Study Notes: Python Functions (Roman Urdu mein)

1 Functions in Python

Python mein **function** ek reusable block of code hota hai jo ek specific kaam karta hai. Functions ka use code ko bar-bar likhne ke bajaye ek hi jagah function banake usse call karne ke liye kiya jata hai. Yeh humare program ko clean, readable, aur maintainable banata hai.

1.1 Basic Syntax

```
def function_name():
    code
```

Explanation: - Function define karte waqt `def` keyword use karte hain. - Function ke naam ke baad parentheses `()` likhte hain. Agar arguments diye ja rahe hain, to unhe iske andar likha jata hai. - Code jo function ke andar kaam karega, wo indentation ke saath likhna hota hai.

1.2 Examples

Example 1: Simple function

```
def greet():
    print("Hello␣Python")

greet()
```

Explanation: - Is function `greet()` mein koi input nahi diya gaya. - Jab hum `greet()` call karenge, function ke andar jo `print("Hello Python")` likha hai, wo execute hoga aur screen par ”Hello Python” print ho jayega.

Output:

```
Hello Python
```

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Example 2: Function performing calculation

```
def add():
    print(5 + 3)

add()
```

Explanation: - Is function `add()` mein simple calculation kiya gaya hai. - `5 + 3` ka result `8` hoga aur yeh print hoga jab function call kiya jayega.

Output:

```
8
```

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Example 3: Function returning value

```
def square():
    return 4 * 4

print(square())
```

Explanation: - Is function `square()` mein ek calculation ho raha hai. Function ke andar `return` keyword diya gaya hai jo result ko function ke bahar wapas karta hai. - Hum function ko call karte waqt uska result `print(square())` ke through dekhte hain.

Output:

```
16
```

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Example 4: Function with multiple statements

```
def info():
    print("Name:␣Ali")
    print("Age:␣20")

info()
```

Explanation: - Is function `info()` mein do `print()` statements hain. - Pehle `Name: Ali` aur phir `Age: 20` print hoga jab function call hoga.

Output:

```
Name: Ali
Age: 20
```

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Example 5: Warning function

```python
def warning():
    print("Access␣Denied")

warning()
```

Explanation: - Is function `warning()` mein ek simple warning message print hota hai. - Jab function call hota hai, `Access Denied` screen par print ho jata hai.

Output:

```
Access Denied
```

2 Creating and Calling Functions

Function ko create karne ka matlab hai usse define karna using the `def` keyword. Aur jab function ko execute karte hain to hum function ka naam likhte hain aur parentheses '()' use karte hain.

2.1 Examples

Example 1

```python
def hello():
    print("Welcome")

hello()
```

Explanation: - Is example mein `hello()` ek function hai jo "Welcome" print karega. - Jab hum `hello()` ko call karenge to yeh output screen par show hoga.

Output:

```
Welcome
```

Example 2

```python
def show_number():
    print(10)

show_number()
```

Explanation: - Is example mein function `show`$_{n}umber()sirfeknumber\texttt{10}printkartahai.-Jabhumfunctioncallkarenge,\texttt{10}outputhoga.$

`Output:`

```
10
```

Example 3

```
def multiply():
    result = 4 * 5
    print(result)

multiply()
```

Explanation: - Yeh function multiplication kar ke result print karega. - Jab function call hota hai, 4 * 5 ki value jo 20 hai, print hoti hai.

Output:

```
20
```

Example 4

```
def message():
    print("Learning␣Python␣Functions")

message()
```

Explanation: - Yeh function message ko print karega jo ki string Learning Python Functions hai. - Jab function call kiya jayega, yeh message screen par show hoga.

Output:

```
Learning Python Functions
```

Example 5

```
def end():
    print("Program␣Finished")

end()
```

Explanation: - Yeh function program ke end par ek message Program Finished print karega.

Output:

```
Program Finished
```

3 Arguments in Functions

Arguments wo values hoti hain jo function ko input ke tor par di jati hain. Yeh arguments function ko different data ke sath work karne ka option dete hain.

3.1 Syntax

```
def function_name(argument):
    code
```

3.2 Examples

Example 1: Single argument

```
def greet(name):
    print("Hello", name)

greet("Ali")
```

Explanation: - Function greet() mein ek argument name diya gaya hai jo name ko function ke andar pass karta hai. - Jab hum function call karenge aur name ko "Ali" dekar pass karenge to output Hello Ali hoga.

Output:

```
Hello Ali
```

Example 2: Two arguments

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

add(5, 7)
```

Explanation: - Function add() mein do arguments a aur b diye gaye hain. - Hum function call karte waqt 5 aur 7 ko pass karte hain, jiska result 12 hoga.

Output:

```
12
```

Example 3: Multiplication

```
def multiply(x, y):
    print(x * y)

multiply(4, 3)
```

Explanation: - Yeh function multiplication perform karega aur result 12 print karega jab x aur y ko values pass ki jayengi.

Output:

```
12
```

Example 4: String argument

```python
def city(name):
    print("City:", name)

city("Karachi")
```

Explanation: - Is example mein function city() ko ek string argument name diya gaya hai. - Jab hum "Karachi" pass karenge to function City: Karachi print karega.

Output:

```
City: Karachi
```

Example 5: Return with argument

```python
def square(num):
    return num * num

print(square(6))
```

Explanation: - Yeh function square ki calculation karega. Argument num ke liye 6 pass karenge aur result 36 print hoga.

Output:

```
36
```

4 Conclusion

Functions Python mein ek important concept hain. Jab aap functions ko achi tarah samajh jaenge aur arguments aur variable scope ke concepts ko samajh lenge to aap efficient aur structured programs likh paenge.