

Message Forum Application Documentation

Table of Contents

1. Introduction
 - 1.1 Purpose of the Application
 - 1.2 Scope
 - 1.3 Features
2. Setup and Installation
 - 2.1 Prerequisites
 - 2.2 Installation Steps
3. Application Overview
 - 3.1 Code Structure
 - 3.2 Database Schema
4. User Guide
 - 4.1 Logging In or Registering
 - 4.2 Sending a Message
 - 4.3 Replying to a Message
 - 4.4 Viewing Messages
 - 4.5 Exiting the Application
5. Database Design
 - 5.1 User Accounts Table
 - 5.2 Users Table
 - 5.3 Forum Table
 - 5.4 User Forum Table
 - 5.5 Message Table
 - 5.6 Message Recipient Table
6. Code Explanation
 - 6.1 Main Class and Entry Point
 - 6.2 Login and Registration
 - 6.3 Sending and Replying to Messages
 - 6.4 Viewing Messages
7. Testing
 - 7.1 Test Scenarios
 - 7.2 Test Results
8. Troubleshooting
 - 8.1 Common Issues

8.2 Solutions

9. Conclusion

9.1 Summary

9.2 Future Enhancements

10. References

1. Introduction

1.1 Purpose of the Application

The Message Forum Application is a Java-based desktop application that enables users to engage in online messaging activities within forums. Users can register, log in, post messages, reply to messages, and view existing messages.

1.2 Scope

The application is designed to provide essential messaging capabilities in a forum-like environment.

1.3 Features

- User registration and login
- Sending messages
- Replying to messages
- Viewing messages

2. Setup and Installation

2.1 Prerequisites

- Java Development Kit (JDK)
- MySQL Database Server
- MySQL Connector/J

2.2 Installation Steps

1. Install JDK and MySQL.
2. Create a MySQL database named 'forum' using the provided SQL scripts.
3. Configure the database connection details in the `ForumApp` class.
4. Compile and run the application.

3. Application Overview

3.1 Code Structure

The application consists of the following classes:

- `ForumApp`: Orchestrates application flow and user interactions.
- `DatabaseUtils`: Provides utility methods for database connections.
- `User`: Represents user information.

- `Message`: Represents message information.

3.2 Database Schema

The application employs a MySQL database with tables including:

- `user_accounts`: Stores user credentials and email.
- `users`: Stores user profile details.
- `forum`: Manages forum attributes.
- `user_forum`: Establishes user-forum relationships.
- `message`: Contains message content and details.
- `msg_recipient`: Tracks message recipients and their read status.

4. User Guide

4.1 Logging In or Registering

- Run the application.
- Choose to log in or register a new account.
- Provide required information (username, password, etc.).
- Upon successful login or registration, the main menu is displayed.

4.2 Sending a Message

- Select the option to send a message.
- Enter the message subject and body.
- The message is posted to the forum.

4.3 Replying to a Message

- Choose the option to reply to a message.
- Enter the ID of the message to reply to.
- Compose your reply.
- The reply is associated with the selected message.

4.4 Viewing Messages

- Select the option to view messages.
- A list of messages is displayed.
- Choose a message to view its details and replies.

4.5 Exiting the Application

- Choose the option to exit the application.

5. Database Design

5.1 User Accounts Table

Stores user credentials and email for authentication.

5.2 Users Table

Contains user profile information.

5.3 Forum Table

Manages forum attributes such as name and creation date.

5.4 User Forum Table

Establishes connections between users and forums.

5.5 Message Table

Stores message content and details.

5.6 Message Recipient Table

Tracks message recipients and read status.

6. Code Explanation

6.1 Main Class and Entry Point

The `ForumApp` class serves as the entry point and orchestrates application flow.

6.2 Login and Registration

- Users can log in with existing credentials.
- New users can register by providing necessary details.

6.3 Sending and Replying to Messages

- Users can send new messages.
- Messages can be replied to and associated with parent messages.

6.4 Viewing Messages

- Users can view existing messages and their details.

7. Testing

7.1 Test Scenarios

- Logging in with correct and incorrect credentials.
- Registering new user accounts.
- Sending messages and verifying their insertion.
- Replying to messages and checking associations.
- Viewing messages and their details.

7.2 Test Results

- Conduct thorough testing to ensure correct application behavior.

8. Troubleshooting

8.1 Common Issues

- Database connection errors.
- Input validation issues.
- Incorrect SQL queries.

8.2 Solutions

- Double-check database configuration.
- Validate user inputs and handle exceptions.
- Verify SQL queries against the schema.

9. Conclusion

9.1 Summary

The Message Forum Application demonstrates core messaging functionalities within a forum environment.

9.2 Future Enhancements

- Enhanced user interface.
- Message formatting options.
- Advanced forum management features.

10. References

- MySQL Documentation
- Java Documentation
- Stack Overflow (for troubleshooting)