

**T.C.
BAHÇEŞEHİR UNIVERSITY**



**FACULTY OF ENGINEERING AND NATURAL SCIENCES
DEPARTMENT OF COMPUTER ENGINEERING**

**CMP2204 – INTRODUCTION TO COMPUTER NETWORKS
SPRING 2024 TERM PROJECT REPORT
PEER-TO-PEER CHAT APPLICATION**

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13/05/2024

1 The Choice of Platform

Windows was the only operating system which was used both for the development and for the testing phases of this project. The development tool of choice was “PyCharm Professional”.

2 Faced Challenges

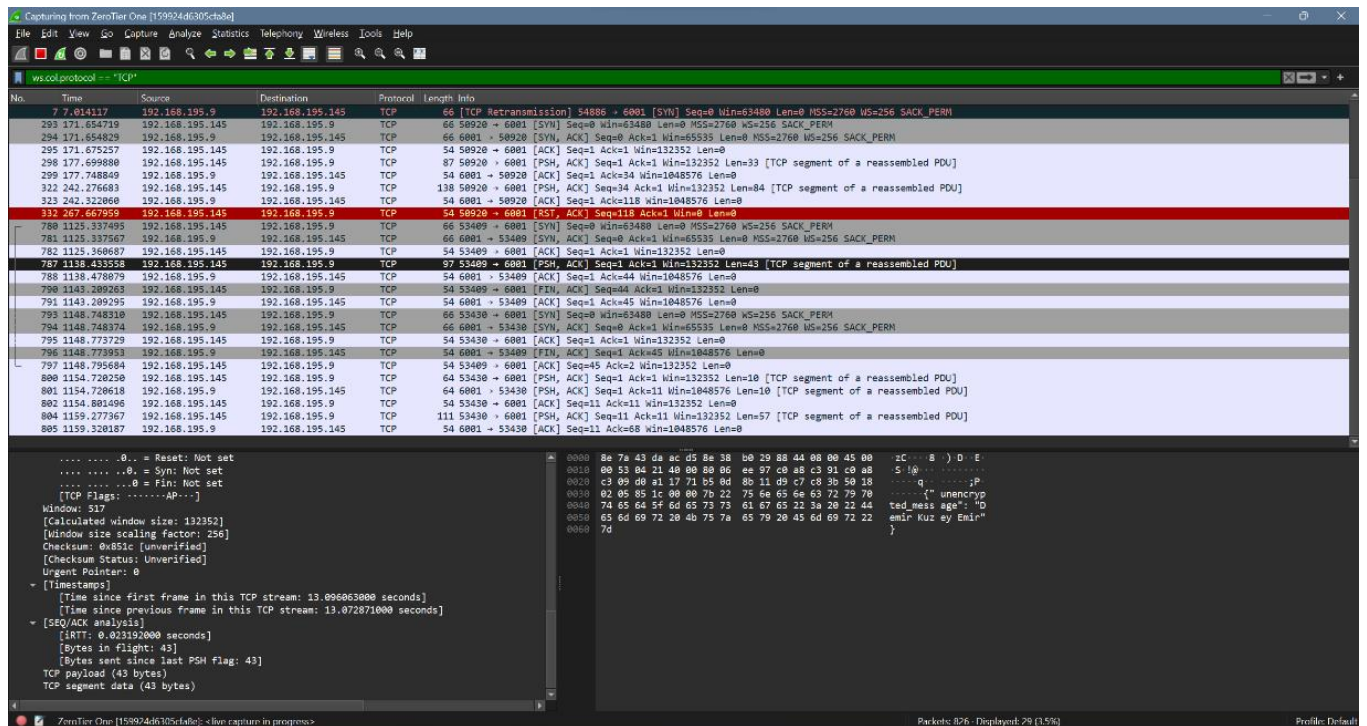
- Implementing the encrypted chat feature by using the Diffie-Hellman key exchange mechanism took longer than the project members have expected.
- Problems with Wireshark, Local Network configurations and Firewall/Antivirus configurations have been encountered, which caused significant struggle. At some point in the development stage of the project, Wireshark would show the transmitted UDP packets but wouldn't do the same for the TCP packets, blocking the project members from taking the necessary screenshots to complete the writing of this report.

3 Division of Labor

Demir created the first prototype TCP client-server mechanism, but it was later abandoned because it was working with a chatroom principle, not P2P. Emir was responsible for the creation of UDP Server and Client programs, which include the modules related to peer discovery and service announcement. The whole team together was responsible for the creation of the TCP Server and Client programs in their current state, which include the modules related to chat initiation and responses with an encrypted chat option respectively. Kuzey implemented the send and receive functions, Demir implemented general file operations and threading, and Emir implemented the Diffie-Hellman key exchange mechanism and encryption with pyDes.

4 Wireshark Screenshots

Unencrypted Exchange



Encrypted Exchange

