

Certificate of Internship Completion

This is to certify that

Anushka Singh

has successfully completed an internship in the position of Software Developer Intern at **MetaSquare Technologies Private Limited** from 01-Aug-2024 to 30-Sep-2024.

During this period, Anushka Singh demonstrated exceptional skills in software development, contributing to projects, including:

Peer-to-Peer Chat System

Introduction

It is a peer-to-peer chat system using Java, enabling users on a local network to connect, chat, and share messages in real-time. It uses socket programming and multithreading, the application allows multiple users to interact seamlessly, providing a simple and effective way to facilitate communication without a centralized server.

Structure Highlights

- **Networking Components:** Utilizes ServerSocket and Socket classes for establishing peer connections and handling message exchange between users.
- **User Management:** Implements a ConcurrentHashMap to maintain a list of reachable peers, ensuring thread-safe operations as users connect and disconnect.
- **Multithreading**:** Uses separate threads for handling client connections and incoming messages, allowing the application to process multiple interactions simultaneously without blocking.
- **Input Validation:** Ensures that user names consist only of alphabetic characters, promoting consistent user identification and improving user experience.



06AAQCM8866R1Z5



info@metasquaretech.com



A-102, Tower A, Spaze Business Park,
Sector 66, Gurugram, Haryana (122101)

- **Command-Line Interface:** Provides a simple menu-driven interface for users to interact, offering options to list online users, send direct messages, or broadcast messages to all connected peers.
- **Error Handling:** Incorporates robust error handling to manage connection issues and invalid inputs gracefully, keeping the user informed without crashing the application.
- **Resource Management:** Implements a cleanup mechanism to properly close sockets and streams, preventing resource leaks and ensuring efficient memory usage.

Conclusion

This peer-to-peer chat system demonstrates an effective approach to facilitating direct interactions among users in a local network. By employing robust networking techniques, multithreading, and a user-friendly interface, the application provides a solid foundation for further enhancements, such as adding features for file sharing or improved security measures. Overall, it showcases the capabilities of Java in building real-time communication solutions.

Anushka Singh's dedication, teamwork, and technical proficiency were valuable assets to our team. We wish them the best in their future endeavors.

Issued on: 30-Sep-2024

Nishi Shukla

Human Resource Manager

MetaSquare Technologies Private Limited

