

Python Global Keyword

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In this article, you'll learn about the global keyword, global variable and when to use global keywords.

Before reading this article, make sure you have got some basics of [Python Global, Local and Nonlocal Variables](#).

What is the global keyword

In Python, `global` keyword allows you to modify the variable outside of the current scope. It is used to create a global variable and make changes to the variable in a local context.

Rules of global Keyword

The basic rules for `global` keyword in Python are:

- When we create a variable inside a function, it is local by default.
 - When we define a variable outside of a function, it is global by default. You don't have to use `global` keyword.
 - We use `global` keyword to read and write a global variable inside a function.
 - Use of `global` keyword outside a function has no effect.
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Use of global Keyword

Let's take an example.

Example 1: Accessing global Variable From Inside a Function

```
c = 1 # global variable

def add():
    print(c)

add()
```

When we run the above program, the output will be:

1

However, we may have some scenarios where we need to modify the global variable from inside a function.

Example 2: Modifying Global Variable From Inside the Function

```
c = 1 # global variable

def add():
    c = c + 2 # increment c by 2
    print(c)

add()
```

When we run the above program, the output shows an error:

```
UnboundLocalError: local variable 'c' referenced before assignment
```

This is because we can only access the global variable but cannot modify it from inside the function.

The solution for this is to use the `global` keyword.

Example 3: Changing Global Variable From Inside a Function using global

```
c = 0 # global variable

def add():
    global c
    c = c + 2 # increment by 2
    print("Inside add():", c)

add()
print("In main:", c)
```

When we run the above program, the output will be:

```
Inside add(): 2
In main: 2
```

In the above program, we define `c` as a global keyword inside the `add()` function.

Then, we increment the variable `c` by `1`, i.e `c = c + 2`. After that, we call the `add()` function. Finally, we print the global variable `c`.

As we can see, change also occurred on the global variable outside the function, `c = 2`.

Global Variables Across Python Modules

In Python, we create a single module `config.py` to hold global variables and share information across Python modules within the same program.

Here is how we can share global variables across the python modules.

Example 4: Share a global Variable Across Python Modules

Create a `config.py` file, to store global variables

```
a = 0
b = "empty"
```

Create a `update.py` file, to change global variables

```
import config

config.a = 10
config.b = "alphabet"
```

Create a `main.py` file, to test changes in value

```
import config
import update

print(config.a)
print(config.b)
```

When we run the `main.py` file, the output will be

```
10
alphabet
```

In the above, we have created three files: `config.py` , `update.py` , and `main.py` .

The module `config.py` stores global variables of *a* and *b*. In the `update.py` file, we import the `config.py` module and modify the values of *a* and *b*. Similarly, in the `main.py` file, we import both `config.py` and `update.py` module. Finally, we print and test the values of global variables whether they are changed or not.

Global in Nested Functions

Here is how you can use a global variable in nested function.

Example 5: Using a Global Variable in Nested Function

```
def foo():
    x = 20

    def bar():
        global x
        x = 25

    print("Before calling bar: ", x)
    print("Calling bar now")
    bar()
    print("After calling bar: ", x)

foo()
print("x in main: ", x)
```

The output is :

```
Before calling bar: 20
Calling bar now
After calling bar: 20
x in main: 25
```

In the above program, we declared a global variable inside the nested function `bar()`. Inside `foo()` function, `x` has no effect of the global keyword.

Before and after calling `bar()`, the variable `x` takes the value of local variable i.e. `x = 20`. Outside of the `foo()` function, the variable `x` will take value defined in the `bar()` function i.e. `x = 25`. This is because we have used `global` keyword in `x` to create global variable inside the `bar()` function (local scope).

If we make any changes inside the `bar()` function, the changes appear outside the local scope, i.e. `foo()`.