

MedVault Documentation

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MedVault

Problem Statement

The healthcare industry in South Africa suffers from inefficiencies brought on by outdated manual documentation procedures. This dependence on outdated techniques results in lost time, errors, restricted accessibility, and difficulties with compliance. As a result, there is a disconnected healthcare system that makes it difficult to coordinate, obtain, maintain continuity of care, use resources, and share information. These issues are made worse by paper-based records, which lead to duplication, delays, mistakes, and restricted patient access.

Recurring problems include:

- Long waiting times for patient file retrieval
- Manual process from registration of a file, retrieval process and process of refiling the files once returned in the filing room
- Each patient file details are captured multiple times by officials (from registration to the filing room when the files are filed back)
- Missing files are only tracked when patients return to the hospital

Solution Statement

To overcome these challenges, South Africa requires a centralized and secure file retrieval system. Benefits include improved care coordination, enhanced patient engagement, increased system efficiency, and better file management. The system will automate and improve the tracking of patient files from creation to retrieval and return, reducing the manual effort involved in finding and managing files. A color-coded real-time system allows staff to track the exact status of files, ensuring that they are returned to the filing room after use, and reducing the risk of lost files. Staff can quickly search for patient files using file numbers, ensuring fast retrieval, improving patient throughput, and reducing wait times. Patients can be kept informed about the location and status of their files, reducing anxiety and increasing satisfaction during hospital visits.

These features align with the goals of modernizing the patient file management process, reducing inefficiencies, and ensuring secure, quick access to medical records.

Key Features:

- Digital Medical Records with File Management:

The platform will digitize patient files, each file will be assigned a unique file number for consistent record-keeping across multiple healthcare facilities.

The system will streamline file creation, allowing the quick registration of new patient records and retrieval by using file numbers.

- Secure Access Control & Role-Based Permissions:

Only authorized healthcare professionals will have access to patient records. Different access levels will be assigned based on roles such as administration clerks, doctors or CEO.

- Real-Time File Retrieval Tracking:

The platform will display real-time statuses for file retrieval and return, using a color-coded system to track whether files are retrieved, dispatched, or returned to storage. Missing files will be flagged as soon as they are identified.

- File Search and Tracking:

Clerk can search for patient files using file numbers, with a system that monitors the movement of each file. This will minimize file loss and ensure faster access to patient files during patient visits.

- Patient Transparency and Communication:

Patients will be able to view the status of their files on screens within waiting areas, reducing waiting times and enhancing communication about file progress.

- Audit Trails and Reporting:

Daily reports will provide insights into file retrieval activity, highlighting any unreturned or missing files. Audit logs will track who accessed or modified the files, ensuring accountability and compliance.

Technologies Used

- Web Application Development:
 - Frameworks used: NextJs, Tailwind CSS and React Native.
- Database Management:
 - Database used: Supabase
- API Integrations:
 - OpenAI for AI functionalities and News API for healthcare updates.

Business Model

The revenue streams for MedVault will be diversified to meet the needs of various stakeholders. Healthcare facilities will be charged subscription fees based on their usage, while transaction fees will apply for access to electronic patient records. Additionally, data analytics services may be introduced to monitor and update health trends. Patients will have access to healthcare services at a flat rate through patient access fees. Training and support services for both staff and authorized patient caretakers will be provided at the point of deployment, driving greater facility optimization. Customization and integration services will be offered, with charges for tailoring the platform to specific needs such as APIs with government health departments, private healthcare providers, technology partners, sponsors, pharmaceutical companies, and educational institutions.

To advance its mission of providing affordable preventive care, MedVault will form partnerships with universities for joint research projects, scholarships, internships, and grant programs that enhance both learning opportunities and revenue generation.

In conclusion, MedVault's diverse revenue model, combined with its research initiatives and educational programs, will contribute to the improvement of North Africa's healthcare system, while ensuring data security and compliance.

Functional Requirements

- **Digital Medical Records:** The system shall store patient information (e.g., diagnoses, allergies, medications) electronically with unique file numbers for each patient to ensure accurate and consistent recordkeeping.
- **Secure Access Control:** The system shall allow only authorized healthcare professionals to access and update patient records, and patients shall be able to view their own records.
- **Patient File Creation:** The system shall allow users to create new patient files and store details such as name, surname, file number, and department. These files will be retrievable by entering file numbers.
- **File Retrieval:** The system shall display files that need to be retrieved by staff in the filing room. A real-time color-coded status system will highlight the file's status (e.g., retrieved, dispatched).
- **File Tracking:** The system shall track the retrieval and return of patient files to ensure that all files are accounted for and missing files are flagged.
- **File Search:** The system shall allow staff to search for patient files using file numbers.
- **Filing Room Activity Monitoring:** The system shall allow staff to tick off files as they are retrieved and ensure that returned files are accurately recorded and filed.
- **Role-Based Access Control:** Different levels of access will be available based on roles (e.g., Administration Clerk, SuperAdmin and CEO), with only certain roles allowed to capture new patient details or generate reports.
- **Audit Trails and Reporting:** The system shall provide daily reports on file statuses, including retrieved files, unreturned files, and logs of who accessed the system and when.
- **Communication with Patients:** Patients should be able to view the status of their files on screens in waiting areas, improving transparency and reducing wait times.

These functional requirements outline key aspects needed for digitizing and improving patient file management and electronic health records across the healthcare system in South Africa.

System Design

Figure 1: Usecase

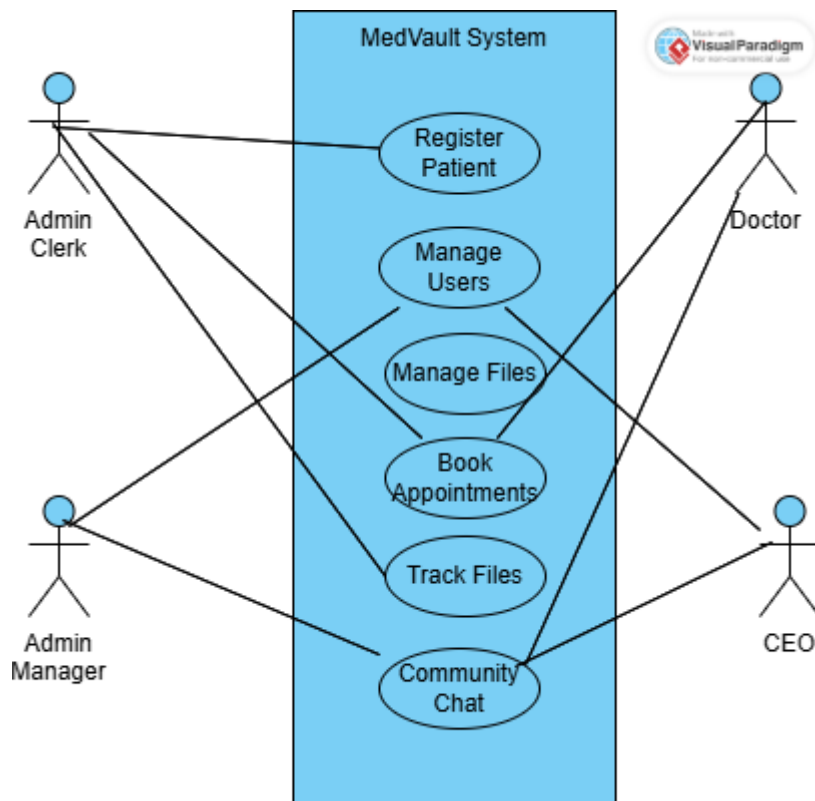


Figure 2: ERD

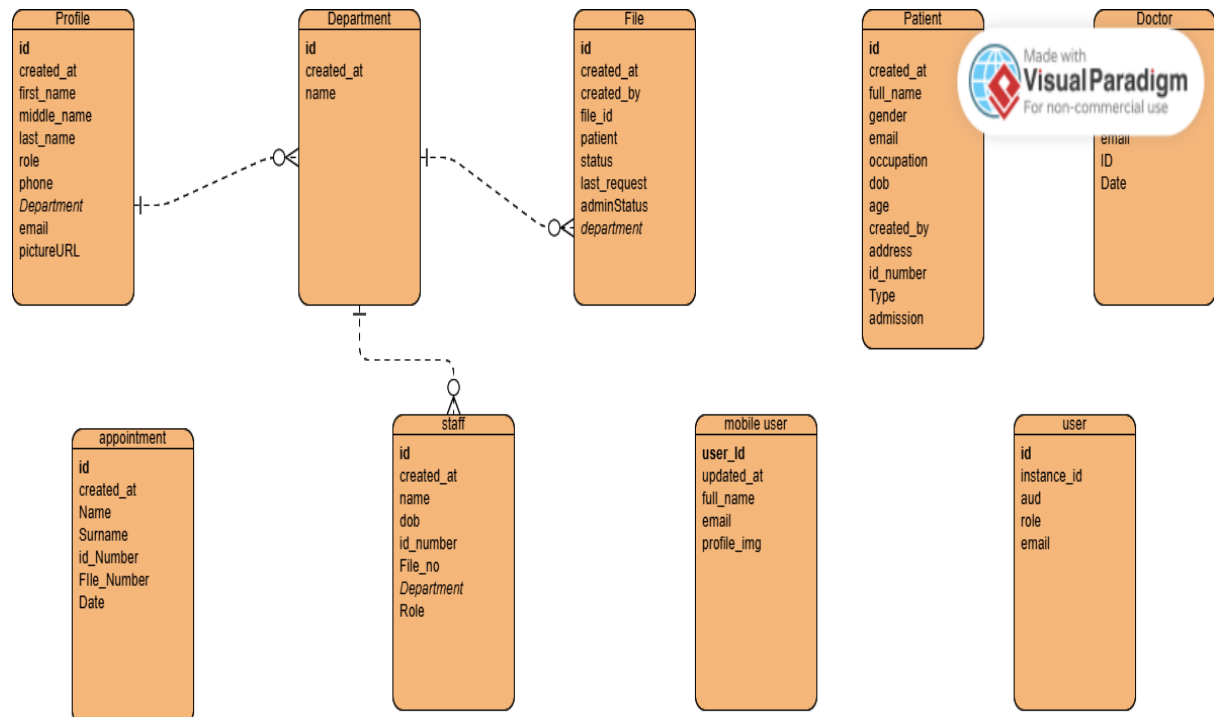


Figure 3: Sequence diagram

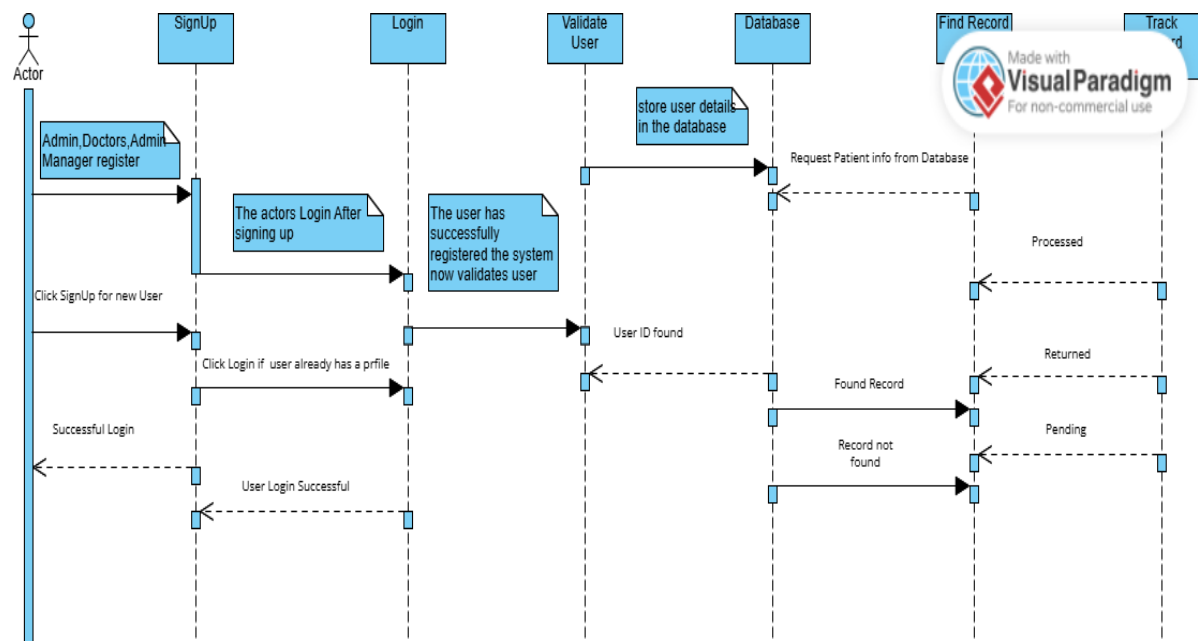
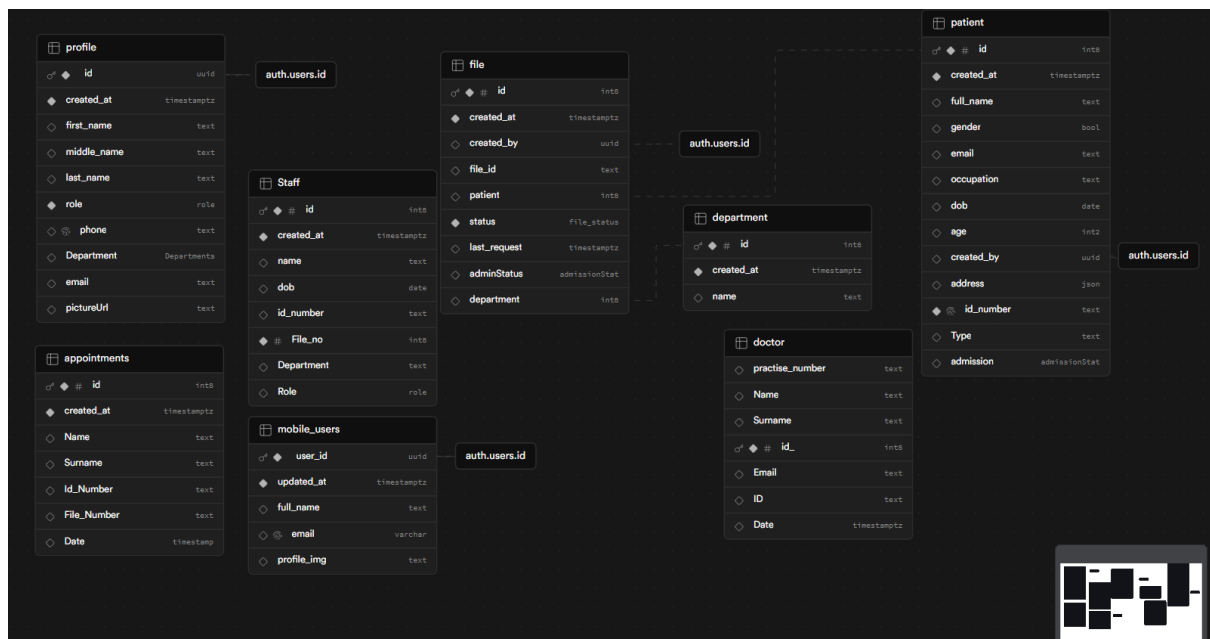
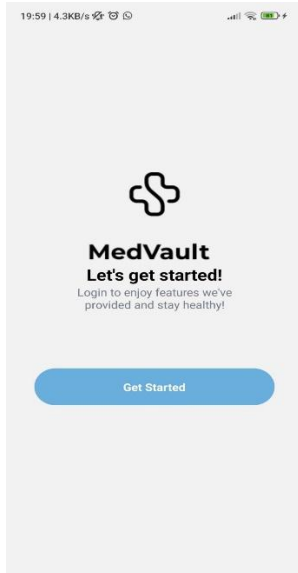


Figure 4: Database Design

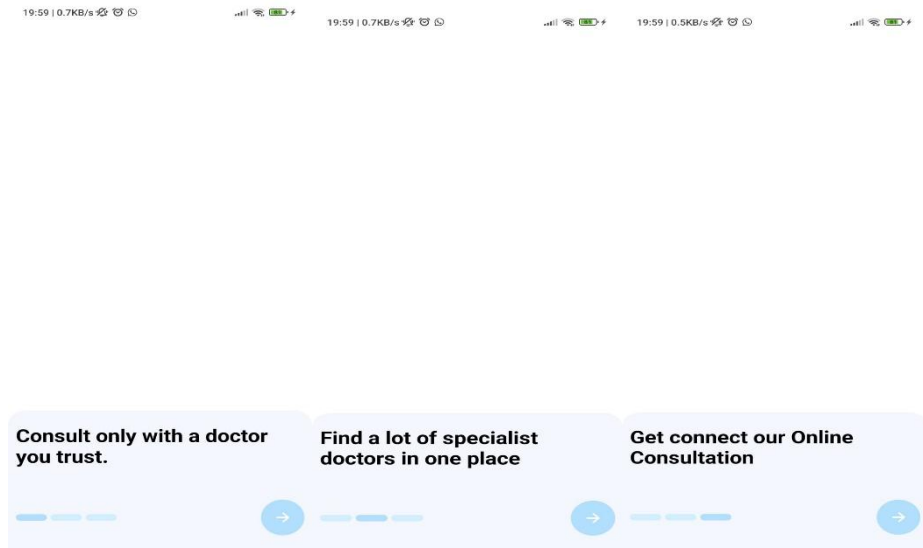


Mobile App Guide

5. Getting started



6: Onboardings



7: Sign in & Sign up

MedVault

Enter your ID number

Enter your email

Enter your password

Sign Up

MedVault

Use Email ☒ Use Phone OTP ☐

Enter your email

Enter your password

Login with Email

MedVault

Use Email ☐ Use Phone OTP ☒

Phone number (0731234567)

Enter your OTP

Send OTP

Login

8: Reception & Emergency contacts

Find your desired health solution

Find Hospital Location

Call Reception Call Ambulance Records Visits

Discover Health

Learn More

5: Homepage, chatbot, appointment

Find your desired health solution

Find Hospital Location

Call Reception Call Ambulance Records Visits

Discover Health

Learn More

Health articles

News24 | Players, coaches and teams: Here's how men could help SA score a goal against HIV

Hey! I have a stomach ache

I'm sorry to hear that you're experiencing a stomach ache. It can be caused by various factors such as indigestion, gas, food intolerance, or even stress. Here are some steps you can take to help alleviate your discomfort:

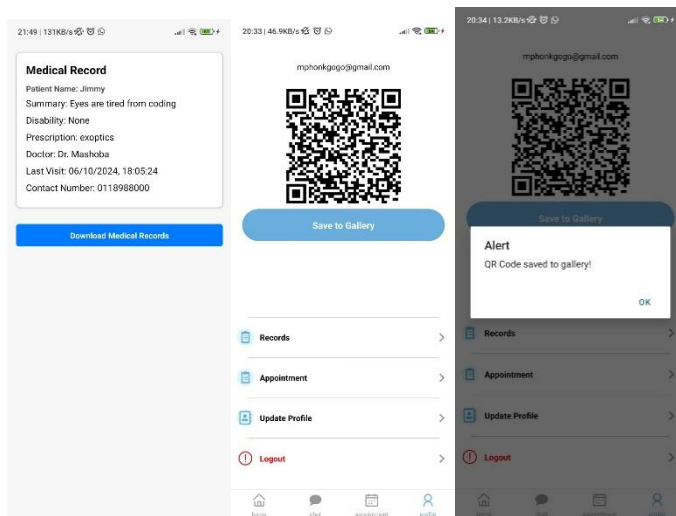
1. **Rest**: Give your body time to recover.
2. **Stay Hydrated**: Drink plenty of water, but avoid caffeinated and carbonated beverages.
3. **Monitor Your Diet**: Avoid heavy, spicy, or fatty foods until your stomach feels better.
4. **Warm Compress**: Applying a warm compress or heating pad to your abdomen can provide relief.
5. **Over-the-Counter Medications**: Antacids or medications like simethicone may help, depending on the cause of your discomfort.

If your stomach ache persists, is severe, or is accompanied by other symptoms such as fever, vomiting, or changes in your bowel habits, it's important to seek medical attention. At OR Tambo Hospital, we have qualified medical professionals who can assess your condition and provide appropriate treatment. Would you like more information about visiting our hospital?

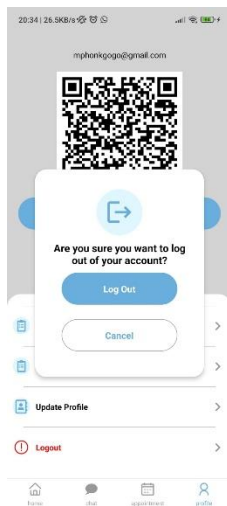
Tambo Memorial Hospital
Tambo Hospital, Plantation, 1439
Day Visited: 06/10/2024

Tambo Memorial Hospital
Tambo Hospital, Plantation, 1439
Day Visited: 07/10/2024

6: QR code & medical record information




7: Log out



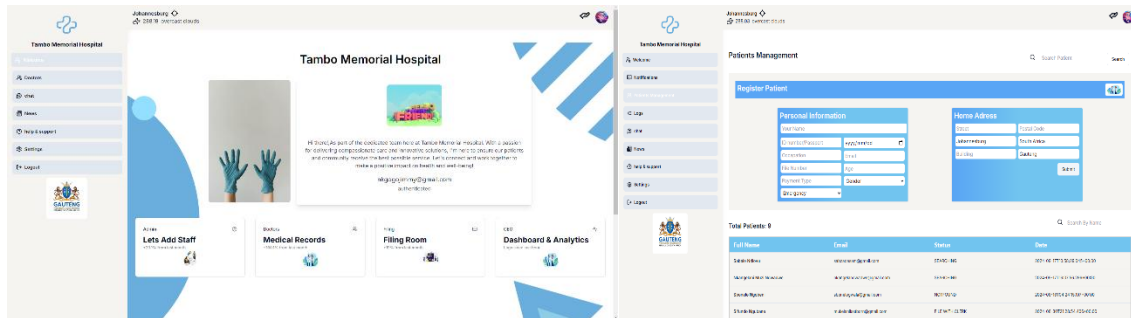
Website Guide

1: Sign in & sign up



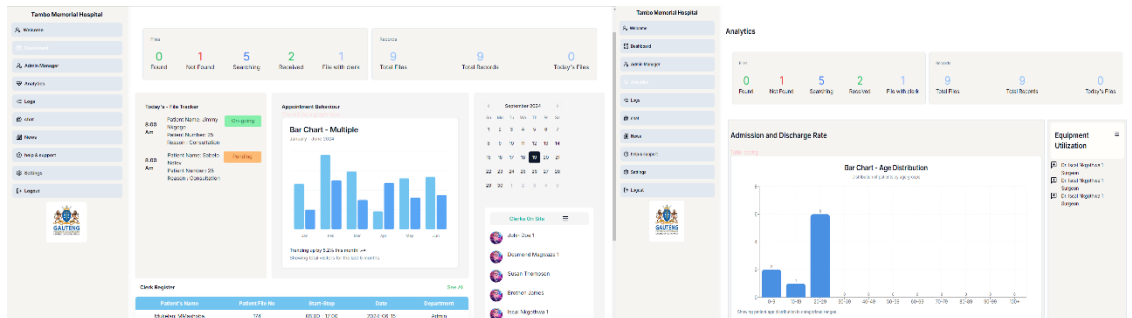
The sign in and sign up forms are displayed side-by-side. The sign in form on the left has fields for 'Staff Name' (with a dropdown), 'Password', and a 'Remember me' checkbox. The sign up form on the right has fields for 'First Name', 'Last Name', 'Email', 'Phone', 'Gender', 'Date of Birth', 'Address', and 'Password'. Both forms have a 'Sign in / Sign up' button and a link to 'Forgot your password?'. The Tambo Memorial Hospital logo is at the top of each form.

2: Welcome page & patient management

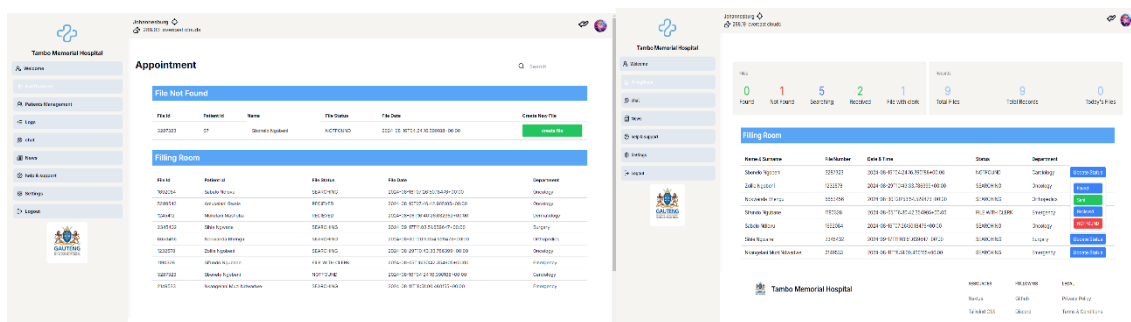


The welcome page on the left shows a dashboard with a sidebar menu (Home, Patients, Appointments, Filing Room, Analytics, Settings, Logout) and a main content area with a welcome message and quick links to 'Add Staff', 'Medical Records', 'Filing Room', and 'Dashboard & Analytics'. The patient management page on the right shows a 'Register Patient' form with 'Personal Information' and 'Home Address' sections, and a 'Total Patients' table with columns for Name, Email, Status, and Date.

3: Dashboard & analytics



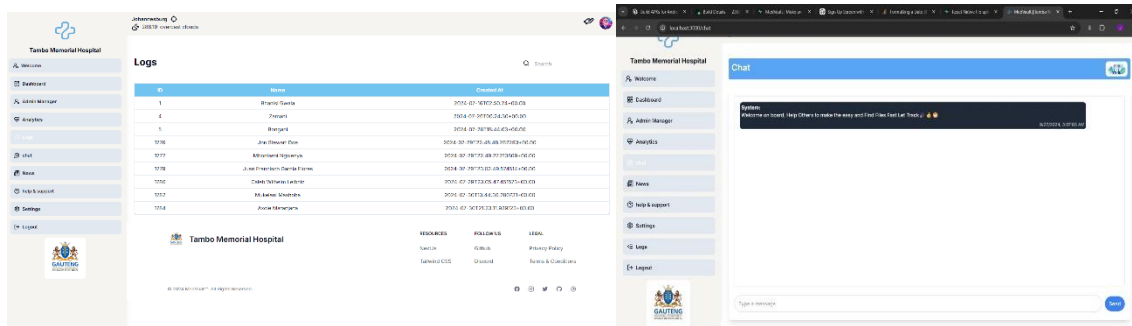
4: Notifications and filing room



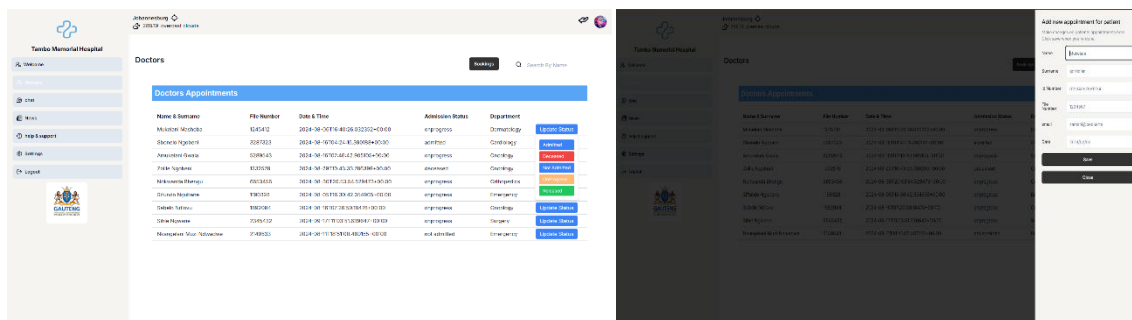
The notifications and filing room interface shows a sidebar menu (Home, Patients, Appointments, Filing Room, Analytics, Settings, Logout) and a main content area with a 'File Not Found' notification, a 'Filing Room' table, and a 'Filing Room' table. The 'Filing Room' table has columns for Name, Surname, File Number, Date, Status, and Department.

Name	Surname	File Number	Date	Status	Department
Shanele Ngweni	123456	2024-08-15	15:00:00	Completed	Cardiology
Shanele Ngweni	123456	2024-08-15	15:00:00	Completed	Cardiology
Shanele Ngweni	123456	2024-08-15	15:00:00	Completed	Cardiology
Shanele Ngweni	123456	2024-08-15	15:00:00	Completed	Cardiology
Shanele Ngweni	123456	2024-08-15	15:00:00	Completed	Cardiology
Shanele Ngweni	123456	2024-08-15	15:00:00	Completed	Cardiology
Shanele Ngweni	123456	2024-08-15	15:00:00	Completed	Cardiology
Shanele Ngweni	123456	2024-08-15	15:00:00	Completed	Cardiology
Shanele Ngweni	123456	2024-08-15	15:00:00	Completed	Cardiology
Shanele Ngweni	123456	2024-08-15	15:00:00	Completed	Cardiology

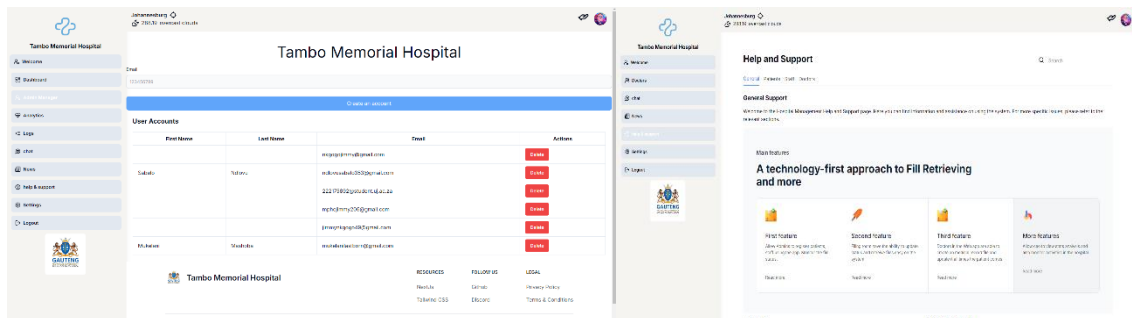
5: Logs & Chat page



6: Doctor's page & appointment setting



7: Admin page & Help and support



8: News page & Terms and conditions

