Function in Python

```
In [2]: def hello():
            print('good evening')
        hello()
```

good evening

```
In [3]: def hello():
            print('good evening')
        hello()

        def hello():
            print('good evening')
        hello()

        def hello():
            print('good evening')
        hello()
```

good evening
good evening
good evening

```
In [4]: def add(x,y):
          c = x + y
          print(c)
        add(5,6)
```

11

```
In [5]: def add(x,y,z):
          c = x + y + z
          print(c)
        add(5,6,7)
```

18

```
In [6]: def add(x,y):
          c = x + y
          return c
        add(5,6)
```

Out[6]: 11

```
In [7]: def hello():
            print('good evening')
        hello()


        def add(x,y):
            c=x+y
            return c
        add(5,6)
```

```
        good evening
```
Out[7]: 11

In [8]:
```python
def hello():
    print('good evening')

def add(x,y):
    c=x+y
    return c

hello()
add(5,6)
```
```
        good evening
```
Out[8]: 11

In [9]:
```python
def greet():
    print('hello')
    print('good noon')

def add(x,y):
    c=x+y
    print(c)

def sub(x,y,z):
    d = x-y-z
    print(d)

greet()
add(5,4)
sub(10,2,4)
```
```
        hello
        good noon
        9
        4
```

In [10]:
```python
def add_sub(x,y):
    c= x + y
    d = x - y
    return c,d
add_sub(4,5)
```
Out[10]: (9, -1)

In [11]:
```python
def add_sub(x,y):
    c= x + y
    d = x - y
    return c,d

result = add_sub(4,5)
print(result)
print(type(result))
```

```
(9, -1)
<class 'tuple'>
```

In [12]:
```python
def add_sub(x,y):
    c= x + y
    d = x - y
    return c,d

result, result1 = add_sub(4,5)
print(result)
print(result1)

print(type(result))
print(type(result1))
```
```
9
-1
<class 'int'>
<class 'int'>
```

In [13]:
```python
def add_sub_mul(x,y):
    c= x+y
    d= x-y
    e = x*y
    return c, d, e

result, result1, result2 = add_sub_mul(4,5)

print(result)
print(result1)
print(result2)

print(type(result))
print(type(result1))
print(type(result2))
```
```
9
-1
20
<class 'int'>
<class 'int'>
<class 'int'>
```

In [14]:
```python
def update():
    x = 8
    print(x)
update()
```
```
8
```

In [15]:
```python
def add(a,b): # a and b are called as formal argument
    c = a + b
    print(c)
add(5,6)  # 5 and 6 are actual argument
```
```
11
```

```
In [16]:  #Positional argument
          def person(name,age):
            print(name)
            print(age)
          person('nit',22)
```

nit
22

```
In [17]:  def person(name,age):
              print(name)
              print(age)

          person(22,'nit')
```

22
nit

```
In [18]:  def person(name,age):
              print(name)
              print(age+1)

          person('nit',22)
```

nit
23

```
In [19]:  #Keyword Argument
          def person(name,age):
            print(name)
            print(age+1)
          person('nit', 22)
```

nit
23

```
In [20]:  def person(name, age, phone):

              print(name)
              print(age+1)
              print(phone)

          person(age = 22, name = 'nit', phone = 879678)
```

nit
23
879678

```
In [21]:  #Variable Length Argument
          def sum(a,b):
            c=a+b
            return c
          sum(5,6)
```

Out[21]: 11
```

```python
In [22]: def sum(a, *b): # 1st argument is fixed but for 2nd argument
             #c = a+b
             print(type(a))
             print(type(b))

         sum(5,6,7,8)
```

```
<class 'int'>
<class 'tuple'>
```

```python
In [23]: def sum(a, *b): # 1st argument is fixed & we fetch each value from the tuple &
             c = a

             for i in b:
                 c = c + i
             print(c)

         sum(5,6,7,8)
```

```
26
```

```python
In [25]: def sum(a,*b):
           c=a
           for i in b:
             c=c+i
           print(c)
         sum(5,6,7,8,10,-100,20,50,90,1000,34,9,8)
```

```
1147
```

```python
In [26]: #Kwargs(Keyword argument + variable length argument)
         def person(name, *data):
           print(name)
           print(data)

         person('ALEX', 36, 'JHON', 987767)
```

```
ALEX
(36, 'JHON', 987767)
```

```python
In [27]: def person(name, **data):
             print(name)
             print(data)

         person('mark', age = 36, home_place ='southcity', mob =987767, degree = 'phd',
```

```
mark
{'age': 36, 'home_place': 'southcity', 'mob': 987767, 'degree': 'phd', 'bank':
'icici'}
```

```python
In [29]: #Global variable vs Local variable
         a = 10  #-- globla variable

         def something():

             b = 15 #local variable
```

```
        print('in function',b)
    print('out function',a)
```

out function 10

In [30]:
```
a = 10

def something():

    a = 15
print('in function',a)
print('out function',a)
```

in function 10
out function 10

In [31]:
```
a = 10

def something():
    b = 15
    print('in function',b)  # local variable

something()

print('out function', a) #gloabl variable

# 1st preference is always local variable
```

in function 15
out function 10

In [32]:
```
a = 10

def something():

    print('in function',a)

something()

print('out function',a)
```

in function 10
out function 10

In [33]:
```
a = 10
b = 25

def something():
    b= 15
    #if we remove this variable then can befault it consider as global variabl
    print('in function',b)

something()
print('out function',a)
```

```
in function 15
out function 10
```

In [34]:
```python
a = 10

def something():
    global a
    b = 15 # 15 is converted to local when user assigned global a
    print('in function',b)
    print('gloabl variable', a)

something()

print('out function',a)
```

```
in function 15
gloabl variable 10
out function 10
```

In [35]:
```python
import keyword
keyword.kwlist
```

```
Out[35]: ['False',
         'None',
         'True',
         'and',
         'as',
         'assert',
         'async',
         'await',
         'break',
         'class',
         'continue',
         'def',
         'del',
         'elif',
         'else',
         'except',
         'finally',
         'for',
         'from',
         'global',
         'if',
         'import',
         'in',
         'is',
         'lambda',
         'nonlocal',
         'not',
         'or',
         'pass',
         'raise',
         'return',
         'try',
         'while',
         'with',
         'yield']
```

```python
In [36]: x = 10  # Global variable

         def update_x():
             global x  # Declare that we are using the global variable x
             x += 10    # Modify the global variable

         update_x()
         print(x)  # Output: 15
```

```
20
```

```python
In [37]: x = 10  # Global variable

         def update_x():
             globals()['x'] += 20  # Access and modify the global variable using the di

         update_x()
         print(x)  # Output: 15
```

```
        30
```

In [40]:
```python
#how to pass list to function
def count(lst):
  even =0
  odd = 0

  for i in lst:
    if i %2 == 0:
      even += 1
    else:
      odd += 1
  return even,odd

lst = [10,9,8,23,50,8,9,100]
even,odd = count(lst)

print(even)
print(odd)
```

```
        5
        3
```

In [41]:
```python
def count(lst):

    even = 0
    odd = 0

    for i in lst:
        if i%2 == 0:
            even += 1
        else:
            odd +=1
    return even,odd

lst = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10,11,12,13]
even,odd = count(lst)

print("Even Number: {} and odd Number : {}".format(even,odd))
```

```
        Even Number: 6 and odd Number : 7
```

In [42]:
```python
def wish():
    print('hello')
    print('hi')
wish()
```

```
        hello
        hi
```

In [1]:
```python
#Fibonacci Series
n = 10
a = 0
b = 1
next = b
```

```
    count = 1

    while count <= n:
        print(next, end=" ")
        count += 1
        a, b = b, next
        next = a + b
print()
```

1 2 3 5 8 13 21 34 55 89

In [2]:
```
def fib(n):
  a=0
  b=1
  print(a)
  print(b)
  for i in range(0,n):
    c =a + b
    a=b
    b=c
    print(c)

  fib(10)
```

In [3]:
```
#Factorial number
def fact(n):
  f = 1
  for i in range(1, n+1):
    f = f*i
  return f
x = 5
result = fact(x)
print(result)
```

120

In [4]:
```
import sys
sys.getrecursionlimit()
```

Out[4]: 1000

In [5]:
```
import sys
sys.setrecursionlimit(200)
print(sys.getrecursionlimit())
```

200

In [6]:
```
def wish():
  print('hello')
  wish()
wish()
```

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---------------------------------------------------------------------
RecursionError                              Traceback (most recent call last)
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      2   print('hello')
      3   wish()
----> 4 wish()

/tmp/ipython-input-1535886818.py in wish()
      1 def wish():
      2   print('hello')
----> 3   wish()
      4 wish()

/tmp/ipython-input-1535886818.py in wish()
      1 def wish():
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      4 wish()

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/usr/local/lib/python3.12/dist-packages/ipykernel/iostream.py in write(self, string)
    548         else:
    549
--> 550             is_child = not self._is_master_process()
    551             # only touch the buffer in the IO thread to avoid races
    552             with self._buffer_lock:

RecursionError: maximum recursion depth exceeded
```

```python
In [7]: from re import I
        import sys
        sys.setrecursionlimit(150)
        print(sys.getrecursionlimit())

        i = 0
        def wish():
          global i
          i += 1
          print('hello',i)
          wish()
        wish()
```

```
150
hello 1
hello 2
hello 3
hello 4
hello 5
hello 6
hello 7
hello 8
hello 9
hello 10
hello 11
hello 12
hello 13
hello 14
hello 15
hello 16
hello 17
hello 18
hello 19
hello 20
hello 21
hello 22
hello 23
hello 24
hello 25
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hello 121
hello 122
hello 123
hello 124
hello 125
hello 126
```

```
---------------------------------------------------------------------------
RecursionError                             Traceback (most recent call last)
/tmp/ipython-input-3659644705.py in <cell line: 0>()
     10    print('hello',i)
     11    wish()
---> 12 wish()

/tmp/ipython-input-3659644705.py in wish()
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/usr/local/lib/python3.12/dist-packages/ipykernel/iostream.py in write(self, st
ring)
    548             else:
    549
--> 550                 is_child = not self._is_master_process()
    551                 # only touch the buffer in the IO thread to avoid races
    552                 with self._buffer_lock:

RecursionError: maximum recursion depth exceeded
```