

Multi-Tasking

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Outline

- ▶ Process
- ▶ Thread



Process



Process

- ▶ A process is basically a program in execution.
- ▶ subprocess is used for calling other program.
- ▶ Example

```
import subprocess
note = subprocess.Popen('notepad.exe')
print('info of note process:', note)
```

Path of program

Thread



Threading

- ▶ Also called lightweight process.
- ▶ Multithreading decrease computational time of program.
- ▶ Syntax Example:

```
1 import threading
2
3 threading.active_count() # how many activated threads now.
```

5

```
1 threading.enumerate() # show all activated threads' info
```

```
[<_MainThread(MainThread, started 4728585664)>,
 <Thread(Thread-2, started daemon 123145565310976)>,
 <Heartbeat(Thread-3, started daemon 123145570566144)>,
 <HistorySavingThread(IPythonHistorySavingThread, started 123145576894464)>,
 <ParentPollerUnix(Thread-1, started daemon 123145582686208)>]
```

```
1 threading.current_thread() #check the current running thread
```

```
<_MainThread(MainThread, started 4728585664)>
```

Threading

► Example

```
1  import threading, time
2
3  print('Program Starts:')
4
5  def takeNap():
6      time.sleep(5)
7      print('wake up!')
8
9
10 thread_Obj = threading.Thread(target=takeNap)
11 thread_Obj.start()
12
13 print('Programs End..')
```

Program Starts:
Programs End..
wake up!