

# Test Plan Document

**Project:** AQA Challenge – Chat Application

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## 1. Introduction

The purpose of this Test Plan is to define the testing strategy, scope, resources, schedule, and deliverables for the Automated QA (AQA) validation of the Chat Application. The primary focus is to verify the functionality of authentication and chat message features using automated behavior-driven testing.

## 2. Objectives

- Validate that users can authenticate correctly using valid credentials.
- Ensure incorrect login attempts are rejected with appropriate error messages.
- Confirm that authenticated users can view chat history and send messages.
- Verify that logout functionality redirects users appropriately.
- Identify missing or untested flows (e.g., user registration).

## 3. Flows

These are the flows and its current state

Area	Description	Status
Login	Validate successful and failed login attempts	Has e2e tests ▾
Chat History	Display of all chat messages including others'	Has e2e tests ▾
Send Message	Sending messages and confirming display	Partial tests ▾
Logout	User logout	Has e2e tests ▾
Registration	Valid and invalid user creation	No coverage ▾
Landing CTA	Succesful navigation to register or login from landing page	No coverage ▾

## 4. Test Approach

### Testing Methodology

The project follows a Behavior-Driven Development (BDD) approach using Gherkin feature files. Each scenario is described in plain English and automated via step definitions that interact with the web frontend.

### Framework & Tools

Category	Tool / Framework
AQA Framework	Cucumber + Webdriver.io
Language	TypeScript
Frontend	React using React Router v7
Backend	Node.js (Express API + socket.io)
Database	PostgreSQL
Reporting	Allure

## 5. Test Scenarios

### Feature: Chat Authentication Stories

Scenario	Objective	Expected Result
Invalid Password	Verify login fails with wrong password	Error message "Incorrect username or password" displayed
Invalid Username	Verify login fails with unknown username	Error message "Incorrect username or password" displayed
Valid Login	Verify successful login with correct credentials	Redirects to chat page
Logout Flow	Verify user logout and redirection	Redirects to home page after logout

## Feature: Chat User Stories

Scenario	Objective	Expected Result
View Chat History	Verify that chat history is visible upon login	Chat messages displayed
View Other Users' Messages	Verify that messages from other users appear in history	Other users' messages visible
Send Message	Verify message sending and confirmation	Message appears in chat list

## 6. Test scenarios not in scope

### Feature: Register user stories

Scenario	Objective	Expected Result
Valid registration	Verify successful register with correct information	Redirects to chat page
Not completed required fields	Register validation fails and the user create is not sent	Highlight the required field that needs input
Invalid field info	The user is not created when there are invalid info (eg. password less than 6 characters)	Show message detailing the error reason
Duplicated username	The user register should fail if exists another user with the same username	Error message depicting the situation

### Feature: Landing user stories

Scenario	Objective	Expected Result
User not logged in	The landing page should be shown	See text and register + login CTA

User Logged in	The chat page should be shown	Redirect to chat
Click on login CTA	The user should be redirected to the login page when the CTA is pressed	Redirect to login
Click on register CTA	The user should be redirected to the register page on CTA click	Redirect to register

## 8. Execution Plan

Stage	Description
Environment Setup	Run backend, database, and frontend locally
Run Tests	Execute AQA test suites using <code>yarn test</code>
Generate Reports	Produce result reports automatically via <code>npm run test:report</code>
Analyze Results	Review failed scenarios.