Function in Python

In [1]:
```
def hello():
    print('Good Morning')
```

In [2]:
```
def hello():
    print('Good Morning')
hello()
```

```
Good Morning
```

In [3]:
```
def hello():
    print('Good Morning')
hello()

def hello():
    print('Good Morning')
hello()

def hello():
    print('Good Morning')
hello()
```

```
Good Morning
Good Morning
Good Morning
```

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)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[5], line 4
      2     c=x+y+z
      3     print(c)
----> 4 add(5,6)

TypeError: add() missing 1 required positional argument: 'z'
```

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

add(5,6,7)
```

```
18
```

In [7]:

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

Out[7]:

```
11
```

In [8]:

```python
def hello():
    print('Good Evening')
hello()

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

```
Good Evening
```

Out[8]:

```
11
```

In [9]:

```python
def hello():
    print('Good Morning')

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

```
Good Morning
```

Out[9]:

```
11
```

In [10]:

```python
def greet():
    print('hello')
    print('How are you')
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(10,3,1)
```

```
hello
How are you
9
6
```

In [11]:

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

add_sub(4,5)
```

Out[11]:

```
(9, -1)
```

In [12]:

```
def add_sub(x,y):
    c=x+y
    d=x-y
    return c,d

result=add_sub(20,3)
print(result)
print(type(result))
```

```
(23, 17)
<class 'tuple'>
```

In [13]:

```
def add_sub(x,y):
    c=x+y
    d=x-y
    return c,d

result,result1=add_sub(5,7)

print(result)
print(result1)

print(type(result))
print(type(result1))
```

```
12
-2
<class 'int'>
<class 'int'>
```

In [14]:

```
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(10,4)

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


print(type(result))
print(type(result1))
print(type(result2))
```

```
14
6
40
<class 'int'>
<class 'int'>
<class 'int'>
```

In [15]:

```
def update():
    x=8
    print(x)
update()
```

```
8
```

In [16]:
```
def add(a,b):  # a & b are called as formal argument

    c=a+b
    print(c)
add(5,6)      # 5 & 6 is called actual argument
```

```
11
```

In [17]:
```
# Possitional Argument

def person(name,age):
    print(name)
    print(age)

person('nit',28)
```

```
nit
28
```

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

person(28,'nit')
```

```
28
nit
```

In [19]:
```
def person(name,age):
    print(name)
    print(age-1)

person(25,'nit')
```

```
25
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[19], line 5
      2     print(name)
      3     print(age-1)
----> 5 person(25,      )

Cell In[19], line 3, in person(name, age)
      1 def person(name,age):
      2     print(name)
----> 3     print(age-1)

TypeError: unsupported operand type(s) for -: 'str' and 'int'
```

In [20]:
```
def person(name,age):
    print(name)
    print(age+1)
person('nit',28)
```

```
nit
29
```

In [21]:
```
def person(name,age):
    print(name)
    print(age+1)
```

```
person('nit')
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[21], line 5
      2     print(name)
      3     print(age+1)
----> 5 person(     )

TypeError: person() missing 1 required positional argument: 'age'
```

In [22]:
```
def person(name,age):
    print(name)
    print(age+1)

person(25)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[22], line 5
      2     print(name)
      3     print(age+1)
----> 5 person(25)

TypeError: person() missing 1 required positional argument: 'age'
```

In [23]:
```
def person(anme):

    print(name)
    print(age+1)

person('nit',22)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[23], line 6
      3     print(name)
      4     print(age+1)
----> 6 person(     ,22)

TypeError: person() takes 1 positional argument but 2 were given
```

keyword Argument

In [24]:
```
def person(name,age):
    print(name)
    print(age+1)

person('nit',25)
```

```
nit
26
```

In [25]:
```
def person(name,age):
    print(name)
    print(age+1)
```

```
person(22,'nit')
```

```
22
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[25], line 5
      2     print(name)
      3     print(age+1)
----> 5 person(22,      )

Cell In[25], line 3, in person(name, age)
      1 def person(name,age):
      2     print(name)
----> 3     print(age+1)

TypeError: can only concatenate str (not "int") to str
```

In [26]:
```
def person(name,age):

    print(name)
    print(age+1)

person(age=22,name-'nit',phone-7008451331)
```

```
  Cell In[26], line 6
    person(age=22,name-'nit',phone-7008451331)
                                             ^
SyntaxError: positional argument follows keyword argument
```

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

person(age=22,name='nit',phone=8658803495)
```

```
nit
23
8658803495
```

In [28]:
```
def person(name,age=18):
    print(name)
    print(age)
person('nit',23)
```

```
nit
23
```

VARIABLE LENGTH ARGUMENT

In [29]:
```
def sum(a,b):
    c=a+b
    return c
sum(3,2)
```

Out[29]: 5

In [30]:

```
def sum(a,b):
    c=a+b
    return c
sum(4,8,9,3)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[30], line 4
      2     c=a+b
      3     return c
----> 4 sum(4,8,9,3)

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

In [31]:

```
def sum(a,*b):
    c=a+b
    return c
sum(2,4,5,6,8)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[31], line 4
      2     c=a+b
      3     return c
----> 4 sum(2,4,5,6,8)

Cell In[31], 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 [32]:

```
def sum(a,*b): # 1st argument is fixed but for 2nd argument is variable length
    print(type(a))
    print(type(b))

sum(5,4,2,1)
```

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

In [33]:

```
def sum(a,*b):
    c=a

    for i in b:
        c=c+i
    print(c)
sum(2,4,5,6)
```

```
17
```

In [34]:

```
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
```

In [35]:

```python
def sum(a, *b): # 1st argument is fixed & we fetch each value from the tuple & w
    #a = 5

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

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

```
26
```

Kwargs(keyword argument+variable length argument)

In [36]:

```python
def person():
    person('anish','sneha','somali','rahul')
```

In [37]:

```python
def person(name,*data):
    print(name)
    print(data)

person('anish',age=25,address='sbp',mob=8794456)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[37], line 5
      2     print(name)
      3     print(data)
----> 5 person(       ,age=25,address=     ,mob=8794456)

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

In [38]:

```python
def person(name,**data):
    print(name)
    print(data)

person('anish',age=25,address='sbp',mob=8794456)
```

```
anish
{'age': 25, 'address': 'sbp', 'mob': 8794456}
```

Global Variable vs Local Variable

In [39]:

```python
a=38
print(a)
```

```
38
```

In [40]:

```python
a=10    # Global variable
def something():

    b=15   #Local Varible
    print('in function',b)
    print('out function',a)
```

In [41]:

```
a=10
def something():
    b=15
    print('in function',b)

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

```
out function 10
```

In [42]:

```
a=10

def something():
    a=15

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

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

In [43]:

```
a=10

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

something()

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

# 1st preference is always local variable
```

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

In [44]:

```
a=10

def something():
    print('in function',a)

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

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

In [45]:

```
a=10
b=25

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

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

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

In [46]:

```
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 [47]:

```
import keyword
print(keyword.kwlist)
```

```
['False', 'None', 'True', 'and', 'as', 'assert', 'async', 'await', 'break', 'clas
s', '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 [48]:

```
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
```

In [49]:

```
x = 10  # Global variable

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

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

```
30
```

How to pass list to a function

In [50]:

```
def count(lst):

    even = 0
    odd = 0

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

```
lst = [15,8,3,43,1,56,7,8,6,7]
even, odd = count(lst)

print(even)
print(odd)
```

```
4
6
```

In [51]:

```
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
```

In [52]:

```
# Fibonacci series :
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
```

Recursion

In [53]:

```python
def wish():
    print('hello')
    print('hi')
    wish()
wish()
```

```
hello
hi
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```
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```

```
---------------------------------------------------------------------------
RecursionError                            Traceback (most recent call last)
Cell In[53], line 5
      3     print('hi')
      4     wish()
----> 5 wish()

Cell In[53], line 4, in wish()
      2 print('hello')
      3 print('hi')
----> 4 wish()

Cell In[53], line 4, in wish()
      2 print('hello')
      3 print('hi')
----> 4 wish()

    [... skipping similar frames: wish at line 4 (2970 times)]

Cell In[53], line 4, in wish()
      2 print('hello')
      3 print('hi')
----> 4 wish()

Cell In[53], line 2, in wish()
      1 def wish():
----> 2     print(       )
      3     print('hi')
      4     wish()

File ~\AppData\Roaming\Python\Python313\site-packages\IPython\core\interactiveshe
ll.py:3056, in InteractiveShell._tee.<locals>.write(data, *args, **kwargs)
   3054 if not data:
   3055     return result
-> 3056 execution_count = self.execution_count
   3057 output_stream = None
   3058 outputs_by_counter = self.history_manager.outputs

File ~\AppData\Roaming\Python\Python313\site-packages\traitlets\traitlets.py:687,
in TraitType.__get__(self, obj, cls)
    685     return self
    686 else:
--> 687     return t.cast(G, self.get(obj, cls))

File ~\AppData\Roaming\Python\Python313\site-packages\traitlets\traitlets.py:666,
in TraitType.get(self, obj, cls)
    664     raise TraitError("Unexpected error in TraitType: default value not se
t properly") from e
    665 else:
--> 666     return t.cast(G, value)

RecursionError: maximum recursion depth exceeded
```

In [54]:

```
import sys
sys.setrecursionlimit(50)

def wish():
    print('hello')
    print('hi')
    wish()
wish()
```

```
hello
hi
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helloUnexpected exception formatting exception. Falling back to standard exceptio
n
```

```
Traceback (most recent call last):
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\IPython\core\i
nteractiveshell.py", line 3699, in run_code
    exec(code_obj, self.user_global_ns, self.user_ns)
    ~~~~^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "C:\Users\HP\AppData\Local\Temp\ipykernel_11872\3126707171.py", line 8, in
<module>
    wish()
    ~~~~^^
  File "C:\Users\HP\AppData\Local\Temp\ipykernel_11872\3126707171.py", line 7, in
wish
    wish()
    ~~~~^^
  File "C:\Users\HP\AppData\Local\Temp\ipykernel_11872\3126707171.py", line 7, in
wish
    wish()
    ~~~~^^
  File "C:\Users\HP\AppData\Local\Temp\ipykernel_11872\3126707171.py", line 7, in
wish
    wish()
    ~~~~^^
  [Previous line repeated 20 more times]
  File "C:\Users\HP\AppData\Local\Temp\ipykernel_11872\3126707171.py", line 5, in
wish
    print('hello')
    ~~~~~^^^^^^^^^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\IPython\core\i
nteractiveshell.py", line 3056, in write
    execution_count = self.execution_count
                      ^^^^^^^^^^^^^^^^^^^^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\traitlets\trai
tlets.py", line 687, in __get__
    return t.cast(G, self.get(obj, cls))  # the G should encode the Optional
                     ~~~~~~~~^^^^^^^^^^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\traitlets\trai
tlets.py", line 666, in get
    return t.cast(G, value)
           ~~~~~~^^^^^^^^^^
RecursionError: maximum recursion depth exceeded

During handling of the above exception, another exception occurred:

Traceback (most recent call last):
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\IPython\core\i
nteractiveshell.py", line 2194, in showtraceback
    stb = self.InteractiveTB.structured_traceback(
        etype, value, tb, tb_offset=tb_offset
    )
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\IPython\core\u
ltratb.py", line 1182, in structured_traceback
    return FormattedTB.structured_traceback(
           ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^
        self, etype, evalue, etb, tb_offset, context
        ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
    )
    ^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\IPython\core\u
ltratb.py", line 1053, in structured_traceback
    return VerboseTB.structured_traceback(
           ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^
```

```
        self, etype, evalue, etb, tb_offset, context
        ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
    )
    ^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\IPython\core\u
ltratb.py", line 861, in structured_traceback
    formatted_exceptions: list[list[str]] = self.format_exception_as_a_whole(
                                            ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^
        etype, evalue, etb, context, tb_offset
        ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
    )
    ^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\IPython\core\u
ltratb.py", line 746, in format_exception_as_a_whole
    records = self.get_records(etb, context, tb_offset) if etb else []
              ~~~~~~~~~~~~~~~~^^^^^^^^^^^^^^^^^^^^^^^^^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\IPython\core\u
ltratb.py", line 848, in get_records
    res = list(stack_data.FrameInfo.stack_data(etb, options=options))[tb_offset:]
          ~~~~^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\stack_data\cor
e.py", line 597, in stack_data
    yield from collapse_repeated(
    ...<4 lines>...
    )
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\stack_data\uti
ls.py", line 83, in collapse_repeated
    yield from map(mapper, original_group)
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\stack_data\cor
e.py", line 587, in mapper
    return cls(f, options)
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\stack_data\cor
e.py", line 551, in __init__
    self.executing = Source.executing(frame_or_tb)
                     ~~~~~~~~~~~~~~~~^^^^^^^^^^^^^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\executing\exec
uting.py", line 264, in executing
    source = cls.for_frame(frame)
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\executing\exec
uting.py", line 183, in for_frame
    return cls.for_filename(frame.f_code.co_filename, frame.f_globals or {}, use_
cache)
           ~~~~~~~~~~~~~~~~^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
^^^^^^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\executing\exec
uting.py", line 212, in for_filename
    return cls._for_filename_and_lines(filename, tuple(lines))
           ~~~~~~~~~~~~~~~~~~~~~~~~~~~^^^^^^^^^^^^^^^^^^^^^^^^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\executing\exec
uting.py", line 223, in _for_filename_and_lines
    result = source_cache[(filename, lines)] = cls(filename, lines)
                                               ~~~^^^^^^^^^^^^^^^^^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\executing\exec
uting.py", line 174, in __init__
    visitor.visit(self.tree)
    ~~~~~~~~~~~~~^^^^^^^^^^^
  File "C:\Users\HP\anaconda3\Lib\ast.py", line 422, in visit
    return visitor(node)
  File "C:\Users\HP\anaconda3\Lib\ast.py", line 430, in generic_visit
    self.visit(item)
```

```
    ~~~~~~~~~~^^^^^^
  File "C:\Users\HP\anaconda3\Lib\ast.py", line 422, in visit
    return visitor(node)
  File "C:\Users\HP\anaconda3\Lib\ast.py", line 432, in generic_visit
    self.visit(value)
    ~~~~~~~~~~^^^^^^^
  File "C:\Users\HP\anaconda3\Lib\ast.py", line 422, in visit
    return visitor(node)
  File "C:\Users\HP\anaconda3\Lib\ast.py", line 432, in generic_visit
    self.visit(value)
    ~~~~~~~~~~^^^^^^^
  File "C:\Users\HP\anaconda3\Lib\ast.py", line 422, in visit
    return visitor(node)
  File "C:\Users\HP\anaconda3\Lib\ast.py", line 432, in generic_visit
    self.visit(value)
    ~~~~~~~~~~^^^^^^^
  File "C:\Users\HP\anaconda3\Lib\ast.py", line 422, in visit
    return visitor(node)
  File "C:\Users\HP\anaconda3\Lib\ast.py", line 432, in generic_visit
    self.visit(value)
    ~~~~~~~~~~^^^^^^^
  File "C:\Users\HP\anaconda3\Lib\ast.py", line 422, in visit
    return visitor(node)
  File "C:\Users\HP\anaconda3\Lib\ast.py", line 426, in generic_visit
    for field, value in iter_fields(node):
                        ~~~~~~~~~~~^^^^^^
RecursionError: maximum recursion depth exceeded
```

In [55]:

```python
import sys
sys.setrecursionlimit(40)

def wish(n):
    if n == 0:   # base case to stop recursion
        return
    print('hello')
    print('hi')
    wish(n - 1)

wish(25)   # prints hello & hi 10 times
```

```
hello
hi
hello
hi
hello
hi
hello
hi
hello
hi
hello
hi
hello
hi
hello
hi
hello
hi
hello
hi
hello
hi
hello
hi
hello
hi
helloUnexpected exception formatting exception. Falling back to standard exceptio
n
```

```
Traceback (most recent call last):
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\IPython\core\i
nteractiveshell.py", line 3699, in run_code
    exec(code_obj, self.user_global_ns, self.user_ns)
    ~~~~^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "C:\Users\HP\AppData\Local\Temp\ipykernel_11872\392280087.py", line 11, in
<module>
    wish(25)   # prints hello & hi 10 times
    ~~~~^^^^
  File "C:\Users\HP\AppData\Local\Temp\ipykernel_11872\392280087.py", line 9, in
wish
    wish(n - 1)
    ~~~~^^^^^^^
  File "C:\Users\HP\AppData\Local\Temp\ipykernel_11872\392280087.py", line 9, in
wish
    wish(n - 1)
    ~~~~^^^^^^^
  File "C:\Users\HP\AppData\Local\Temp\ipykernel_11872\392280087.py", line 9, in
wish
    wish(n - 1)
    ~~~~^^^^^^^
  [Previous line repeated 10 more times]
  File "C:\Users\HP\AppData\Local\Temp\ipykernel_11872\392280087.py", line 7, in
wish
    print('hello')
    ~~~~~^^^^^^^^^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\IPython\core\i
nteractiveshell.py", line 3056, in write
    execution_count = self.execution_count
                      ^^^^^^^^^^^^^^^^^^^^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\traitlets\trai
tlets.py", line 687, in __get__
    return t.cast(G, self.get(obj, cls))  # the G should encode the Optional
                     ~~~~~~~~^^^^^^^^^^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\traitlets\trai
tlets.py", line 666, in get
    return t.cast(G, value)
           ~~~~~~^^^^^^^^^^
RecursionError: maximum recursion depth exceeded

During handling of the above exception, another exception occurred:

Traceback (most recent call last):
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\IPython\core\i
nteractiveshell.py", line 2194, in showtraceback
    stb = self.InteractiveTB.structured_traceback(
        etype, value, tb, tb_offset=tb_offset
    )
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\IPython\core\u
ltratb.py", line 1182, in structured_traceback
    return FormattedTB.structured_traceback(
           ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^
        self, etype, evalue, etb, tb_offset, context
        ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
    )
    ^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\IPython\core\u
ltratb.py", line 1053, in structured_traceback
    return VerboseTB.structured_traceback(
           ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^
```

```
        self, etype, evalue, etb, tb_offset, context
        ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
    )
    ^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\IPython\core\u
ltratb.py", line 861, in structured_traceback
    formatted_exceptions: list[list[str]] = self.format_exception_as_a_whole(
                                            ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^
        etype, evalue, etb, context, tb_offset
        ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
    )
    ^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\IPython\core\u
ltratb.py", line 746, in format_exception_as_a_whole
    records = self.get_records(etb, context, tb_offset) if etb else []
              ~~~~~~~~~~~~~~~~^^^^^^^^^^^^^^^^^^^^^^^^^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\IPython\core\u
ltratb.py", line 848, in get_records
    res = list(stack_data.FrameInfo.stack_data(etb, options=options))[tb_offset:]
          ~~~~^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\stack_data\cor
e.py", line 597, in stack_data
    yield from collapse_repeated(
    ...<4 lines>...
    )
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\stack_data\uti
ls.py", line 83, in collapse_repeated
    yield from map(mapper, original_group)
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\stack_data\cor
e.py", line 587, in mapper
    return cls(f, options)
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\stack_data\cor
e.py", line 551, in __init__
    self.executing = Source.executing(frame_or_tb)
                     ~~~~~~~~~~~~~~~~^^^^^^^^^^^^^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\executing\exec
uting.py", line 264, in executing
    source = cls.for_frame(frame)
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\executing\exec
uting.py", line 183, in for_frame
    return cls.for_filename(frame.f_code.co_filename, frame.f_globals or {}, use_
cache)
           ~~~~~~~~~~~~~~~~^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
^^^^^^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\executing\exec
uting.py", line 212, in for_filename
    return cls._for_filename_and_lines(filename, tuple(lines))
           ~~~~~~~~~~~~~~~~~~~~~~~~~~~^^^^^^^^^^^^^^^^^^^^^^^^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\executing\exec
uting.py", line 223, in _for_filename_and_lines
    result = source_cache[(filename, lines)] = cls(filename, lines)
                                               ~~~^^^^^^^^^^^^^^^^^
  File "C:\Users\HP\AppData\Roaming\Python\Python313\site-packages\executing\exec
uting.py", line 167, in __init__
    for node in ast.walk(self.tree):
                ~~~~~~~~^^^^^^^^^^^
  File "C:\Users\HP\anaconda3\Lib\ast.py", line 394, in walk
    todo.extend(iter_child_nodes(node))
    ~~~~~~~~~~~^^^^^^^^^^^^^^^^^^^^^^^^
  File "C:\Users\HP\anaconda3\Lib\ast.py", line 289, in iter_child_nodes
```

```
    for name, field in iter_fields(node):
                       ~~~~~~~~~~~^^^^^^
RecursionError: maximum recursion depth exceeded
```

```
In [56]: import sys
         sys.getrecursionlimit()
```

```
Out[56]: 40
```

```
In [57]: import sys
         sys.setrecursionlimit(200)
         print(sys.getrecursionlimit())
```

```
200
```

```
In [58]: 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
hello 26
hello 27
hello 28
hello 29
hello 30
hello 31
hello 32
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hello 62
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hello 74
hello 75
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hello 97
hello 98
hello 99
hello 100
hello 101
hello 102
hello 103
hello 104
hello 105
hello 106
hello 107
hello 108
hello 109
hello 110
hello 111
hello 112
hello 113
hello 114
hello 115
hello 116
hello 117
hello 118
hello 119
hello 120
hello 121
hello 122
hello 123
hello
```

```
---------------------------------------------------------------------------
RecursionError                            Traceback (most recent call last)
Cell In[58], line 11
      9     print('hello',i)
     10     wish()
---> 11 wish()

Cell In[58], line 10, in wish()
      8 i+=1
      9 print('hello',i)
---> 10 wish()

Cell In[58], line 10, in wish()
      8 i+=1
      9 print('hello',i)
---> 10 wish()

    [... skipping similar frames: wish at line 10 (120 times)]

Cell In[58], line 10, in wish()
      8 i+=1
      9 print('hello',i)
---> 10 wish()

Cell In[58], line 9, in wish()
      7 global i
      8 i+=1
----> 9 print(       ,i)
     10 wish()

File ~\AppData\Roaming\Python\Python313\site-packages\IPython\core\interactiveshe
ll.py:3056, in InteractiveShell._tee.<locals>.write(data, *args, **kwargs)
   3054 if not data:
   3055     return result
-> 3056 execution_count = self.execution_count
   3057 output_stream = None
   3058 outputs_by_counter = self.history_manager.outputs

File ~\AppData\Roaming\Python\Python313\site-packages\traitlets\traitlets.py:687,
in TraitType.__get__(self, obj, cls)
    685     return self
    686 else:
--> 687     return t.cast(G, self.get(obj, cls))

File ~\AppData\Roaming\Python\Python313\site-packages\traitlets\traitlets.py:666,
in TraitType.get(self, obj, cls)
    664     raise TraitError("Unexpected error in TraitType: default value not se
t properly") from e
    665 else:
--> 666     return t.cast(G, value)

RecursionError: maximum recursion depth exceeded
```

In [ ]:

```
def fact(n):
    if n==0:
        return 1
    return n*fact(n-1)
result=fact(5)


result
```

In [ ]:

In [ ]: