实战 | Python 编写端口扫描器

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介绍：

本篇学习笔记将记录使用 python 编写 Scan 的学习路线，记录整个 python 扫描器的编写过程，记录从第一行代码到最新版本，对每个版本更新用到的技术进行详解

Version 1.0（socket 库）

使用 socket 库进行端口扫描：

更新日志：

调用 socket 中的库对目标进行扫描，并统计目标端口的开放情况

```
#!/usr/bin/python

# -*- coding: UTF-8 -*-

import sys



from socket import *

# import socket



# 端口扫描模块

def portScan(ip,portStart,portEnd):

  open_ports=[]

  for port in range(int(portStart),int(portEnd)+1):

    # 显示扫描百分比

    percent = float(port)*100/float(int(portEnd))
    sys.stdout.write("%.2f"%percent)
    sys.stdout.write("%\r")
    sys.stdout.flush()
    # 发送数据，尝试建立连接
    sock = socket(AF_INET, SOCK_STREAM)
    # sock = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
    sock.settimeout(10)
    result = sock.connect_ex((ip,port))
    if result == 0:
      open_ports.append(port)
    pass
  print open_ports
  pass

# 获取ip和端口扫描范围
def main():
  ip = sys.argv[1]
  port = sys.argv[2].split("-")
  portStart = port[0]
  portEnd = port[1]
  portScan(ip,portStart,portEnd)

if __name__ == '__main__':
  main()
```

Version 1.1（Threadpool 多线程）

使用 Threadpool 进行多线程端口扫描：

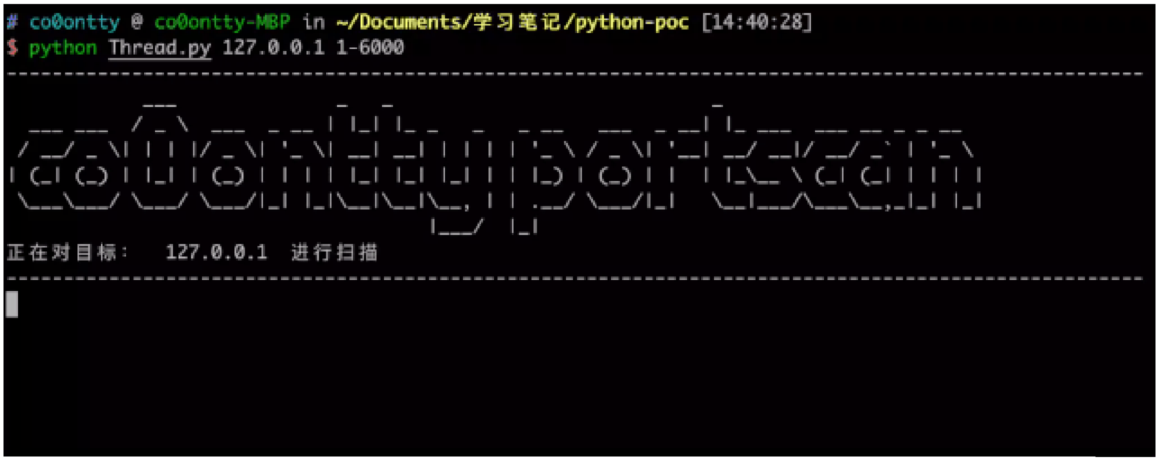
更新日志：

调用 python 中的 Threadpool 模块，设置多线程多目标的端口进行扫描，增加扫描的效率

```
#!/usr/bin/python
# -*- coding: UTF-8 -*-
import socket
import sys
from datetime import datetime
from multiprocessing.dummy import Pool as ThreadPool

remote_server = sys.argv[1]
targetport = sys.argv[2].split("-")
startPort = targetport[0]
endPort = targetport[1]
remote_server_ip = socket.gethostbyname(remote_server)
ports = []

print '-' * 60
print '正在对目标：', remote_server_ip + '进行扫描'
print '-' * 60
```

```
socket.setdefaulttimeout(0.5)

def scan_port(port):
    try:
        s = socket.socket(2,1)
        res = s.connect_ex((remote_server_ip,port))
        if res == 0: # 如果端口开启 发送 hello 获取banner
            print 'Port {}: OPEN'.format(port)
        s.close()
    except Exception,e:
        print str(e.message)

for i in range(int(startPort),int(endPort)+1):
    ports.append(i)

# Check what time the scan started
t1 = datetime.now()

# 创建线程
pool = ThreadPool(processes = 32) # 设置线程数
results = pool.map(scan_port,ports) # 设置需要使用多线程的函数名称，传递参数的集合，该函数会将传递参数的集合分条传递到函数中使用
pool.close()
pool.join()


print '本次端口扫描共用时 ', datetime.now() - t1
```

演示：



```
# co0ontty @ co0ontty-MBP in ~/Documents/学习笔记/python-poc [14:40:28]
$ python Thread.py 127.0.0.1 1-6000
------------------------------------------------------------------------------------------
          ___              _   _                      _
 ___ ___  / _ \  ___  _ __ | |_| |_ _   _   _ __   ___  _ __| |_ ___  ___ __ _ _ __
/ __/ _ \| | | |/ _ \| '_ \| __| __| | | | | '_ \ / _ \| '__| __/ __|/ __/ _` | '_ \
| (_| (_) | |_| | (_) | | | | |_| |_| |_| | | |_) | (_) | |  | |_\__ \ (_| (_| | | | |
 \___\___/ \___/ \___/|_| |_|\__|\__|\__, | | .__/ \___/|_|   \__|___/\___\__,_|_| |_|
                                     |___/  |_|
正在对目标:   127.0.0.1  进行扫描
------------------------------------------------------------------------------------------
```

Version 1.2 (optparse 库)

使用 optparse 对 python 使用过程的命令进行解析

更新日志：

调用 python 的 optparse 库，实现在运行该脚本的过程中使用“–host”等方式指定参数名称

```
#!/usr/bin/python

# -*- coding: UTF-8 -*-

import optparse

import socket

import sys

from datetime import datetime

from multiprocessing.dummy import Pool as ThreadPool
```

```
print "---------------------------------------------------------
---------------------------------"

print "|             ___              _   _
_                        |"

print "|   ___ ___  / _ \  ___  _ __ | |_| |_ _   _   _ __   ___
_ __| |_ ___  ___ __ _ _ __   |"

print "|  / __/ _ \| | | |/ _ \| '_ \| __| __| | | | | '_ \ / _
\| '__| __/ __|/ __/ _` | '_ \  |"

print "| | (_| (_) | |_| | (_) | | | | |_| |_| |_| | | |_) | (_)
| |  | |_\__ \ (_| (_| | | | | |"

print "|  \___\___/ \___/ \___/|_| |_|\__|\__|\__, | | .__/
\___/|_|   \__|___/\___\__,_|_| |_| |"

print "|                                      |___/  |_|
|"

print "---------------------------------------------------------
---------------------------------"


parse=optparse.OptionParser(usage='python portscan.py -H
127.0.0.1 -P 60,90 -T 32',version="co0ontty portscan
version:1.2")

parse.add_option('-H','--
Host',dest='host',action='store',type=str,metavar='host',help='E
nter Host!!')

parse.add_option('-P','--
Port',dest='port',type=str,metavar='port',default='1,10000',help
='Enter Port!!')

parse.add_option('-T','--
Thread',dest='thread',type=int,metavar='thread')
```

```
parse.set_defaults(thread=32)

options,args=parse.parse_args()


# optparse.OptionParser usage=''介绍使用方式

# dest='host',传递参数到名为host的变量

# type='str',传递参数的类型

# metavar='host', help中参数后的名称

# help=''，help中的语句

# parse.set_defaults(thread=32)  设置参数默认值的另一种方式

# 当你将所有的命令行参数都定义好了的时候，我们需要调用parse_args()方法add_option()函数依次传入的参数：options,args=parse.parse_args()


portList = options.port.split(",")

startPort = portList[0]

endPort = portList[1]

remote_server_ip = socket.gethostbyname(options.host)

# remote_server_info = socket.gethostbyname_ex(host)

ports = []

openPort = []


print '正在对目标：'+remote_server_ip + '  进行 '+str(options.thread)+'  线程扫描'

socket.setdefaulttimeout(0.5)
```

```
def scan_port(port):
    try:
        s = socket.socket(2,1)
        res = s.connect_ex((remote_server_ip,port))
        if res == 0:
            openPort.append(port)
        s.close()
    except Exception,e:
        print str(e.message)

for i in range(int(startPort),int(endPort)+1):
    ports.append(i)

# 扫描开始
t1 = datetime.now()
# 创建线程
pool = ThreadPool(processes = int(options.thread))
results = pool.map(scan_port,ports)
pool.close()
pool.join()

print openPort
print '本次端口扫描共用时 ', datetime.now() - t1
```

Version 1.3 （gethostbyname_ex）

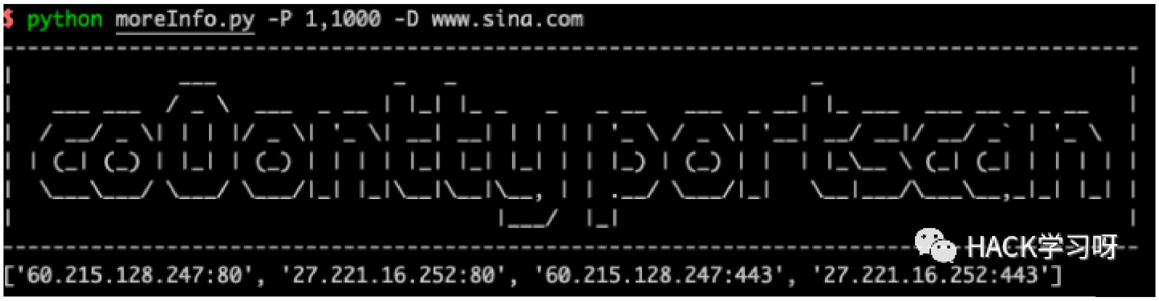
使用 gethostbyname_ex 函数获取目标的域名、ip 等信息
更新日志：
1、使用 gethostbyname_ex 函数实现对输入的域名进行解析
2、使用-D 参数传递域名，扫描器将对域名相关的 ip 进行端口扫描
3、对代码进行了模块化操作

```
#!/usr/bin/python

# -*- coding: UTF-8 -*-

import socket,sys,optparse

from datetime import datetime

from multiprocessing.dummy import Pool as ThreadPool


print "---------------------------------------------------------
---------------------------------"

print "|             ___              _   _
_                        |"

print "|   ___ ___  / _ \  ___  _ __ | |_| |_ _   _   _ __   ___
_ __| |_ ___  ___ __ _ _ __   |"

print "|  / __/ _ \| | | |/ _ \| '_ \| __| __| | | | | '_ \ / _
\| '__| __/ __|/ __/ _` | '_ \  |"

print "| | (_| (_) | |_| | (_) | | | | |_| |_| |_| | | |_) | (_)
| |  | |_\__ \ (_| (_| | | | | |"

print "|  \___\___/ \___/ \___/|_| |_|\__|\__|\__, | | .__/
\___/|_|   \__|___/\___\__,_|_| |_| |"

print "|                                      |___/  |_|
|"
```

```
print "|                             Blog:
https://co0ontty.github.io                           |"
print "---------------------------------------------------------
---------------------------------"

def Ip_scan_port(port):
  socket.setdefaulttimeout(0.5)
  remote_server_ip = socket.gethostbyname(Ip_target)
  try:
    s = socket.socket(2,1)
    res = s.connect_ex((remote_server_ip,port))
    if res == 0:
      openPort.append(port)
    s.close()
  except Exception,e:
    print str(e.message)
def Domain_scan_port(port):
  socket.setdefaulttimeout(0.5)
  for remote_server_ip in Ip_from_domain:
    try:
      s = socket.socket(2,1)
      res = s.connect_ex((remote_server_ip,port))

      if res == 0:
        # Domain_res = str(remote_server_ip)+":"+str(port)

Domain_result.append(str(remote_server_ip)+":"+str(port))
      s.close()
      pass
    except Exception as e:
      print str(e.message)


def moreInfo(domainName):
  global Ip_from_domain
  Ip_from_domain = []
  domainNames = socket.gethostbyname_ex(domainName)
  print "[+]Start domain Scan"
  for x in domainNames:
    if type(x) == list:
      for i in x:
        print "Find : "+str(i)+"\n"+" IP
:"+str(socket.gethostbyname(i))
        Ip_from_domain.append(socket.gethostbyname(i))
    else:
      Ip_from_domain.append(socket.gethostbyname(x))
  Ip_from_domain = list(set(Ip_from_domain)) #去重
  start_domain_pool()
```

```
def start_IP_Pool():

  pool = ThreadPool(processes = int(thread))

  results = pool.map(Ip_scan_port,ports)

  pool.close()

  pool.join()

  print openPort


def start_domain_pool():

  print "[+] Start portscan on those IP from "+str(startPort)+"
to "+str(endPort)

  pool = ThreadPool(processes = int(thread))

  results = pool.map(Domain_scan_port,ports)

  pool.close()

  pool.join()

  for x in Domain_result:

    print "Find open port :"+str(x)

    pass


def main():

  parse=optparse.OptionParser(usage='python portscan.py -H
127.0.0.1 -P 60,90 -T 32 or python portscan.py -D www.baidu.com
-P 60,90 -T 32 ',version="co0ontty portscan version:1.0")

  parse.add_option('-H','--
Host',dest='host',action='store',type=str,default="0")
```

```
  parse.add_option('-P','--
Port',dest='port',type=str,default='1,10000')
  parse.add_option('-T','--Thread',dest='thread',type=int)
  parse.add_option('-D','--
Domain',dest='domainName',type=str,default="0")
  parse.set_defaults(thread=32)
  options,args=parse.parse_args()

  global
remote_server_ip,openPort,domainName,Ip_target,thread,openPort,p
orts,Domain_result,startPort,endPort
  Ip_target = options.host
  domainName = options.domainName
  portList = options.port.split(",")
  thread = options.thread
  startPort = portList[0]
  endPort = portList[1]
  ports = []
  openPort = []
  Domain_result = []
  for i in range(int(startPort),int(endPort)+1):
      ports.append(i)

  if domainName == "0":
    print "[+]port scan :"+Ip_target
    start_IP_Pool()
  else:
    moreInfo(domainName)
    pass
if __name__ == '__main__':
  main()
```



```
$ python moreInfo.py -P 1,1000 -D www.sina.com
-----------------------------------------------------------------------------------------
|                                                                                       |
|                  ___        _   _                                   _                  |
|    ___ ___    / _ \ _ __ | |_| |_ _   _   _ __   ___  _ __| |_ ___  ___ __ _ _ __    |
|   / __/ _ \| | | | '_ \| __| __| | | | | '_ \ / _ \| '__| __/ __|/ __/ _` | '_ \   |
|  | (_| (_) | |_| | | | | |_| |_| |_| | | |_) | (_) | |  | |_\__ \ (_| (_| | | | |  |
|   \___\___/ \___/|_| |_|\__|\__|\__, | | .__/ \___/|_|   \__|___/\___\__,_|_| |_|  |
|                                 |___/  |_|                                           |
-----------------------------------------------------------------------------------------
['60.215.128.247:80', '27.221.16.252:80', '60.215.128.247:443', '27.221.16.252:443']
```

END

点赞，转发，在看

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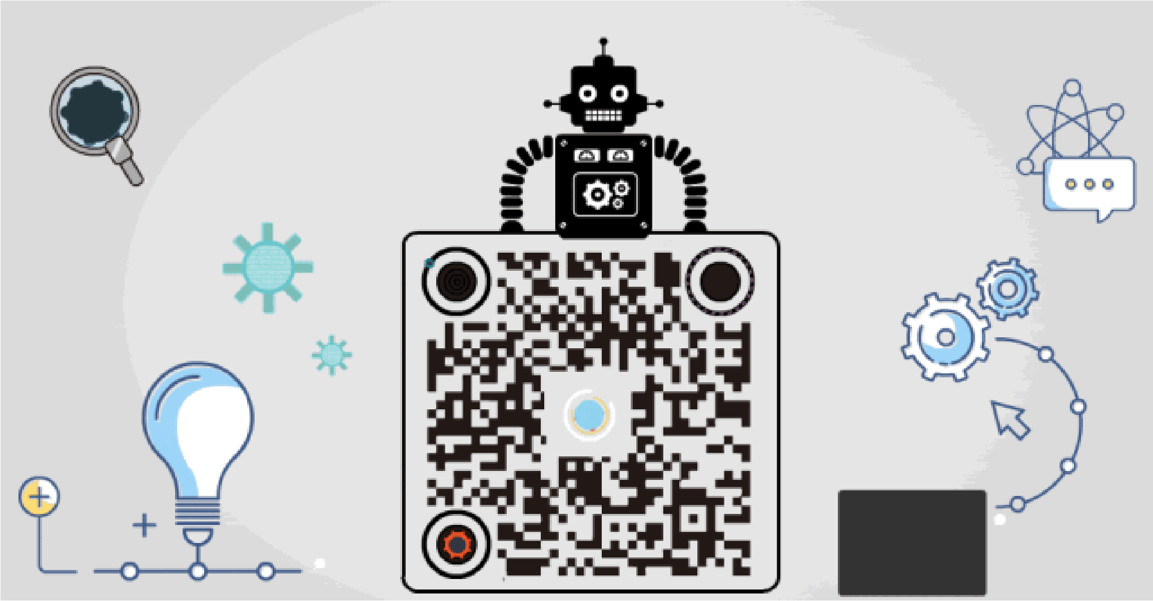

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