

Function sleep () in Python

Module time in Python provides some very useful functions to handle time-related tasks. One of the most commonly used functions is sleep ().

Module time in Python provides some very useful functions to handle time-related tasks. One of the most commonly used functions is **sleep ()** .

The sleep () function in Python is used to stop executing the current thread in the number of seconds passed.

Example 1: Use sleep ()

```
import time
print ("In k?t qu? ra màn hình ngay l?p t?c.")
time.sleep(3)
print ("In k?t qu? ra màn hình sau 3s.")
```

This method does not return any value but only the executable delay, which works like this:

1. Execute the task to display the results *"Print results to the screen immediately."*
2. Delay execution within *3 seconds*.
3. Continue to perform the task and display *"Print results to the screen after 3 seconds."*

Example 2: Create an electronic clock in Python

```
import time
while True:
    localtime = time.localtime()
    result = time.strftime("%I:%M:%S %p", localtime)
```

In the above program, Quantrimang created and printed local time inside an infinite while loop. After printing the results, the executable will delay within 1 second and continue printing the current time. This process is continuous thanks to a *while* loop , forming an electronic clock in Python.

```
11:58:31 AM 11:58:32 AM 11:58:33 AM 11:58:34 AM 11:58:35 AM 11:58:36 AM 11:58:37 AM
```

Or another way of making electronic clocks:

```
import time
while True:
    localtime = time.localtime()
    result = time.strftime("%I:%M:%S %p", localtime)
```

Multithreading in Python

Before talking about *sleep ()* in multi-threaded programs, let's mention a little bit about *Process* and *Thread*.

1. **Process** is the operation of a program.
2. A **thread** is an operating step inside a *process*. A *process* can contain multiple *threads* within it.

Example 3: Python multithreading

```
import threading def print_hello_three_times(): for i in range(3): print("Hello"
```

Running the program, the output to the screen will look like this:

```
Hello Hello Hi Hello Hi Hi
```

The above program has two threads *t1* and *t2*. These threads are run using the statements *t1.start ()* and *t2.start ()*.

Note that, *t1* and *t2* run simultaneously and you can get different output.

time.sleep () in multithreaded programs

The sleep () function pauses execution of the current thread for a certain number of seconds.

In the case of single threaded programs, *sleep ()* pauses thread execution and processing. However, in multithreaded programs, this function only pauses a thread instead of the entire multithreaded process.

Example 4: sleep () in a multithreaded program

```
import threading import time def print_hello(): for i in range(4): time.sleep(0.5)
```

The result has the form:

```
Hello Hi Hello Hi Hello Hello Hi Hi
```

The above program has two threads. Here we used *time.sleep (0.5)* and *time.sleep (0.75)* to pause the execution of these two threads in 0.5 seconds and 0.7 seconds respectively.

Last lesson: Module time in Python

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