TECHNICAL UNIVERSITY

(Sofia, Bulgaria)

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EXPLANATORY NOTE AT DIPLOMA PROJECT

Topic:

Developing web-based chat application for real-time communication using MERN tech-stack.

Introduction

In today's digital world, real-time communication has become an essential aspect of various applications. Web-based chat applications provide users with the ability to interact and exchange messages instantly, making them a popular choice for social networking, team collaboration, customer support, and more. Building a chat application requires a robust technology stack that enables seamless communication and a modern user interface.

My chat application is built using a new world trend tech-stack which is called the MERN (MongoDB, Express.js, React.js, and Node.js), complemented by Tailwind CSS for effortless styling and WebSocket for real-time communication. The MERN stack is renowned for its flexibility, scalability, and ease of development, making it an excellent choice for building full-stack applications. Tailwind CSS, a utility-first CSS framework, simplifies the process of designing beautiful and responsive user interfaces. WebSocket, on the other hand, enable bidirectional and real-time communication between the client and server.

Throughout this project documentation, I will introduce the process of setting up the development environment which includes the back-end side (API) and the front-end side as our client side where customers can see and interact with. In my project, we can deep dive into creating the back-end API (application program interface) using Express.js and Node.js, integrating MongoDB for data storage, building the front-end using React.js, styling with TailwindCSS, and implementing WebSockets for real-time messaging functionality. Based on the application's functionality, my chat application allows users to create user accounts, send and receive messages in real-time, and design an intuitive and visually appealing user interface.

Annotation

The thesis assignment consists of the development and implementation of a web-based chat application for real-time communication which includes a server-side, client-side and database.

Following the task assignment while developing:

- A brief overview, as well as the technology, programing language, and programming environment precede the development of the application.

- Design and description of the proposed solution:

  • Specifying the functional requirements for the application.

  • Selection of tools, i.e., technology, programing languages, and programming environments.

- Introducing and initializing the database and database schema using MongoDB.

- Preparing a manual for the chat application.

- Deploying and testing the application.