



Linnéuniversitetet
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Report

Assignment 3 TFTP Server

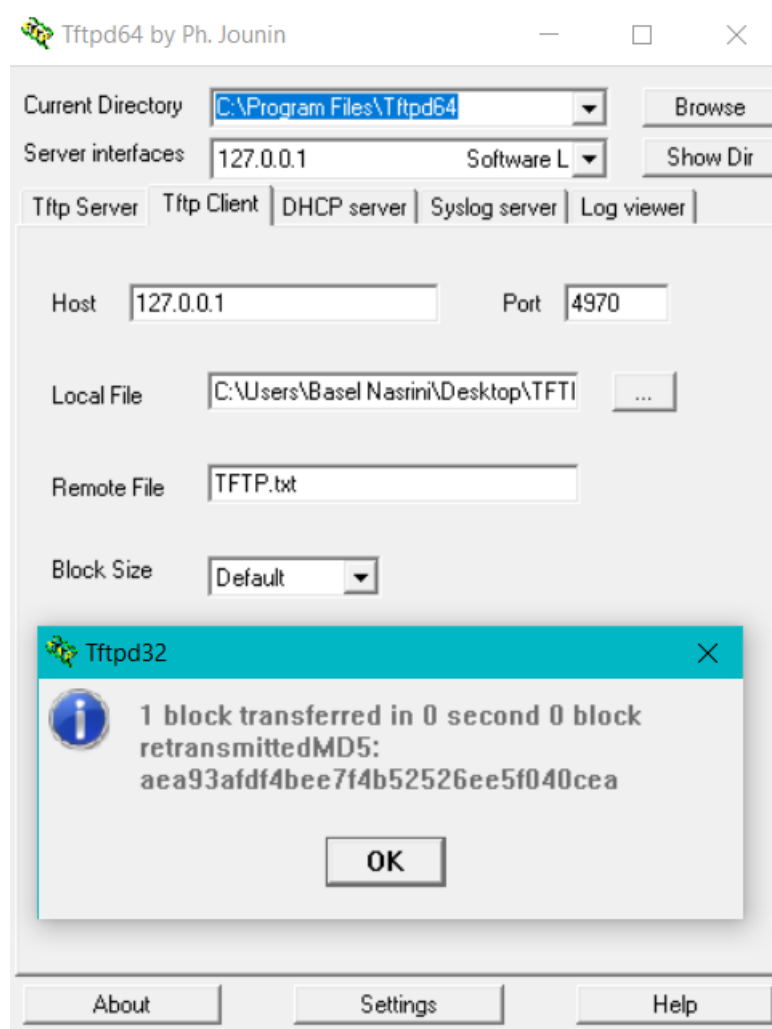


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Course: 1DV701
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I worked this assignment alone. I used tftpd64 as a client and run the server on win 10 using my computer

Problem 1

Read request for file shorter 512 bytes



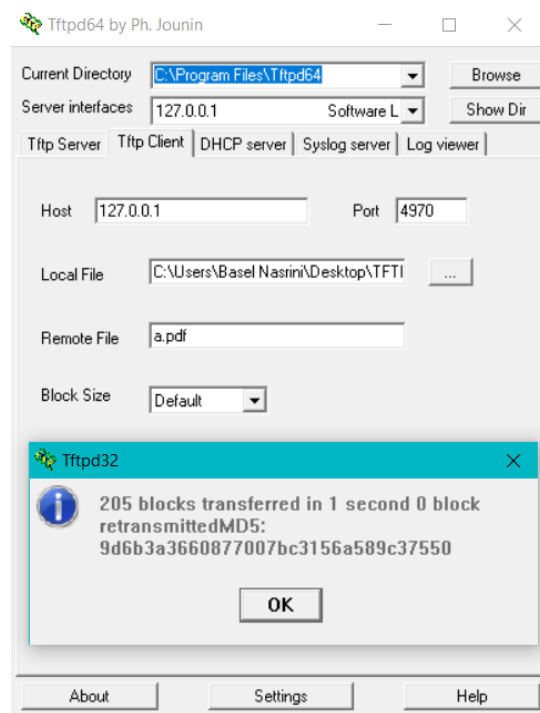
The above picture is screenshot for reading a file that is shorter than 512 bytes.

Why Socket and sendSocket?

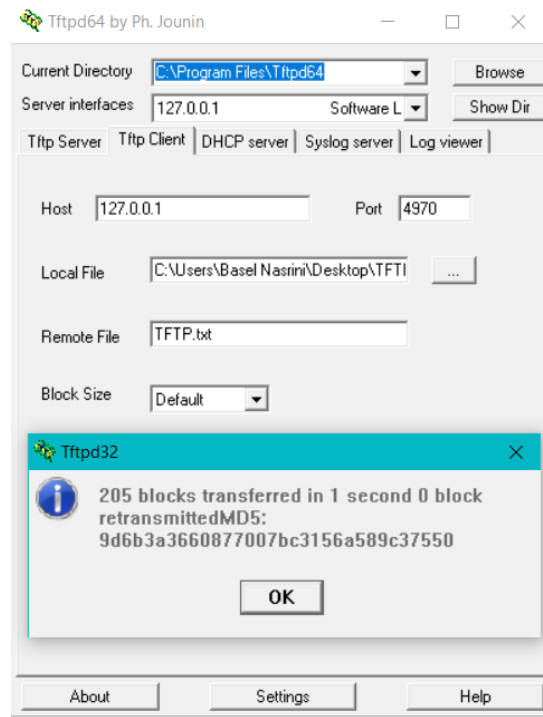
We are using two kinds of socket. "Socket" is for reading a connection from the client and "sendSocket" for handling the reading/writing requests sent form the client which is tftpd64.

Problem 2

Now we can read a file larger than 512 bytes



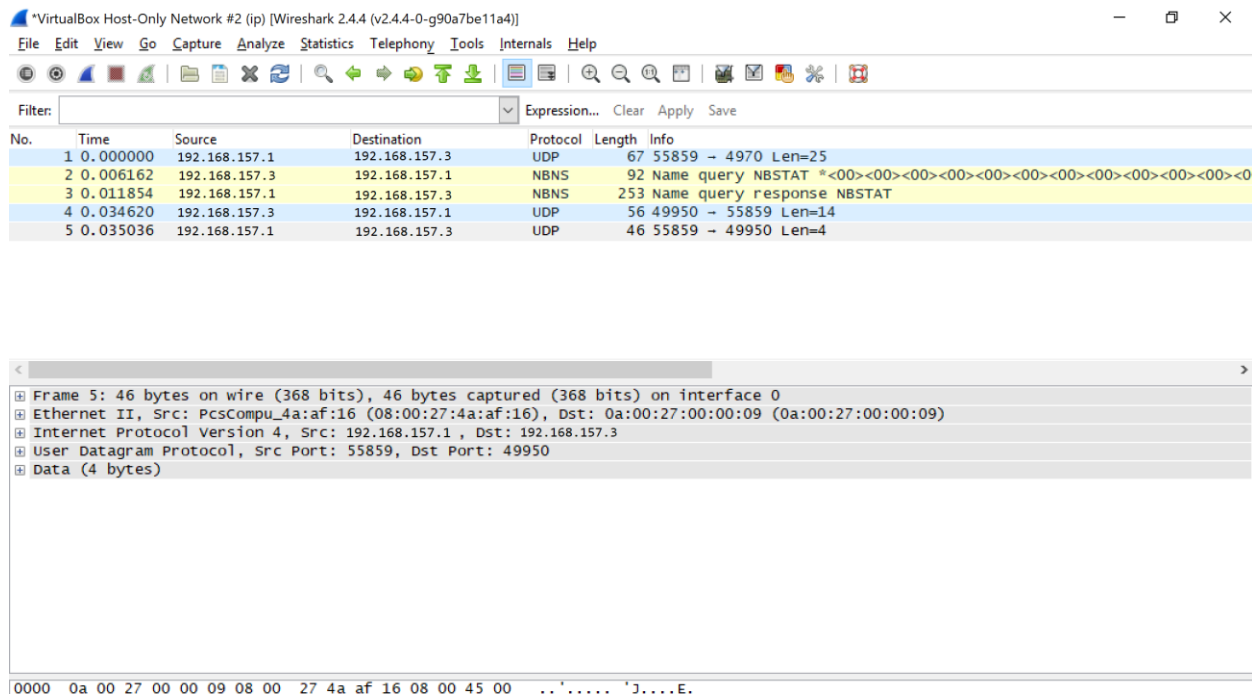
The above picture is screenshot for reading a file that is larger than 512 bytes.



The above picture is screenshot for writing request for a file that is larger than 512 bytes.

VG task 1:

Wireshark analysis for read request to a file that is 10 bytes



The above picture is a screenshot shows a RRQ from the client that its IP is (192.168.157.1) to the server that its IP is (192.168.157.3)

Description of the steps:

- 1- It is a packet of that its type is UDP packet. It has information about the file name, mode and data size.
- 2- NBNS protocol that is used to convert human-read names to IP address.
- 3- NBNS protocol
- 4- UDP packet has been sent to the client and its size is 14 bytes. (10 bytes data + 2 bytes opcode + 2 bytes block number.
- 5- UDP packet that is an ACK packet has been sent to the server and its size is 4 bytes. (2 bytes opcode + 2 bytes block number.

Difference between RRQ and WRQ

Read Request	Write Request
Opcode is 1	Opcode is 2
After accepting the request, the server creates and sends a DATA PACKET to the client	After accepting the request, the server sends a ACK PACKET to the client that has the same block number
After sending a packet, Server waits to an ACK from the client. The client will receive the data and send an ACK to the server	After receiving a packet from the client, Server sends an ACK to the client The client sends data to the server and wait for an ACK.

Wireshark analysis for write request to a file that is 10 bytes

*VirtualBox Host-Only Network #2 (host 192.168.41.2) [Wireshark 2.4.4 (v2.4.4-0-g90a7be11a4)]

File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help

Filter: Expression... Clear Apply Save

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	192.168.157.1	192.168.157.3	UDP	68	61942 → 4970 Len=26
3	0.002250	192.168.157.1	192.168.157.3	NBNS	253	Name query response NBSTAT
8	0.006971	192.168.157.3	192.168.157.1	UDP	46	50770 → 61942 Len=4
9	0.007354	192.168.157.1	192.168.157.3	UDP	56	61942 → 50770 Len=14
10	0.010008	192.168.157.3	192.168.157.1	UDP	46	50770 → 61942 Len=4

Frame 1: 68 bytes on wire (544 bits), 68 bytes captured (544 bits) on interface 0

Ethernet II, Src: PcsCompu_4a:af:16 (08:00:27:4a:af:16), Dst: 0a:00:27:00:00:06 (0a:00:27:00:00:06)

Internet Protocol Version 4, Src: 192.168.157.1, Dst: 192.168.157.3

User Datagram Protocol, Src Port: 61942, Dst Port: 4970

Data (26 bytes)

```

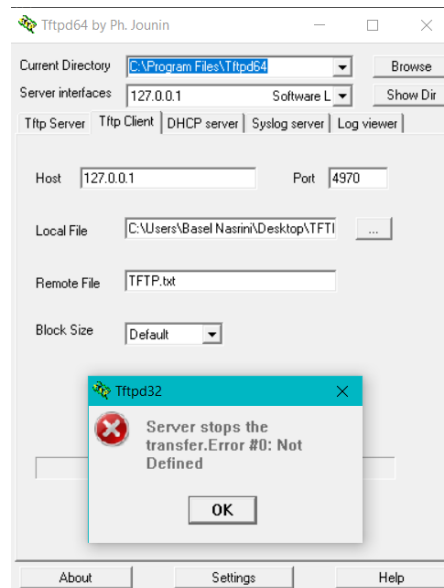
0000  0a 00 27 00 00 06 08 00 27 4a af 16 08 00 45 00  ..'.... 'J....E.
0010  00 36 01 8b 00 00 80 11 65 d8 c0 a8 29 02 c0 a8  .6..... e...)...
0020  29 01 f1 f6 13 6a 00 22 b0 64 00 02 74 65 73 74  )....j." .d..test
0030  2e 74 78 74 00 6f 63 74 65 74 00 74 73 69 7a 65  .txt.oct et.tsize
0040  00 31 30 00                                     .10.

```

Problem 3

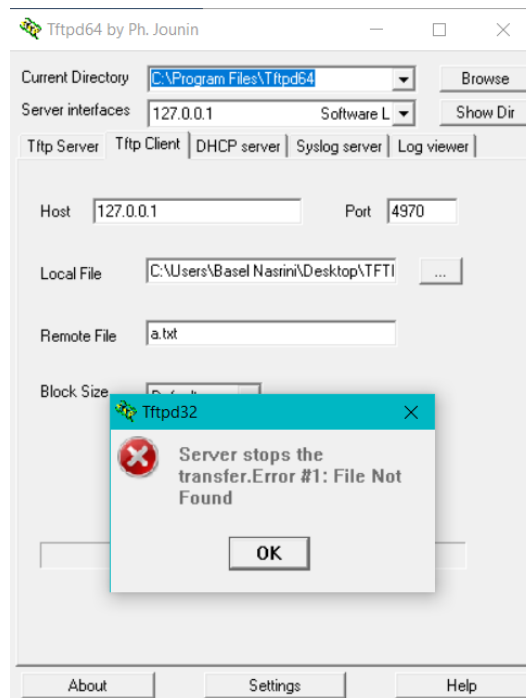
Error code 0: Not defined

This error occurs when the server gets a request that is not octet (For testing this error, I changed the server code temporally to let the server return this error when the request is octet)



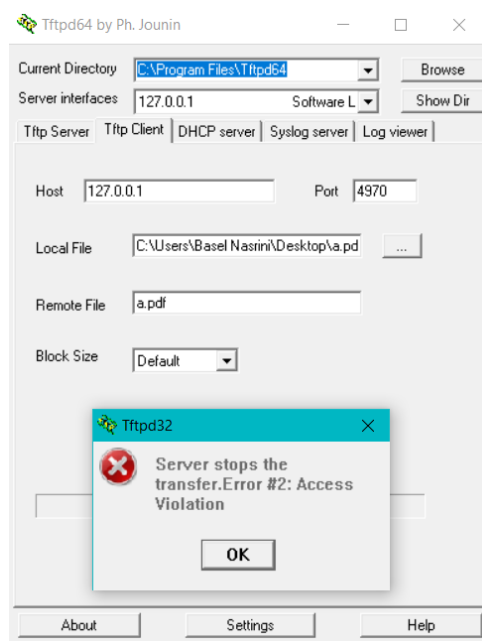
Error code 1: File not found

This error occurs when the server gets a read request for a file that is not exist.



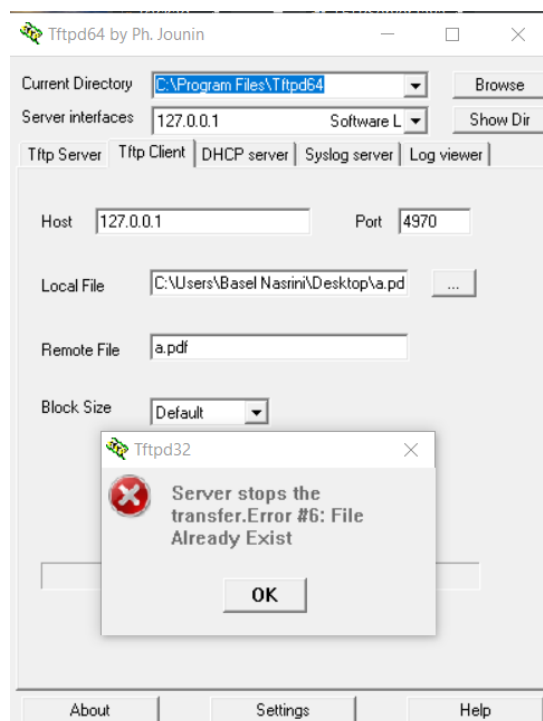
Error code 2: Access Violation

This error occurs when the server faces an IOException. (To test this error, I prevent the server from access to the write folder. And then I sent write request to the server.)



Error code 6: File already exist

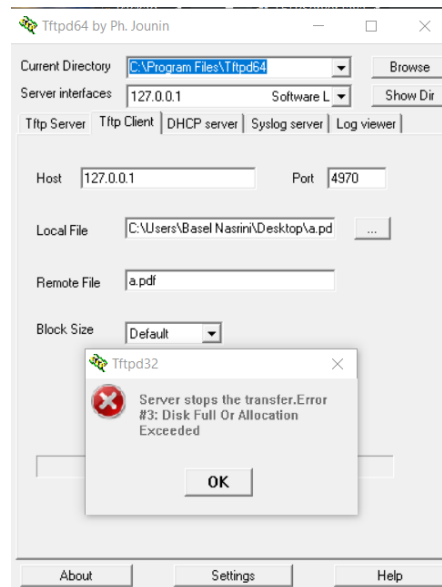
This error occurs when I tried to write a file that is already exist on the server.



VG-task 2:

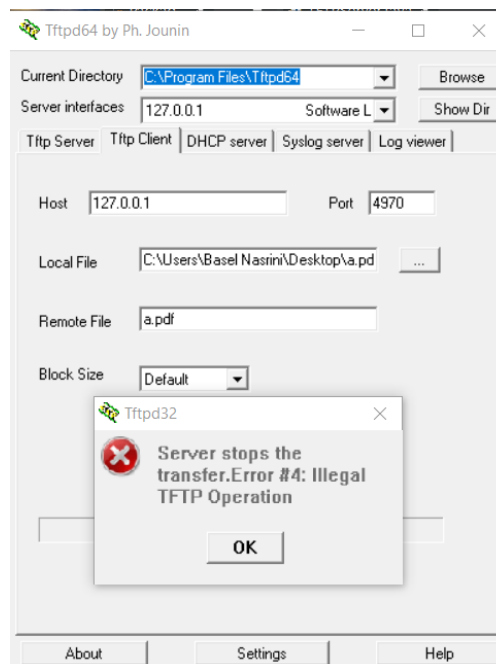
Error code 3: Disk full or Allocation Exceeded

This error occurs when there is not enough space on the disk (To test this error, A gave the server a permission for 50 KB of the hard disk, then and sent a write request with a file that is larger than 50KB)



Error code 4: Illegal TFTP Operation

This error occurs when the server receives a request other than write or read



Error code 5: Unknown Transfer ID

This error occurs when the server receives a packet that is not from the expected client. (To test this error, I changed the received port number for one of the ACK packet from the client)

