Term Project

Prof. Fei Xie and PM: Tahniat

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1 Project Description

1.1 Instant Messaging Application

In this team project, you will be building an instant messaging app, like Slack, telegram, etc., but with a much simpler design, where only essential functionalities are required.

This application consists of a chat server and many chat clients (users).

- A client can send messages to other clients through the server.

- A client can receive messages from other clients through the server.

- The server accepts connections from the clients.

- The server delivers messages from one client to the other over the Internet in real-time.

1.2 Feature Requirements

- Authentication (registration, login/out, etc.).

- Creating new chat room with one or a group of existing users.

- Chatting in the chat room.

- Displaying history conversations.

- Displaying all created chat rooms.

- Deleting chat room.

- Proper database to store users' private info, contacts and messaging history.

1.3 Tools

You are **required** to use JavaScript and the version control system – Git(GitHub) in support of agile development.

The tools below are **recommended**, not mandatory. If you have other tools you prefer, please feel free to use them.

- IDE: VScode

- MERN stack

  - MongoDB
  - Express.js
  - React.js
  - Node.js

2 Goals

- Working with a modest-scale agile software project.

- Learning new skills by utilizing various online resources.

- Developing complete and coherent documentation.

- Taking a crack at designing a microservice architecture.

- Understanding the importance of test-driven development.

3 Submission

In this project, you need to submit **4** documents to the corresponding **Canvas** Assignment. There are document templates on **Canvas** Files, you can download and refer to them.

3.1 Feature Document (Due April. 23)

Feature document is to help you explore all the features you need to implement through product vision and user stories.

You are required to fill out a thorough feature list at the end of the document, which will be your main reference when planning a sprint backlog.

3.2 Architecture Document (Due May. 14)

This document is the most challenging one out of the three.

In System Overview, you are required to figure out the architecture design of your system following the layered model.

Then you are also required to give more detailed architecture designs for web frontend and microservices in the backend.

3.3 Test Plan (Due June. 4)

For unit testing and feature testing, you are required to develop appropriate test cases.

For system testing, you should especially pay attention to potential security vulnerabilities that might be exposed to the attackers.

3.4 Final Project Deliverable (Due June. 11)

This contains **2** parts.

3.4.1 Presentation

A short 5-minute presentation is required with PM before the end of the final week.

- Present a demo app that meets all feature requirements.

- Run system tests.

3.4.2 Report

Write a short project report. This is to show all the efforts you have made.

- Structure of code and tests.

- Challenges you have experienced while working on this project.

- Any other features you implemented that are beyond the requirements (extra credits will be given).

4 Grading

Overall: 40 pts

- 25 %: Feature document

- 25 %: Architecture document

- 25 %: Test plan

- 25 %: Final project deliverable