

Case Study on

Multi-User Complaint Management System

Introduction

In today's fast-paced organizations and educational institutions, managing complaints efficiently is essential for maintaining transparency and trust.

CompSolveHub is a multi-user complaint management system designed to simplify the process of raising, tracking, and resolving issues through a centralized platform.

The application allows users to submit complaints and monitor their status in real time, while administrators can manage, update, and resolve issues effectively. With role-based access, email notifications, and an intuitive user interface

CompSolveHub ensures faster resolution, improved accountability, and a seamless communication flow between users and administrators.

Abstract

CompSolveHub is a web-based multi-user complaint management system developed to streamline the process of complaint registration, tracking, and resolution.

The system provides a centralized platform where users can raise complaints and monitor their status, while administrators efficiently manage and resolve issues through a dedicated dashboard.

Built using Spring Boot and a responsive user interface, the application ensures secure role-based access, real-time status updates, and automated email notifications. By improving transparency, accountability, and communication, CompSolveHub enhances organizational efficiency and delivers a structured approach to complaint handling.

What we are going to build: Client Requirement

- A **web-based complaint management system** accessible to multiple users.
- Facility for users to **raise complaints** with relevant details.
- **User registration and login system** with role-based access (Admin & User).
- Ability for users to **track complaint status** in real time.
- An **admin dashboard** to view, manage, and update complaints.
- **Status management** (Open, In Progress, Resolved) for complaints.
- **Automated email notifications** to users when complaint status changes.

What we are going to build: Some technical terms.

- A **Spring Boot**–based web application following the MVC architecture.
- RESTful controllers to handle user and admin operations.
- Role-based authentication and authorization (**Admin & User**).
- **MySQL** relational database for secure and structured data storage.
- **Bootstrap-powered** responsive UI for cross-device compatibility.
- Email service integration (**SMTP**) for automated status notifications.
- **CRUD** operations for complaint and user management.

What are the technologies and tools we are going use ?

- **Framework:** Spring Boot Java Framework
- **Front-end :** HTML5, CSS3, JS , Bootstrap
- **Programming Language:** Java 8+
- **Build Tool:** Maven
- **IDE:** Spring Tool Suite (STS)
- **Web Server:** Apache Tomcat
- **Spring Modules:** Spring Core, Spring Security (JWT), Spring Data JPA (Hibernate)
- **Database:** MySQL Database

System Requirements

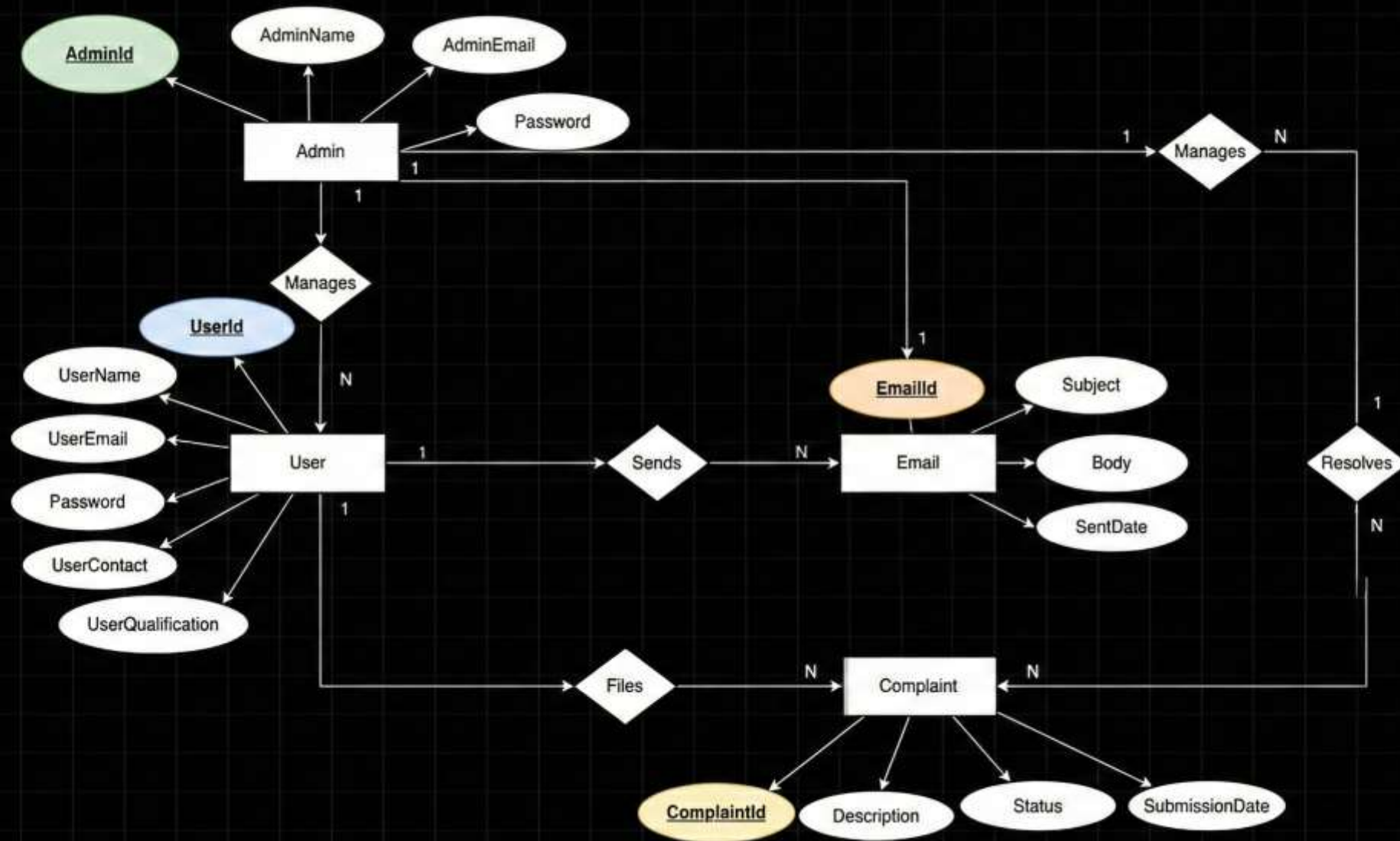
SOFTWARE REQUIREMENTS :

- **Back End:** Spring Boot, Spring Data JPA (Hibernate)
- **Database Server:** MySQL Server 8.0 CE
- **Web Server:** Apache Tomcat
- **IDE:** Spring Tool Suite (STS)
- **Browser:** Any web-browser
- **Testing Tool:** Junit(optional)

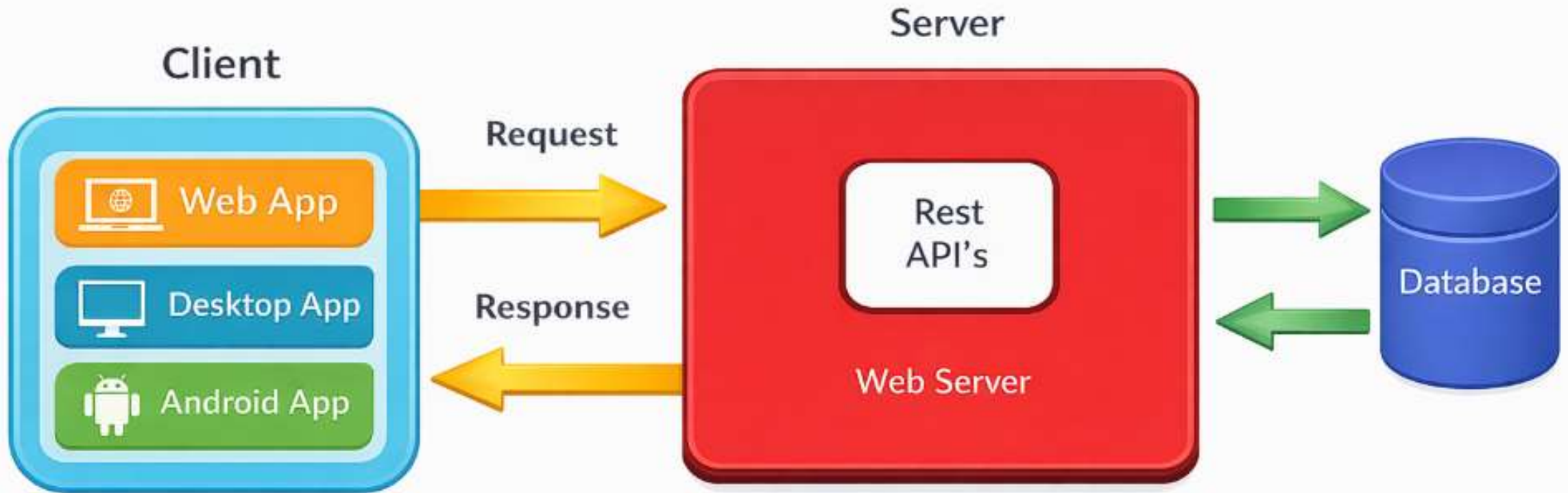
Project Module

- **Admin Module**
- **User Module**
- **Complaint Management Module**
- **Email Notification Module**

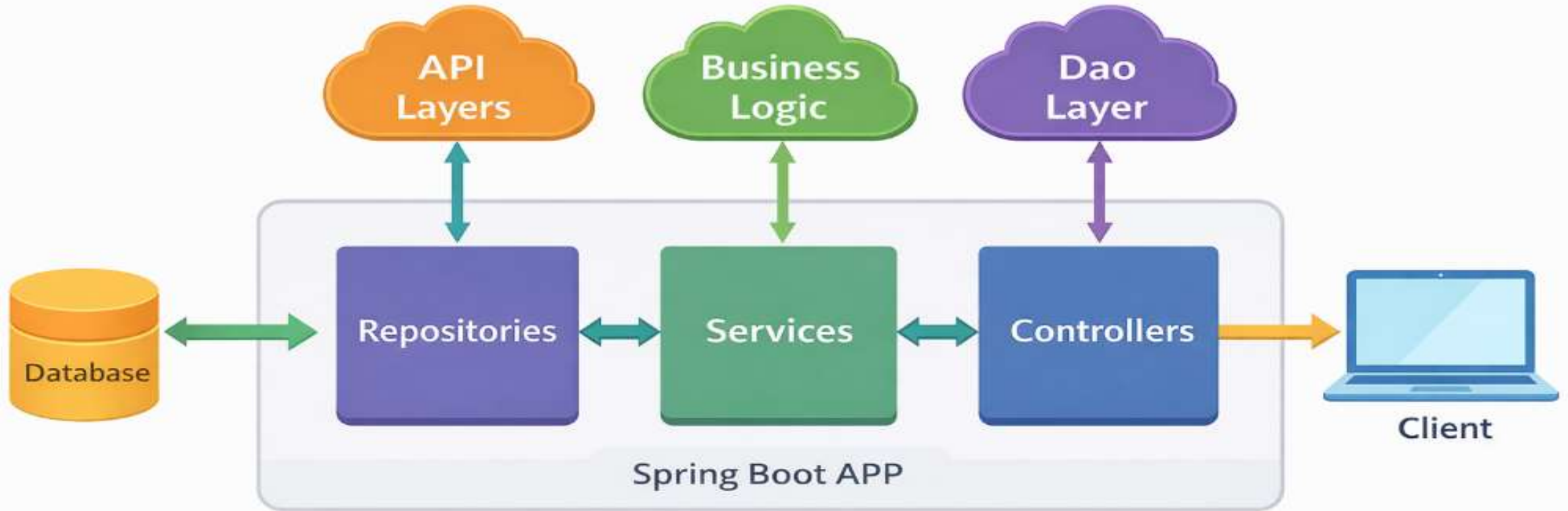
ER DIAGRAM



Client – Server Architecture



Architecture of Web App



ADMIN MODULE

In the Admin Module, the admin can access the system after successful login. The admin is responsible for managing the overall complaint handling process. Admin details are stored and managed through backend services.

- The Admin module allows the admin to perform **CRUD operations** using REST APIs. Admin details can be saved using **POST** Mapping, retrieved using **GET** Mapping, updated using **PUT** Mapping, and deleted using **DELETE** Mapping.
- The Admin module contains methods such as **Save Admin**, **View All Complaints**, **Update Complaint Status**, and **Delete Complaint** to ensure efficient management.
- The Admin has the authority to **view all user complaints**, update their status (Open, In Progress, Resolved), and monitor complaint resolution.
- After successful implementation of the Admin Module, child modules such as the User Module and Complaint Management Module are integrated under admin supervision.

USER MODULE

In the User Module, users can access the application after successful registration and login. This module allows users to interact with the system by submitting and tracking their complaints.

- The User module allows users to register and log in to the application securely. User details are stored and managed through backend services.
- Users can raise new **complaints** by submitting complaint details using **POST** Mapping. They can also view their submitted complaints using **GET** Mapping.
- Users can track the status of **complaints** (Open, In Progress, Resolved) in real time through the user dashboard.
- The User module contains methods such as **Register User**, **Login User**, **Create Complaint**, **View Complaints**, and **Track Complaint Status** to ensure smooth user interaction with the system.

Http Request Methods

HTTP defines a set of request methods to indicate the desired action to be performed for a given resource.

GET	http://localhost:8080/admin/complaints	Returns the list of all complaints
GET	http://localhost:8080/admin/complaints/AC_issue	Returns the list of complaints raised by a specific user
POST	http://localhost:8080/user/create-complaint	Creates a new complaint
PUT	http://localhost:8080/admin/update-status/1	Updates the status of a complain by complaint ID
DELETE	http://localhost:8080/user/delete-complaint/3	Deletes a complaint by complaint ID

COMPLAINT MANAGEMENT MODULE

- The Complaint Management Module is responsible for handling the complete lifecycle of complaints within the system.
- It allows users to **create** new complaints by submitting details such as title, description, and category using **POST Mapping**.
- The module enables users to **view** their submitted complaints along with current status using **GET Mapping**.
- Admin users can **view all complaints** raised by different users through the admin dashboard.
- Admins can **update** the complaint status (Open, In Progress, Resolved) using **PUT Mapping** to track resolution progress.

EMAIL NOTIFICATION MODULE

- The Email Notification Module is used to provide **automated email communication** between the system and users.
- This module sends an **email notification to users** whenever the status of their complaint is updated by the admin.
- Email alerts are triggered when a complaint is resolved or moved to a different **status** such as Open or In Progress.
- The module is implemented using **SMTP (JavaMailSender)** for sending emails securely.

Tables for the database

The screenshot shows a database management interface with a left sidebar and a main SQL editor area.

Left Sidebar:

- Navigator:**
 - SCHEMAS:** Filter objects. A tree view shows 'college' and 'complaint_db'. Under 'complaint_db', 'Tables' is expanded, showing 'complaints' and 'users'. Other categories like Views, Stored Procedures, and Functions are also listed.
 - Administration** and **Schemas** tabs are at the bottom.
- Information:** Displays 'Schema: complaint_db'.

Main SQL Editor:

- Tab: **SQL File 3***
- Toolbar: Includes icons for file operations, execution, and a 'Limit to 1000 rows' dropdown.
- SQL Code:

```
1 • drop database complaint_db;  
2  
3 • CREATE DATABASE complaint_db;  
4 • USE complaint_db;  
5  
6 • show tables;  
7  
8  
9  
10  
11
```

Bottom Panel:

- Buttons: **Result Grid**, **Filter Rows:** (with a text input), **Export:** (with a printer icon), **Wrap Cell Content:** (with a text icon).
- Table List:**

Tables_in_complaint_db
complaints
users

Admin Database

Navigator

SCHEMAS

Filter objects

college

complaint_db

Tables

complaints

users

Views

Stored Procedures

Functions

crud

dummy

eshop

Administration Schemas

Information

Schema: complaint_db

SQL File 3

Limit to 1000 rows

```
1 • drop database complaint_db;
2
3 • CREATE DATABASE complaint_db;
4 • USE complaint_db;
5
6 • select * from users where role= "ADMIN";
7
8
9
10
11
```

Result Grid

Filter Rows:

Edit:

Export/Import:

Wrap Cell Content:

	id	email	name	password	role
▶	2	admin@gmail.com	Admin	admin123	ADMIN
*	NULL	NULL	NULL	NULL	NULL

Student Database

Navigator

SCHEMAS

Filter objects

college

complaint_db

Tables

complaints

users

Views

Stored Procedures

Functions

crud

dummy

eshop

Administration Schemas

Information

Schema: complaint_db

SQL File 3*

Limit to 1000 rows

1 • drop database complaint_db;

2

3 • CREATE DATABASE complaint_db;

4 • USE complaint_db;

5

6

7 • select * from users where role= "USER";

8

9

10

11

12

Result Grid

Filter Rows:

Edit:

Export/Import:

Wrap Cell Content:

	id	email	name	password	role
▶	1	hari@gmail.com	Hari	12345	USER
	3	kesh@gmail.com	kesh	123456	USER
	4	hariyt0910@gmail.com	AI Man	Hari1011@	USER
•	NULL	NULL	NULL	NULL	NULL

Complaint Database

The screenshot displays a database management interface. On the left, the 'Navigator' pane shows a tree structure of schemas, with 'complaint_db' selected. Below it, the 'Administration' tab is active, showing the 'Schema: complaint_db'. The main area, titled 'SQL File 3', contains a list of SQL queries. The first query is 'drop database complaint_db;', followed by 'CREATE DATABASE complaint_db;', 'USE complaint_db;', and 'select * from complaints;'. The bottom pane shows the 'Result Grid' with a table of complaint records.

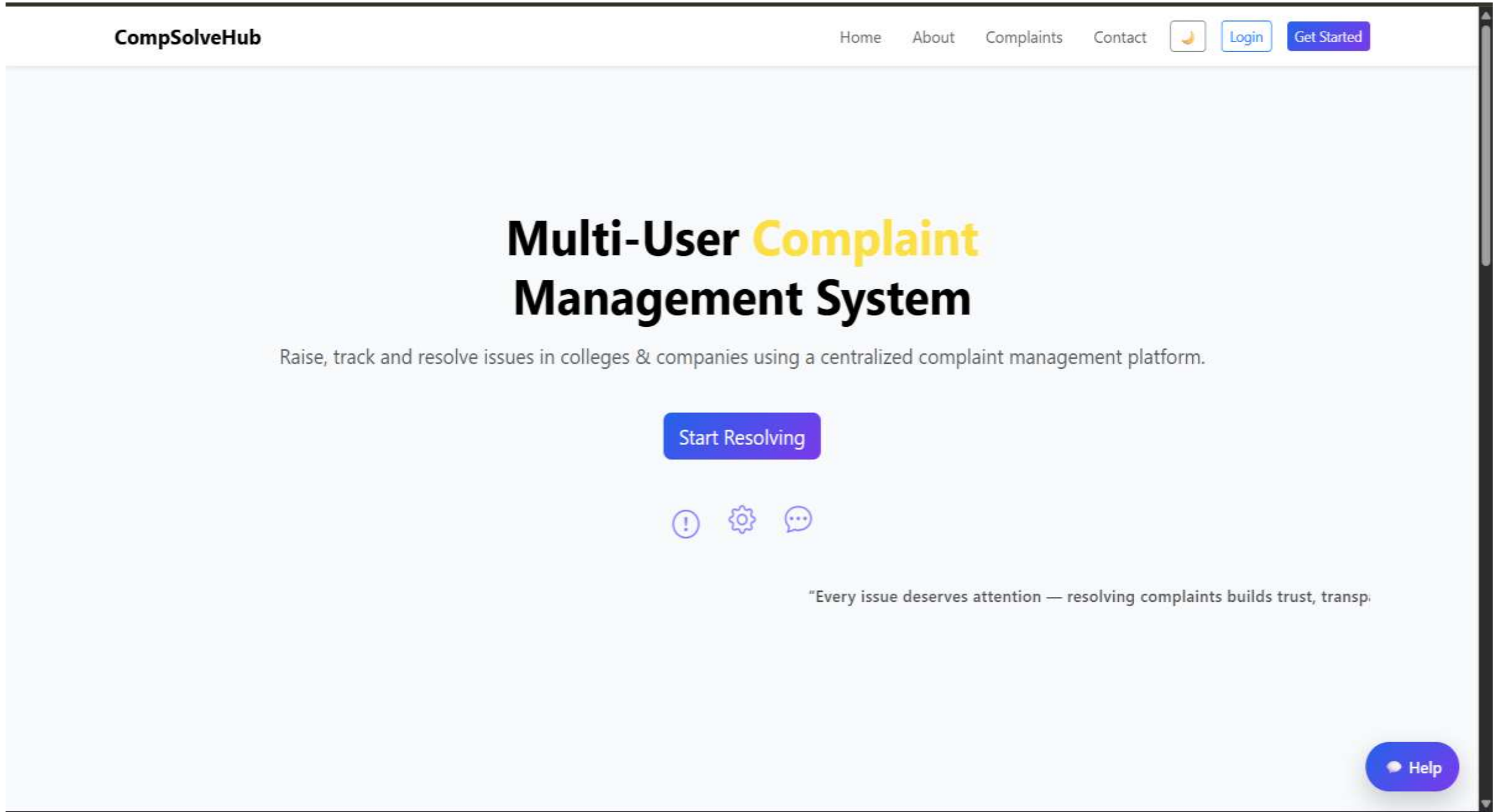
SQL File 3

```
1 • drop database complaint_db;
2
3 • CREATE DATABASE complaint_db;
4 • USE complaint_db;
5
6
7 • select * from complaints;
8
9
10
11
12
13
14
15
16
```

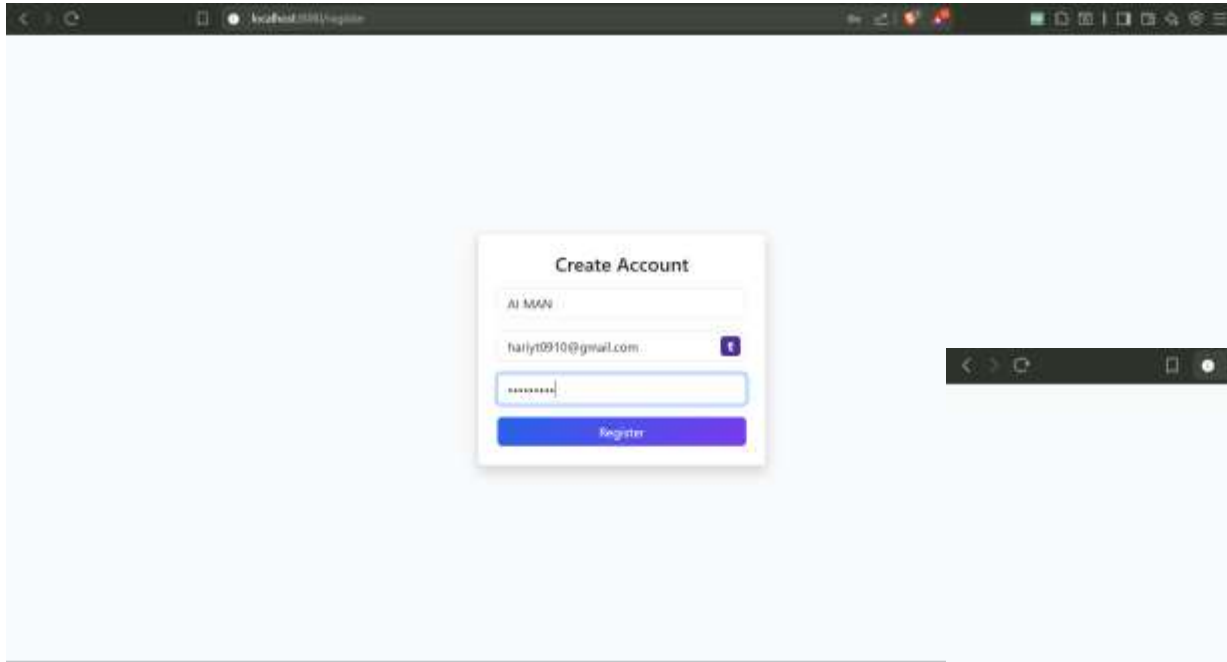
Result Grid

	id	created_at	description	resolved_at	status	title	user_id
▶	1	2025-12-13 23:47:23.865736	Boys issue in 301	2025-12-15 11:40:05.100230	RESOLVED	harassment	1
	2	2025-12-14 11:54:42.230509	Please resolve the issue it is so hard to sit	2025-12-14 11:56:16.990137	RESOLVED	No proper working of AC	1
	3	2025-12-14 13:20:10.338672	not working	2025-12-14 13:20:27.940537	RESOLVED	fan	1
	4	2025-12-14 14:46:00.575785	Useless fights for girls	2025-12-14 15:02:51.233645	RESOLVED	fighting	1
	5	2025-12-14 15:02:22.373574	so hot and no aeration	2025-12-15 11:10:35.623500	RESOLVED	fan not working	1
	6	2025-12-14 16:11:37.126897	flickering	2025-12-14 16:12:41.524374	RESOLVED	lights	1
	7	2025-12-15 11:42:11.253219	The ethernet port is not working	2025-12-15 11:45:49.554069	RESOLVED	PC issue	4
	8	2025-12-15 12:04:16.605162	broken glasses, need to be replaced and fixed	NULL	OPEN	window issue	1

ScreenShots of the Capstone Project



Create Account Page and Login Page



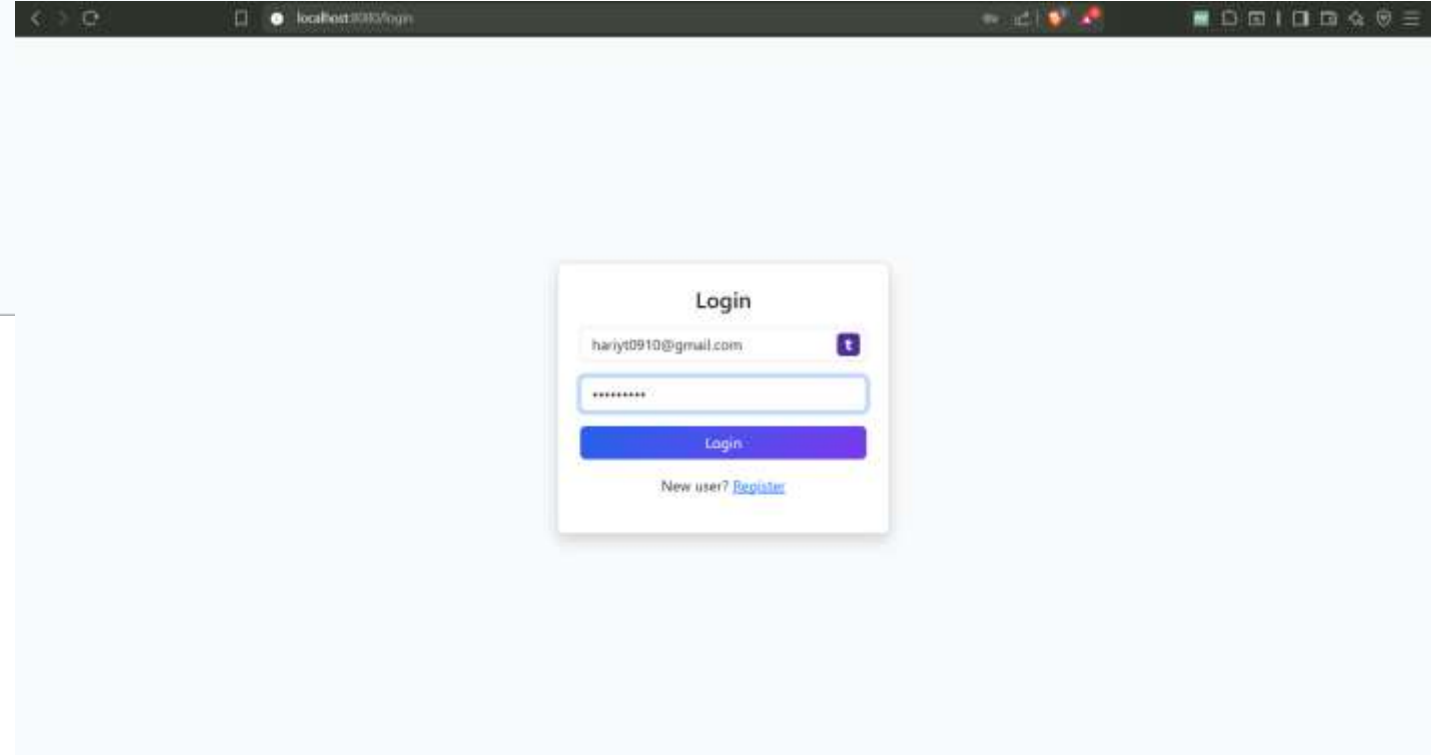
localhost:3000/register

Create Account

AI KARAN

hariyt0910@gmail.com

Register



localhost:3000/login

Login

hariyt0910@gmail.com

Login

New user? [Register](#)

Admin Dashboard

User Dashboard

Logout

+ Raise Complaint

Title	Status	Created
harassment	RESOLVED	2025-12-13T23:47:23.865736
No proper working of AC	RESOLVED	2025-12-14T11:54:42.230509
fan	RESOLVED	2025-12-14T13:20:10.338672
fighting	RESOLVED	2025-12-14T14:46:00.575785
fan not working	RESOLVED	2025-12-14T15:02:22.373574
lights	RESOLVED	2025-12-14T16:11:37.126897
window issue	OPEN	2025-12-15T12:04:16.605162
ac issue	RESOLVED	2025-12-15T16:16:56.227973
ac issues	OPEN	2025-12-16T09:56:23.208158

User Dashboard

Admin Panel

Logout

Total Complaints

11

Open

2

In Progress

0

Resolved

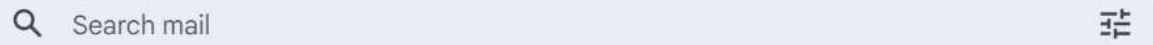
9

Search by complaint or user name

All Status

Complaint	User	Status	Update
harassment	Hari	RESOLVED	<div>RESOLVED</div> <div>Update Status</div>
No proper working of AC	Hari	RESOLVED	<div>OPEN</div> <div>Update Status</div>
fan	Hari	RESOLVED	<div>OPEN</div> <div>Update Status</div>
fighting	Hari	RESOLVED	<div>OPEN</div> <div>Update Status</div>
fan not working	Hari	RESOLVED	<div>OPEN</div> <div>Update Status</div>
lights	Hari	RESOLVED	<div>OPEN</div> <div></div>

mail.google.com/mail/u/3/#inbox/FMfcgzQdzmXMLIZqdXhZWrpZFGFMNGZ



 Inbox 22

☆ Starred

 Snoozed

➤ Sent

 Drafts 1

 Purchases

More

Labels +

1 of 34 < > 

Complaint Status Update Inbox x



hariai091011@gmail.com

to me ▼

Hello,

Your complaint titled "PC issue" has been updated.

Current Status: RESOLVED

Regards,
ComplaintTrack Team

Mon, Dec 15, 11:45 AM (1 day ago) ☆ 😊 ↩



hariai091011@gmail.com

to me ▼

...

Mon, Dec 15, 11:45 AM (1 day ago) ☆ 😊 ↩ ⋮



hariai091011@gmail.com

to me ▼

Hello,

Your complaint titled "Harassment" has been updated.

...

Mon, Dec 15, 10:25 PM (1 day ago) ☆ 😊 ↩ ⋮

← Reply

→ Forward

