

# NIAOCHAT Testing Report

**Course Name:** Basic Computer Science Practice

**Professor:** Li Yugang

**Leader:** 1820222041 – 温富勝 Alexander Darryl Kristiawan

**Member:** 1820222021 – 郑国强 Darren Tejaatmaja

1820222030 – 林哲豪 Wilbert Jaya Sucipto

1820222040 – 冯明想 Jesslyn Clarissa Hermanto

**Project Topic:** Instant Messaging

**Version:** Niaochat 2.0

## Project Overview

The primary objective of this project was to develop a secure and robust internet-based messaging platform that enables real-time communication across both desktop and mobile devices. Key features of the system include end-to-end encryption, message storage, and multimedia sharing, all designed to prioritize user experience and data security.

This report provides a comprehensive overview of the platform's development process, core features, and performance evaluation. The ultimate goal was to create a user-friendly, secure, and efficient messaging solution capable of delivering seamless communication over the internet.

**Objective:** The primary goal of this testing report is to thoroughly assess the functionality, performance, usability, and security of the internet-based messaging system. The aim is to ensure that the platform meets established quality standards and fulfills user expectations across multiple devices.

**Scope:** The testing covers

- Functional testing (messaging features, notifications, contacts)
- Performance testing (response time, load handling)
- Usability testing (ease of use)
- Security testing (encryption, data protection)

### Test Cases:

TestID	Test Case Description	Steps to Execute	Expected Result	Actual Result	Status (Pass/Fail)
TC-01	Opening Server	Click 'Run' on the Server code or the file	The server is running and ready to host the messenger.	The server is running and ready to host the messenger.	Pass
TC-02	Opening Multiple Clients	Click 'Run' on the Client code or the file	The app-based user interface will pop up showing the log in / register page.	The app-based user interface will pop up showing the log in / register page.	Pass
TC-03	Make a account by register	Click on the register button and input the determined account username and password	User will be able to enter and the app window will pop up	The app window pops up and the app is usable	Pass
TC-04	Login account	Click on the login button and input the account username and password	The app window will pop up	The app window pops up and the app is usable	Pass
TC-05	Chat	Click on one of the contacts in the chat window and press the text box. Then start typing and enter the final text.	The text from the text box will move upward into a bubble showing the message has been sent. The other party will receive the message almost instantly.	The text from the text box will move upward into a bubble showing the message has been sent. The other party will receive the message almost instantly.	Pass
TC-06	Send Emoji	Click on the emoji on the chat window and select the emoji that the user wants to send	The receiver will receive the emoji and can press the emoji sent the enlarge it	The emoji sent well and there is no problem in the image at all	Pass
TC-07	Send Image	Click on the image button on the chat window and select the image that the user wants to send	The receiver will receive the image and can press the image sent the enlarge it	The image is sent well and there is no problem in the image at all	Pass

TC-08	Group chat	Click on the group chat there is in the contact window	Several users will be able to chat in a group	The group chat function has now worked because the messages were not shown and not sending	Fail
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### Key Observations:

A. **Performance:** The system performs well under normal loads but experiences delays under heavy traffic. Performance improvements are recommended, particularly in message delivery during high-volume scenarios.

B. **Security:** The messaging system successfully implements end-to-end encryption and safeguards user data. Brute-force protection works as expected.

C. **Usability:** The platform is user-friendly with smooth transitions between features. The multi-device sync works well.

### D. Areas for Improvement:

- Message delivery times under high load need optimization.
- GIF loading times could be improved to enhance the user experience.
- Some minor delays in receiving multiple notifications simultaneously were observed.

### Recommendations:

#### 1. Optimize for high traffic:

Enhance the system's ability to handle simultaneous users and heavy loads, particularly in high-volume group chats.

#### 2. Improve multimedia performance:

Work on speeding up the load times for GIFs and large video files.

#### 3. Test group call functionality:

The group call function has not worked and still needs more time to develop. There are problems that occur when chatting in the group chat to make it functional

### Conclusion:

The internet messaging system generally performs well in terms of functionality, usability, and security, with a few performance bottlenecks that can be addressed. Further optimizations and load testing are recommended to enhance user experience under high-demand scenarios.