Internship Project

Name: Evaluating Data Transfer Efficiency: Plain Text, JSON, vs. Google Protocol Buffers (Protobuf) Over WebSocket

Duration: 4 weeks

Department: Vestel EVC Products Software Group

Term: 2024 / Summer

Summary

Develop a client-server application that uses WebSocket for data transfer in Plain Text, JSON and Protobuf formats. The application will be implemented using modern C++(17) and should apply Object-Oriented Programming (OOP) principles. It should incorporate important coding standards to ensure high-quality, reliable and maintainable code.

Tasks

Section - 1

- Implement a simple WebSocket application (Hint: check libwebsockets lib)
- Test the application by sending a sample text data (e.g., "Test data is sent!")

Section - 2

- Read and parse CSV data file (check **Attachments**)
- Send plain text data over WebSocket

Section - 3

- Convert plain text data to JSON format (Hint: check nlohmann/json lib)
- Send JSON formatted data over WebSocket

Section - 4

- Convert plain text data to Protobuf format
- Send Protobuf formatted data over WebSocket

Metrics

- Data Transfer Time
- Data Size

Expected Results

- Calculate and compare data transfer times for several datasets (for attached files)
- Report comparison results in a table
- List pros and cons of plain text, JSON and Protobuf data formats
- Evaluate internship practices (learning outcomes, challenges, feed-backs)
- Presentation

Attachments

- data_small.csv
- data_medium.csv
- data_big.csv

Abbreviations

- JSON: JavaScript Object Notation
- CSV: Comma Separated Values