پوهنتون کاردان
KARDAN UNIVERSITY

MODERN PROGRAMMING LANGUAGE (Python)

Functions

Learning Outcome

- Should know about What is Function?
- Could use Function Arguments?
- Should know about Function return values?
- Learn What are Function Scopes?

What is Function

- A *function* is a device that groups a set of statements so they can be run more than once in a program
- Functions let us specify parameters that serve as function inputs
- It provides maximum *code reuse*,

- We have used the functions:
  - Open()
  - Len()
  - Append()
  - Etc.

Contd.

- They are called in expressions, are passed values, and return results.
- We start a function by def keyword

- def function_name():
  - print(“this is inside the function”)

- def creates statements object that will not be executed until it is called.

Arguments

- A function can pass the arguments as object references.
- Example:
  - def my_function(name, s_name):
    - print (f"Your name is: {name}, and your Father Name is: {f_name}")
- Call it in program:
- my_function("Hakim")
- We can assign the default parameter values, when no value is passed.

  - def my_function(name, s_name="second Name")
    - print (f"Your name is: {name}, and your Father Name is: {f_name}")

Practice

- Write a Python function to find the Max of two numbers.
- Write a Python function to take three inputs and multiply it with three numbers?
- Write a Python function to check whether a number is in a given range?
- Homework?
- What the difference between Range and XRange function in python?

Return Statements

- The methods can return statements so we can assign the result to a variable.
- We can pass the values for the functions to get the result from it.
- Example:

```
def addition(num1, num2):
    result=num1+num2
    return  result
```

- Call it in the program:

```
Sum=addition(3,4)
```

Practice

- Write a function which is able to convert Mile to KM, with a return statements.

- Suppose you are going to shop and buying baskets of goods and fruits as follows:
  - 2 Kg apple: 50 AFN p/kg
  - 10 Kg rice: 100 AFN p/kg
  - 1 ltr Milk : 50 AFN p/ltr

  - Find the overall basket price and print it to the user as follows:
  - You have to pay : price

Arbitrary number of Arguments

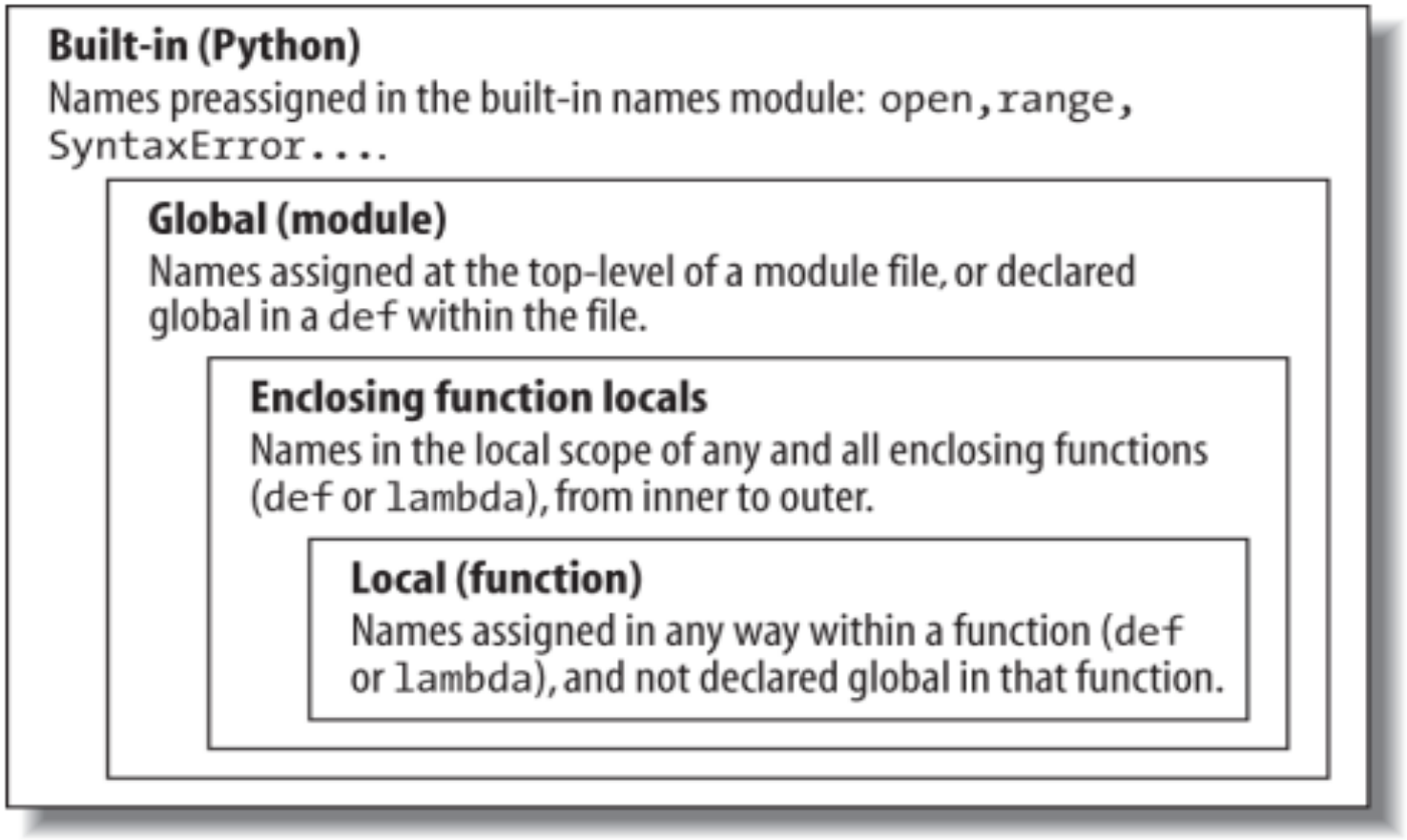
- What if we don’t know about the number of arguments we pass?
- We can use “ * variable” to pass any number of arguments
- Example:
- def addition(num1, num2, num3):
  - return sum(num1, num2, num3)
- If we call:
  - addition(56,23) # we missed the num3, ERROR
- Instead we can use
- def addition (* args):
  - return sum(args)

Scope of Variables

- Basically there is precedence of LEGB:

  - L: Local — Names assigned in any way within a function (def or lambda), and not declared global in that function.
  - E: Enclosing function locals — Names in the local scope of any and all enclosing functions (def or lambda), from inner to outer.
  - G: Global (module) — Names assigned at the top-level of a module file, or declared global in a def within the file.
  - B: Built-in (Python) — Names preassigned in the built-in names module : open, range, SyntaxError,...

Scope of variable



Enclosing function locals

- Enclosing (or nonlocal) scope is a special scope that only exists for nested functions
- If the local scope is an inner or nested function, then the enclosing scope is the scope of the outer or enclosing function.
- This scope contains the names that you define in the enclosing function.

Contd..

```
name='Ahmad'

def setName():

    name='Saeed'
    def setName2():
        print("Your name is:"+name)

    setName2()
```

```
setName()
```

Thank You!