

# Network project

مدیث غفوری 9825413

پرا این روند برعکس نیست یعنی کلاینت یک پورت را باز نمیکند و آن را به سرور اطلاع دهد و سرور فایل را روی آن پورت برای کلاینت ارسال کند؟

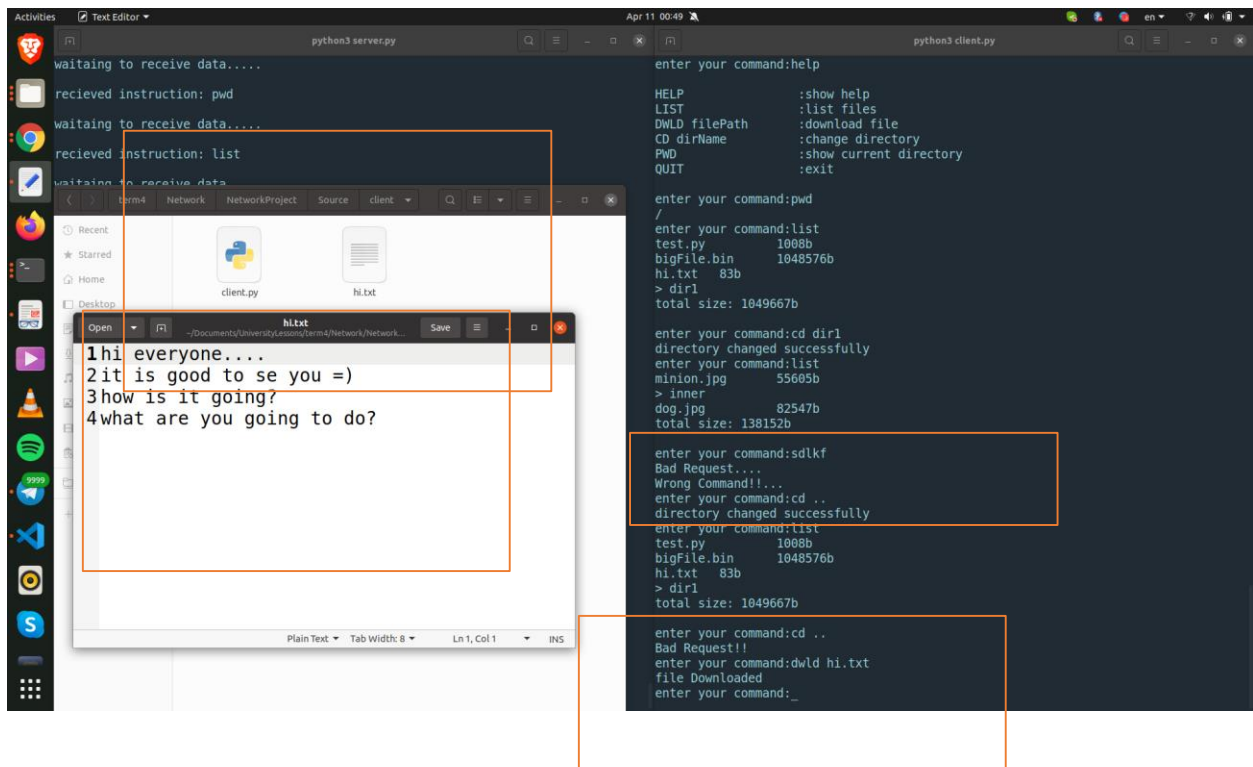
وظیفه ی سرور این است که به درخواست ها از سمت کلاینت پاسخ دهد و وظیفه ی کلاینت درخواست کردن است و سرور باید در حال گوش کردن باشد تا کلاینت درخواست کند در نتیجه نمیشود که اول کلاینت اجرا شود.

همه ای که باعث شود فایلی دانلود شود یا فولدری باز شود که در زیرشاهه های فولدر اصلی سرور قرار ندارد. چه نام دارد؟

path traversal attack

```
Server:
received instruction: cd ..
waiting to receive data.....
received instruction: dwld hi.txt
fileName: hi.txt
fileName: hi.txt
test.py
bigFile.bin
hi.txt
waiting to receive data.....
received instruction: dwld bigFile.bin
fileName: bigFile.bin
fileName: bigFile.bin
test.py
bigFile.bin
waiting to receive data.....
received instruction: dwld sdfk
fileName: sdfk
fileName: sdfk
test.py
bigFile.bin
hi.txt
dirl
waiting to receive data.....
received instruction: cd dsf
waiting to receive data.....
received instruction: sdfsdaf
waiting to receive data.....
received instruction: quit

Client:
test.py 1008b
bigFile.bin 1048576b
hi.txt 83b
> dirl
total size: 1049667b
enter your command:cd dirl
directory changed successfully
enter your command:list
minion.jpg 55605b
> inner
dog.jpg 82547b
total size: 138152b
enter your command:sdlkf
Bad Request....
Wrong Command!...
enter your command:cd ..
directory changed successfully
enter your command:list
test.py 1008b
bigFile.bin 1048576b
hi.txt 83b
> dirl
total size: 1049667b
enter your command:cd ..
Bad Request!!
enter your command:dwld hi.txt
file Downloaded
enter your command:dwld bigFile.bin
file Downloaded
enter your command:dwld sdfk
Bad Request....
Wrong Command!...
enter your command:cd dsf
Bad Request... directory not found...
enter your command:sdfsdaf
Bad Request....
Wrong Command!...
enter your command:quit
```



```
Activities Terminal python3 server.py python3 client.py
Server ls
main_server.py
hadis@whoami ~/Documents/UniversityLessons/term4/Network/NetworkProject/Source/
Server python3 server.py
connected with: ('127.0.0.1', 2121)
waitainga to receive data.....
recieived instruction: help
waitainga to receive data.....
recieived instruction: pwd
waitainga to receive data.....
recieived instruction: list
waitainga to receive data.....
recieived instruction: cd dir1
waitainga to receive data.....
recieived instruction: list
waitainga to receive data.....
recieived instruction: sdlkf
waitainga to receive data.....
recieived instruction: cd ..
waitainga to receive data.....
recieived instruction: list
waitainga to receive data.....
recieived instruction: cd ..
waitainga to receive data.....
_

hadis@whoami ~/Documents/UniversityLessons/term4/Network/NetworkProject/Source/
client python3 client.py
enter your command:help
HELP :show help
LIST :list files
DWLD filePath :download file
CD dirName :change directory
PWD :show current directory
QUIT :exit

enter your command:pwd
/

enter your command:list
test.py 1008b
bigFile.bin 1048576b
hi.txt 83b
> dir1
total size: 1049667b

enter your command:cd dir1
directory changed successfully
enter your command:list
main.jpg 55609b
> inner
dog.jpg 82547b
total size: 138152b

enter your command:sdlkf
Bad Request....
Wrong Command!...
enter your command:cd ..
directory changed successfully
enter your command:list
test.py 1008b
bigFile.bin 1048576b
hi.txt 83b
> dir1
total size: 1049667b

enter your command:cd ..
Bad Request!!
enter your command:_
```

```
Activities Files python3 server.py python3 client.py
Server ls
main_server.py
hadis@whoami ~/Documents/UniversityLessons/term4/Network/NetworkProject/Source/
Server python3 server.py
connected with: ('127.0.0.1', 2121)
waitainga to receive data.....
recieived instruction: help
waitainga to receive data.....
recieived instruction: pwd
waitainga to receive data.....
recieived instruction: list
waitainga to receive data.....

Recent
Starred
Home
Desktop
Documents
Downloads
Music
Pictures
Videos
Trash
Download
Other Locations

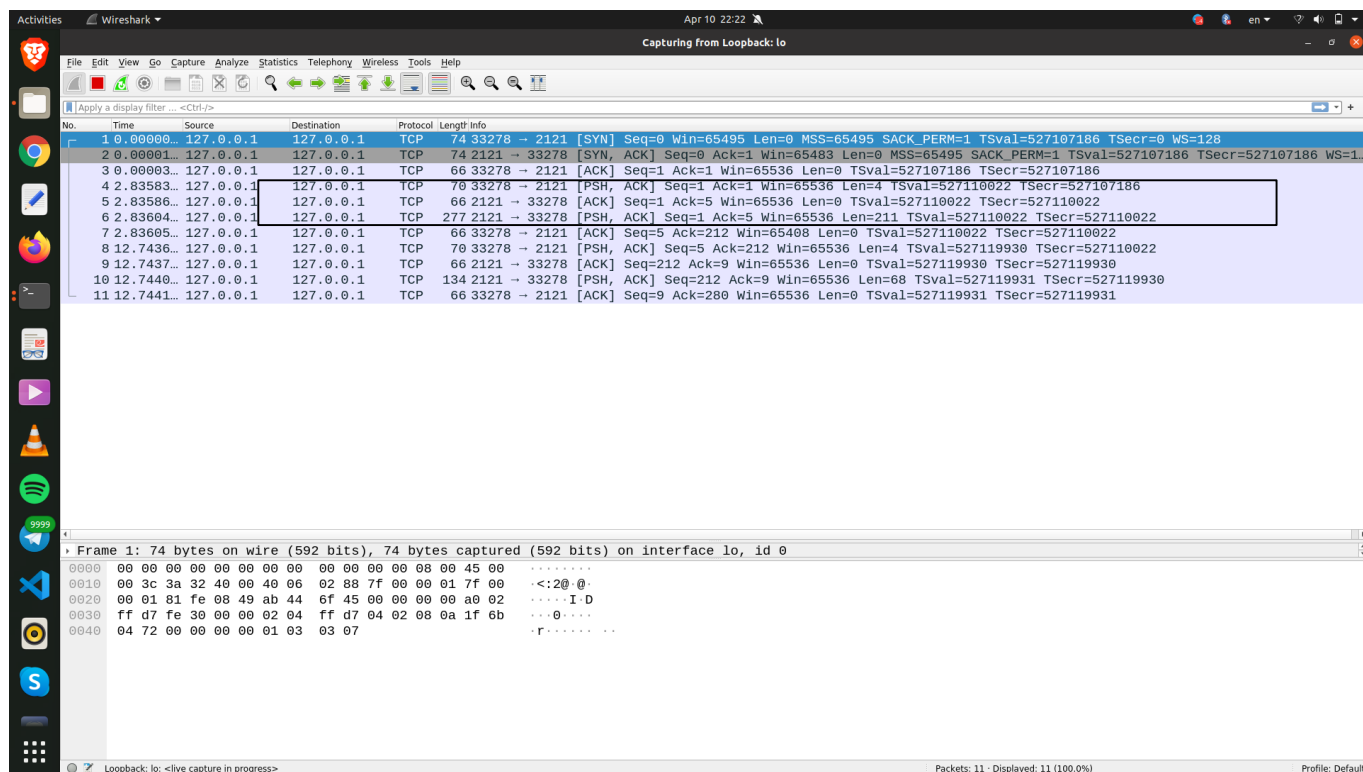
bigFile.bin dir1 hi.txt test.py

hadis@whoami ~/Documents/UniversityLessons/term4/Network/NetworkProject/Source/
client ls
client.py
hadis@whoami ~/Documents/UniversityLessons/term4/Network/NetworkProject/Source/
client python3 client.py
enter your command:help
HELP :show help
LIST :list files
DWLD filePath :download file
CD dirName :change directory
PWD :show current directory
QUIT :exit

enter your command:pwd
/

enter your command:list
test.py 1008b
bigFile.bin 1048576b
hi.txt 83b
> dir1
total size: 1049667b

enter your command:_
```



آیا TCP محدودیتی برای اندازه بسته ها دارد؟ فایل های بزرگ چگونه توسط سوکت TCP ارسال میشوند؟

بله محدودیت دارد.

برای فایل ها با حجم بالا بسته های بیشتری ارسال میکند.

برای مشاهده ی عملی جواب قسمت قبل، ابتدا وایرشارک را روشن کنید و سپس در کلاینت درخواست دانلود فایل bigFile.txt را بدهید. از

نتایج وایرشارک اسکرین شات بگیرید. TCP برای دانلود این فایل چند بسته فرستاده است؟

12 بسته

Activities Wireshark Apr 11 00:41 Capturing from Loopback: lo

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-F>

No.	Time	Source	Destination	Protocol	Length	Info
1	0.00000	127.0.0.1	127.0.0.1	TCP	69	39880 → 2120 [PSH, ACK] Seq=1 Ack=1 Win=512 Len=3 TSval=535406112 TSecr=535393546
2	0.00009	127.0.0.1	127.0.0.1	TCP	67	2120 → 39880 [PSH, ACK] Seq=1 Ack=4 Win=512 Len=1 TSval=535406112 TSecr=535406112
3	0.00010	127.0.0.1	127.0.0.1	TCP	66	39880 → 2120 [ACK] Seq=4 Ack=2 Win=512 Len=0 TSval=535406112 TSecr=535406112
4	10.9235	127.0.0.1	127.0.0.1	TCP	82	39880 → 2120 [PSH, ACK] Seq=4 Ack=2 Win=512 Len=16 TSval=535417035 TSecr=535406112
5	10.9236	127.0.0.1	127.0.0.1	TCP	71	2120 → 39880 [PSH, ACK] Seq=2 Ack=20 Win=512 Len=5 TSval=535417036 TSecr=535417035
6	10.9236	127.0.0.1	127.0.0.1	TCP	66	39880 → 2120 [ACK] Seq=20 Ack=7 Win=512 Len=0 TSval=535417036 TSecr=535417036
7	10.9237	127.0.0.1	127.0.0.1	TCP	74	41530 → 24866 [SYN] Seq=0 Win=65495 Len=0 MSS=65495 SACK_PERM=1 TSval=535417036 TSecr=0 WS=128
8	10.9237	127.0.0.1	127.0.0.1	TCP	74	24866 → 41530 [SYN, ACK] Seq=0 Ack=1 Win=65483 Len=0 MSS=65495 SACK_PERM=1 TSval=535417036 TSecr=535417036 WS=
9	10.9237	127.0.0.1	127.0.0.1	TCP	66	41530 → 24866 [ACK] Seq=1 Ack=1 Win=65536 Len=0 TSval=535417036 TSecr=535417036
10	10.9243	127.0.0.1	127.0.0.1	TCP	32	24866 → 41530 [ACK] Seq=1 Ack=1 Win=65536 Len=32768 TSval=535417036 TSecr=535417036
11	10.9243	127.0.0.1	127.0.0.1	TCP	66	41530 → 24866 [ACK] Seq=1 Ack=32769 Win=48512 Len=0 TSval=535417036 TSecr=535417036
12	10.9243	127.0.0.1	127.0.0.1	TCP	32	24866 → 41530 [PSH, ACK] Seq=32769 Ack=1 Win=65536 Len=32768 TSval=535417036 TSecr=535417036
13	10.9244	127.0.0.1	127.0.0.1	TCP	66	41530 → 24866 [ACK] Seq=1 Ack=65537 Win=65536 Len=0 TSval=535417036 TSecr=535417036
14	10.9244	127.0.0.1	127.0.0.1	TCP	32	24866 → 41530 [ACK] Seq=65537 Ack=1 Win=65536 Len=32768 TSval=535417036 TSecr=535417036
15	10.9244	127.0.0.1	127.0.0.1	TCP	32	[TCP Window Full] 24866 → 41530 [PSH, ACK] Seq=98305 Ack=1 Win=65536 Len=32768 TSval=535417036 TSecr=535417036
16	10.9245	127.0.0.1	127.0.0.1	TCP	66	41530 → 24866 [RST, ACK] Seq=1 Ack=131073 Win=65536 Len=0 TSval=535417036 TSecr=535417036

Frame 1: 69 bytes on wire (552 bits), 69 bytes captured (552 bits) on interface lo, id 0  
Ethernet II, Src: 00:00:00:00:00:00 (00:00:00:00:00:00), Dst: 00:00:00:00:00:00 (00:00:00:00:00:00)  
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1  
Transmission Control Protocol, Src Port: 39880, Dst Port: 2120, Seq: 1, Ack: 1, Len: 3  
Data (3 bytes)  
0000 00 00 00 00 00 00 00 00 00 00 00 08 00 45 00 .....  
0010 00 37 5e 8b 40 00 00 06 de 33 7f 00 00 01 7f 00 ..7^..@..  
0020 00 01 9b c8 08 48 0c bb 98 83 27 61 70 27 80 18 .....H..  
0030 02 00 fe 2b 00 00 01 01 08 0a 1f e9 a6 20 1f e9 .....  
0040 75 0a 70 77 64 u.pwd

Loopback: lo: <live capture in progress> Packets: 26 - Displayed: 26 (100.0%) Profile: Default