FR. CONCEICAO RODRIGUES COLLEGE OF ENGINEERING

Department of Computer Engineering

Class T.E. Computer A
Subject Name Mobile Computing

Practical No.	9
Title	To develop an android application perform CRUD operations on a database
Date of Performance	21/04/2025
Date of Submission	27/04/2025
Roll No.	9913
Name	Mark Lopes

Evaluation:

Sr. No	Rubric	Grade
1	**Timeline(2)**	
2	**Output(3)**	
3	**Code Optimization(3)**	
4	**Knowledge of the topic(2)**	
5	**Total(10)**	

Signature of the teacher:

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Experiment No.:

Aim: To implement a Database Connection with Android Application

Theory:

1. App Overview

This application is a mobile-based authentication system connected to a Spring Boot backend. The app includes functionality for user registration, login, and a welcome screen after successful login.

It uses Retrofit for networking and connects to a Spring Boot backend API for managing user credentials.

The application interacts with a MySQL database for storing and retrieving user data, including hashed passwords using various methods (simple, salted, and salted & peppered). 2. Registration Flow

The registration functionality includes three types of registration methods: - Simple registration

- Salted registration

- Salted & peppered registration

The user inputs their username and password. The password is sent to the backend for hashing using the chosen method. The backend returns a response, which the app uses to show appropriate

messages to the user.

3. Login Flow

The login screen allows users to authenticate with their registered username and password. The app supports three login methods:

- Simple login

- Salted login

- Salted & peppered login

The user provides their login credentials, which are validated against the backend using the appropriate hashing method. If the credentials are correct, the user is redirected to the welcome screen.

If the authentication fails, an error message is shown to the user.

4. Welcome Screen

After a successful login, users are redirected to a welcome screen. The screen includes a greeting

message and a logout button. The logout button triggers a logout function, which navigates the

user back

to the login screen.

5. Network Integration with Retrofit

Retrofit is used to handle the network requests between the app and the Spring Boot backend. The app makes

use of different endpoints based on the operation (register or login), sending the appropriate data to

the backend. The backend validates the data and responds with either a success message or an error.

The Retrofit client is set up with the base URL pointing to the backend, and it includes methods for

each API call such as registration and login. The response from the backend is processed and the appropriate

UI feedback is shown to the user.

6. Spring Boot Backend with Database

The Spring Boot backend is responsible for handling the business logic, such as user registration,

login authentication, and interacting with the database. The backend uses Spring Security to secure

the endpoints and ensure that passwords are handled securely.

The user data is stored in a MySQL database. Passwords are hashed before storing them in the database

using different methods, ensuring the security of the user's credentials. The backend communicates with

the database using Spring Data JPA for database operations.

7. Database Setup

The MySQL database contains a users table where the following fields are stored: - id (primary key)

- username

- password (hashed)

The database is connected via Spring Data JPA repositories, which handle CRUD operations on the user data.

The password is stored securely by hashing it using the chosen hashing method. 8. Dependencies

The project depends on the following libraries and frameworks: - Retrofit: For handling network requests in the Android app. - Spring

Boot: For building the backend API.

- Spring Security: For securing the backend endpoints and hashing passwords. - Spring Data JPA: For interacting with the MySQL database. - MySQL: For storing user data.

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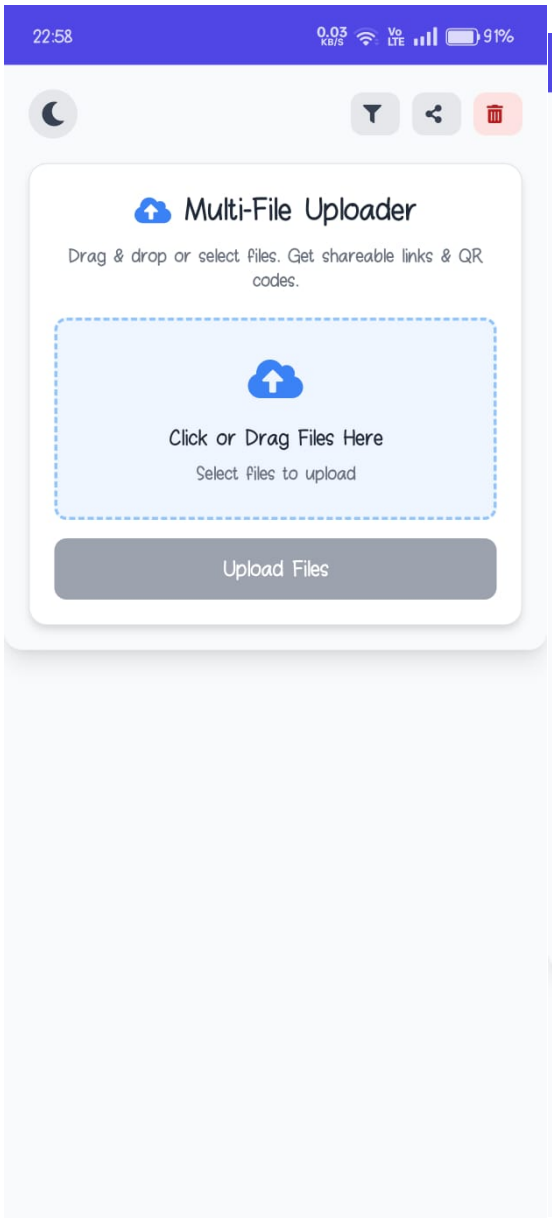

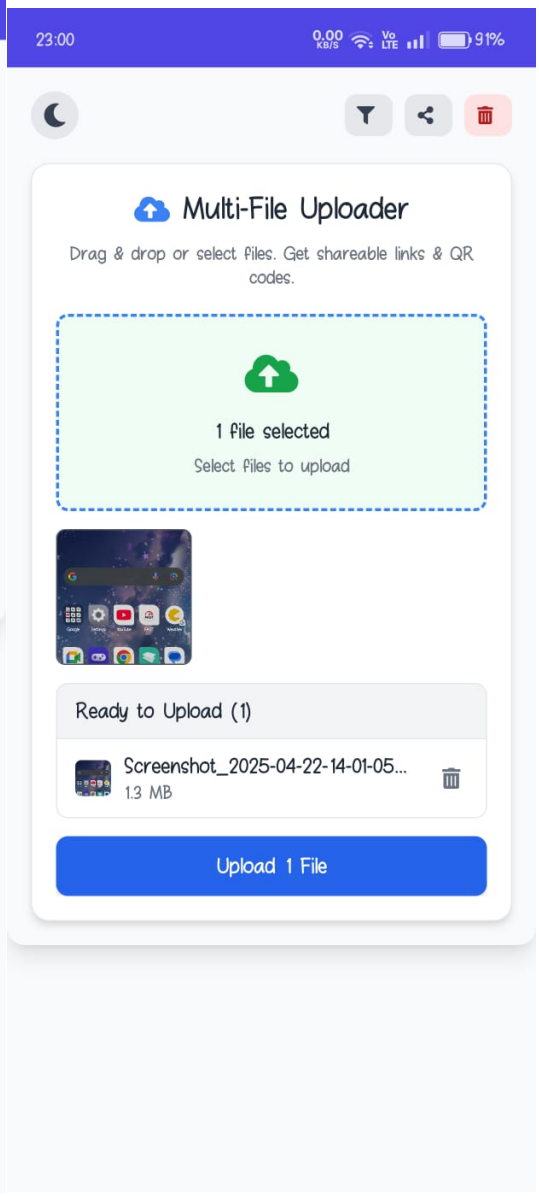

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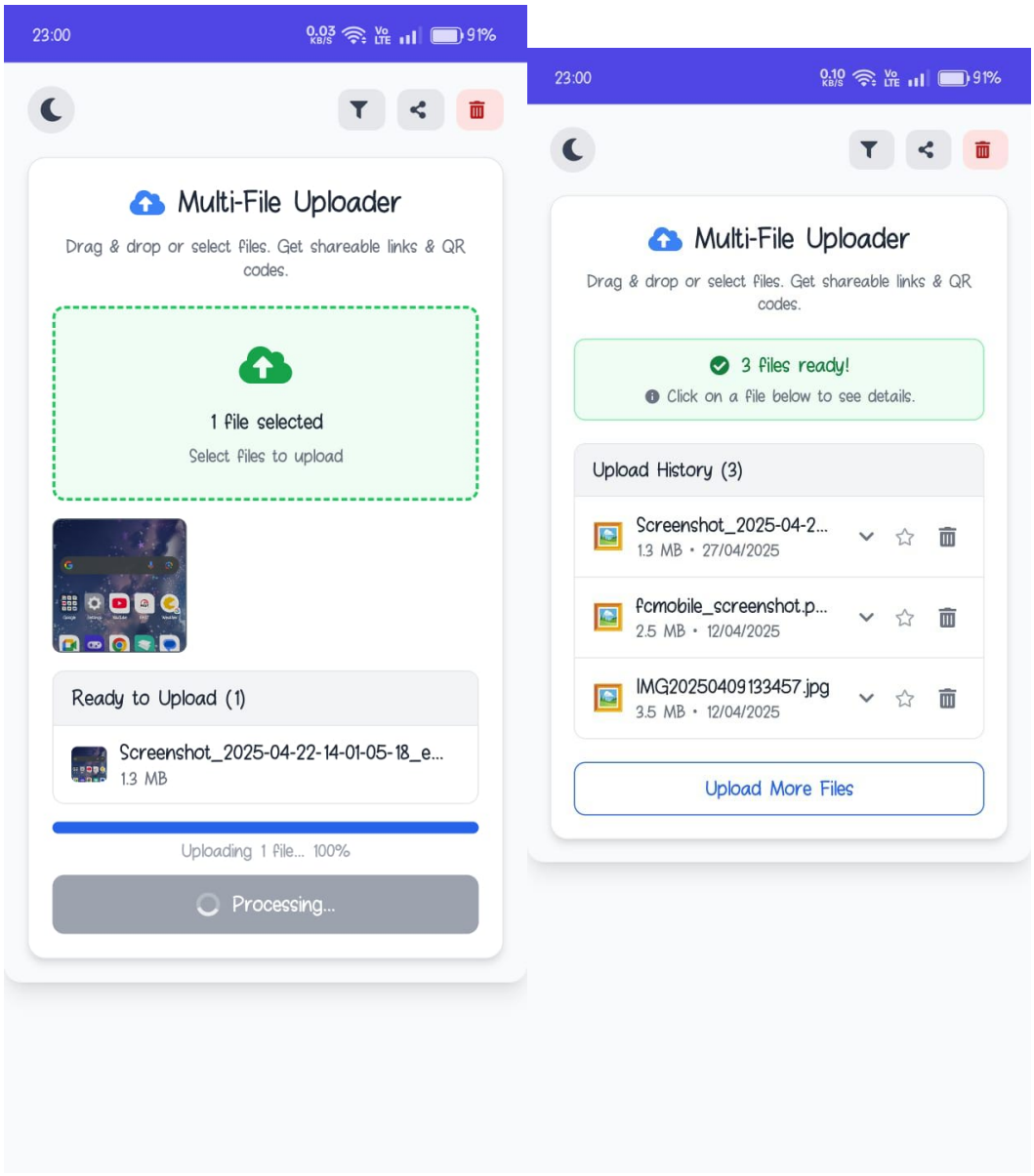

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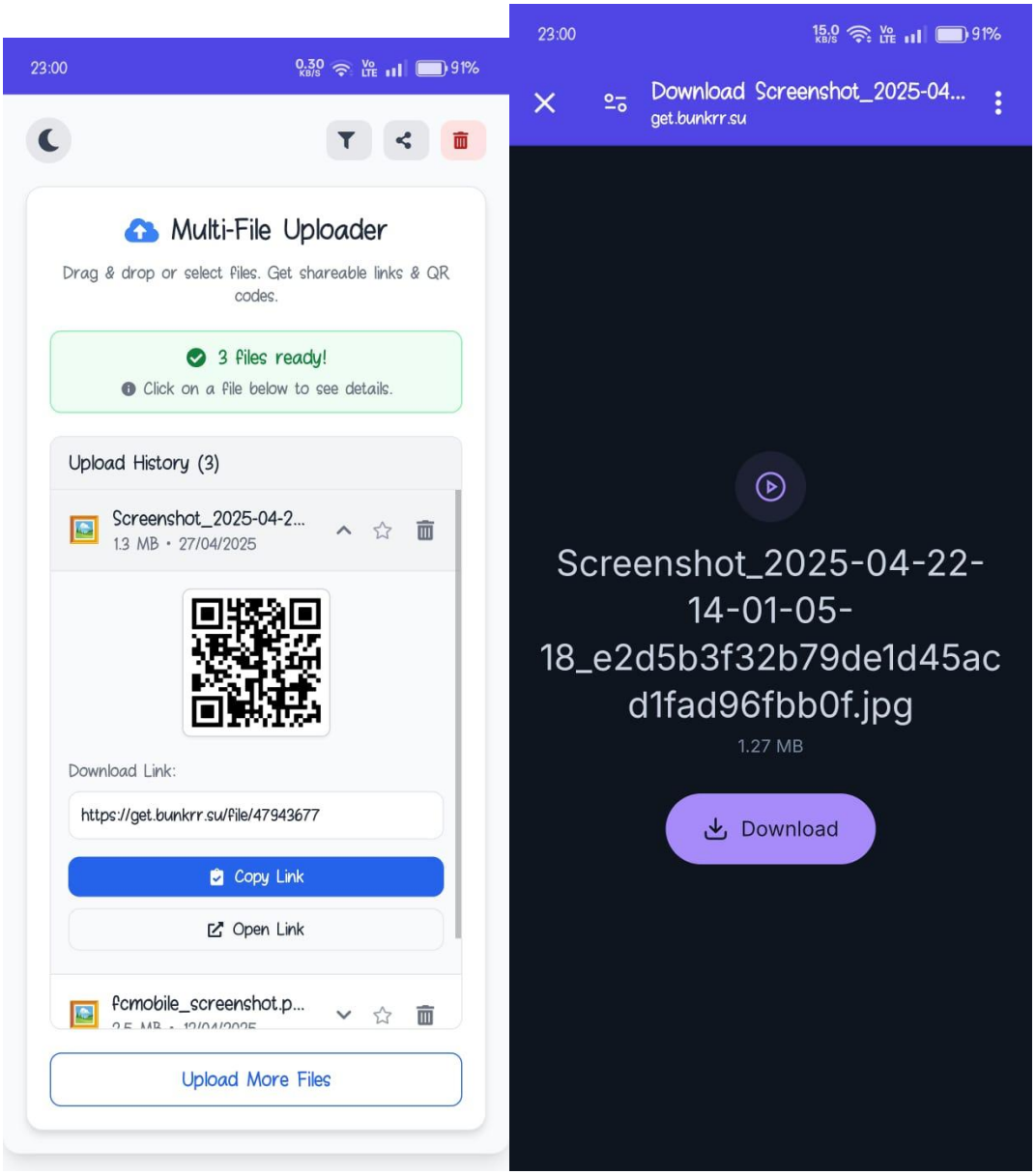

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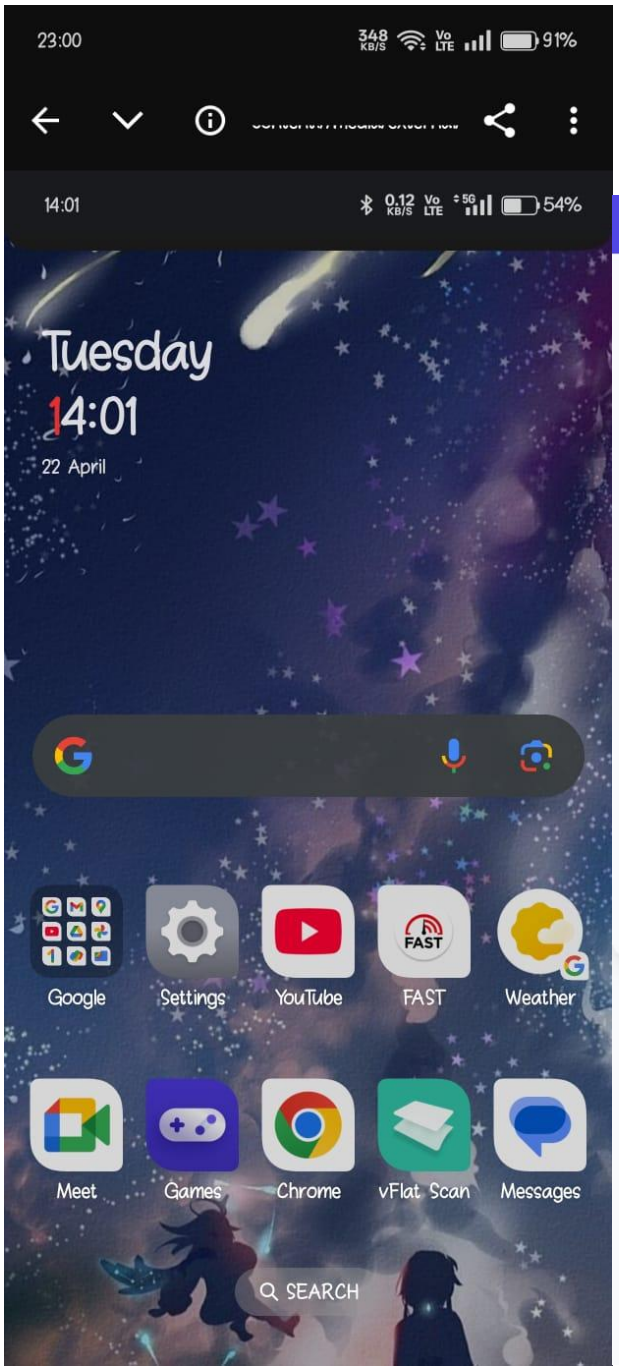

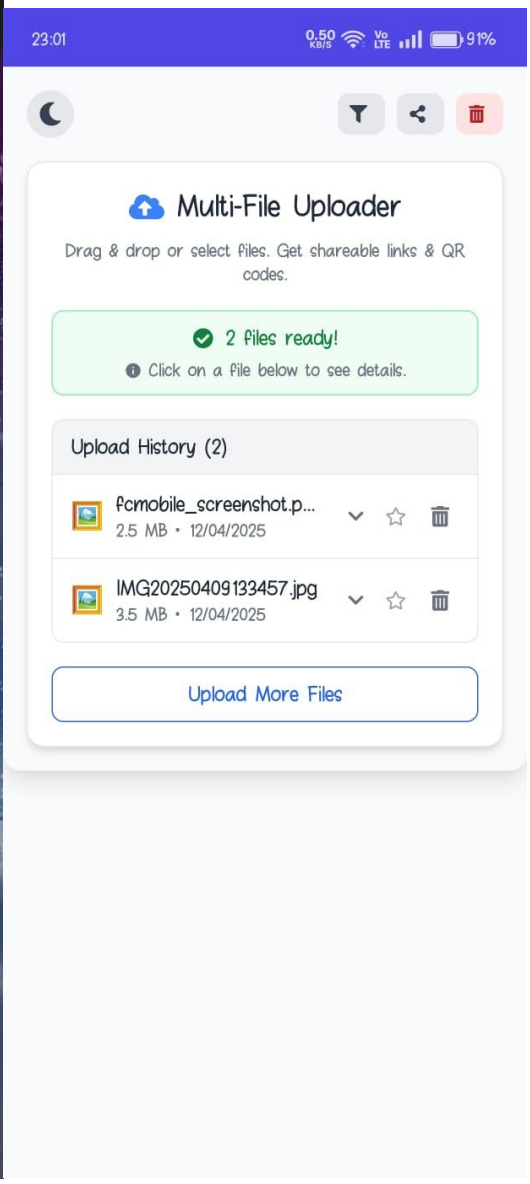

Conclusion:

This mobile app, named "FileUploader" offers file storage on the cloud, you can store files, by uploading it from your phone, or by taking a photo. Then a qr/link is generated For that file. You can share the link with anyone for them to access that file.