

DIGITAL DIARY

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1. Abstract

The *Personal Diary Management System* is a Java-based desktop application developed using JavaFX and SQLite. It allows users to securely create, view, edit, and manage personal diary entries in an organized manner. The system provides features such as user authentication, password hashing, search and filter options, and a modern graphical interface for an enhanced user experience. Data is securely stored in a local database, ensuring privacy and persistence. Security measures like password encryption, user-specific data isolation, and SQL injection prevention are implemented to protect user information. The project aims to deliver a secure and user-friendly digital diary that replaces traditional paper-based journaling with a convenient and efficient software solution.

2. Introduction

The Digital Diary Application is a comprehensive Java-based solution designed to provide users with a secure and intuitive platform for maintaining personal journals. In an era where digital privacy is paramount, this application offers a reliable and private space for individuals to document their thoughts, experiences, and daily activities.

3.Technologies and Tools Used

Core Technologies

- **Java SE 17:** Primary programming language
- **JavaFX 17.0.2:** For building the desktop application UI
- **SQLite:** For local database storage

Development Tools

- **Maven:** Build automation and dependency management
- **IntelliJ IDEA:** Primary development IDE
- **Git:** Version control system

Dependencies

- **SQLite JDBC 3.36.0.3:** Database connectivity
- **ControlsFX 11.1.1:** Enhanced UI controls
- **JUnit 5.9.1:** For unit testing

Key Features

- **MVC Architecture:** For code organization
- **JDBC:** For database operations
- **JavaFX FXML:** For UI design

Security

- **BCrypt:** For password hashing (custom implementation)

Build & Packaging

- **Maven Shade Plugin:** For creating executable JAR
- **JavaFX Maven Plugin:** For JavaFX application packaging

4.Core Features

1. User Authentication

- Secure user login
- User registration/signup
- Password hashing for security
- User session management

2. Entry Management

- Create new diary entries
- View existing entries
- Edit/Update entries

- Delete entries
- View entry history (created/updated timestamps)

3. Search & Filter

- Search entries by title/content
- Filter entries by date
- Sort entries by:
 - Date (newest/oldest first)
 - Title (A-Z, Z-A)

4. User Interface

- Clean, modern JavaFX interface
- Responsive design
- Entry list with preview
- Detailed entry view
- Navigation controls

5. Data Management

- Local SQLite database storage
- Data persistence
- Automatic backup

- Entry versioning (via timestamps)

6. Security Features

- Secure password storage
- User-specific data isolation
- SQL injection prevention
- Data encryption

7. Advanced Features

- Bulk selection for multiple entries
- Entry pagination
- Keyboard shortcuts
- Context menus
- Entry preview

8. User Experience

- Intuitive navigation
- Visual feedback for actions
- Confirmation dialogs for destructive actions
- Status indicators

9. Additional Functionality

- Entry tagging/categorization (potential future enhancement)
- Rich text formatting in entries
- Entry export/import
- Dark/light theme support

5.FILE STRUCTURE

digital-diary/

```

└─ .mvn/           # Maven wrapper files
└─ src/            # Source code and resources
|   └─ main/
|       └─ java/    # Java source files
|           └─ com/
|               └─ loginapp/
|                   └─ controllers/  # FXML controllers
|                       └─ LoginController.java  # Handles user
authentication
|                       └─ SignupController.java  # Manages user
registration
|                       └─ DiaryMainController.java # Main dashboard
controller

```


| | | | └─ DiaryEntryController.java # Manages diary entry operations

| | | |

| | | └─ models/ # Data models

| | | | └─ User.java # User data structure

| | | | └─ DiaryEntry.java # Diary entry data structure

| | | |

| | | └─ utils/ # Utility classes

| | | | └─ Database.java # Database connection and operations

| | | | └─ PasswordHasher.java # Password encryption

| | | | └─ PasswordMigration.java # Password update utilities

| | | |

| | | └─ Main.java # Application entry point

| | | └─ DiaryContext.java # Shared context between controllers

| | |

| | └─ resources/ # Resource files

| | └─ fxml/ # FXML view files

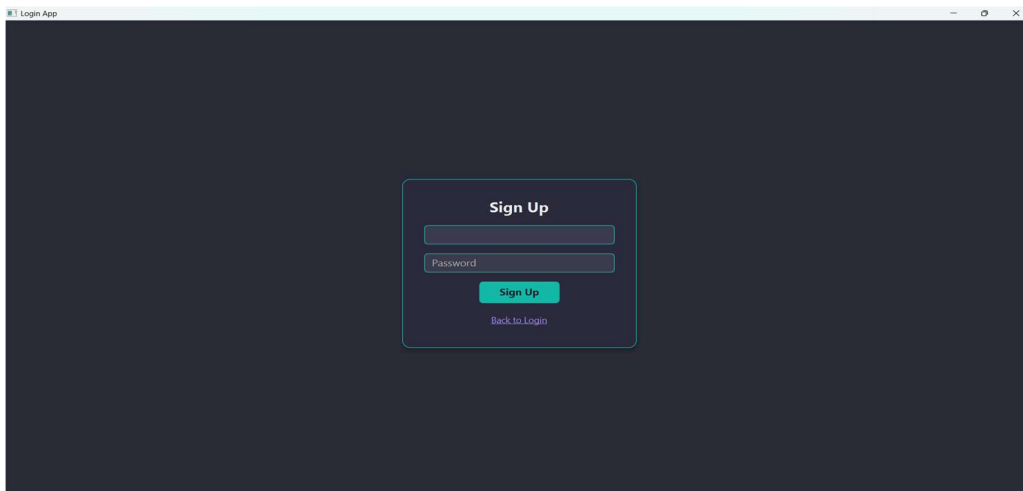
| | | └─ Login.fxml # Login screen

| | | └─ Signup.fxml # Registration screen

| | | └─ DiaryMain.fxml # Main dashboard

```
| | | └─ DiaryEntry.fxml # Diary entry editor
| | |
| | └─ styles/ # CSS stylesheets
| | └─ styles.css # Application styling
| |
| └─ test/ # Test files
| └─ java/ # Test source files
|
└─ target/ # Compiled files and build output
└─ users.db # SQLite database file
└─ pom.xml # Maven project configuration
└─ README.md # Project documentation
```

6.SIGN UP PAGE



User Registration

Allows new users to create accounts by collecting a username and password through a simple form.

Password Security

Uses BCrypt hashing to securely store passwords in the database.

Basic Input Validation

Ensures required fields are not empty before submission.

Username Uniqueness

Prevents duplicate usernames through database constraints.

Database Integration

Stores user credentials in an SQLite database using prepared statements.

Error Feedback

Displays alerts for registration failures such as duplicate usernames.

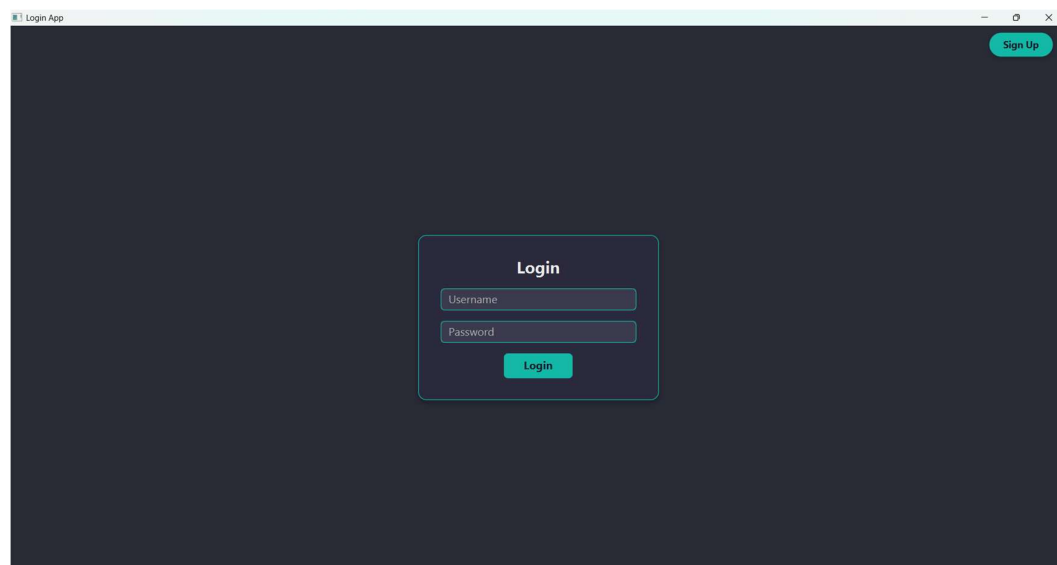
Form Navigation

Provides a simple interface to switch between login and signup forms.

Basic Error Handling

Catches and displays database-related errors during registration.

7.LOGIN PAGE



User Authentication

Verifies user credentials against the stored database records using username and password.

Password Verification

Uses BCrypt to verify entered passwords against the stored hashed versions.

Basic Error Handling

Shows alerts for invalid credentials and login failures.

Session Management

Sets the current user in the Database class upon successful login.

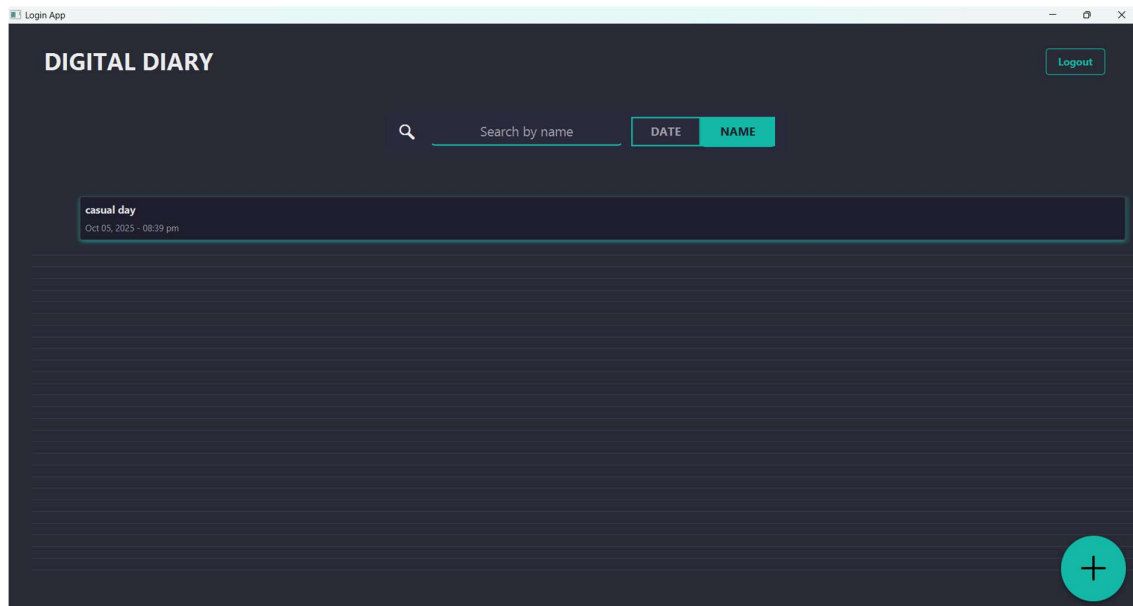
Form Validation

Includes basic validation for empty username/password fields.

UI Navigation

Handles transitions between login and signup views.

8.HOME PAGE



Search Functionality

- Search by date using a date picker
- Search by entry name with real-time filtering

Entry Management

- Add new entries with the + button
- Delete single or multiple entries
- View entries in a scrollable list

User Interface

- Clean, modern interface with a floating action button

- Toggle between date and name search modes
- Responsive layout for different screen sizes

Entry Selection

- Select multiple entries for batch operations
- Visual feedback for selected items
- Context menu for quick actions

Lazy Loading

- Loads entries in pages (10 at a time)
- Automatically loads more entries when scrolling

Navigation

- Logout button to return to login screen
- Clear visual hierarchy and intuitive controls

Data Display

- Shows entry titles with timestamps
- Sorts entries by date or name
- Displays entry count and selection status

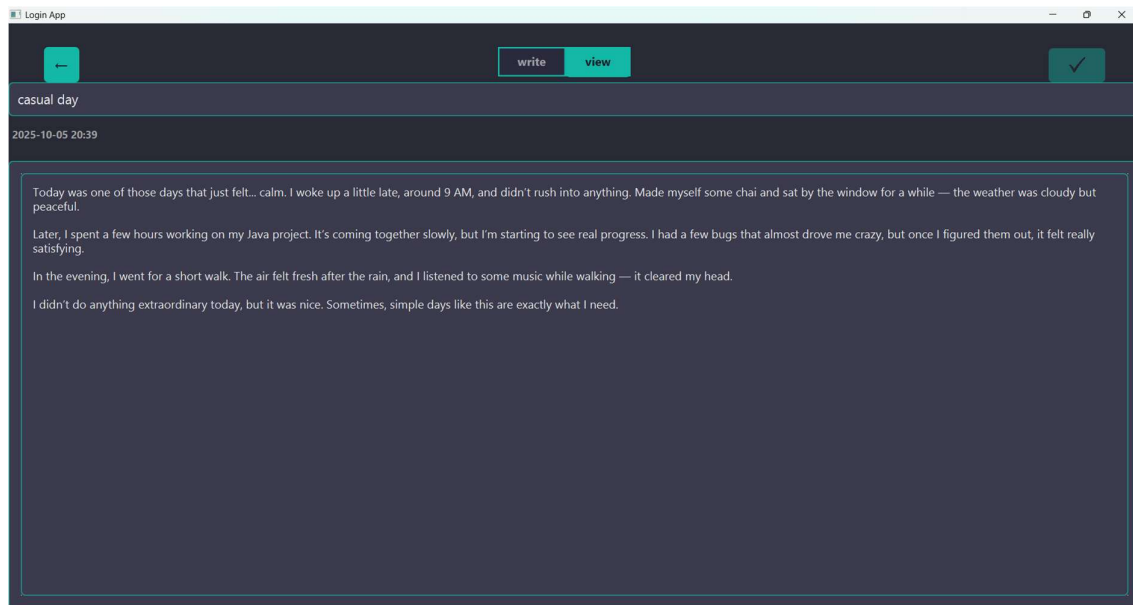
Error Handling

- Confirmation dialogs for destructive actions
- Clear feedback for user actions

- Graceful handling of empty states

Feedback submitted

9.ENTRY PAGE:



View/Edit Toggle

- Switch between view and edit modes
- Visual indicators for the current mode
- Automatic saving when switching modes

Entry Management

- Create new diary entries
- Edit existing entries

- Save changes with a dedicated button

Entry Details

- Title field for entry names
- Date display showing creation timestamp
- Content area for diary text

User Interface

- Clean layout with clear section separation
- Back button for navigation
- Responsive design for different screen sizes

Navigation

- Return to main diary list
- Clear visual hierarchy

Data Handling

- Auto-populates fields when editing
- Maintains entry context between views
- Formatted date display

User Experience

- Clear visual feedback for actions
- Intuitive controls

- Confirmation for unsaved changes

Text Editing

- Full content editing in write mode
- Read-only view in view mode
- Preserves formatting and line breaks

10.Conclusion

The **Digital Diary Management System** is a JavaFX-based desktop application that provides a secure and user-friendly platform for personal journaling. It allows users to **register and log in** with securely hashed passwords, and to **create, view, edit, and delete diary entries** with ease. The application supports basic **search functionality** by date or entry title and stores all data locally using **SQLite**, ensuring reliability and data persistence.

Built with **JavaFX and Maven**, the project demonstrates a clean separation of concerns, maintainable code structure, and effective use of object-oriented principles. The intuitive interface and core

functionalities provide a solid foundation for daily diary management.

While the current implementation meets the essential requirements, there is potential for **future enhancements**, including advanced search and filtering, rich text formatting, data backup and restore features, and a more visually engaging interface.

Overall, this project reflects practical skills in Java programming, database management, and desktop application development, offering a reliable starting point for further improvements and extensions.