Functions

- A block of code which we can use many times

In [12]:
```
num1=10
num2=20
add=num1+num2
print(add)
```

```
30
```

In [13]:
```
import random
random.randint
```

Out[13]:
```
<bound method Random.randint of <random.Random object at 0x0000025AA46200A0>>
```

In [ ]:
```
def <function_name>():
    codelines
```

Functions with out arguments

In [14]:
```
def addition():
    num1=10
    num2=20
    add=num1+num2
    print(add)
```

In [ ]:
```
# function name: addition
# in order to execute code lines
# we need to call the function
```

In [16]:
```
addition()
```

```
30
```

In [20]:
```
def addition():
    num1=10
    print("num1 is:",num1)
    num2=20
    print("num2 is:",num2)
    add=num1+num2
    print(f"the addition of {num1} and {num2} is: {add}")

addition()
```

```
num1 is: 10
num2 is: 20
the addition of 10 and 20 is: 30
```

Note

- function names can be anything
- same rules applicable as variable rules
- whenever you create the function make sure the indentation correctly

- starting with keyword , ending with colon then code lines start with indentation
- brackets means functions
- Never missed the brackets whenever you call the function
- If you want to execute the code we need to call the function
- while you are calling the function if you see function or bound method
- which means you missed the brackets

In [ ]:
```
def addition():
    num1=10
    print("num1 is:",num1)
    num2=20
    print("num2 is:",num2)
    add=num1+num2
    print(f"the addition of {num1} and {num2} is: {add}")

addition()
```

In [21]:
```
num1=10
num2=20
add=num111+num2
print(add)
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[21], line 3
      1 num1=10
      2 num2=20
----> 3 add=num111+num2
      4 print(add)

NameError: name 'num111' is not defined
```

In [22]:
```
def addition1():
    num1=10
    print("num1 is:",num1)
    num2=20
    print("num2 is:",num2)
    add=num111+num2
    print(f"the addition of {num1} and {num2} is: {add}")
```

In [23]:
```
addition1()
```

```
num1 is: 10
num2 is: 20
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[23], line 1
----> 1 addition1()

Cell In[22], line 6, in addition1()
      4 num2=20
      5 print("num2 is:",num2)
----> 6 add=num111+num2
      7 print(f"the addition of {num1} and {num2} is: {add}")

NameError: name 'num111' is not defined
```

whenever we defined the function It does not throw any errot untill unless we call the function

In [ ]:
```
# wap ask the user enter 3 numbers calculate average
#---------------------------------------------------------------------------

# wap ask the uer enter radius values find the area of the circle
#---------------------------------------------------------------------------

# wap ask the user bill amount,
#     ask the user how much tip you want pay in percentage
#     calculate totalbill
#---------------------------------------------------------------------------

#wap ask the user enter base height calculate area of the traingle
#---------------------------------------------------------------------------

#wap ask the user enter length and breadth calculate area of the rectangle
#---------------------------------------------------------------------------
## wap ask the user enter a number
# find it is a even number or odd number
#---------------------------------------------------------------------------
## wap ask the user enter the distance
# if distance greater than 25km
#      then enter the charge
#      print the total cost
#otherwise
#      print free ride
```

In [26]:
```
# wap ask the user enter 3 numbers calculate average
num1=eval(input("enter the num1:"))
num2=eval(input("enter the num3:"))
num3=eval(input("enter the num3:"))
avg=(num1+num2+num3)/3
avg1=round(avg,2)
print(f"the average of {num1} ,{num2} and {num3} is {avg1}")
```

```
the average of 20 ,30 and 40 is 30.0
```

In [28]:
```
# function name and variable name should not be same
def average():
    num1=eval(input("enter the num1:"))
    num2=eval(input("enter the num3:"))
    num3=eval(input("enter the num3:"))
    avg=(num1+num2+num3)/3
```

```
    avg1=round(avg,2)
    print(f"the average of {num1} ,{num2} and {num3} is {avg1}")

average()
```

```
the average of 20 ,30 and 40 is 30.0
```

- while we are defining function if nothing mentioned means
- It is called as Functions with out arguments

In [ ]:
```
def addition()
def average()
def area_of_traingle()
def bill()
```

Functions with arguments

- First look at how many arguments or variables are there
- In that how many input variables are there
- How many output variables are there
- Input variables means user can defined
- output variable means python gives the output
- We can use only input variables as arguments inside the function

In [ ]:
```
def addition():
    num1=10
    num2=20
    add=num1+num2
    print(f"the addition of {num1} and {num2} is: {add}")

addition()
```

In [29]:
```
def addition2(num1,num2):
    add=num1+num2
    print(f"the addition of {num1} and {num2} is: {add}")

addition2(10,20)
```

```
the addition of 10 and 20 is: 30
```

In [33]:
```
# try for average

def average1(num1,num2,num3):
    avg=(num1+num2+num3)/3
    avg1=round(avg,2)
    print(f"the average of {num1} ,{num2} and {num3} is {avg1}")

average1(30,40,50)
```

```
the average of 30 ,40 and 50 is 40.0
```

In [ ]:
```
average1(num1,num2,num3)  # Mistake-1
average1()                # Mistake-2
```

In [35]:
```
#wap ask the user enter base height calculate area of the traingle
def average1(num1,num2,num3):
    avg=(num1+num2+num3)/3
    avg1=round(avg,2)
    print(f"the average of {num1} ,{num2} and {num3} is {avg1}")

average1(30,40,50)
```

```
the average of 30 ,40 and 50 is 40.0
```

In [36]:
```
def area(len,bre):
    a=(len*bre)
    print(f"area is {a}")

area(10,20)
```

```
area is 200
```

In [3]:
```
def sub():
    n1=eval(input("enter number1:"))
    n2=eval(input("enter number2:"))
    sub=n1-n2
    print(sub)
sub()


# Do not provide function name and variable name both are same
```

```
-1
```

In [4]:
```
def sub(n1,n2):
    sub=n1-n2
    print(sub)
sub(10,20)
```

```
-10
```

In [ ]:
```
num=eval(input("enter the number:"))
if num%2==0:
    print(f"the {num} is even")
else:
    print(f"the {num} is odd")
```

In [5]:
```
def even_odd():
    num=eval(input("enter the number:"))
    if num%2==0:
        print(f"the {num} is even")
    else:
        print(f"the {num} is odd")

even_odd()
```

```
the 20 is even
```

Default arguments

In [6]:
```
# Bill amount problem
bill=eval(input("enter the bill:"))
tip_per=eval(input("enter the tip_percentage:"))
tip_amount=bill*tip_per/100
total_bill=bill+tip_amount
print("The total bill is:",total_bill)
```

```
The total bill is: 1100.0
```

In [7]:
```
# with out arguments
def bill_pay():
    bill=eval(input("enter the bill:"))
    tip_per=eval(input("enter the tip_percentage:"))
    tip_amount=bill*tip_per/100
    total_bill=bill+tip_amount
    print("The total bill is:",total_bill)

bill_pay()
```

```
The total bill is: 1200.0
```

In [8]:
```
# with arguments
# whenever you provide the arguments
# these provided arguments are we using inside the code or not
def bill_pay(bill,tip_per):
    tip_amount=bill*tip_per/100
    total_bill=bill+tip_amount
    print("The total bill is:",total_bill)

bill_pay(2000,20)
```

```
The total bill is: 2400.0
```

In [ ]:
```
# Bill amount problem
bill=eval(input("enter the bill:"))
tip_per=eval(input("enter the tip_percentage:"))
tip_amount=bill*tip_per/100
total_bill=bill+tip_amount
print("The total bill is:",total_bill)

################################################################################
# with out arguments
def bill_pay():
    bill=eval(input("enter the bill:"))
    tip_per=eval(input("enter the tip_percentage:"))
    tip_amount=bill*tip_per/100
    total_bill=bill+tip_amount
    print("The total bill is:",total_bill)

bill_pay()
################################################################################
# with arguments
# whenever you provide the arguments
# these provided arguments are we using inside the code or not
def bill_pay(bill,tip_per):
    tip_amount=bill*tip_per/100
    total_bill=bill+tip_amount
    print("The total bill is:",total_bill)

bill_pay(2000,20)
```

In [9]:
```
def bill_pay(bill,tip_per=20):
    print("bill is:",bill)
    print("tip_per is:",tip_per)
    tip_amount=bill*tip_per/100
    total_bill=bill+tip_amount
    print("The total bill is:",total_bill)

bill_pay(2000)

# Here the tip_per=default value
# whenever we provided default value to a arguments
# Then it is called default argument
```

```
bill is: 2000
tip_per is: 20
The total bill is: 2400.0
```

In [11]:
```
def average1(num1,num2,num3=50):
    print("num1:",num1)  # 30
    print("num2:",num2)  # 40
    print("num3:",num3)  # 50
    avg=(num1+num2+num3)/3
    avg1=round(avg,2)
    print(f"the average of {num1} ,{num2} and {num3} is {avg1}")

average1(30,40)

# num1  num2  are postitional arguments
# num3 is default argument
```

```
num1: 30
num2: 40
num3: 50
the average of 30 ,40 and 50 is 40.0
```

In [12]:
```
def average1(num1,num2=40,num3):
    print("num1:",num1)  # 30
    print("num2:",num2)  # 40
    print("num3:",num3)  # 50
    avg=(num1+num2+num3)/3
    avg1=round(avg,2)
    print(f"the average of {num1} ,{num2} and {num3} is {avg1}")

average1(30,50)
```

```
  Cell In[12], line 1
    def average1(num1,num2=40,num3):
                                   ^
SyntaxError: non-default argument follows default argument
```

In [13]:
```
def average1(num1,num3,num2=40):
    print("num1:",num1)  # 30
    print("num2:",num2)  # 40
    print("num3:",num3)  # 50
    avg=(num1+num2+num3)/3
    avg1=round(avg,2)
    print(f"the average of {num1} ,{num2} and {num3} is {avg1}")

average1(30,50)
```

```
num1: 30
num2: 40
num3: 50
the average of 30 ,40 and 50 is 40.0
```

Note

- Default argument always at last

In [ ]:
```
average1(num1,num2,num3=40)  # W
average1(num1,num2=50,num3)  # F
average1(num1=100,num2,num3) # F
average1(num1,num2=50,num3=40) # W
average1(num1=100,num2,num3=40) # F
average1(num1=100,num2=50,num3) # F
average1(num1=100,num2=50,num3=40) # W
```

In [14]:
```
def average1(num1,num2=50,num3=40):
    print("num1:",num1)  # 30
    print("num2:",num2)  # 40
    print("num3:",num3)  # 50
    avg=(num1+num2+num3)/3
    avg1=round(avg,2)
    print(f"the average of {num1} ,{num2} and {num3} is {avg1}")

average1(30)
```

```
num1: 30
num2: 50
num3: 40
the average of 30 ,50 and 40 is 40.0
```

In [15]:
```
# Case-1:
def addition(n1,n2=600):
    add=n1+n2
    print(add)

addition(500)
```

```
1100
```

In [16]:
```
# Case-2:
def addition(n1,n2=600):
    add=n1+n2
    print(add)

addition(500,1000)

# First we are defining function
# while define the function we given n2=600
# now we are calling the function,
# while we are calling n2=1000
# So value will be overwrite
# Python always takes the latest value
```

```
1500
```

In [17]:
```
# Case-3:
def addition(n1,n2=600):
    n2=2000
```

```
    add=n1+n2
    print(add)

addition(500,1000)

#A) 1100  B) 1500 C) 2500 D) error

# Step-1:  Define the function  n2=600
# Step-2: Call the fuction n2=1000
# Step-3: Running the function n2=2000
```

```
2500
```

In [ ]:
```
# Case-4:
def addition(n1,n2=600):
    n2=2000
    add=n1+n2
    print(add)
n2=3000
addition(500,1000)
# n2=600 ==== > 3000 === >1000m==== > 2500
```

Local variable and Global variable

- Local variable means : the variables inside the function call
- Global variable means: the variables outside the function call
- Once you define the variables outside means , you can use those variables anywhere
- You can use global variables inside function also
- But you can not use local variables outside the function

In [18]:
```
def multiplication():
    a=10
    b=20
    mul=a*b
    print(mul)
multiplication()

# a,b,mul are local variables
# these values we can not use outside the function
```

```
200
```

In [20]:
```
mul
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[20], line 1
----> 1 mul

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

In [24]:
```
a1=100
b1=200
def multiplication1():
    mul1=a1*b1
```

```
    print(mul1)
multiplication1()
```

```
20000
```

In [22]:
```
a1
```

Out[22]:
```
100
```

In [25]:
```
mul1
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[25], line 1
----> 1 mul1

NameError: name 'mul1' is not defined
```

In [26]:
```
# Case-5:
a1=100
b1=200
def add11(a1=1000):
    add1=a1+b1
    print(add1)
add11()

# a1=100 === > a1=1000  === > 1000+200

#Step-1: Global variable intialization  a1=100
# Step-2: Define the function  a1=1000
# Step-3: Call the function    a1=1000
# Step-4: Running the function a1=1000
```

```
1200
```

In [27]:
```
# Case-6:
a1=100
b1=200
def add11(a1=1000):
    add1=a1+b1
    print(add1)
add11(a1=2000,b1=3000)

# while defiening function only one argument is there
# while calling we are providing two arguments
# It is not possibile
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[27], line 7
      5     add1=a1+b1
      6     print(add1)
----> 7 add11(a1=2000,b1=3000)

TypeError: add11() got an unexpected keyword argument 'b1'
```

In [28]:
```
# Case-7:
a1=100
b1=200
def add11(a1=1000):
    add1=a1+b1
```

```
    print(add1)
add11(a1=2000)
```

```
2200
```

In [31]:
```
# Case-8:
a1=100
b1=200
def add11(a1=1000):
    a1=5000
    add1=a1+b1
    print(add1)
add11(a1=2000)
```

```
5200
```

In [32]:
```
a1
```

Out[32]:
```
100
```

In [33]:
```
# Case-9:
a1=100
b1=200
def add11(a1=1000):
    a1=5000
    add1=a1+b1
    print(add1)
a1=6000
add11(a1=2000)
# a1=100,b1=200
# define the function a1=1000
# a1=6000
# calling the  a1=2000
# running  a1=5000
```

```
5200
```

In [34]:
```
a1
```

Out[34]:
```
6000
```

In [35]:
```
# Case-10:
b1=200
def add11():
    add1=a1+b1
    print(add1)
a1=6000
add11()

# b1=200
# define the function
# a1=6000
# calling the function
# running the function
```

```
6200
```

In [ ]:
```
# Case-11:
b1=200
def add11():
    add1=a1+b1
```

```
    print(add1)
a1=6000
add11()
```

In [ ]:
```
even through we use same variable name a1 in local and global.. both are differe
```

In [36]:
```
a=100
def greet():
    a=200
    print('hello')
greet()
```

```
hello
```

In [ ]:
```
# step-1: Variables intilised
# Step-2:  Define the function
# Step-3: Calling the function
# Step-4: Running the function
```

In [38]:
```
# Case-12:
b21=200
def add21():
    add1=a21+b21
    print(add1)
add21()
a=6000
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[38], line 6
      4     add1=a21+b21
      5     print(add1)
----> 6 add21()
      7 a=6000

Cell In[38], line 4, in add21()
      3 def add21():
----> 4     add1=a21+b21
      5     print(add1)

NameError: name 'a21' is not defined
```

In [1]:
```
s=0
def add():
    s=s+10
    print(s)
add()
```

```
---------------------------------------------------------------------------
UnboundLocalError                         Traceback (most recent call last)
Cell In[1], line 5
      3     s=s+10
      4     print(s)
----> 5 add()

Cell In[1], line 3, in add()
      2 def add():
----> 3     s=s+10
      4     print(s)

UnboundLocalError: cannot access local variable 's' where it is not associated wi
th a value
```

In [2]:
```
s=0
def add():
    a=s+10
    print(a)
add()
```

```
10
```

In [3]:
```
b=0
def add():
    s=b+10
    print(s)
add()
```

```
10
```

In [4]:
```
s=0  # GV
def add():
    c=s+10
    s=c  # LV
    print(s)
add()
```

```
---------------------------------------------------------------------------
UnboundLocalError                         Traceback (most recent call last)
Cell In[4], line 6
      4     s=c  # LV
      5     print(s)
----> 6 add()

Cell In[4], line 3, in add()
      2 def add():
----> 3     c=s+10
      4     s=c  # LV
      5     print(s)

UnboundLocalError: cannot access local variable 's' where it is not associated wi
th a value
```

In [5]:
```
n1=10
def addition():
    n1=100
    n2=200
    n3=n1+n2
    print(n1,n2,n3)
```

```
addition()

#
```

```
100 200 300
```

Note

- if you give same variabel as global and local
- make sure that that variable should not use as value inside the function

In [7]:
```
n11=10
def addition():
    n22=200+n11
    n33=n11+n22
    print(n11,n22,n33)

addition()


# step-1: n11 =10
# step-2:  define the function
# step-3:  call the function
# step-4:  run the function
#           n11 is global variable passing inside the function (yes)
#           n22=200+n11= 200+10=210
#           n33=10+210=220
#           print(10,210,220)
```

```
10 210 220
```

In [ ]:
```
s=0  # GV
def add():
    c=s+10
    s=c  # LV
    print(s)
add()

# step-1:  s=0    gv
# step-2: define the function
# step-3:  call the function
# step-4:  run the function
#          c  is lv :  c= s+10 = c=10
#          we are creating a new variable same like as global s
# we are creating a new variable with same name as global variable
# by using global variable
```

In [9]:
```
value=100
def greet():
    value=200
    print('hello')
greet()
```

```
hello
```

In [10]:
```
value
```

Out[10]:
```
100
```

In [ ]:
```
**global**

- global keyword is used to take the local variable value outside the function
```

In [11]:
```
value=100
def greet():
    global value
    value=200
    print('hello')
greet()
print('value:',value)
```

```
hello
value: 200
```

In [15]:
```
n11=10
def addition():
    global n33,n22
    n22=200
    n33=n11+n22
    print(n11,n22,n33)

addition()
```

```
10 200 210
```

In [16]:
```
n33
```

Out[16]:
```
210
```

- Outside the function is called Global variables
- Inside the function is local varaiable
- local variables can not use outside the function
- if you want to use outside the function use **global** keyword

In [18]:
```
def mul(a,b):
    print(a*b)

mul(eval(input()),
    eval(input()))
```

```
600
```

Return

- we can use the local variable or function outputs outside the function using return
- print is different
- return is different
- print is used to only to print the values

- that value you can only see, but you can not use
- if you want to use outside we will use return (it is also possibile by using global)

In [21]:
```
def average():
    n1=10
    n2=20
    n3=30
    avg=(n1+n2+n3)/3
    return(avg)
avg=average()

# function is ready to return values to me
# so i need to store
```

In [22]:
```
avg
```

Out[22]: 20.0

In [23]:
```
def average():
    n1=10
    n2=20
    n3=30
    avg=(n1+n2+n3)/3
    return(avg,n3)
avg,n3=average()

# How many values we are returning
# we will store each return values in different variable
# because two values are different
# If you use only variable to store : tuple value
```

In [24]:
```
print(avg)
print(n3)
```

```
20.0
30
```

In [29]:
```
def sub():
    a=10
    b=20
    subb=b-a
    return(subb)

subb=sub()
```

In [28]:
```
subb
```

Out[28]: 10

In [ ]:
```
# Return always at last line of the function
# Not in middile lines

#Sir in real time projects, do we use return or global more sir?
#return
```

In [34]:
```
def sub():
    a=10
```

```
    b=20
    subb=b-a
    return(a,b,subb)
out=sub()
```

In [35]:
```
out
```

Out[35]: (10, 20, 10)

In [ ]:
```
- with out arguments

- with arguments

- default arguments

- local vs global

- global keywords

- return

- function in function

- *kwargs: keyword arguments
```

unbound local error

In [6]:
```
num=10  #   gv
def fun1():
    num1=100 # lv
    print("inside function:",num1) # print(100)

fun1()
print("outside function:",num1)
```

```
inside function: 100
outside function: 10
```

In [4]:
```
num2=10# gv
def fun2():
    print(num2)
    num2=100  # lv

fun2()
# Name error wil come
# local variable and global variable both names are same
# you are try to access local variable before assign
```

```
---------------------------------------------------------------------------
UnboundLocalError                         Traceback (most recent call last)
Cell In[4], line 6
      3     print(num2)
      4     num2=100
----> 6 fun2()

Cell In[4], line 3, in fun2()
      2 def fun2():
----> 3     print(num2)
      4     num2=100

UnboundLocalError: cannot access local variable 'num2' where it is not associated
with a value
```

In [ ]:
```
s=0 # GV
def add():
    c=s+10
    s=c  # LV
    print(s)
add()
```

In [ ]:
```
sir but num2=10, its is a global variable no sir
but on Mondays class it worked no sir
first initialization happens, define the function
call the function
so sir num2=20 and it is not updated
```

In [ ]:
```
a1=100
b1=200
def add11():
    add1=a1+b1
    print(add1)
add11()
```

In [9]:
```
num2=10# gv
def fun2():
    global num2
    num2=100  # lv

fun2()
```

In [10]:
```
num2
```

Out[10]: 100

In [14]:
```
a1=100
b1=200
def add11():
    add1=a1+b1
    print(add1)
add11()

# Here No local variables as same name as golbal variable

################################################################################
a1=100
b1=200
```

```
def add12():
    a1=700
    b1=800
    add1=a1+b1
    print(add1)
add11()

# we are intialisng lv names same as gv
# we are using lv after intialization
#########################################################################
a1=100
b1=200
def add13():
    add1=a1+b1
    a1=700
    b1=80
    print(add1)
add11()
# we are intialisng lv names same as gv
# we are using lv before intialization
```

```
300
```

No error

- Here No local variables as same name as golbal variable
- we are intialisng lv names same as gv
    - we are using lv after intialization

Error

- we are intialisng lv names same as gv
    - we are using lv before intialization

In [17]:
```
a1=100
b1=200
def add12():
    c=700
    d=800
    add1=c+d
    print(add1)
add12()


a1=100
b1=200
def add32():
    add1=c+d
    c=700
    d=800
    print(add1)
add32()
```

```
1500
```

```
---------------------------------------------------------------------------
UnboundLocalError                         Traceback (most recent call last)
Cell In[17], line 18
     16     d=800
     17     print(add1)
---> 18 add32()

Cell In[17], line 14, in add32()
     13 def add32():
---> 14     add1=c+d
     15     c=700
     16     d=800

UnboundLocalError: cannot access local variable 'c' where it is not associated wi
th a value
```

In [22]:
```
# Case-12:
b21=200
def add21():
    a21=1000
    add1=a21+b21
    b21=2000
    print(add1)
add21()
```

```
---------------------------------------------------------------------------
UnboundLocalError                         Traceback (most recent call last)
Cell In[22], line 8
      6     b21=2000
      7     print(add1)
----> 8 add21()

Cell In[22], line 5, in add21()
      3 def add21():
      4     a21=1000
----> 5     add1=a21+b21
      6     b21=2000
      7     print(add1)

UnboundLocalError: cannot access local variable 'b21' where it is not associated
with a value
```

- Global variable
- define the function
- call the function
- run the function

Functions in Functions

In [23]:
```
def greet1():
    print('hello good morning')

def greet2():
    print('Good night!')
```

```
greet1()
greet2()
```

```
hello good morning
Good night!
```

In [24]:
```
def greet2():
    print('Good night!')

def greet1():
    print('hello good morning')
    greet2()

greet1()
# hello gm
# good night
```

```
hello good morning
Good night!
```

In [25]:
```
def greet2():
    print('Good night!')
    greet1()

def greet1():
    print('hello good morning')
    greet2()

greet1()

# Hello gm
# greet2 ==== GN
# greet1 ==== hello gm
```

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Good night!
hello good morning
Good night!
hello good morning
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Good night!
hello good morning
Good night!

```
---------------------------------------------------------------------------
RecursionError                            Traceback (most recent call last)
Cell In[25], line 9
      6     print('hello good morning')
      7     greet2()
----> 9 greet1()

Cell In[25], line 7, in greet1()
      5 def greet1():
      6     print('hello good morning')
----> 7     greet2()

Cell In[25], line 3, in greet2()
      1 def greet2():
      2     print('Good night!')
----> 3     greet1()

Cell In[25], line 7, in greet1()
      5 def greet1():
      6     print('hello good morning')
----> 7     greet2()

Cell In[25], line 3, in greet2()
      1 def greet2():
      2     print('Good night!')
----> 3     greet1()

    [... skipping similar frames: greet1 at line 7 (1482 times), greet2 at line 3
(1482 times)]

Cell In[25], line 7, in greet1()
      5 def greet1():
      6     print('hello good morning')
----> 7     greet2()

Cell In[25], line 3, in greet2()
      1 def greet2():
      2     print('Good night!')
----> 3     greet1()

Cell In[25], line 6, in greet1()
      5 def greet1():
----> 6     print('hello good morning')
      7     greet2()

File ~\anaconda3\Lib\site-packages\ipykernel\iostream.py:649, in OutStream.write
(self, string)
    646     msg = "I/O operation on closed file"
    647     raise ValueError(msg)
--> 649 is_child = not self._is_master_process()
    650 # only touch the buffer in the IO thread to avoid races
    651 with self._buffer_lock:

File ~\anaconda3\Lib\site-packages\ipykernel\iostream.py:520, in OutStream._is_ma
ster_process(self)
    519 def _is_master_process(self):
--> 520     return os.getpid() == self._master_pid

RecursionError: maximum recursion depth exceeded while calling a Python object
```

- Functions with out arguments
- Functions with arguments
- Functions default arguments
- Global variable vs Local variable
- Global keyword
- return statement
- unbound local error
- Function in Functions

In [ ]:
```
distance=eval(input("enter the distance in km:"))
cutoff_distance=eval(input("enter the cuto ff distance in km:"))
if distance>cutoff_distance:
    chargeble_distance=distance-cutoff_distance
    print("kudos to you the chargeble distance is:",chargeble_distance)
    charge=eval(input("enter the charge in rs"))
    cost=chargeble_distance*charge
    print("the total charge is:",cost)
else:
    print("enjoy the free ride")

# 50K  upto 25km is free ride
# 50-25=25km
```

In [26]:
```
def total_fare():
    distance=eval(input("enter the distance in km:"))
    cutoff_distance=eval(input("enter the cuto ff distance in km:"))
    if distance>cutoff_distance:
        chargeble_distance=distance-cutoff_distance
        print("kudos to you the chargeble distance is:",chargeble_distance)
        charge=eval(input("enter the charge in rs"))
        cost=chargeble_distance*charge
        print("the total charge is:",cost)
    else:
        print("enjoy the free ride")

total_fare()
```

```
kudos to you the chargeble distance is: 35
the total charge is: 70
```

In [27]:
```
def total_fare1(distance,cutoff_distance,charge):
    if distance>cutoff_distance:
        chargeble_distance=distance-cutoff_distance
        print("kudos to you the chargeble distance is:",chargeble_distance)
        cost=chargeble_distance*charge
        print("the total charge is:",cost)
    else:
        print("enjoy the free ride")
```

```
total_fare1(60,25,3)
```

```
kudos to you the chargeble distance is: 35
the total charge is: 105
```

In [29]:
```
def total_fare2(distance,cutoff_distance=25,charge=5):
    if distance>cutoff_distance:
        chargeble_distance=distance-cutoff_distance
        print("kudos to you the chargeble distance is:",chargeble_distance)
        cost=chargeble_distance*charge
        print("the total charge is:",cost)
    else:
        print("enjoy the free ride")

total_fare2(100)
```

```
kudos to you the chargeble distance is: 75
the total charge is: 375
```

In [30]:
```
distance=eval(input("enter the distance in km:"))
cutoff_distance=eval(input("enter the cuto ff distance in km:"))
def total_fare3():
    if distance>cutoff_distance:
        chargeble_distance=distance-cutoff_distance
        print("kudos to you the chargeble distance is:",chargeble_distance)
        charge=eval(input("enter the charge in rs"))
        cost=chargeble_distance*charge
        print("the total charge is:",cost)
    else:
        print("enjoy the free ride")

total_fare3()
```

```
kudos to you the chargeble distance is: 100
the total charge is: 1000
```

In [31]:
```
distance=eval(input("enter the distance in km:"))
cutoff_distance=eval(input("enter the cuto ff distance in km:"))
def total_fare4():
    global cost
    if distance>cutoff_distance:
        chargeble_distance=distance-cutoff_distance
        print("kudos to you the chargeble distance is:",chargeble_distance)
        charge=eval(input("enter the charge in rs"))
        cost=chargeble_distance*charge
        print("the total charge is:",cost)
    else:
        print("enjoy the free ride")

total_fare4()

print("outside function cost is:",cost)
```

```
kudos to you the chargeble distance is: 50
the total charge is: 250
outside function cost is: 250
```

In [33]:
```
distance=eval(input("enter the distance in km:"))
cutoff_distance=eval(input("enter the cuto ff distance in km:"))
def total_fare5():
    if distance>cutoff_distance:
```

```
        chargeble_distance=distance-cutoff_distance
        print("kudos to you the chargeble distance is:",chargeble_distance)
        charge=eval(input("enter the charge in rs"))
        cost=chargeble_distance*charge
        print("the total charge is:",cost)
    else:
        cost=100

    return(cost)


cost=total_fare5()

print("outside function cost is:",cost)
```

```
outside function cost is: 100
```

In [35]:

```
distance=eval(input("enter the distance in km:"))
cutoff_distance=eval(input("enter the cuto ff distance in km:"))
def total_fare5():
    if distance>cutoff_distance:
        chargeble_distance=distance-cutoff_distance
        print("kudos to you the chargeble distance is:",chargeble_distance)
        charge=eval(input("enter the charge in rs"))
        cost=chargeble_distance*charge
        print("the total charge is:",cost)
        return(cost)
    else:
        cost=100
        return(cost)



cost=total_fare5()

print("outside function cost is:",cost)
```

```
outside function cost is: 100
```

In [ ]:

```
# First create 4 individual function
# Fun1: add
# Fun2: sub
# Fun3: mul
# Fun4: div

def add(a,b):
    print(a+b)

# Create a main function name : calculator
# Inside main function
# Print some statements
# option1: addition
# option2: sub, opt3: mul  opt4: div
# option=eval(input('1-4'))
# a value
# b value
# if option==1:
#    call add function
# elif option==2:
#    call sub function
# elif option==3:
```

```
#    call mul function
# elif option==4:
#    call div function
```

In [ ]:

```
def add(a,b):
    print(a+b)

def add(a,b):
    print(a+b)

def add(a,b):
    print(a+b)

def add(a,b):
    print(a+b)

def calcualtor():
    # print
    # option
    # a
    # b
    if op==1:
        add(a,b)
```