or indirectly is called recursion and the corresponding function is called as recursive function.

Source Code:

```
def factorial(n):  
    if n == 1:  
        return n  
    else:  
        return n*factorial(n-1)  
  
num = int(input("Enter a number: "))  
if num < 0:  
    print("Sorry, factorial does not exist for negative numbers")  
elif num == 0:  
    print("The factorial of 0 is 1")  
else:  
    print("The factorial of",num,"is",factorial(num))
```

Output:



```
C:\Windows\System32\cmd.exe  
C:\Users\MURALI\Desktop\Python\Lab>python Exp12.py  
Enter a number: 5  
The factorial of 5 is 120  
C:\Users\MURALI\Desktop\Python\Lab>_
```

The screenshot shows a Windows Command Prompt window with a black background and white text. The title bar at the top reads "C:\Windows\System32\cmd.exe". The command prompt shows the user running a Python script named "Exp12.py" in the directory "C:\Users\MURALI\Desktop\Python\Lab". The user enters "5" when prompted "Enter a number:", and the program outputs "The factorial of 5 is 120". The prompt then shows a blank line with a cursor. The Windows taskbar is visible at the bottom, showing various icons and the system clock indicating 10:18 on 15-11-2021.

Ex. No: 13

Aim: Write a program that accepts the lengths of three sides of a triangle as inputs. The program output should indicate whether or not the triangle is a right triangle (Recall from the Pythagorean Theorem that in a right triangle, the square of one side equals the sum of the squares of the other two sides).

Theory:

Pythagorean Theorem: Pythagorean theorem states that the square of the length of the hypotenuse will be equal to the sum of the squares of the lengths of the other two sides of the right-angled triangle.

The Formula of Pythagorean Theorem:

So, mathematically, we represent the Pythagoras theorem as:

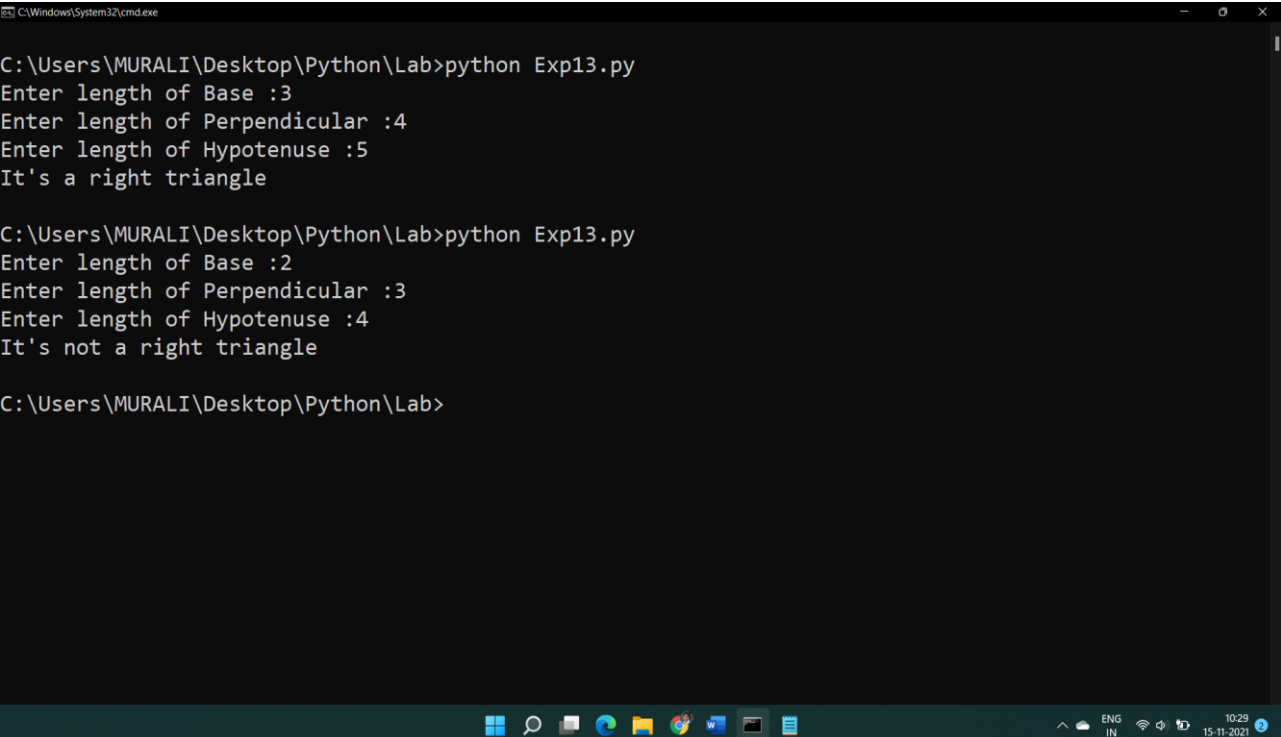
$$\text{Hypotenuse}^2 = \text{Perpendicular}^2 + \text{Base}^2$$

Source Code:

```
base=float(input("Enter length of Base :"))
perp=float(input("Enter length of Perpendicular :"))
hypo=float(input("Enter length of Hypotenuse :"))

if hypo**2==((base**2)+(perp**2)):
    print("It's a right triangle")
else:
    print("It's not a right triangle")
```

Output:



```
C:\Windows\System32\cmd.exe

C:\Users\MURALI\Desktop\Python\Lab>python Exp13.py
Enter length of Base :3
Enter length of Perpendicular :4
Enter length of Hypotenuse :5
It's a right triangle

C:\Users\MURALI\Desktop\Python\Lab>python Exp13.py
Enter length of Base :2
Enter length of Perpendicular :3
Enter length of Hypotenuse :4
It's not a right triangle

C:\Users\MURALI\Desktop\Python\Lab>
```

Ex. No: 14

Aim: Write a python program to define a module to find Fibonacci Numbers and import the module to another program.

Theory:

Fibonacci numbers: The Fibonacci Sequence is the series of numbers: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, ... The next number is found by adding up the two numbers before it.

Python module: A Python module is a file containing Python definitions and statements. A module can define functions, classes, and variables.

Source Code:

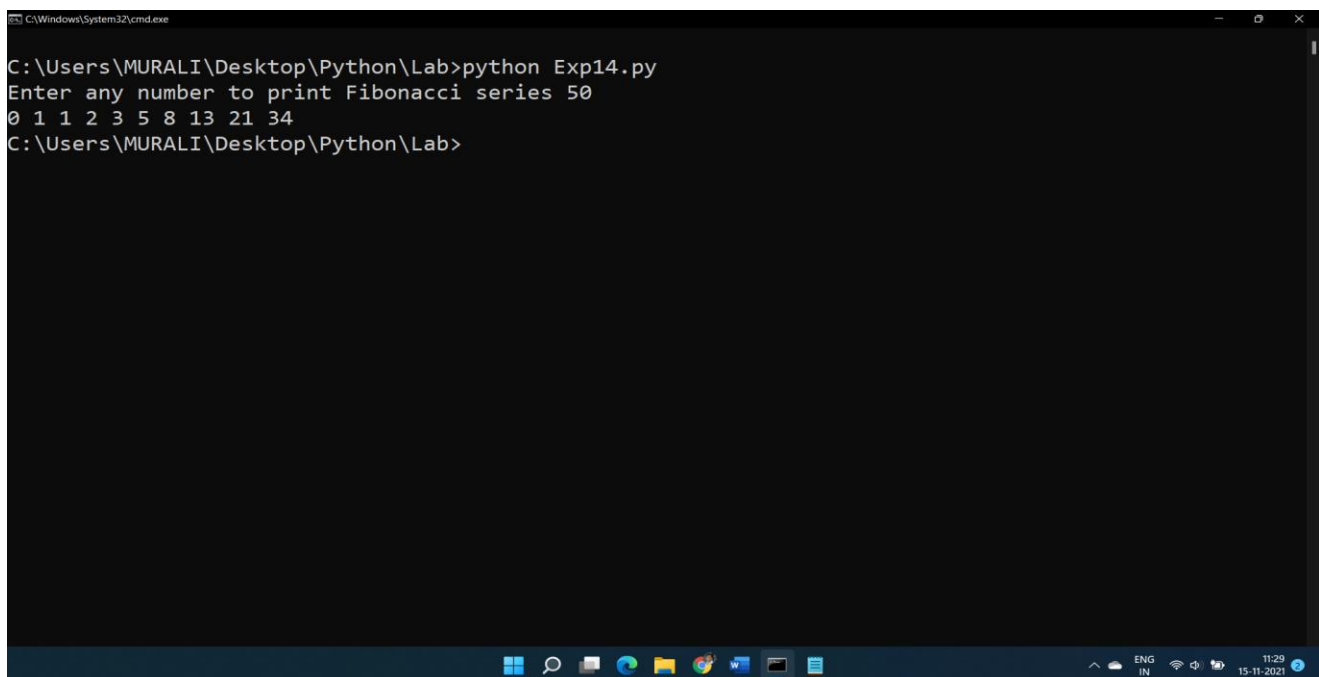
Fibonacci.py

```
def fib(n):  
    a, b = 0, 1  
    print(a,end = " ")  
    while b < n:  
        print(b, end = " ")  
        a, b = b, a+b
```

Exp14.py

```
import fibonacci  
num=int(input("Enter any number to print Fibonacci series "))  
fibonacci.fib(num)
```

Output:



```
C:\Windows\System32\cmd.exe  
C:\Users\MURALI\Desktop\Python\Lab>python Exp14.py  
Enter any number to print Fibonacci series 50  
0 1 1 2 3 5 8 13 21 34  
C:\Users\MURALI\Desktop\Python\Lab>
```

Ex. No: 15

Aim: Write a python program to define a module and import a specific function in that module to another program.

Source Code:

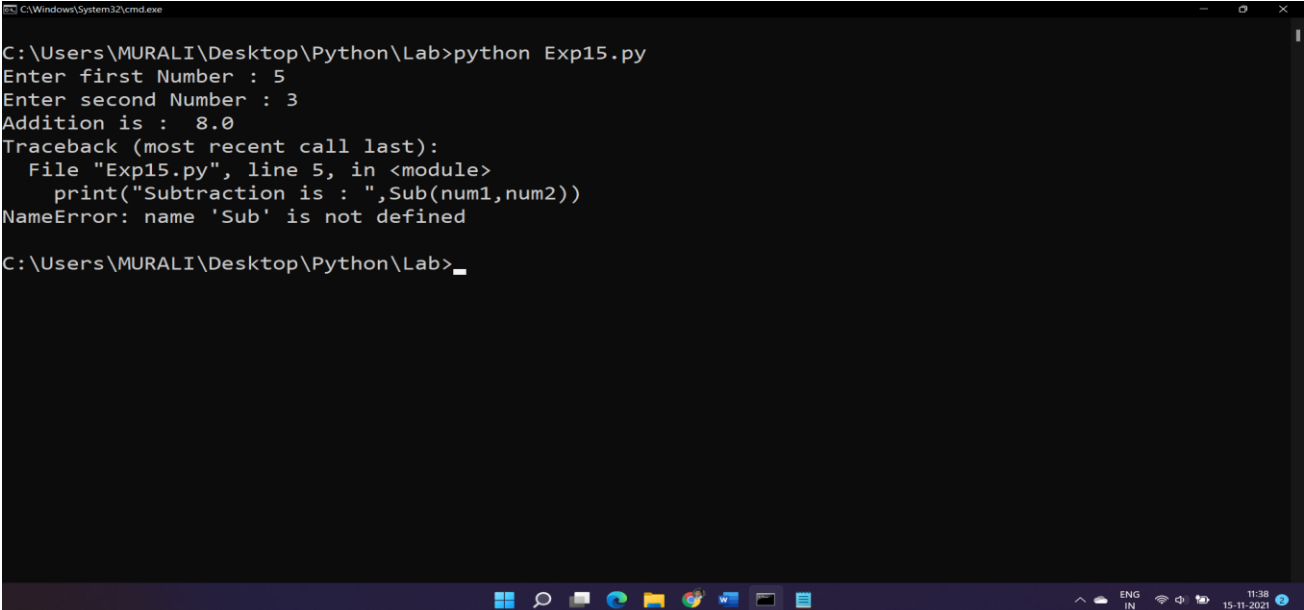
arth.py

```
def Add(a,b):  
    c=a+b  
    return c  
def Sub(a,b):  
    c=a-b  
    return c  
def Mul(a,b):  
    c=a*b  
    return c  
def Div(a,b):  
    c=a/b  
    return c
```

Exp15.py

```
from arth import Add  
num1=float(input("Enter first Number : "))  
num2=float(input("Enter second Number : "))  
print("Addition is : ",Add(num1,num2))  
print("Subtraction is : ",Sub(num1,num2))  
print("Multiplication is : ",Mul(num1,num2))  
print("Division is : ",Div(num1,num2))
```

Output:



```
C:\Windows\System32\cmd.exe  
C:\Users\MURALI\Desktop\Python\Lab>python Exp15.py  
Enter first Number : 5  
Enter second Number : 3  
Addition is : 8.0  
Traceback (most recent call last):  
  File "Exp15.py", line 5, in <module>  
    print("Subtraction is : ",Sub(num1,num2))  
NameError: name 'Sub' is not defined  
C:\Users\MURALI\Desktop\Python\Lab>_
```