



Project Proposal

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Title of the Project

To Design and implement a Mobile-Based Appointment & Queue Management System

Application Name: SmartQueue

Introduction/Purpose

Designed to help users book appointments and manage queues remotely for service based organization. (Hospitals, government offices, University offices etc)

Eliminates long waiting times by allowing users to reserve a spot in queue, receive real-time updates, get notifications when turn is approaching.

Problem Statement

Many service centers operate on a first-come-first-served basis, leading to:

1. Long waiting lines
2. Time wastage
3. Overcrowding
4. Poor customer experience

There is a need for a digital queue management solution that allows users to plan their time efficiently.

Objectives

1. To design a mobile application that enables users to book queue slots remotely.

2. To reduce physical congestion in service centers.
3. To notify users in real time about their queue status.
4. To improve efficiency for service providers.
5. To create a secure and user-friendly mobile system.

Scope of the Project

The system will focus on:

1. Mobile platform (Android first)
2. Single or multiple service centers
3. Basic analytics and reports

System Requirements

Functional Requirements

1. User authentication (email/phone)
2. Appointment booking system
3. Queue number assignment
4. Mpesa Integration
5. Notification system
6. Database storage for users and bookings

Non-Functional Requirements

1. High performance and fast response time
2. Secure data handling
3. User-friendly interface
4. Scalability for multiple service centers
5. Offline error handling

Tools & Technologies

1. Frontend: Flutter / React Native / Android Studio (Java or Kotlin)
2. Backend: Firebase / Node.js / PHP
3. Database: Firebase Firestore / MySQL
4. Notifications: Firebase Cloud Messaging (FCM)

System Architecture (Explanation)

User Side

1. User registration and login
2. Select service center
3. Book an appointment or queue slot
4. Mpesa Integration
5. View queue position in real time
6. Push notifications & reminders
7. Cancel or reschedule appointments

Admin Side

1. Admin login
2. Manage services and service counters
3. Approve or reject bookings
4. Update queue progress
5. View daily reports and statistics

Conclusion

SmartQueue provides a modern solution to queue and appointment management, improving efficiency for both service providers and customers while embracing mobile technology.

