

Function Parameters and Arguments

Let us get an overview of different types of Function Parameters and Arguments supported by Python.

- Parameter is variable in the declaration of function. Argument is the actual value of this variable that gets passed to function.
- However, in some cases these two terms are used interchangeably.
- In Python, parameters can be objects or even functions. We can pass named functions or lambda functions as arguments. We will talk about these details later.
- Here are different types of parameters or arguments:
 - Parameters with Default Values
 - Varying arguments
 - Keyword arguments
 - Varying Keyword arguments
- We can pass arguments to a function by parameter position or name. If you use name you can pass arguments in any order.
- You can only specify parameters with default values after mandatory parameters. `def get_commission_amount(sales_amount=1000, commission_pct)` is syntactically wrong and throws error.

Tasks

Let us perform a few tasks to understand more about parameters and arguments with and without default values.

- Checking whether phone numbers of a given employee are valid - `get_invalid_phone_count`
 - Function should take 2 arguments, `employee_id` and `phone_numbers` (list)
 - Check whether each phone number has 10 digits.
 - Return `employee_id` and number of phone numbers with less than 10 digits
- Get commission amount by passing sales amount and commission percentage. However, if the commission percentage is not passed from the caller, then the default percentage should be 10.

```
def get_invalid_phone_count(employee_id, phone_numbers):  
    invalid_count = 0  
    for phone_number in phone_numbers:  
        if len(phone_number) != 10:  
            invalid_count += 1  
    return employee_id, invalid_count
```

```
s = 'Employee {employee_id} have {invalid_count} invalid phones'  
employee_id, invalid_count = get_invalid_phone_count(1, ['1234', '1234567890'])
```

```
print(s.format(employee_id=employee_id, invalid_count=invalid_count))
```

Employee 1 have 1 invalid phones

```
def get_commission_amount(sales_amount=1000, commission_pct):  
    """Function to compute commission amount. commission_pct should be passed as percent  
    notation (eg: 20%)  
    20% using percent notation is equal to 0.20 in decimal notation.  
    """  
    commission_amount = (sales_amount * commission_pct / 100) if commission_pct else 0  
    return commission_amount
```

```
File "<ipython-input-5-60598743caf3>", line 1  
def get_commission_amount(sales_amount=1000, commission_pct):  
    ^
```

SyntaxError: non-default argument follows default argument

```
def get_commission_amount(sales_amount, commission_pct=10):  
    """Function to compute commission amount. commission_pct should be passed as percent  
    notation (eg: 20%)  
    20% using percent notation is equal to 0.20 in decimal notation.  
    """  
    if commission_pct and commission_pct > 100:  
        print('Invalid Commission Percentage, greater than 100')  
        return  
    commission_amount = sales_amount * (commission_pct / 100) if commission_pct else 0  
    return commission_amount
```

```
# Arguments by position  
get_commission_amount(1000, 5)
```

50.0

```
# Will take commission_pct default value  
get_commission_amount(1000)
```

100.0

```
get_commission_amount(1000, None)
```

0

```
get_commission_amount(1000, 150)
```

Invalid Commission Percentage, greater than 100

```
# Arguments by name  
get_commission_amount(commission_pct=18, sales_amount=1500)
```

270.0