

Course name: Computer Networks[202301-ISE2232-001]

Professor: Mehdi Pirahandeh

Final Exam Presentation Material

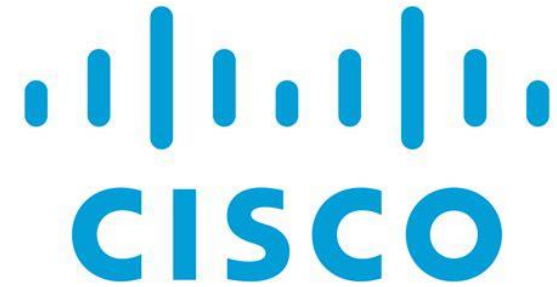
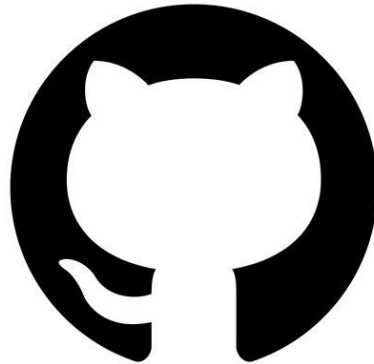
Usmonjonov Mirjavkharbek
12214737



Python3 Based P2P Socket Programming with TCP Protocol




WIRESHARK



Architecture

Server

Initialize. Start listening.

Accept connection

Receives <-> Responses

Collects data and Saves it.

Closes connection.

Keep listening.

Client

Display menu.

User inputs.

Accesses file.

Connects to server

Sends <-> Waits Response

Closes connection.

Return to menu.



File Transfer Process

1.Client:

- 1.Connects to the server using TCP socket.
- 2.Selects the file to send from a menu.
- 3.Provides the file name or file path.
- 4.Establishes a connection with the server.
- 5.Sends the file to the server in multiple steps.

1. Server:

1. Listens for incoming connections from clients.
2. Accepts the client connection.
3. Receives file-related information from the client (extension, name, size).
4. Creates a new file for storage.
5. Receives the file data in chunks.
6. Writes the received data to the file.
7. Closes the client connection.

Cisco Packet Tracer

Cisco Packet Tracer

File Edit Options View Tools Extensions Window Help

Logical Physical

c 968, y: 221

Root

02:02:00

Time: 00:04:02

Automatically Choose Connection Type

Scenario 0

New Delete

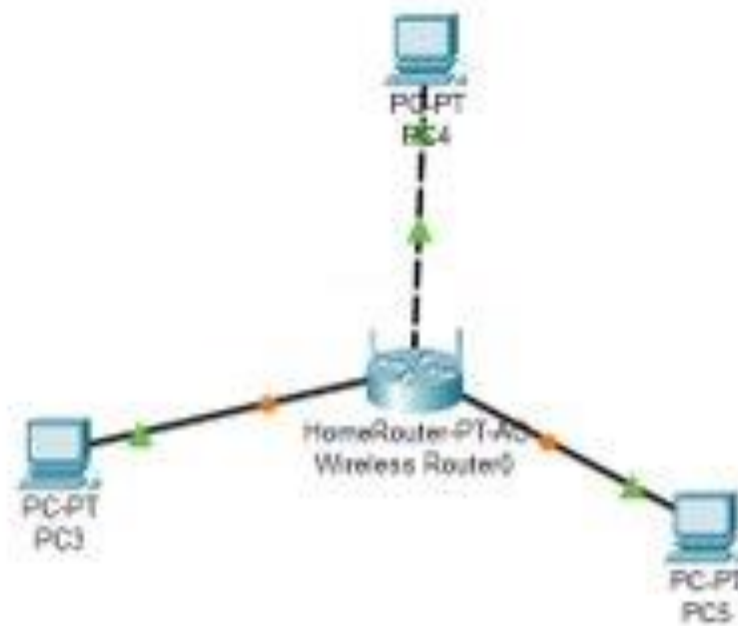
Toggle PDU List Window

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
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Realtime Simulation

Cisco Packet Tracer

Simpler Example



Experiment Connection

```
#c-s connect  
#c send ext  
#s ok  
#c send name  
#s ok  
#c send size  
#s ok  
#c send data  
#s ok  
#c-s close
```

PROBLEMS OUTPUT DEBUG CONSOLE

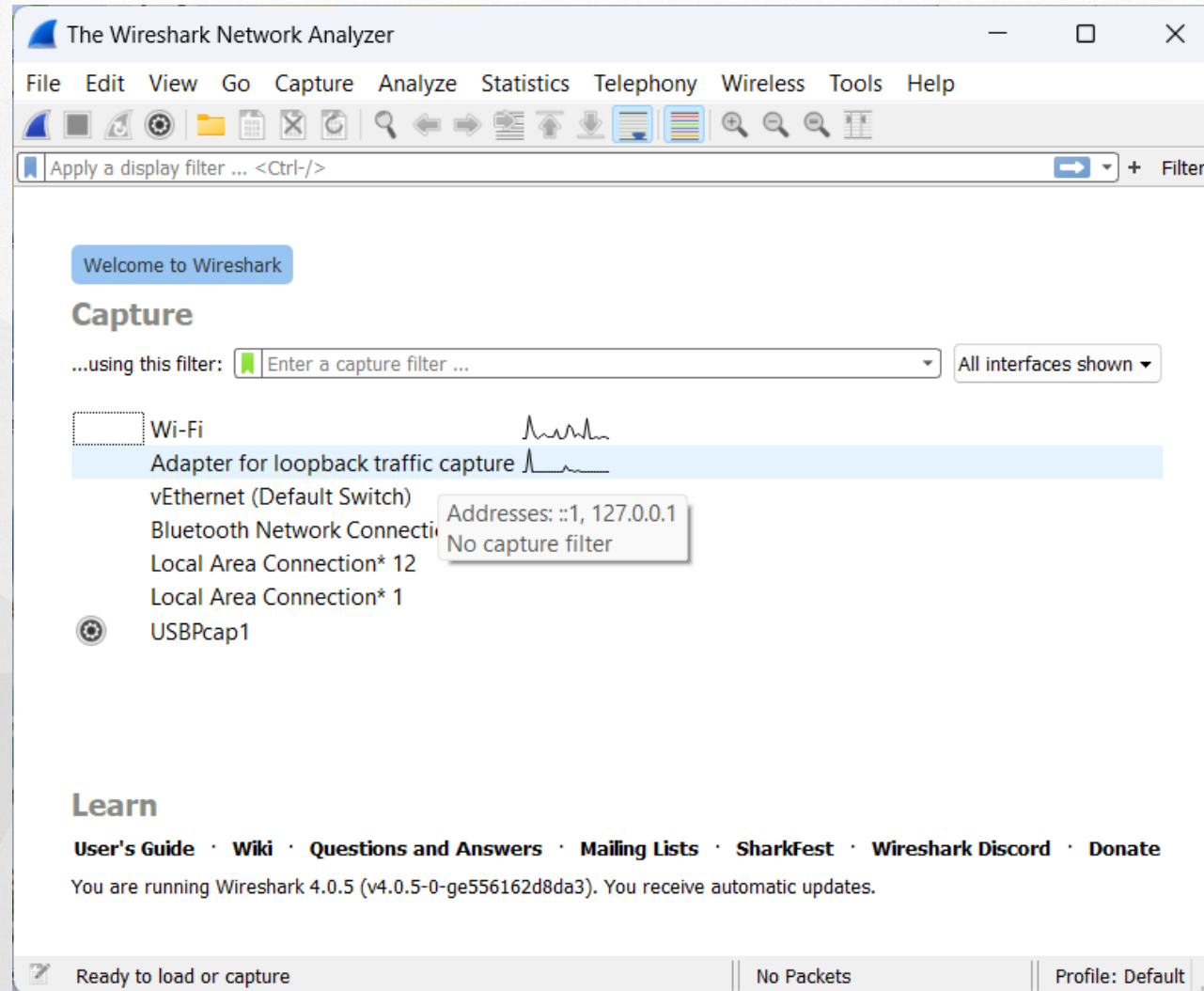
```
PS C:\Users\asus\Desktop\12214737_CN_FINAL> python expServer.py  
Server online on [('127.0.0.1', 8080)]  
Connected to ->('127.0.0.1', 53229)  
Image received and save to [1686436581.8441806.json]  
PS C:\Users\asus\Desktop\12214737_CN_FINAL>
```

TERMINAL

```
PS C:\Users\asus\Desktop\12214737_CN_FINAL> python expclient.py  
Enter image name: cars.json  
Latency -> 0.0seconds.  
Overall time -> 0.0 seconds.  
PS C:\Users\asus\Desktop\12214737_CN_FINAL>
```

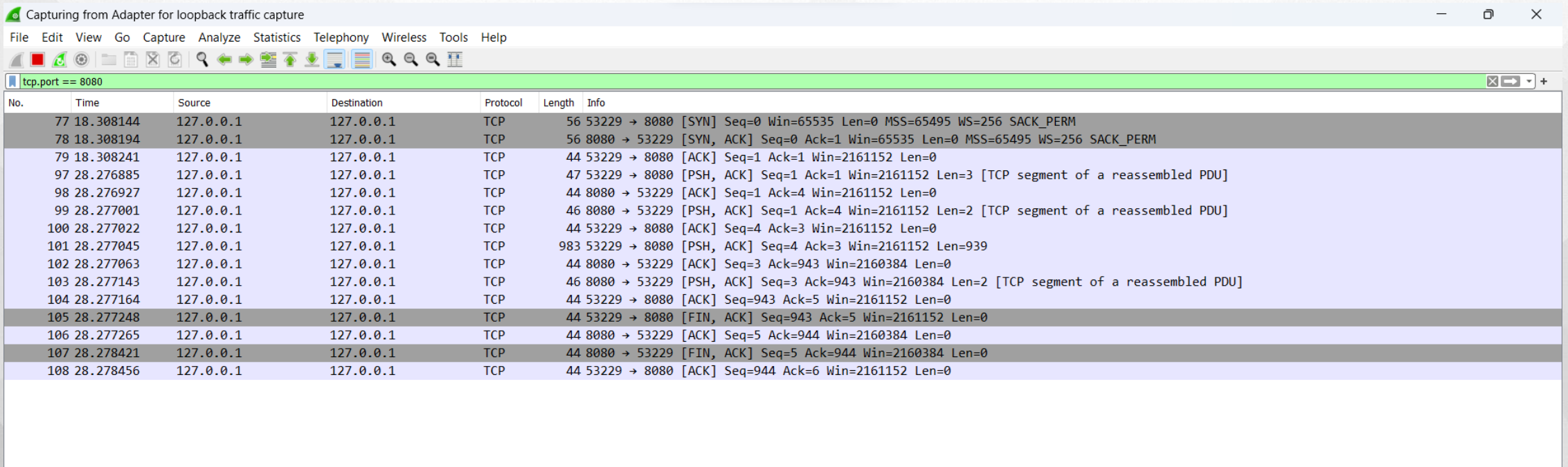
Can send any type of data

Wireshark



Open loopback traffic
capture

WireShark



Capturing from Adapter for loopback traffic capture

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

tcp.port == 8080

No.	Time	Source	Destination	Protocol	Length	Info
77	18.308144	127.0.0.1	127.0.0.1	TCP	56	53229 → 8080 [SYN] Seq=0 Win=65535 Len=0 MSS=65495 WS=256 SACK_PERM
78	18.308194	127.0.0.1	127.0.0.1	TCP	56	8080 → 53229 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=65495 WS=256 SACK_PERM
79	18.308241	127.0.0.1	127.0.0.1	TCP	44	53229 → 8080 [ACK] Seq=1 Ack=1 Win=2161152 Len=0
97	28.276885	127.0.0.1	127.0.0.1	TCP	47	53229 → 8080 [PSH, ACK] Seq=1 Ack=1 Win=2161152 Len=3 [TCP segment of a reassembled PDU]
98	28.276927	127.0.0.1	127.0.0.1	TCP	44	8080 → 53229 [ACK] Seq=1 Ack=4 Win=2161152 Len=0
99	28.277001	127.0.0.1	127.0.0.1	TCP	46	8080 → 53229 [PSH, ACK] Seq=1 Ack=4 Win=2161152 Len=2 [TCP segment of a reassembled PDU]
100	28.277022	127.0.0.1	127.0.0.1	TCP	44	53229 → 8080 [ACK] Seq=4 Ack=3 Win=2161152 Len=0
101	28.277045	127.0.0.1	127.0.0.1	TCP	983	53229 → 8080 [PSH, ACK] Seq=4 Ack=3 Win=2161152 Len=939
102	28.277063	127.0.0.1	127.0.0.1	TCP	44	8080 → 53229 [ACK] Seq=3 Ack=943 Win=2160384 Len=0
103	28.277143	127.0.0.1	127.0.0.1	TCP	46	8080 → 53229 [PSH, ACK] Seq=3 Ack=943 Win=2160384 Len=2 [TCP segment of a reassembled PDU]
104	28.277164	127.0.0.1	127.0.0.1	TCP	44	53229 → 8080 [ACK] Seq=943 Ack=5 Win=2161152 Len=0
105	28.277248	127.0.0.1	127.0.0.1	TCP	44	53229 → 8080 [FIN, ACK] Seq=943 Ack=5 Win=2161152 Len=0
106	28.277265	127.0.0.1	127.0.0.1	TCP	44	8080 → 53229 [ACK] Seq=5 Ack=944 Win=2160384 Len=0
107	28.278421	127.0.0.1	127.0.0.1	TCP	44	8080 → 53229 [FIN, ACK] Seq=5 Ack=944 Win=2160384 Len=0
108	28.278456	127.0.0.1	127.0.0.1	TCP	44	53229 → 8080 [ACK] Seq=944 Ack=6 Win=2161152 Len=0

Set filter to "tcp.port == 8080.
And wait for packets to be
captured.

Create README file and upload everything to GitHub

GitHub repository page for **LockedSoul / 12214737_CN_FINAL** (Public).

Navigation: <> Code, Issues, Pull requests, Actions, Projects, Wiki, Security, Insights, Settings.

Repository details: main branch, 1 branch, 0 tags. 97c6634 34 minutes ago, 7 commits.

Files:

File Name	Action	Time
A.png	Add files via upload	49 minutes ago
README.md	README.md	34 minutes ago
cars.csv	Add files via upload	49 minutes ago
cars.json	Add files via upload	49 minutes ago
client.py	Add files via upload	49 minutes ago
expClient.py	Add files via upload	49 minutes ago
expServer.py	Add files via upload	49 minutes ago
server.py	Add files via upload	49 minutes ago

Selected file: README.md

Content of README.md:

D2D File Transfer

Right sidebar:

- About: No description, website, or topics provided.
- Readme
- Activity
- 0 stars
- 2 watching
- 0 forks
- Releases: No releases published. [Create a new release](#)
- Packages: No packages published. [Publish your first package](#)
- Languages

https://github.com/LockedSoul/12214737_CN_FINAL

The background of the slide is a low-poly geometric pattern composed of various shades of gray triangles and polygons, creating a modern, abstract look.

Thank you!