# App Development Project Report

## App Dev Project Report

## 1. Student Details

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**About Me:** I am a diploma level student at IITM BS Program

## 2. Project Details

### Project Title: Hospital Management Project

**Problem Statement: Required to build a Hospital Management System (HMS) web application that allows Admins, Doctors, and Patients to interact with the system based on their roles.**

### Approach:

Facing complex hospital management needs, I approached them systematically using Flask and SQLAlchemy. I designed three user roles with specific functionalities, implemented secure authentication, created dynamic appointment systems with conflict prevention, and ensured data integrity through relational models—all while maintaining clean, modular code architecture for scalability.

## 3. AI/LLM Declaration

I used **css for styling, gemini for debugging and finding errors and vs code suggestions, which makes it around 8%.**

## 4. Technologies and Frameworks Used

| **Technology / Library** | **Purpose** |
|---|---|
| **Flask** | Core backend web framework |
| **SQLAlchemy** | Object Relational Mapper for SQLite database |
| **Jinja2** | Template engine for rendering dynamic HTML pages |
| **Flask-Login** | User authentication and session management |
| **WTForms** | Frontend form validation |

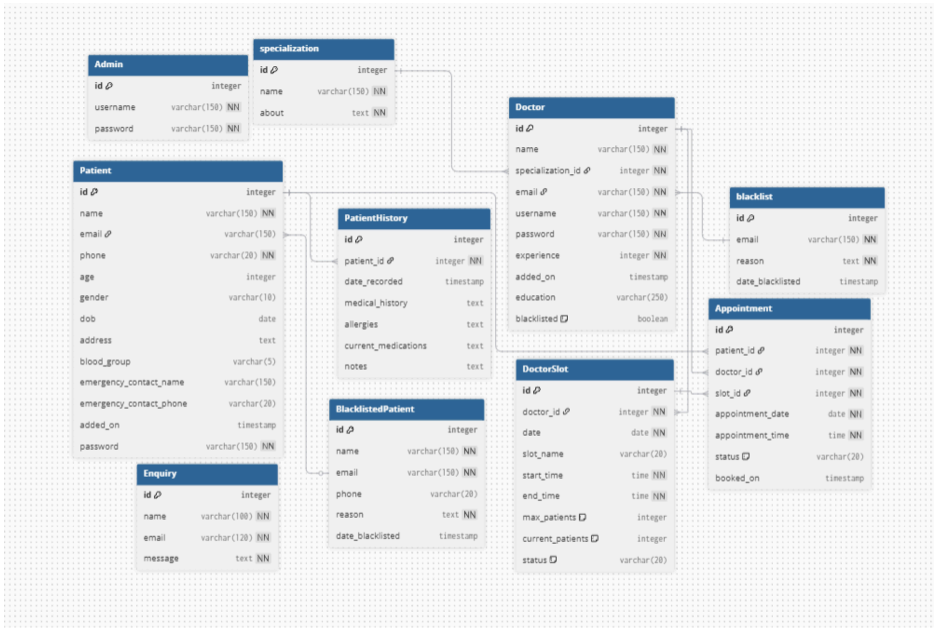
| | |
|---|---|
| **SQLite** | Lightweight local database for storing user data |

## 5. Database Schema / ER Diagram

- ***Tables:***
  ***Admin*** *— stores admin account details (id, name, email, password)*
  ***Doctor*** *— stores doctor details (id, name, email, password, specialization_id, phone, gender)*
  ***Patient*** *— stores patient details (id, name, email, password, age, gender, phone)*
  ***Specialization*** *— stores predefined doctor specializations (id, name, description)*
  ***DoctorSlot*** *— stores doctor availability slots (id, doctor_id, date, start_time, end_time, is_booked)*
  ***Appointment*** *— stores appointment data (id, patient_id, doctor_id, slot_id, date, description, status)*
  ***PatientHistory*** *— stores patient medical history (id, patient_id, doctor_id, diagnosis, prescription, date_recorded)*
  ***Blacklist*** *— stores blocked doctor emails (id, email)*

  *BlacklistedPatient-Stores email of the blacklisted patients.*

- ***Relationships:***
  *One-to-Many -> Specialization -> Doctor*
  *One-to-Many -> Doctor -> DoctorSlot*
  *One-to-Many -> Doctor -> Appointment*
  *One-to-Many -> Patient -> Appointment*
  *One-to-Many -> Patient -> PatientHistory*
  *One-to-Many -> Doctor -> PatientHistory*
  *Logical (email-based) -> Doctor.email -> Blacklist.email*
  *Logical (email-based) -> Patient.email -> BlacklistedPatient.email*



## 6. API Resource Endpoints

| Endpoint | Method | Description |
|---|---|---|

| | | |
|---|---|---|
| `/home` | GET | Shows home template |
| `/about` | GET | Shows about template |
| `/privacy` | GET | Shows Privacy template |
| `/terms` | GET | Shows terms of services template |
| `/enquiry` | GET | Shows enquiry from template |
| `/submit_contact` | POST | Submits contact enquiry form |
| `/delete_enquiry/<int:enquiry_id>` | POST | Deletes an enquiry(admin only) |
| `/view_enquiries` | GET | Shows all enquires (admin only) |
| `/admin_login` | GET | Shows all login templates |
| `/submit-admin-loin` | POST,GET | Processes admin login |
| `/logout` | GET | Logs out any user type |
| `/admin_dasboard` | GET | Shows admin dashboard |
| `/manage_doctors` | GET | Shows doctor management page |
| `/add_doctor` | GET,POST | Adds new doctor |
| `/edit_doctor/<int:doctor_id>` | GET | Shows all doctor edit form |
| `/edit_doctor/<int:doctors_id>` | POST | Updates doctor information |
| `/remove_doctor/<int:doctor-id>` | POST | Removes doctor |
| `/blacklist_doctor/<int:doctor_id>` | POST | Blacklist doctor |
| `/blacklisted_doctors` | GET | Shows blacklisted doctors |
| `/revoke_blacklist/<int;doctor_id>` | POST | Removes doctor from blacklist |
| `/Services` | GET | Shows services page |
| `/OurDoctor` | GET | Shows doctor list with search |
| `/department/<int:specialization-id>` | GET | Shows department details |
| `/manage_doctor_ page` | GET | Shows doctor management with search |

| | | |
|---|---|---|
| /doctor_login | GET | Show doctor login_page |
| /submit-doctor-login | POST | Process doctor login |
| /doctor_dashboard | GET | Show doctor dashboard |
| /register | Get | Show patient registration |
| /submit-registration | POST | Process patient registration |
| /patient_login | GET | Show patient login page |
| /submit-patient-login | POST | Process patient login |
| /patient_dashboard | GET | Show patient dashboard |
| /login | GET | Show login page |
| /book_appointment<int:doctor_id> | GET, POST | Book appointment with doctor |
| /patient_my_appointment | GET | View patient appointments |
| /cancel_appointment/<int:appointment_id> | POST | Cancel appointment |
| /doctor_appointments | GET | View doctor appointment |
| /reschedule_appointment/<int:appointment_id> | POST | Reschedule appointment |
| /view_patient_history | GET | View patient medical history |
| /add_patient_record/<int:patient_id> | POST | Add patient medical record |
| /edit_patient_record/<int:record_id> | GET,POST | Edit patient record |
| /delete_patient_history/<int:record_id> | POST | Delete patient record |
| /update_appointment_status/<int:appointment_id> | POST | Update appointment status |
| /admin_view_appointments | GET | View all appointments admin |
| /admin-cancel-appointment/<int:admin_id> | POST | Admin cancel appointment |
| /admin-patient | GET | Manage patients admin |
| /admin-view-patient/<int:patient_id> | GET | View patient profile admin |
| /admin-update-pass | POST | Admin changes password |

| | | |
|---|---|---|
| `/admin_myAcc` | GET | admin account page |
| `/admin-change-pass` | GET | Show change password page |
| `/doctor_myAcc` | GET | Doctor account page |
| `/doctor-change-pass` | GET | Shows Doctor change password page |
| `/doctor-update-pw` | POST | Updates doctor’s password |
| `/patient-myACC` | GET | Patient account page |
| `/update-profile` | GET,POST | Update patient profile |
| `/patient-change-pass` | GET | Patient change password page |
| `/patient-update-pw` | POST | Updates password for patient |
| `/patient-history-for-patient/<int:patient_id>` | GET | Patient view own history |
| `/doctor-patients` | GET | View doctor’s patient list |
| `/doc-ava/<int:doctor_id>` | GET,POST | Manage doctor availability |
| `<blacklist_patient/<int:patient_id>` | POST | Blacklist the patient |
| `<revoke_patient_blacklist<int:bid>` | POST | Removes the blacklist on the patient. |

## 7. Architecture (their are extra features, but I dont have more space)

### Architecture Overview:

- **run.py** – main Flask application entry point
- /app - contains models, routes, and init
- **/templates** – Jinja2 HTML templates
- **/static** – CSS.

VIDEO:

### Drive Link:

https://drive.google.com/file/d/1mtfhLxU2VxA4Cxinjk84bm_cDjveB5_9/view?usp=sharing