IT Project 700 Project 2025 – Phase 3
Project Proposal: Doctor Appointment & Office Management System (Enhanced)

Group Members

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3. ANALYSIS PHASE

3.1 Introduction

- The analysis phase aims to thoroughly understand the current appointment and clinic management process, identify weaknesses, and define detailed system requirements.
This ensures that the proposed system aligns with stakeholder needs while being technically and operationally feasible.

3.2 Information Gathering methodology (Observation, participatory, Interviews)

To ensure accurate requirements are collected, these 3 methods are used
Observation - we viewed Current methods for booking and queue management and general admin.
participatory – went to local clinics / GP`s and Specialists to view current booking system
I**nterviews** – We have done interviews as patients with receptionists and doctors to assess current procedures and flaws they experience.

Questions we asked

Patients

1. How do you usually book appointments? - Mostly by calling or walking in. would like a app for my local GP.
2. What challenges do you face when making appointments? - long waiting times even after booking. as we cannot get through as line busy
3. Would you like digital reminders? – Yes, via SMS or WhatsApp.

Receptionists/Admin staff

1. What is the hardest part of managing appointments - Handling walk-ins vs scheduled patients. Often leads to confusion. And we not enough staff to handle all calls.
2. How do you keep records? Paper registers and Folders. Retrieval takes time. But lately we use medical Aids to keep patients records to many systems

Doctors and Specialists

1. Do scheduling conflicts affect your work? - Yes, patients arrive late or don't show making become irate when they are late.
2. Do you receive wrong patients files? -Yes, a mix-up rarely happens

3.3 Analysis of existing system

-**Manual Process booking** is managed via phone calls, emails, diary book entries and normal walk-in patients.
-**Communication**: Phone call, SMS, emails, walk-in patients and even WhatsApp.
-**Queue Management**: Normally sit in a line by doctors and walk-in disrupt the queue.
-**Data Storage**: Have normal client folders and no database systems for patients.
-Analytics: patients that have appointments and still always wait in long quests and trends are not captured.

3.4 Data Analysis (Data Integrity & Constraints)

Data integrity issues

- Duplicate patient records and patient file
- Incomplete patient files
- Mishandling patient files e.g same surname, name and not identifying by an unique identifiers like ID number

Constraints

- Each record should have a unique identifier like ID number
- POPIA compliance consent for patient reminders
- Patient sensitive data should be more protected.

3.5 Weakness of the Current System

- No overlapping appointments should be allowed per doctor or double bookings (except for code red or emergency cases)
- high no shows because they not send consistent reminder (patient forgets booking)
- some patients prefer WhatsApp or SMS as people don't have airtime for phone calls
- paper dependency leads to data loss

3.6 Analysis of the Proposed System (Functional Requirements)

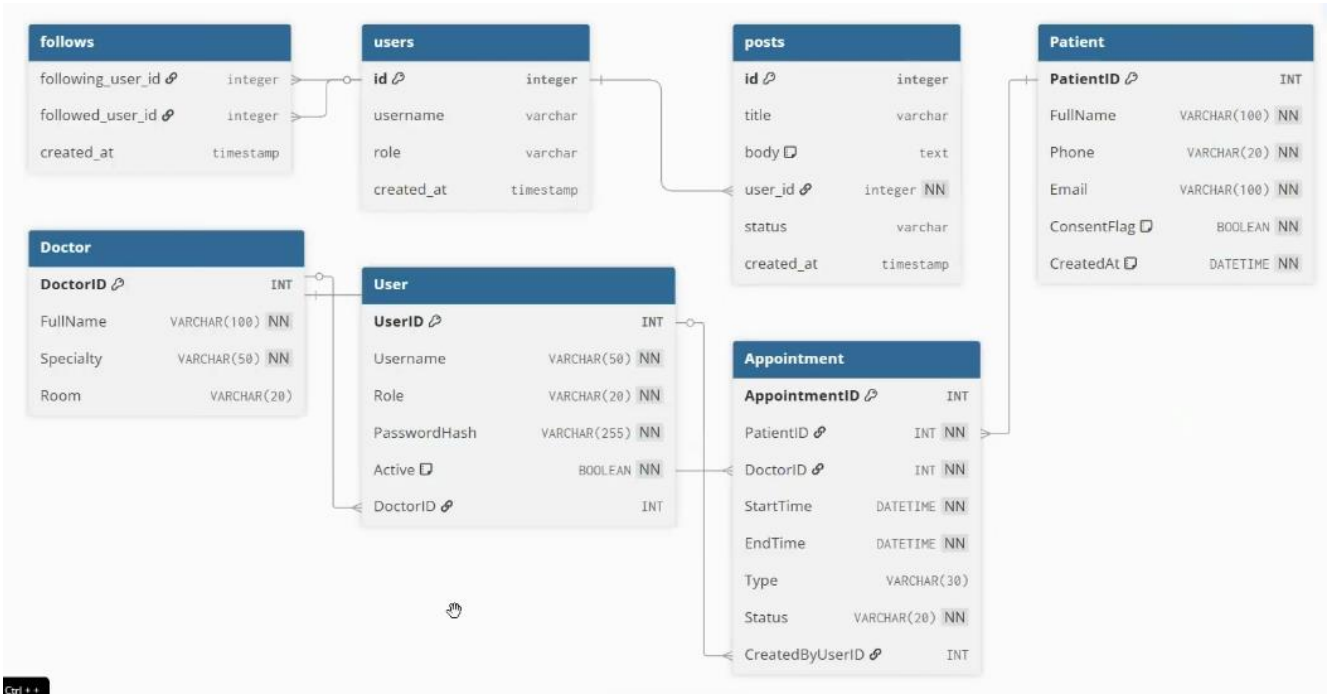
- queue management with real time updates which prevent double bookings and overlapping
-Multi-channel booking – pop ups via app, email, SMS
- integrate WhatsApp and SMS for reminders
- with reminders patients will have option to cancel, reschedule or proceed then next patient will get notification asking if they would like to come earlier or stay same time
-Dashboard that will report will no shows and cancellations and how patients attended

3.7 Non-Functional Requirements

Performance - Booking/search under 5 seconds if 1 client uses or 1000 clients use it same time
Availability - 99% uptime offline for clinics back office support for clinics and doctors
Scalability - Support for additional doctors and rooms as clients and patients
Security - POPIA compliance, TLS when logging in and saving Audit logs when data is shared,
Portability – must be supported on operating systems and mobile devices.

3.8 Data Modeling for Proposed System

- **Patient:** Stores patient details including unique patient ID, full name, phone number, unique email, current consent flag, and creation timestamp.
- **Doctor:** Contains doctor information with unique doctor ID, full name, specialty, and optionally assigned room.
- **User:** Holds system user accounts with unique user ID, username, role (limited to Admin, Manager, Reception, Doctor, Patient), hashed password, active status, and an optional link to a Doctor record if the user is a doctor.
- **Appointment:** Records appointments with unique appointment ID, links to Patient and Doctor IDs, start and end times, appointment type, status (scheduled, checked-in, completed, cancelled, no-show), and the user who created the appointment. Includes indexes for efficient lookups by doctor and time.
- **Notification:** Tracks notifications sent for appointments with unique notification ID, related appointment ID, channel used (SMS, Email, WhatsApp), template name, sent timestamp, and delivery status.
- **Queue Entry**: Manages appointment queue entries with unique queue ID, one-to-one link to appointment, check-in time, priority level (urgent or routine), position in queue, and status (waiting, called, skipped, done).
- **Triage Response:** Captures triage questionnaire responses linked to an appointment, storing answers in JSON format, urgency score, and an urgency flag.
- **Audit Log:** Logs actions with unique log ID, user ID who performed the action, type of action, affected entity and entity ID, timestamp of the action, and additional metadata stored as JSON.
- **Availability:** Maintains doctor availability schedules identified by availability ID, linked to Doctor ID, day of the week, start and end times, with optional exception dates for special schedule changes.
- **Consent:** Records patient consents with unique consent ID, linked to patient ID, scope of consent, method of obtaining consent, timestamp, and optional revocation timestamp.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