

CMP2204 Peer-to-Peer Chat Application Summary

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1. Development Platform

Our peer-to-peer chat application was developed and tested on **Windows 11** using Python 3.9. The team utilized **Visual Studio Code** as the primary development environment, along with essential Python libraries such as `socket`, `threading`, `json`, and `pyDes` for encryption.

2. Challenges Faced

- Ensuring synchronized peer discovery and message broadcasting using UDP threads.
- Implementing secure chat via the Diffie–Hellman key exchange and DES encryption.
- Handling TCP connection failures gracefully while maintaining a persistent server.
- Debugging real-time encryption issues using packet capture tools like Wireshark.

3. Team and Work Division

- **Can Sarı:** UDP peer discovery module, JSON-based broadcasting, and report writing.
- **Batuhan Arda Bekar:** UDP service announcer and documentation.
- **Hüseyin Can Gülkan:** TCP chat responder, Wireshark capture analysis, and system testing.