PRACTICAL: 2

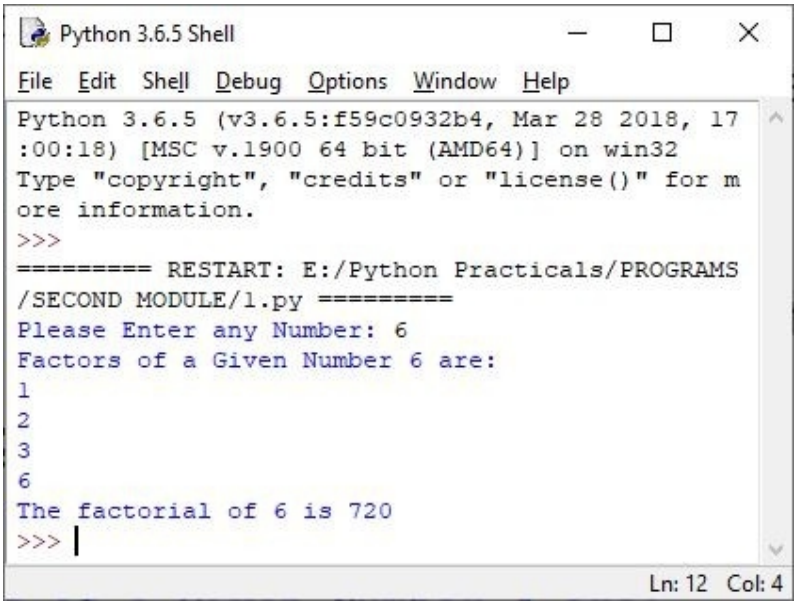
Develop programs to understand control structure, functions, scoping and recursion.

PROGRAM 1: Write a program for finding iterative and recursive version factorial of a given number using function.

SOLUTION:

```
def Find_Factors(number):
   for value in range(1, number + 1):
      if(number % value == 0):
         print("{0}".format(value))
num = int(input("Please Enter any Number: "))
print("Factors of a Given Number {0} are:".format(num))
Find_Factors(num)
#Recursion
def recur_factorial(n):
  if n == 1:
     return n
  else:
     return   n*recur_factorial(n-1)
# check is the number is negative
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",recur_factorial(num))
```

OUTPUT:



PROGRAM 2: Write a program which takes a sentence from user and calculates number of digits, letters, uppercase letters, lowercase letters and spaces in sentence.

SOLUTION:

```
s = input("Input a string: ")
count1=0
count2=0
for i in s:
    if(i.islower()):
        count1=count1+1
    elif(i.isupper()):
        count2=count2+1
print("The number of lowercase characters is:")
print(count1)
print("The number of uppercase characters is:")
print(count2)
d=l=0
for c in s:
  if c.isdigit():
    d=d+1
  elif c.isalpha():
    l=l+1
  else:
    pass
print("The numbers of Letters is:", l)
print("The numbers of Digits is:", d)
def check_space(string):
  # counter
  count = 0
  # loop for search each index
  for i in range(0, len(string)):
    # Check each char
    # is blank or not
    if string[i] == " ":
      count += 1
  return count
print("The number of spaces is:",check_space(s))
```

OUTPUT:

```
Input a stringHello World 2021
The number of lowercase characters is:
8
The number of uppercase characters is:
2
The numbers of Letters is: 10
The numbers of Digits is: 4
The number of spaces is: 2
```

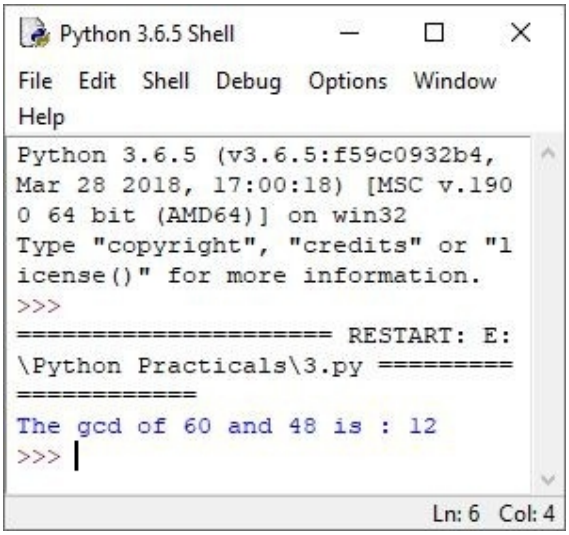
PROGRAM 3: Write a program to find GCD of two numbers.

SOLUTION:

```
# Python code to demonstrate the working of gcd()
# importing "math" for mathematical operations
import math

# prints 12
print("The gcd of 60 and 48 is : ", end="")
print(math.gcd(60, 48))
```

OUTPUT:



PROGRAM 4: Write a program to convert Decimal to hex, octal and binary.

SOLUTION:

```
dec = int(input("Enter a decimal number: "))

print(bin(dec),"in binary.")
print(oct(dec),"in octal.")
print(hex(dec),"in hexadecimal.")
```

OUTPUT: