Python for Pentesters

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Python is probably the most widely used and most convenient scripting language in cybersecurity. This room covers real examples of Python scripts including hash cracking, key logging, enumeration and scanning.

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Difficulty: Easy

Active Machine Information

Title	IP Address	Expires	
Py4PT2	10.10.96.99	1h 40m 28s	? Add 1 hour Terminate

41%

Task 1 ✓ Introduction

Task 2 ✓ Subdomain Enumeration

Task 3 ✓ Directory Enumeration

Task 4 ✓ Network Scanner

Task 5 ○ Port Scanner

In this task, we will be looking at a script to build a simple port scanner.

The code:

```
import sys
import socket
import pyfiglet


ascii_banner = pyfiglet.figlet_format("TryHackMe \n Python 4 Pentesters \nPort Scanner")
print(ascii_banner)


ip = '192.168.1.6'
open_ports =[]

ports = range(1, 65535)


def probe_port(ip, port, result = 1):
  try:
    sock = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
    sock.settimeout(0.5)
    r = sock.connect_ex((ip, port))
    if r == 0:
      result = r
    sock.close()
  except Exception as e:
    pass
  return result


for port in ports:
    sys.stdout.flush()
    response = probe_port(ip, port)
    if response == 0:
        open_ports.append(port)


if open_ports:
  print ("Open Ports are: ")
  print (sorted(open_ports))
else:
  print ("Looks like no ports are open :(")
```

To better understand the port scanning process, we can break down the code into several sections:

Importing modules that will help the code run:

```
import sys
```

```
import socket
```

Modules could also be imported with a single line using

```
import socket,sys
```

Specifying the target:

```
ip = '192.168.1.6'
```

An empty "open_ports" array that will be populated later with the detected open ports:

```
open_ports =[]
```

Ports that will be probed:

```
ports = range(1, 65535)
```

For this example, we have chosen to scan all TCP ports using the range() function. However, if you are looking for a specific service or want to save time by scanning a few common ports, the code could be changed as follows;

```
ports = { 21, 22, 23, 53, 80, 135, 443, 445}
```

The list above is relatively small. As we are trying to keep a rather low profile, we have limited the list to ports that will likely be used by systems connected to a corporate network.

Getting the IP address of the domain name given as target. The code also works if the user directly provides the IP address.

```
ip = socket.gethostbyname(host)
```

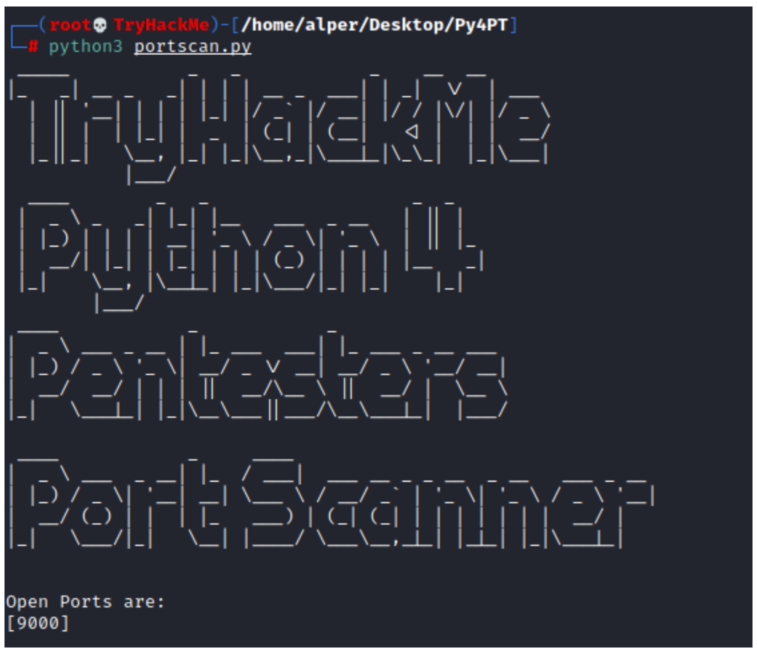
Tries to connect to the port:

```
def probe_port(ip, port, result = 1):
  try:
    sock = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
    sock.settimeout(0.5)
    r = sock.connect_ex((ip, port))
    if r == 0:
      result = r
    sock.close()
  except Exception as e:
    pass
  return result
```

This code is followed by a for loop that iterates through the specified port list:

```
for port in ports:
    sys.stdout.flush()
    response = probe_port(ip, port)
    if response == 0:
        open_ports.append(port)
```

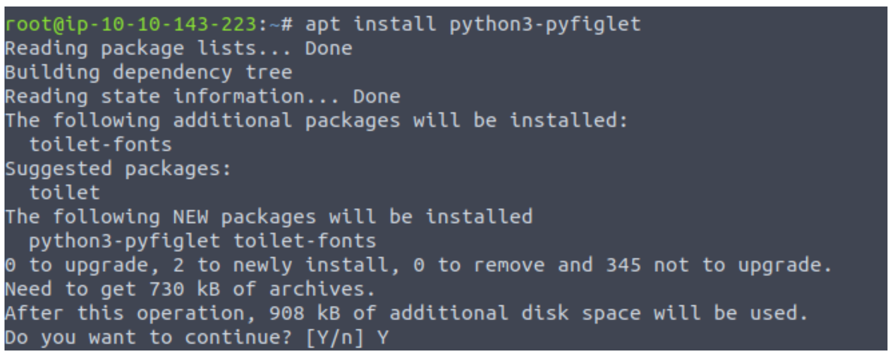
Below are the results of the port scanning script run against a random target.



```
┌──(root💀 TryHackMe)-[/home/alper/Desktop/Py4PT]
└─# python3 portscan.py
```

```
Open Ports are:
[9000]
```

Of course, I will be the first one to admit the ASCII art banner was a bit much. The banner will require Pyfiglet to be imported. If you are using the AttackBox, you can easily install pyfiglet using the "apt install python3-pyfiglet" command.



```
root@ip-10-10-143-223:~# apt install python3-pyfiglet
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  toilet-fonts
Suggested packages:
  toilet
The following NEW packages will be installed
  python3-pyfiglet toilet-fonts
0 to upgrade, 2 to newly install, 0 to remove and 345 not to upgrade.
Need to get 730 kB of archives.
After this operation, 908 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
```

If you wish to remove the banner you can simply delete the following lines:

```
ascii_banner = pyfiglet.figlet_format("TryHackMe \n Python 4 Pentesters \nPort Scanner")
```

```
print(ascii_banner)
```

Answer the questions below

What protocol will most likely be using TCP port 22?

Answer format: *** Submit

What module did we import to be able to use sockets?

Answer format: ****** Submit

What function is likely to fail if we didn't import sys?

Answer format: ***.******.******* Submit

How many ports are open on the target machine?

Answer format: * Submit

What is the highest port number open on the target system?

Answer format: **** Submit

Task 6 ○ File Downloader

Task 7 ○ Hash Cracker

Task 8 ○ Keyloggers

Task 9 ○ SSH Brute Forcing

Task 10 ○ Extra challenges

Created by

tryhackme

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