Functions: ¶

In [1]:
```
# without arguments and without return values
def add():
    num1=int(input("Enter any number:"))
    num2=int(input("Enter any number:"))
    print(num1+num2)
add()
```

```
Enter any number:2
Enter any number:3
5
```

In [2]:
```
def mul():
    num1=int(input("Enter any number:"))
    num2=int(input("Enter any number:"))
    print(num1*num2)
mul()
```

```
Enter any number:4
Enter any number:5
20
```

In [4]:
```
# Without arguments &with return values
def add():
    num1=int(input("Enter any number:"))
    num2=int(input("Enter any number:"))
    return num1+num2
res=add()
print(res)
```

```
Enter any number:3
Enter any number:4
7
```

In [5]:
```
def mul():
    num1=int(input("Enter any number:"))
    num2=int(input("Enter any number:"))
    return num1*num2
res=mul()
print(res)
```

```
Enter any number:5
Enter any number:4
20
```

In [33]:
```
#Function to count the number of digits in a given  number
def count2(num):
    n=str(num)
    return len(n)
num=int(input())
print(count2(num))
```

```
1234
4
```

In [6]:
```
#With arguments & without return values
def add(num1,num2):
    print(num1+num2)
num1=int(input("Enter any number:"))
num2=int(input("Enter any number:"))
add(num1,num2)
```

```
Enter any number:4
Enter any number:5
9
```

In [7]:
```
def mul(num1,num2):
    print(num1*num2)
num1=int(input("Enter any number:"))
num2=int(input("Enter any number:"))
mul(num1,num2)
```

```
Enter any number:4
Enter any number:5
20
```

In [8]:
```
# Function to find square of a number
def square(num):
    return num**2
num=int(input("Enter any number:"))
res=square(num)
print(res)
```

```
Enter any number:4
16
```

In [9]:
```
def factorial(num):
    s=1
    while(num>=1):
        s*=num
        num-=1
    print(s)
number=int(input("Enter any number:"))
factorial(number)
```

```
Enter any number:4
24
```

In [12]:
```
def reverse(string):
    print(string[::-1])
string=input()
reverse(string)
```

```
asdfhj
jhfdsa
```

In [11]:
```
###### Leap Year
def leap(year):
    if (year%400==0) or (year%4==0 and year%100!=0):
        print("Leap Year")
    else:
        print("Not a Leap Year")
year=int(input())
leap(year)
```

```
200
Not a Leap Year
```

In [20]:
```
#Palindrome of a string
def palindrome(s):
    if s==s[::-1]:
        return True
    else:
        return False
s=input()
print(palindrome(s))
```

```
madams
False
```

In [30]:
```
#Greatest of four numbers
def greatest(n1,n2,n3,n4):
    if n1>n2 and n1>n3 and n1>n4:
        return n1
    elif n2>n3 and n2>n4:
        return n2
    elif n3>n4:
        return n3
    else:
        n4
n1=int(input())
n2=int(input())
n3=int(input())
n4=int(input())
greatest(n1,n2,n3,n4)
```

```
12
15
13
14
```

Out[30]:
```
15
```

In [13]:
```
# Count no of digits
def digits(num):
    count=0
    while(num>0):
        num=num//10
        count+=1
    return count
number=int(input())
res=digits(number)
print(res)
```

```
1234
4
```

In [14]:
```
# Function to print all numbers divisible by 6 and not a factor of 100 in a given
def divisible(n1,n2):
    s=0
    avg=0
    while(n1<=n2):
        if n1 %6==0:
            if n1%100!=0:
                print(n1)
        n1+=1
num1=int(input("Enter lower bound:"))
num2=int(input("Enter upper bound:"))
divisible(num1,num2)
```

```
Enter lower bound:4
Enter upper bound:14
6
12
```

In [15]:
```
# Function to find the average of cubes of all the even numbers in a given range
def avg_cubes(n1,n2):
    s=0
    c=0
    while(n1<=n2):
        if n1%2==0:
            s+= n1 **3
            c+=1
        n1+=1
    avg=s/c
    return avg
lb=int(input("Enter lower bound:"))
ub=int(input("Enter upper bound:"))
res=avg_cubes(lb,ub)
print(res)
```

```
Enter lower bound:4
Enter upper bound:20
2688.0
```

In [17]:
```
#Function to generate the list of factors for a given number
def factors(num):
    i=1
    while(i<=num):
        if num %i==0:
            print(i)
        i+=1
number=int(input("Enter any number:"))
factors(number)
```

```
Enter any number:16
1
2
4
8
16
```

In [18]:
```
# Function to calculate the factorial of a given number
def factorial(num):
    s=1
    while(num>=1):
        s*=num
        num-=1
    print(s)
number=int(input("Enter any number:"))
factorial(number)
```

```
Enter any number:5
120
```

In [ ]:

In [ ]:

In [ ]:

Recursive Function

- A function call by itself

In [ ]:
```
def factorial(n):
    if(n>1):
        return n*factorial(n-1)
    elif(n==0):
        return 1
    else:
        return n
num=int(input())
fact=factorial(num)
print(fact)
```

In [ ]:
```
#Function to count the number of digits in a given  number
def count2(num,count):
    if(num>1):
        num=num/10
        count=count+1
        return count2(num,count)
    else:
        return count
num=int(input())
count=0
print(count2(num,count))
```

In [2]:
```
lb=5
i=4
print(lb,"X",i,"=",lb*i)
```

```
5 X 4 = 20
```

In [19]:
```
#Function to check if a given number is Prime by using recursive function
def prime(num,i):
    if(i==num):
        return 1
    else:
        if num%i==0:
            return False
        else:
            return 0+prime(num,i+1)


number=int(input("Enter any number:"))
res=prime(number,2)
if res==1:
    print("Prime")
else:
    print("NOt prime")
```

```
Enter any number:123
NOt prime
```

In [21]:
```
#Function to calculate the average first N Prime numbers  by using recursive func
def prime(num,i):
    if(i==num):
        return 1
    else:
        if num%i==0:
            return False
        else:
            return 0+ prime(num,i+1)


number=int(input("Enter any number:"))
for i in range(2,number):
    res=prime(i,2)
    if res==1:
        print(i)
```

```
Enter any number:12
2
3
5
7
11
```

In [28]:
```
#Function to generate all Perfect numbers in a given range  by using recursive fu
def isperfect(num,i):
    if i==1 :
        return 1
    else:
        if num%i==0:
            return i+ isperfect(num,i-1)
        else:
            return 0+isperfect(num,i-1)
number=int(input("Enter any number:"))
for i in range(2,number):
    res=isperfect(i,i-1)
    if res==i:
        print(i)
```

```
Enter any number:100
6 perfect number
28 perfect number
```

In [31]:
```
#Function to calculate the average of all factorials in a given range
def factorial(num):
    s=1
    while(num>=1):
        s*=num
        num-=1
    return s
lb=int(input("Enter any lower bound:"))
ub=int(input("Enter any upper bound:"))
for i in range(lb,ub):
    res=factorial(i)
    print(i,'---->',res)
```

```
Enter any lower bound:7
Enter any upper bound:17
7 ----> 5040
8 ----> 40320
9 ----> 362880
10 ----> 3628800
11 ----> 39916800
12 ----> 479001600
13 ----> 6227020800
14 ----> 87178291200
15 ----> 1307674368000
16 ----> 20922789888000
```

In [32]:
```
#Function to generate N odd armstrong numbers
def digits(num):
    count=0
    while(num>0):
        num=num//10
        count+=1
    return count
def amstr(num,dgt_cnt):
    s=0
    while(num>0):
        r=num%10
        s+=r**dgt_cnt
        num=num//10
    return s
number=int(input("Enter any number: "))
for i in range(1,number):
    count=digits(i)
    res=amstr(i,count)
    if res==i and i%2!=0:
        print(i)
```

```
Enter any number: 500
1
3
5
7
9
153
371
407
```

In [33]:
```
#Function to generate Multiplication table for a number in a given range
#10 in the range(100, 102) inclusive
#10 x 100 = 1000
#10 x 101 = 1010
#10 x 102 = 1020
def table(num,lb,ub):
    while(lb<=ub):
        print(num,"X",lb,"=",num*lb)
        lb+=1
num=int(input("Enter any number:"))
lb=int(input("Enter lower bound:"))
ub=int(input("Enter upper bound:"))
table(num,lb,ub)
```

```
Enter any number:10
Enter lower bound:20
Enter upper bound:30
10 X 20 = 200
10 X 21 = 210
10 X 22 = 220
10 X 23 = 230
10 X 24 = 240
10 X 25 = 250
10 X 26 = 260
10 X 27 = 270
10 X 28 = 280
10 X 29 = 290
10 X 30 = 300
```