In [1]:
```
def avg(x, y, z):
    adding = x + y + z
    avg_value = adding /3
    Y = avg ( 5, 9, 20)
```

In [5]:
```
def student (name, sub1, sub2, sub3):
    avg = (sub1 + sub2 + sub3) / 3
    print('Name is: ' + name + 'Average Marks: ' + str(avg))

student('Ali', 5,6,7)
```

```
Name is: AliAverage Marks: 6.0
```

In [7]:
```
std2()
def std2():
    print('Hello world')
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-7-b55b255ca030> in <module>
----> 1 std2()
      2 def std2():
      3     print('Hello world')

NameError: name 'std2' is not defined
```

In [14]:
```
def avg (10, 15, 20 = 50):
    adding = 10 + 15 + 20
    avg_value = adding /3

Y = 50 ( x = 5, z = 9)
print(5,9)
```

```
  File "<ipython-input-14-49dac1054e50>", line 1
    def avg (10, 15, 20 = 50):
                ^
SyntaxError: invalid syntax
```

In [16]:
```
def avg (10, 15, 20 = 50):
    adding = 5 + 9 + 10
    avg_value = adding /3

Y = 50 ( x = 5, z = 9)
print(5,9)
```

```
  File "<ipython-input-16-164e7da17fa1>", line 1
    def avg (10, 15, 20 = 50):
                ^
SyntaxError: invalid syntax
```

In [18]:
```
def avg (10, 15, 20 = 50):
    adding = 5 + 9 + 10
    avg_value = adding /3

Y = 50 ( x = 5, z = 9)
```

```
  File "<ipython-input-18-542fa2ecd322>", line 1
    def avg (10, 15, 20 = 50):
                ^
SyntaxError: invalid syntax
```

In [20]:
```
def avg (x, y = 10, z = 10):
```

```
  File "<ipython-input-20-91dc9166117d>", line 1
    def avg (x, y = 10, z = 10):
                                ^
SyntaxError: unexpected EOF while parsing
```

In [22]:
```
def avg(x = 10, y, z):
```

```
  File "<ipython-input-22-17ac5618dde4>", line 1
    def avg(x = 10, y, z):
                          ^
SyntaxError: unexpected EOF while parsing
```

In [24]:
```
def avg (y, z, x = 10):
```

```
  File "<ipython-input-24-46c4be594251>", line 1
    def avg (y, z, x = 10):
                           ^
SyntaxError: unexpected EOF while parsing
```

In [25]:
```
def avg (x, y, z):
    adding = x + y + z
    avg_value = adding/3
    return avg_value

y = avg(5, z = 9, y = 20)
```

In [27]:
```
Def avg (x, y, z):
```

```
  File "<ipython-input-27-e85d3bb27061>", line 1
    Def avg (x, y, z):
        ^
SyntaxError: invalid syntax
```

In [30]:
```
Def avg (x, y, z):
    Y = avg (5, z = 9, y = 20)
```

```
  File "<ipython-input-30-8c4fc90d38bf>", line 1
    Def avg (x, y, z):
        ^
SyntaxError: invalid syntax
```

In [32]:
```
Def avg (x, y, z):
    y = avg (y=5, x = 9, 20)
```

```
  File "<ipython-input-32-a81f6ed7dc3f>", line 1
    Def avg (x, y, z):
        ^
SyntaxError: invalid syntax
```

In [35]:
```
Def avg (x, y, z):
    Y = avg (7, z = 9, y = 30)
```

```
  File "<ipython-input-35-0457713f3395>", line 1
    Def avg (x, y, z):
        ^
SyntaxError: invalid syntax
```

In [39]:
```
def avg (name, x, y, z):
    avg = ('Ali', 5, 9, 20, 34, 87, 112))
    print('Name is: ' + name + 'Average Marks: ' + str(avg))
```

```
  File "<ipython-input-39-690027be2885>", line 2
    avg = ('Ali', 5, 9, 20, 34, 87, 112))
                                        ^
SyntaxError: invalid syntax
```

In [41]:
```
def avg (name, *opt_values):
    avg_value = sum(opt_values) / len(opt_values)
    print(‘name is:’ + name + ‘Marks:’ str(avg_value))
```

```
  File "<ipython-input-41-0ff1c09228b0>", line 3
    print(‘name is:’ + name + ‘Marks:’ str(avg_value))
                ^
SyntaxError: invalid character in identifier
```

In [43]:
```
def avg (name, *opt_values):
    avg_value = sum(opt_values) / len(opt_values)
    print(‘name is:’ + name + ‘Marks:’ str(avg_value))
```

```
  File "<ipython-input-43-0ff1c09228b0>", line 3
    print(‘name is:’ + name + ‘Marks:’ str(avg_value))
                ^
SyntaxError: invalid character in identifier
```

In [45]:
```
def student (name, sub1, sub2, sub3):
    avg = (sub1 + sub2 + sub3) / 3
    print('Name is: ' + name + 'Average Marks: ' + str(avg))

student('Ali', 5, 6, 7)
```

```
Name is: AliAverage Marks: 6.0
```

In [47]:
```
def avg (name, *opt_values):
    avg_value = sum(opt_values) / len(opt_values)
    print(‘name is:’ + name + ‘Marks:’ str(avg_value))
```

```
  File "<ipython-input-47-0ff1c09228b0>", line 3
    print(‘name is:’ + name + ‘Marks:’ str(avg_value))
                ^
SyntaxError: invalid character in identifier
```

In [49]:
```
def student (name, sub1, sub2):
    avg = (sub1 + sub2) / 5
    print('Name is: ' + name + 'Average Marks: ' + str(avg))

student('Imran', 5, 6, 7)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-49-656bb41b3fee> in <module>
      3     print('Name is: ' + name + 'Average Marks: ' + str(avg))
      4
----> 5 student('Imran', 5, 6, 7)

TypeError: student() takes 3 positional arguments but 4 were given
```

In [51]:
```
def avg (opt_values):
    avg_value = sum(opt_values) / len(opt_values)
    print(‘name is:’ + name + ‘Marks:’ str(avg_value))

avg(‘Ali’, 5, 9, 20, 34, 87, 112)
```

```
  File "<ipython-input-51-ff211e75b8eb>", line 3
    print(‘name is:’ + name + ‘Marks:’ str(avg_value))
                ^
SyntaxError: invalid character in identifier
```

In [53]:
```
def abc(*x, name):
    print(x)
    print(name)
abc(1,2,3,4,5, 'Islamabad', True, name='Nasir Hussain')
```

```
(1, 2, 3, 4, 5, 'Islamabad', True)
Nasir Hussain
```

In [55]:
```
def abc(*x, name):
    print(x)
    print(name)
abc(1,2, 'Islamabad', True, name='Nasir Hussain')
```

```
(1, 2, 'Islamabad', True)
Nasir Hussain
```

In [57]:
```
def abc(**x, name):
    print(x)
    print(name)
abc(1,2,3,4 'Islamabad', True, name='Nasir Hussain')
```

```
  File "<ipython-input-57-2d5cbcc8bf83>", line 1
    def abc(**x, name):
                 ^
SyntaxError: invalid syntax
```

In [59]:
```
def abc(*x, name):
    print(x)
    print(name)
abc(1,2, 'Islamabad', True, name='Nasir Hussain')
```

```
(1, 2, 'Islamabad', True)
Nasir Hussain
```

In [61]:
```
def test(name,fname,sid,course,timings):
    print(f'''
          id: (sid)
          Name: (name)
          Father's Name: (fname)
          Course: (course)
          Timings: (timings)
          ''')
test('Ali', 'Hussain', 2034, 'A.I.', '6:45 to 9:45')
```

```
          id: (sid)
          Name: (name)
          Father's Name: (fname)
          Course: (course)
          Timings: (timings)
```

In [63]:
```
def test(name,fname,sid,course,timings):
    print(f'''
         id: (sid)
         Name: (name)
         Father's Name: (fname)
         Course: (course)
         Timings: (timings)
          ''')
test('Ali','Hussain',2034,'A.I.','6:45 to 9:45')
```

```
         id: (sid)
         Name: (name)
         Father's Name: (fname)
         Course: (course)
         Timings: (timings)
```

In [66]:
```
list1=['Ali','Hussain',2034,'A.I.','6:45 to 9:45']
test(list1[0],list1[1],list1[2],list1[3],list1[4])
```

```
id: (sid)
Name: (name)
Father's Name: (fname)
Course: (course)
Timings: (timings)
```

In [68]:
```
test(*list1)
```

```
id: (sid)
Name: (name)
Father's Name: (fname)
Course: (course)
Timings: (timings)
```

In [72]:
```
test(list1)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-72-bbfe90779dad> in <module>
----> 1 test(list1)

TypeError: test() missing 4 required positional arguments: 'fname', 'sid', 'cou
rse', and 'timings'
```

In [73]:
```
test(**list1)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-73-6cd7bda1577c> in <module>
----> 1 test(**list1)

TypeError: test() argument after ** must be a mapping, not list
```

In [75]:
```
test(*list1)_
```

```
id: (sid)
Name: (name)
Father's Name: (fname)
Course: (course)
Timings: (timings)
```

In [79]:
```
def display_result(winter, score, **other_info):
    print("The winner was " + winter)
    print("The score was " + score)
    #for key, value in other_info.items():
         #print(key + ": "+ value)
    print(other_info)

display_result(winner='Manchester', score="1-0", overtime = "yes", injuries="non
```

```
  File "<ipython-input-79-7d32cca9675b>", line 8
    display_result(winner='Manchester', score="1-0", overtime = "yes", injuries
="none"

^
SyntaxError: unexpected EOF while parsing
```

In [82]:
```
y = sum (35, 78, 6, 12) + avg (5, 9, 20)
y = 110
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-82-60316eb7d095> in <module>
----> 1 y = sum (35, 78, 6, 12) + avg (5, 9, 20)
      2 y = 110

TypeError: sum expected at most 2 arguments, got 4
```

In [84]:
```
def print_my_name(name)
    print(name)
def say_you_name():
    my_name = “Imran Mahmood”
    print_my_name(my_name)
```

```
  File "<ipython-input-84-29d0b45f984a>", line 1
    def print_my_name(name)
                          ^
SyntaxError: invalid syntax
```

In [86]:
```
print("line # 1")
def testing():
    print("Pakistan")
    print()
    print("islam")
print("line # 2")
```

```
line # 1
line # 2
```

In [88]:
```
testing()
```

```
Pakistan

islam
```

In [93]:
```
# 5 functorial
# 5 " 4 " 3 " 2 " 1
def fact(num):
    if num == 1:
        return 1
    return (num + fact(num - 1))

a=fact(5)
print(a)
```

```
15
```

In [95]:
```
# 5 functorial
# 5 " 4 " 3 " 2 " 1
def fact(num):
    if num == 1:
        return 1
    return (num + fact(num - 1))

a=fact(10)
print(a)
```

```
55
```

In [97]:
```
# 5 functorial
# 5 " 4 " 3 " 2 " 1
def fact(num):
    if num == 1:
        return 1
    return (num + fact(num - 1))

a=fact(15)
print(a)
```

```
120
```