functionss

April 22, 2024

Functions /? —> code written once –> use many in applying some logic ————> functions with known number of arguments <————-

[1]:
```
def hello():
    pass
```

[2]:
```
# to call function
hello()
```

[3]:
```
res  = hello()
print(res)
```

```
None
```

[4]:
```
def saywelcome():
    print("welcome")
```

[5]:
```
saywelcome()
```

```
welcome
```

[6]:
```
res2=saywelcome()
print(res2)
```

```
welcome
None
```

[7]:
```
def askforname(): # function returns with value
    name = input("What is your name? ")
    name = name.upper()
    print(f"You entered {name}")
    return name
```

[8]:
```
res=askforname()
print(res)
```

```
You entered NOHA
NOHA
```

[9]:
```
def sayhi():
    return
```

[10]:
```
res3=sayhi()
print(res3)
```

```
None
```

Function with known mandatory number of arguments

[ ]:
```
# function accept arguments
def sumnum(num1,num2):
    res = num1+num2
    print(f"res=  {res}")
```

[12]:
```
sumnum(3,5)
```

```
res=  8
```

[13]:
```
sumnum(1)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[13], line 1
----> 1 sumnum(1)

TypeError: sumnum() missing 1 required positional argument: 'num2'
```

Functions with optional arguments (default arguments)

[15]:
```
def mulnum(num1,num2=2):
    print(f"num1={num1}, num2={num2}")
    res = num1*num2
    print(f"res=  {res}")
```

[16]:
```
mulnum(3,5)
```

```
num1=3, num2=5
res=  15
```

[17]:
```
mulnum(10)
```

```
num1=10, num2=2
res=  20
```

[18]:
```
def divnums(num1=2,num2):
    print(f"num1={num1}, num2={num2}")
    res = num1/num2
```

```
    print(f"res=  {res}")
```

```
  Cell In[18], line 1
    def divnums(num1=2,num2):
                       ^
SyntaxError: non-default argument follows default argument
```

[19]:
```
def divnums(num1=2,num2=10):
    print(f"num1={num1}, num2={num2}")
    res = num1/num2
    print(f"res=  {res}")
```

[20]:
```
divnums()
```

```
num1=2, num2=10
res=  0.2
```

[25]:
```
print("iti", "telecom", sep="#", end="|")
print("iti")
```

```
iti#telecom|iti
```

————————> functions with unknown number of arguments

[26]:
```
print()
print("iti","telecom")
print(3,"iti", "telecom", [3,45,3])
```

```

iti telecom
3 iti telecom [3, 45, 3]
```

[32]:
```
def askforstudents(*students):  # optional zero or more
    print(students) # tuple ---> function started --> cannot change input
    print(len(students))
```

[33]:
```
askforstudents()
```

```
()
0
```

[34]:
```
askforstudents("3r", 124,24234, 3124,3124)
```

```
('3r', 124, 24234, 3124, 3124)
5
```

—-> ** –> function accept keyword argument

[37]:
```
def introduce_yourself(**info):
    print(info)
```

[38]:
```
introduce_yourself(name='mohamed')
```

```
{'name': 'mohamed'}
```

[39]:
```
introduce_yourself(fname='ahmed', city='cairo')
```

```
{'fname': 'ahmed', 'city': 'cairo'}
```

[40]:
```
bio = "My name is {username}, I works at {userwork}"
print(bio)
```

```
My name is {username}, I works at {userwork}
```

[41]:
```
print(bio.format(username='noha', userwork='iti'))
```

```
My name is noha, I works at iti
```

————————> check this <————————

[42]:
```
def sumnum(num1, num2):
    print(f"num1={num1}, num2={num2}")
    res = num1 + num2
    print(f"res={res}")
```

[43]:
```
sumnum(3,4)
```

```
num1=3, num2=4
res=7
```

[44]:
```
sumnum("iti", 'telecom')
```

```
num1=iti, num2=telecom
res=ititelecom
```

[45]:
```
def sumnum(num1, num2):
    print(f"num1={num1}, num2={num2}")
    if num1.isdigit() and num2.isdigit():
        res = num1 + num2
        print(f"res={res}")
```

[46]:
```
sumnum("iti", "abc")
```

```
num1=iti, num2=abc
```

[47]:
```
sumnum(34,34)
```

```
num1=34, num2=34
```

```
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
Cell In[47], line 1
----> 1 sumnum(34,34)

Cell In[45], line 3, in sumnum(num1, num2)
      1 def sumnum(num1, num2):
      2     print(f"num1={num1}, num2={num2}")
----> 3     if num1.isdigit() and num2.isdigit():
      4         res = num1 + num2
      5         print(f"res={res}")

AttributeError: 'int' object has no attribute 'isdigit'
```

[48]:
```
print(isinstance(2, int))
```

```
True
```

[49]:
```
def sumnum(num1:int, num2:int): # for documentation purpose.. type hints
    if isinstance(num1 , int) and isinstance(num2 , int):
        res = num1 + num2
        print(f"res={res}")
    else:
        print(f"num1={num1}, num2={num2} must be int ")
```

[50]:
```
sumnum(2,4)
```

```
res=6
```

[51]:
```
sumnum("iti", "abc")
```

```
num1=iti, num2=abc must be int
```

[52]:
```
sumnum(34,"sjkfhf")
```

```
num1=34, num2=sjkfhf must be int
```

[53]:
```
def sumnum2(num1: int, num2:int):
    print(f"num1={num1}, num2={num2}")
    res = num1 + num2
    print(f"res={res}")
```

[54]:
```
sumnum2(3,4)
```

```
num1=3, num2=4
res=7
```

[55]:
```
sumnum2("iti", "abc")
```

```
num1=iti, num2=abc
res=itiabc
```

[ ]: