PYTHON TUTORIAL FOR BEGINNERS

Source: www.youtube.com/@RishabhMishraOfficial

Chapter - 11

Function Arguments in Python

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Arguments in Function

Arguments are the values that are passed into a function when it's called. A function must be called with the right number of arguments. If a function has 2 parameters, you must provide 2 arguments when calling it.

Example: function defined using one parameter (variable)

```
def greetings(name):          # name is a parameter
   print("Hello, " + name + "!")

greetings("Madhav")           # Madhav as argument
# Output: Hello, Madhav!
```

Types of Function Arguments

Python supports various types of arguments that can be passed at the time of the function call.

1. Required arguments (Single/Multiple arguments)
2. Default argument
3. Keyword arguments (named arguments)
4. Arbitrary arguments (variable-length arguments *args and **kwargs)

Required Arguments (same as above)

Required arguments are the arguments passed to a function in correct positional order. A function must be called with the right number of arguments. If a function has 2 parameters, you must provide 2 arguments when calling it.

Example: function defined using one parameter (variable)

```
def greetings(name):       # name is a parameter
   print("Hello, " + name + "!")

greetings("Madhav")        # Madhav as argument
# Output: Hello, Madhav!
```

Default Arguments

You can assign **default** values to arguments in a function definition. If a value **isn't** provided when the function is called, the default value is used.

Example: function defined using one parameter & default value

```
def greetings(name = "World"):   # default value
   print("Hello, " + name + "!")

greetings()        # No argument passed
# Output: Hello, World!

greetings("Madhav")     # Madhav as argument
# Output: Hello, Madhav!
```

Keyword Arguments

When calling a function, you can specify arguments by the parameter **name**. These are called **keyword arguments** and can be given in **any order**.

Example: function defined using two parameters

```
def divide(a, b):   # a,b are 2 parameters
    return a / b

result = divide(b=10, a=20) # with keyword arguments
print(result)    # Output: 2
```

```
result = divide(10, 20)     # positional arguments
print(result)    # Output: 0.5
```

Arbitrary Positional Arguments (*args)

If you're unsure how many arguments will be passed, use *args to accept any number of positional arguments.

Purpose: Allows you to pass a variable number of positional arguments.

Type: The arguments are stored as a **tuple**.

Usage: Use when you want to pass multiple values that are accessed by position.

Example 1:

```
def add_numbers(*args):
    return sum(args)

# Any number of arguments
result = add_numbers(1, 2, 3, 4)
print(result)# Output: 10
```

Note: Here, *args collects all the passed arguments into a tuple, & sum() function adds them.

Example 2:

```
def greetings(*names):
    for name in names:
        print(f"Hello, {name}!")
greetings("Madhav", "Rishabh", "Visakha")
# Output:
Hello, Madhav!
Hello, Rishabh!
Hello, Visakha!
```

Arbitrary Keyword Arguments (**kwargs)

If you want to pass a variable number of keyword arguments, use **kwargs.

Purpose: Allows you to pass a variable number of keyword arguments (arguments with names).

Type: The arguments are stored as a **dictionary**.

Usage: Use when you want to pass multiple values that are accessed by name.

Example 1:

```
def print_details(**kwargs):
    for key, value in kwargs.items():
        print(f"{key}: {value}")

print_details(name="Madhav", age=26, city="Delhi")

# Output:
name: Madhav
age: 26
city: Delhi
```

Example 2:

```
def shopping_cart(**products):
    total = 0
    print("Items Purchased:")
    for item, price in products.items():
        print(f"{item}: ₹{price}")
        total += price
    print(f"Total: ₹{total}")

# multiple keyword arguments
shopping_cart(apple=15, orange=12, mango=10)


# Output:
Items Purchased:
apple: ₹15
orange: ₹12
mango: ₹10
Total: ₹37
```

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