PYTHON FUNCTION

In [1]:
```
def am9():
    print('good morninng team')
```

In [2]:
```
def am9():
    print('good morninng team')
am9()
```

```
good morninng team
```

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

In [4]:
```
def greet():
    print('hello')
    print('good morning')
greet()
```

```
hello
good morning
```

In [5]:
```
def greet():
    print('hello')
    print('good morning')
greet()

def greet():
    print('hello')
    print('good morning')
greet()

def greet():
    print('hello')
    print('good morning')
greet()
```

```
hello
good morning
hello
good morning
hello
good morning
```

In [6]:
```
def greet():
    print('hello good morning boss')

greet()
```

```
hello good morning boss
```

In [7]:
```
def greet():
    print('hello good morning boss')

greet()

greet()

greet()

greet()
```

```
hello good morning boss
hello good morning boss
hello good morning boss
hello good morning boss
```

In [2]:
```
def add(x,y):
    c=x+y
    print(c)

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

```
---------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[2], line 5
      2     c=x+y
      3     print(c)
----> 5 add(5,6,7,8)

TypeError: add() takes 2 positional arguments but 4 were given
```

In [9]:
```
def add(x,y):
    c=x+y
    print(c)
add(5,6)
```

```
11
```

In [4]:
```
def add(x,y,z):
    c=x+y+z
    print(c)
add(1,4,5)
```

```
10
```

In [11]:
```
def add(x,y,z,m):
    c=x+y+z+m
    print(c)
add(1,4,5,6)
```

```
16
```

In [12]:
```
def greet():
    print('hello')
    print('good morning')
greet()
```

```
hello
good morning
```

In [13]:
```
def add(x,y):
    print('hello')
    print('good morning')
greet()
```

```
hello
good morning
```

In [14]:
```
def add(x,y):
    c=x+y
    print(c)
add( 5,6)
```

```
11
```

In [15]:
```
def greet():
    print('hello')
    print('good morning')
greet()

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

```
hello
good morning
11
```

In [16]:
```
def greet():
    print('hello')
    print('good morninng')
def add(x,y):
    c=x+y
    print(c)

add(5,6)
greet()
```

```
11
hello
good morninng
```

In [17]:
```
def greet():
    print('hello')
    print('good noon')

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

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

```
greet()
add(5,6)
sub(10,2)
```

```
hello
good noon
11
8
```

In [18]:
```
def add_sub(x,y):
    c=x+y
    d=x-y
    print(c)
    print(d)

add_sub(10,5)
```

```
15
5
```

In [19]:
```
def add_sub(x,y):
    c=x+y
    d=x-y
    return c,d

add_sub(10,5)
```

Out[19]: (15, 5)

In [20]:
```
def add_sub(x,y):
    c=x+y
    d=x-y
    return c,d

result = add_sub(5,4)

print(result)
```

```
(9, 1)
```

In [21]:
```
def add_sub(x,y):
    c=x+y
    d=x-y
    return c,d

result1,result2=add_sub(5,4)

print(result1,result2)
```

```
9 1
```

In [22]:
```
def add(x,y):
    c=x+y
    print(c)
add(5,6)
```

```
11
```

FORMAL ARGUEMENT & ACTUAL ARGUMENTS

In [5]:
```
def person(name,age):
    print(name)
    print(age)

person('nit',23)
```

```
nit
23
```

In [24]:
```
def person(name,age):
    print(name)
    print(age)

person('nit',23)
```

```
nit
23
```

In [25]:
```
def person (name,age):
    print(name)
    print(age)

person(23,'nit')
```

```
23
nit
```

KEYWORD ARGUMENT

In [27]:
```
def person(name,age):
    print(name)
    print(age+1)

person(age=23,name='nit')
```

```
nit
24
```

In [7]:
```
def person(name,age):
    print(name)
    print(age+1)

person(age=23,name='nit')
```

```
nit
24
```

In [29]:
```
def person(name,age1):
    print(name)
    print(age1+1)
```

```
person(age1=23,name='nit')
```

```
nit
24
```

In [8]:
```
def person (name,age1,city):
    print(name)
    print(age1+1)
    print(city)

person(age1=23, name='nit',city='hyd')
```

```
nit
24
hyd
```

DEFAULT ARGUMENT

In [9]:
```
def person(name,age=18):
    print(name)
    print(age)
person('nit')
```

```
nit
18
```

In [10]:
```
def person(name='nit',age):
    print(name)
    print(age)
person('nit')
```

```
  Cell In[10], line 1
    def person(name='nit',age):
                          ^
SyntaxError: parameter without a default follows parameter with a default
```

VARIABLE LENGTH ARGUMENT

In [13]:
```
def sum(a,b):
    c=a+b
    return c
sum(3,5)
```

Out[13]: 8

In [35]:
```
def sum(a,b):
    c=a+b
    return c

sum(5,6,7,8,9,10)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[35], line 5
      2     c=a+b
      3     return c
----> 5 sum(5,6,7,8,9,10)

TypeError: sum() takes 2 positional arguments but 6 were given
```

In [36]:
```
def sum(a,*b):
    c=a+b
    return c
sum(5,6,7,8,9,10)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[36], line 4
      2     c=a+b
      3     return c
----> 4 sum(5,6,7,8,9,10)

Cell In[36], line 2, in sum(a, *b)
      1 def sum(a,*b):
----> 2     c=a+b
      3     return c

TypeError: unsupported operand type(s) for +: 'int' and 'tuple'
```

In [37]:
```
def sum(a,*b): # 1st arguement is fixed but for 2nd arguement
    #c= a+b
    print(type(a))
    print(type(b))

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

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

In [14]:
```
def sum(a,*b):
    c = a

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

sum(5,6,7,8,9,10,100)
```

```
145
```

In [17]:
```
def sum(a, *b):
    c=a

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

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

26

KWARGS

In [42]:
```
def person():
    person('ALEX',36,'JOHN',98441)
```

In [46]:
```
def person (name,*data):
    print('name')
    print(data)

person('ALEX', age = 23, home_place='southcity', mob=784711)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[46], line 5
      2     print('name')
      3     print(data)
----> 5 person('ALEX', age = 23, home_place='southcity', mob=784711)

TypeError: person() got an unexpected keyword argument 'age'
```

In [48]:
```
def person(name,**data):
    print('name')
    print(data)

person('ALEX',AGE=23, home_place ='southcity',mob=78479,edu='phd')
```

```
name
{'AGE': 23, 'home_place': 'southcity', 'mob': 78479, 'edu': 'phd'}
```

GLOBAL & LOCAL VARIABLE

In [50]:
```
a=10

print(a)
```

10

In [28]:
```
a=10 #global var
def something():
    b=20  #local var
    print('in function',b)
    print('out function',a) #10 display
```

In [29]:
```
a=10
def something():
    b=20
```

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

```
in function 20
out function 10
```

DEFINE THE GLOBAL VARIABLE INSIDE THE FUNCTION

In [56]:
```
a = 10  #global variable

def something():
    b = 55  # local variable
    print('in function',b)
something()

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

```
in function 55
out function 10
```

In [30]:
```
#global variable inside the function
a=10

def something():
    global a
    b=20 #local var
    print('in function',b)
    print('out function',a) #call the global var inside the function
something()
print('out function',a) #global var
```

```
in function 20
out function 10
out function 10
```

In [58]:
```
x = 10  # Global variable

def update_x():
    global x  # Declare we suing global variable x
    x += 5

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

```
15
```

In [59]:
```
x = 10  # Global variable

def update_x():
    globals()['x'] += 5  # Access & modify  global variable

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

15

In [60]:
```
import keyword
keyword.kwlist
```

Out[60]:
```
['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']
```

In [68]:
```
def count(lst):
    return lst


lst = [1,2,3,4,8,9,10]
count(lst)
```

Out[68]:
```
[1, 2, 3, 4, 8, 9, 10]
```

In [69]:
```
def count(lst):

    even = 0
    odd = 0

    for i in lst:
```

```
        if i%2 == 0:
            even += 1
        else:
            odd +=1
    return even,odd

lst = [1,2,3,4,8,9,10]
even, odd = count(lst)

print(even)
print(odd)
```

```
4
3
```

In [72]:
```
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))
#format is function belongs to string & bydefault you need to pass any parameter
```

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

FIBONACCI SERIES

In [31]:
```
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)
```

```
0
1
1
2
3
5
8
13
21
34
55
89
```

FACTORIAL

In [1]:
```
def wish():
    print("hello")
    print("hi")
wish()
```

```
hello
hi
```

In [3]:
```
def wish():
    print("hello")
    print("hi")
    wish()
wish()
```

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```
---------------------------------------------------------------------------
RecursionError                            Traceback (most recent call last)
Cell In[3], line 5
      3     print("hi")
      4     wish()
----> 5 wish()

Cell In[3], line 4, in wish()
      2 print("hello")
      3 print("hi")
----> 4 wish()

Cell In[3], line 4, in wish()
      2 print("hello")
      3 print("hi")
----> 4 wish()

    [... skipping similar frames: wish at line 4 (2972 times)]

Cell In[3], line 4, in wish()
      2 print("hello")
      3 print("hi")
----> 4 wish()

Cell In[3], line 2, in wish()
      1 def wish():
----> 2     print("hello")
      3     print("hi")
      4     wish()

File ~\anaconda3\Lib\site-packages\ipykernel\iostream.py:664, in OutStream.write(sel
f, string)
    655 def write(self, string: str) -> Optional[int]:  # type:ignore[override]
    656     """Write to current stream after encoding if necessary
    657
    658     Returns
   (...)
    662
    663     """
--> 664     parent = self.parent_header
    666     if not isinstance(string, str):
    667         msg = f"write() argument must be str, not {type(string)}"  # type:ig
nore[unreachable]

RecursionError: maximum recursion depth exceeded
```

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

Out[4]: 3000

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

```
200
```

In [6]:
```
import sys
sys.getrecursionlimit()
```

Out[6]: 200

In [33]:
```
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
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hello 17
hello 18
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hello 123
hello 124
hello 125
```

```
---------------------------------------------------------------------------
RecursionError                            Traceback (most recent call last)
Cell In[33], line 10
      8     print('hello',i)
      9     wish()
---> 10 wish()

Cell In[33], line 9, in wish()
      7 i+=1
      8 print('hello',i)
----> 9 wish()

Cell In[33], line 9, in wish()
      7 i+=1
      8 print('hello',i)
----> 9 wish()

    [... skipping similar frames: wish at line 9 (122 times)]

Cell In[33], line 9, in wish()
      7 i+=1
      8 print('hello',i)
----> 9 wish()

Cell In[33], line 8, in wish()
      6 global i
      7 i+=1
----> 8 print('hello',i)
      9 wish()

File ~\anaconda3\Lib\site-packages\ipykernel\iostream.py:664, in OutStream.write(sel
f, string)
    655 def write(self, string: str) -> Optional[int]:  # type:ignore[override]
    656     """Write to current stream after encoding if necessary
    657
    658     Returns
   (...)
    662
    663     """
--> 664     parent = self.parent_header
    666     if not isinstance(string, str):
    667         msg = f"write() argument must be str, not {type(string)}"  # type:ig
nore[unreachable]

RecursionError: maximum recursion depth exceeded
```

FACTORIAL USING RECURSION

In [34]:
```
def fact(n):
    if n==0:
         return 1
    return n*fact(n-1)
```

```
result=fact(5)
result
```

Out[34]: 120

ANONYMOUS FUNCTION==LAMBDA FUNCTION

-Lambda is a reserved keyword . -lambda function used to reduces the lines of code.

In [9]:
```
def square(a):
    return a*a

square(3)
```

Out[9]: 9

In [10]:
```
def square(a):
    return a*a

result=square(3)
print(result)
```

```
9
```

In [11]:
```
f=lambda a:a*a
result=f(5)
result
```

Out[11]: 25

In [35]:
```
f=lambda a, b : a + b
f1= lambda a, b: a - b

result = f(1,3)
result1 = f1(3,1)

print(result)
print(result1)
```

```
4
2
```

In [37]:
```
f=lambda a,b :a+b
f1=lambda a,b :a-b
f2=lambda a,b : a*b

result=f(1,3)
result1=f1(3,1)
result2=f2(3,1)

print(result)
```

```
print(result1)
print(result2)
```

```
4
2
3
```

filter()

In [39]:
```
def is_even(n):
    return n%2 == 0
nums=[2,3,4,5,6,9]
evens=list(filter(is_even,nums))
print(evens)
```

```
[2, 4, 6]
```

In [41]:
```
def is_odd(n):
    return n%2 !=0
nums=[2,3,4,5,6,9]

odds=list(filter(is_odd,nums))
print(odds)
```

```
[3, 5, 9]
```

In [42]:
```
nums=[3,2,4,5,6,9]

evens=list(filter(lambda n:n%2!=0 ,nums))

odds
```

Out[42]:
```
[3, 5, 9]
```

map()

In [43]:
```
def update(n):
    return n+2

nums=[3,2,4,5,6,9]

evens =list(filter(is_even,nums))
double=list(map(update,evens))

print(evens)
print(double)
```

```
[2, 4, 6]
[4, 6, 8]
```

In [44]:
```
nums=[3,2,4,5,6,9]

evens=list(filter(is_even,nums))
```

```
double=list(map(lambda n: n*3,evens))
print(evens)
print(double)
```

```
[2, 4, 6]
[6, 12, 18]
```

reduce()

In [47]:
```
from functools import reduce

def add_all(a,b):
    return a+b
def is_even(n):
    return n%2==0
nums=[3,2,4,5,6,7,9]

evens=list(filter(is_even,nums))
double=list(map(lambda n: n*2,evens))

sums=reduce(add_all,double)
print(sums)
```

```
24
```

In [48]:
```
from functools import reduce

nums=[3,2,4,5,6,7,9]
evens=list(filter(is_even,nums))
double=list(map(lambda n:n*2,evens))

sums=reduce(lambda a,b: a+b,double)

print(evens)
print(double)
print(sums)
```

```
[2, 4, 6]
[4, 8, 12]
24
```

In [ ]: