A PROPOSED OFFERING OF AN ONLINE CLINIC APPOINTMENT AND WALK-IN QUEUE MANAGEMENT SYSTEM FOR TONSUYA SUPER HEALTH CENTER

A Requirement Specification Document Presented to the
Faculty of Datamex College of Saint Adeline, Inc.

In Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Information Technology

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INTRODUCTION

Visiting Tonsuya Super Health Center has always been part of many people's lives, whether for check-ups, treatment, or consultations. However, patients often face the same issue. long lines, confusion about who's next, and uncertainty on how long they will wait. With the current manual process where names are listed on paper, both patients and staff experience unnecessary delays and stress. This document has been prepared to clearly define the requirements of a system that aims to change this situation for the better. Its main purpose is to serve as a guide, ensuring that everyone involved developers, healthcare workers, and decision-makers understands exactly what needs to be built and how it should function.

The proposed Online Clinic Appointment and Walk-In Queue Management System will directly address these challenges by providing patients with two simple options: booking their appointment online at a time that suits them, or registering as a walk-in and receiving a digital queue number. This way, waiting will no longer feel endless, and patients will have a clearer idea of when they will be served. At the same time, healthcare staff will spend less time managing manual lists and more time focusing on patient care. This overview shows how the system is designed not just to remove long queues, but also to create a fairer, more transparent, and more convenient healthcare experience for the community.

The scope of this requirements specification covers the essential features and functions needed for the system to operate effectively. These include online appointment booking, walk-in queue registration, queue monitoring, and secure management of patient records. It also details the functional and non-functional requirements that will guide the development process, such as ensuring data privacy, user accessibility, and system reliability.

Overall, this requirements specification aims to give a clear and detailed picture of the system that will be developed. By defining the needs of both patients and staff in advance, it ensures that the final product will truly solve existing problems, improve healthcare services, and modernize the way the Tonsuya Super Health Center delivers care to its community

FUNCTIONAL REQUIREMENTS

This section lists the key functions the system must perform to meet user and business needs. It includes account registration and login, booking and managing appointments, viewing doctor schedules, generating walk-in queue numbers, sending notifications, and admin management of schedules and reports. Each requirement specifies its priority, dependencies, and criteria for successful completion.

Requirement ID	Requirement Description	Priority	Dependencies	Acceptance Criteria
FR-01	Patients can register with their personal details.	High	None	Patients can create an account and details are stored in the system.
FR-02	Patients can log in using their credentials.	High	FR-01	Patients access the system dashboard after login.
FR-03	Walk-in patients can get a queue number and monitor their queue status.	High	None	Queue number is generated and displayed to the patient.
FR-04	Patients can schedule an appointment online by selecting service, staff, date, and time.	High	FR-01	Appointment is successfully booked and confirmed.

FR-05	Staff can confirm, reschedule, or cancel appointments.	Medium	FR-04	Appointment status updates are reflected in the system.
FR-06	Staff/Admin can add, edit, or remove services offered.	Medium	None	Services are updated and visible to patients.
FR-07	Admin can manage staff information, accounts, and roles.	Medium	None	Staff records are properly maintained in the system.
FR-08	System generates reports related to appointments, queue, and services.	Medium	FR-03, FR-04	Reports can be viewed or downloaded successfully.
FR-09	Patients receive notifications regarding appointment status, reminders, or updates.	Medium	FR-04, FR-05	Patients get timely notifications.
FR-10	Staff can search and filter patient records, appointments, and queue lists.	Medium	FR-01, FR-03, FR-04	Records can be retrieved quickly and accurately.

Table 1: Functional Requirements

NON-FUNCTIONAL REQUIREMENTS

This section defines the system's quality attributes, including performance, usability, reliability, security, scalability, and maintainability. It ensures the system operates efficiently, is user-friendly, secure, and can handle future growth while being easy to maintain and update.

Category	**Description**
Performance	The system must load pages within 3 seconds and handle up to 100 simultaneous users without performance degradation.
Usability	The interface should be intuitive, with clear navigation for patients and staff. Users should complete tasks without extensive guidance.
Reliability	System uptime should be at least 99%, and data should be regularly backed up to prevent loss.
Security	All user data must be encrypted. Access to admin features requires authentication and role-based authorization.
Scalability	The system must support future increase in users, appointments, and doctors without requiring major redesign.
Maintainability	System design must allow easy updates and addition of new features, following modular coding practices.

Table 2: Non-Functional Requirements

USE CASES

Use case shows how a user interacts with a system to perform a specific task, highlighting the actions taken by the system and the expected outcome.

Use Case 1

- Use Case ID: UC-01
- Use Case Name: Appointment Booking
- Description: The patient books a consultation by selecting the desired service, available date, and time slot. The system confirms the appointment and provides a confirmation code.
- Actors: Patient
- Preconditions:
    - The patient has access to the system (via web).
    - Available slots exist for the chosen date/service.
- Postconditions:
    - Appointment details are saved in the database.
    - Confirmation is displayed and sent to the patient.
- Alternate Flows:
    - If the selected slot is unavailable, the system prompts the patient to choose another.
    - If internet connection fails, booking is not processed.

Use Case 2

- Use Case ID: UC-02
- Use Case Name: Walk-In Registration
- Description: A walk-in patient registers at the clinic. The system records personal details and adds them to the queue for consultation.
- Actors: Patient, Staff
- Preconditions:
    - Clinic staff have access to the registration module.
    - The patient provides valid information.

- Postconditions:
    - Walk-in patients are added to the current day's queue.
- Alternate Flows:
    - Missing or invalid details → registration not accepted.

Use Case 3

- Use Case ID: UC-03
- Use Case Name: Queue Monitoring
- Description: Patients and staff monitor the current queue status in real-time. Patients see their position, while staff manage the sequence.
- Actors: Patient, Staff
- Preconditions:
    - The system is online and the queue is active.
- Postconditions:
    - Queue position updated whenever changes occur.
- Alternate Flows:
    - If the system is offline, queue updates are delayed.

Use Case 4

- Use Case ID: UC-04
- Use Case Name: Service Management
- Description: Admin manages available medical services by adding, updating, or deleting them from the system.
- Actors: Admin
- Preconditions
    - Admin is logged into the system.
- Postconditions:
    - Updated service list is reflected in the booking module.
- Alternate Flows:
    - Invalid service data → operation not saved.

Use Case 5

- Use Case ID: UC-05
- Use Case Name: Staff Management
- Description: Admin registers, updates, or deactivates staff accounts with roles and permissions.
- Actors: Admin
- Preconditions:
    - Admin authenticated with correct credentials.
- Postconditions:
    - Updated staff details stored in the database.
- Alternate Flows:
    - Duplicate username/email → system rejects registration.

Use Case 6

- Use Case ID: UC-06
- Use Case Name: Appointment Cancellation
- Description: Patients or staff cancel an appointment. The slot becomes available for other bookings.
- Actors: Patient, Staff
- Preconditions:
    - Appointment exists and is not yet completed.
- Postconditions:
    - Appointment removed from schedule.
    - Slot reopened for others.
- Alternate Flows:
    - Attempted cancellation of already completed appointment → error message.

Use Case 7

- Use Case ID: UC-07
- Use Case Name: Report Generation
- Description: Admin generates reports on appointments, walk-ins, and queues for analysis and record-keeping.
- Actors: Admin
- Preconditions:
    - Admin is logged in.
    - Data available for reporting.
- Postconditions:
    - Report generated and optionally exported.
- Alternate Flows:
    - No data available → system generates an empty report.

Use Case 8

- Use Case ID: UC-08
- Use Case Name: Authentication
- Description: System verifies login credentials and assigns role-based access (Patient, Staff, Admin).
- Actors: Patient, Staff, Admin
- Preconditions:
    - The user has a registered account.
- Postconditions:
    - Users are granted access according to role.
- Alternate Flows:
    - Invalid credentials → access denied.
    - Forgotten password → password reset option triggered.

Use Case 9

- Use Case ID: UC-09
- Use Case Name: Notification Sending

- Description: System sends appointment confirmations, reminders, or queue status updates via notifications or email.
- Actors: System (automatic), Patient
- Preconditions:
    - The patient has an active booking.
    - Contact information (email/phone) available.
- Postconditions:
    - Notification successfully sent.
- Alternate Flows:
    - Notification fails due to invalid email/connection issue.

Use Case 10

- Use Case ID: UC-10
- Use Case Name: Audit Log Management
- Description: System records significant user actions (e.g., login, booking, cancellation, updates) for security and monitoring.
- Actors: Admin (viewer), System (recorder)
- Preconditions:
    - System active.
- Postconditions:
    - Logs stored in the database
- Alternate Flows:
    - Storage failure → logs temporarily unavailable.

Use Case 11

- Use Case ID: UC-11
- Use Case Name: Fill-Up Form Submission
- Description: Patients complete and submit required forms for medical consultations or services. The system stores responses securely.
- Actors: Patient, Staff
- Preconditions:
    - The patient has access to an online form.

- Postcondition:
    - Submitted form saved in database.
- Alternate Flows:
    - Incomplete form → system prompts to complete required fields.

DATA REQUIREMENTS

The Online Clinic Appointment and Walk-In Queue Management System requires structured data to handle patient information, appointments, walk-ins, queue management, staff records, services, and reports. These data entities and their relationships ensure smooth booking, Effective queue handling, secure staff operations, and accurate reporting for clinic management.

Data Entities and Attributes

Patients

- address
- appointment_type
- booking_source
- created_at
- date_of_birth
- email
- full_name
- phone_number
- priority_flag
- queue_number
- service_ref
- status

Staff

- created_at
- email
- full_name
- password
- role

Services

- created_at
- description
- duration_minutes
- service_name

Appointments

- appointment_date
- appointment_id
- booked_by_name
- booking_source
- contact_number
- created_at
- current_medications
- email_address
- patient_birthdate
- patient_full_name
- patient_sex
- present_checkbox
- relationship_to_patient
- service_ref

Audit_logs

- user_ref
- action
- created_at
- ip_address
- timestamp

Fill_up_forms

- allergies
- appointment_date

- appointment_id
- booked_by_name
- booking_source
- contact_number
- created_at
- current_medications
- email_address
- medical_history
- patient_birthdate
- patient_full_name
- patient_sex
- present_checkbox
- relationship_to_patient

Queue

- address
- appointment_type
- booking_source
- created_at
- date_of_birth
- email
- full_name
- phone_number
- priority_flag
- queue_number
- service_ref
- status

Relationships

- Patients → Appointments : A patient can book one or more appointments.
- Patients → Queue : A patient can be placed in the queue for consultation.
- Appointments → Services : Each appointment is linked to a service.
- Queue → Services : Each queued patient is assigned to a service.

- Staff → Audit_logs : Staff activities are recorded in the audit logs.
- Fill_up_forms → Appointments : Each filled-up form is connected to an appointment.

ASSUMPTION AND CONSTRAINS

This section outlines the conditions expected to be true during system development and implementation, as well as the limitations that may affect the system's design, performance, and operation

Assumptions

- Patients have access to a stable internet connection when booking appointments online.
- Staff members are trained to use the system and are familiar with basic computer operations.
- The healthcare facility has reliable hardware and network infrastructure to support the system.
- Patient data entered into the system is accurate and provided in good faith.
- The system will be used primarily within the operational hours of the healthcare facility.
- Users will access the system through modern browsers or supported devices compatible with the application.
- Third-party services (such as SMS/email notifications) are available and reliable for integration.
- Security policies and data privacy regulations (e.g., Data Privacy Act) will be followed by both staff and system users.

Constraints

Technical Constraints

- Performance may degrade if user load exceeds the planned system capacity.
- Limited by the speed and reliability of the internet connection for online transactions.
- Dependent on the capacity of the facility's hardware and servers.

Operational Constraints

- System usage is restricted to the operating hours of the clinic unless extended support is provided.

- The system requires continuous maintenance and updates to remain fully functional.
- Queue management is dependent on staff compliance in marking patients as served.

Security Constraints

- Patient information storage and access are bound by data privacy regulations and must comply with role-based authentication rules.
- Unauthorized access is prevented by encryption, but breaches may still occur due to human error or external threats.

Financial Constraints

- The scope of system features may be limited by the budget allocated for hardware, software, and third-party services.
- Expansion (adding more servers for load balancing) depends on available funding.

GLOSSARY

This section lists key terms and their definitions used in the document. It provides a quick reference for understanding the system's terminology.

- Appointment Booking – The process of scheduling a consultation with a doctor, either online or through walk-in registration.
- Authentication – A security process that verifies the identity of a user before granting access to the system.
- Caching – A technique used to temporarily store frequently accessed data for faster retrieval.
- Concurrent Users – The number of users who are actively using the system at the same time.
- Data Encryption – The process of converting sensitive information into a coded format to prevent unauthorized access.
- Database – A structured collection of data, such as patient records and appointments, managed by the system.
- Load Balancing – A method of distributing user requests across multiple servers to ensure system efficiency and prevent overload.
- Patient Queue – An ordered list of patients waiting for service, updated in real-time.
- Performance Testing – A testing process that measures how well the system responds under different conditions, such as high traffic.
- Queue Management – The process of organizing and monitoring the flow of patients to ensure fair and efficient service.
- Real-Time Synchronization – The immediate updating of data across the system to ensure consistency between online and walk-in patients.
- Reliability – The ability of the system to perform its functions accurately and consistently over time.
- Role-Based Access Control (RBAC) – A security mechanism that limits system access based on the user's role (e.g., admin, staff, doctor, patient).
- Scalability – The capability of the system to handle increasing numbers of users, data, or transactions without performance degradation.

- Stress Testing – A test that evaluates how the system performs under extreme conditions beyond its normal operating limits.
- System Downtime – A period when the system is unavailable or not operational.
- Throughput – The number of processes or transactions the system can handle within a given period.
- User Interface (UI) – The part of the system that users interact with, including screens, buttons, and menus.
- Walk-In Patient – A patient who registers directly at the healthcare facility without booking an appointment online.

REVISION HISTORY

This section records all modifications made to the design document throughout its development. Each entry lists the version number, the date of the update, and a brief description of the changes. It helps track progress, maintain accountability, and provide a clear history of the system

Version	Date	Change Made
1.0	Aug 16, 2025	Prepared the first draft of the document.
1.1	Aug 17, 2025	Added the system requirements and use case details.
1.2	Aug 18, 2025	Included data flow diagrams and outlined the security setup.
1.3	Aug 19, 2025	Updated the database design and revised the queue process.
1.4	Aug 22, 2025	Adjusted the design of the interface; added some reporting functions.
1.5	Aug 25, 2025	Made changes to diagrams; improved parts of the layout.
1.6	Aug 27, 2025	Added the testing plan, corrected minor inconsistencies, and finalized revisions.

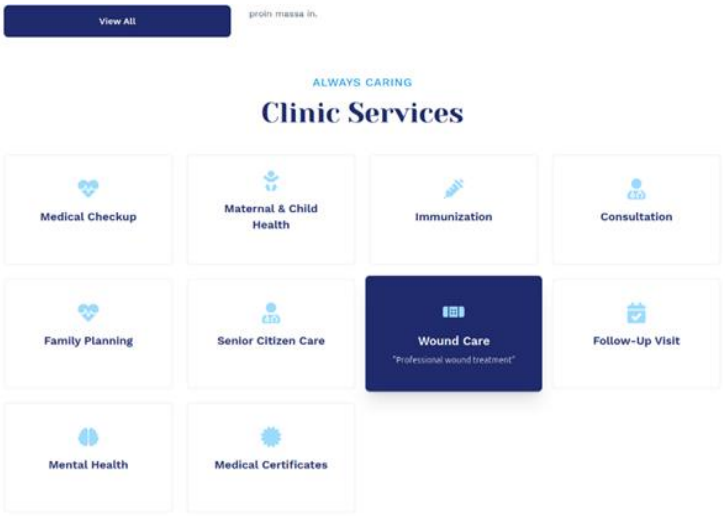
Table 3: Revision History

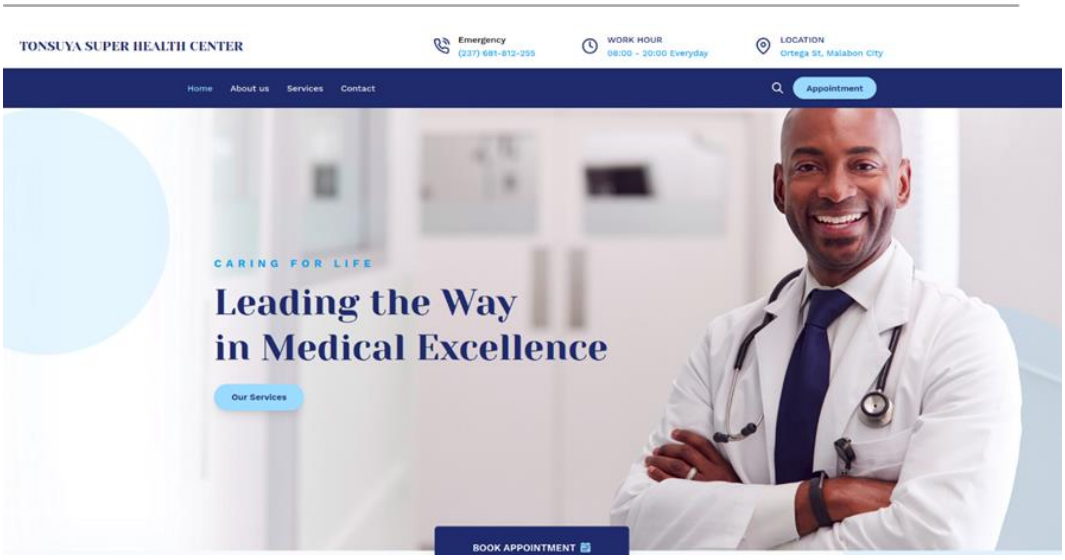
APPENDIX

Appendix A: Mockups

This section presents the screenshots of the developed system, showcasing its user interface and main functionalities. Each figure highlights the design and interaction flow of the Online Clinic Appointment and Walk-In Queue Management System for Tonsuya Super Health Center.

Appendix A.1 Landing Page





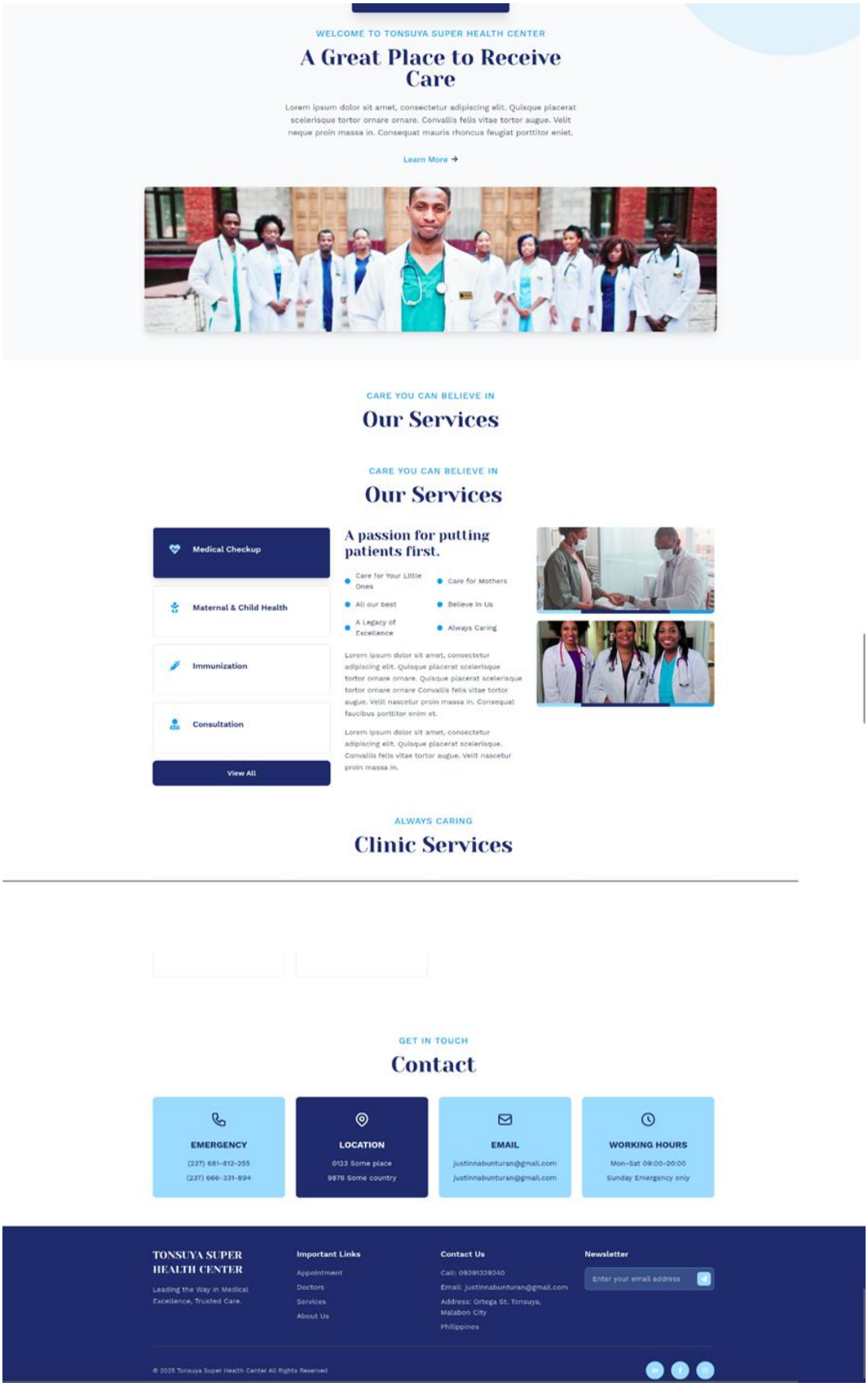


Figure A.1 Landing page

Appendix A.2 About Us

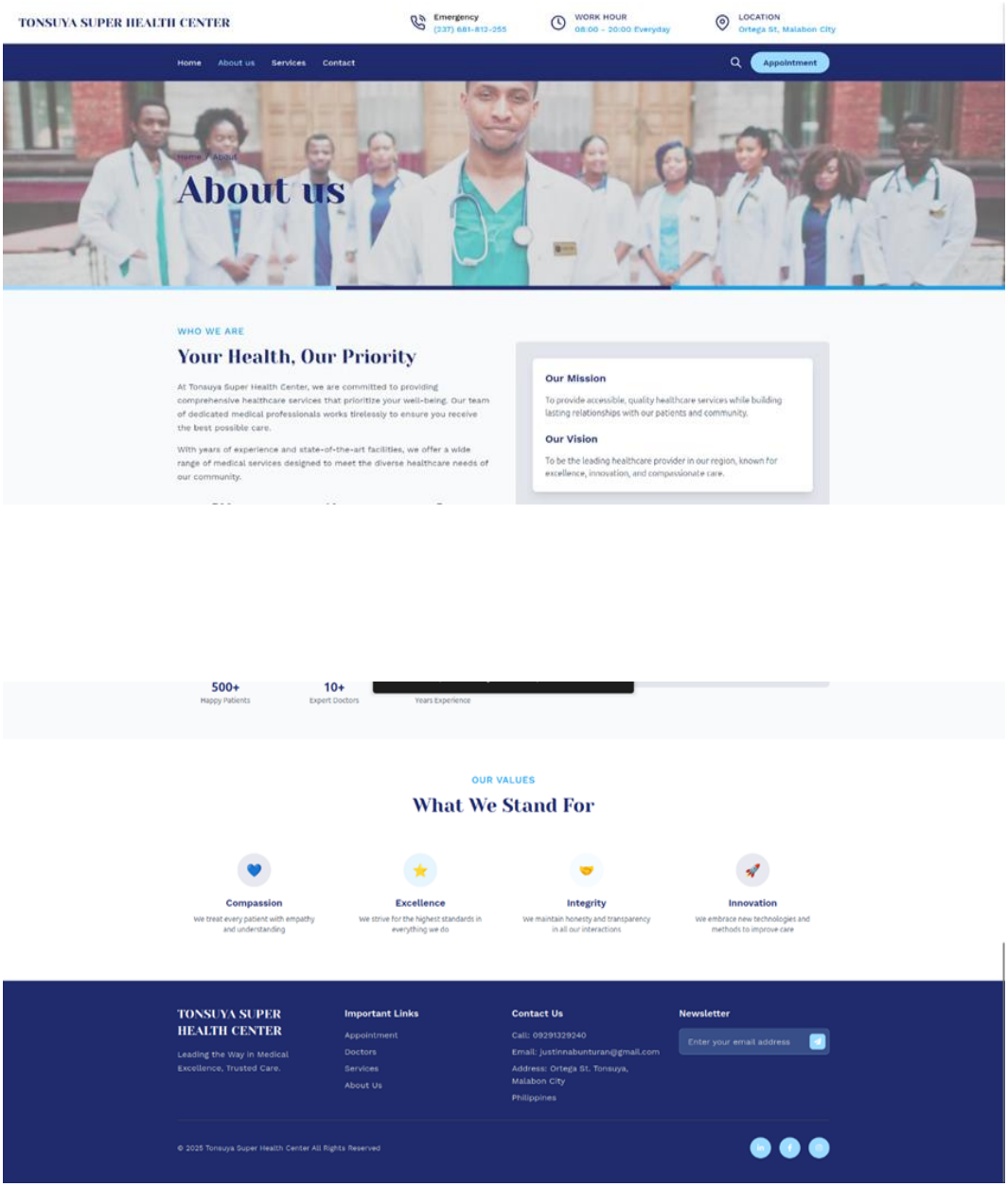


Figure A.2 About us,

Appendix A.3 Our Services

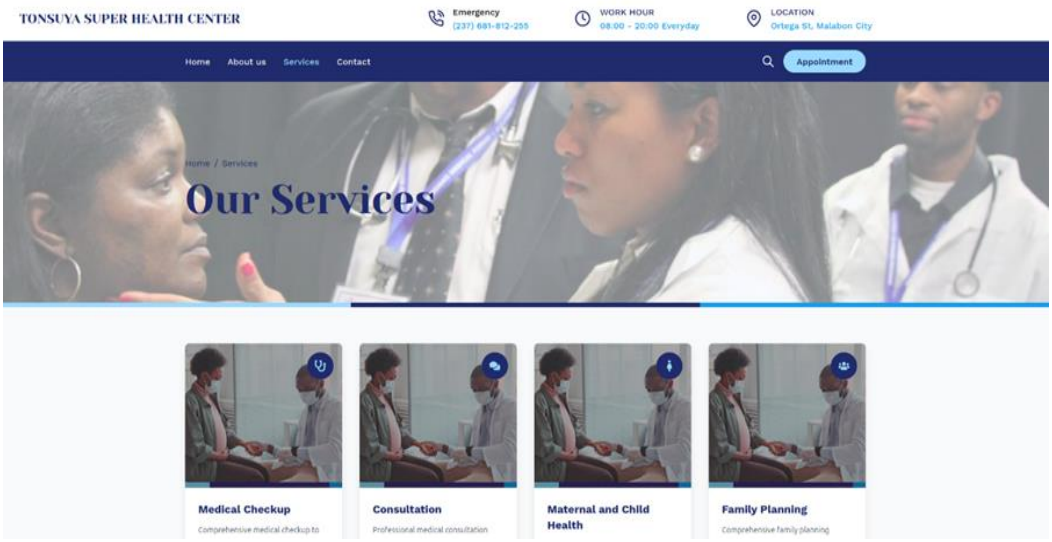


Figure A.3 Our Services

Appendix A.4 Contact Us

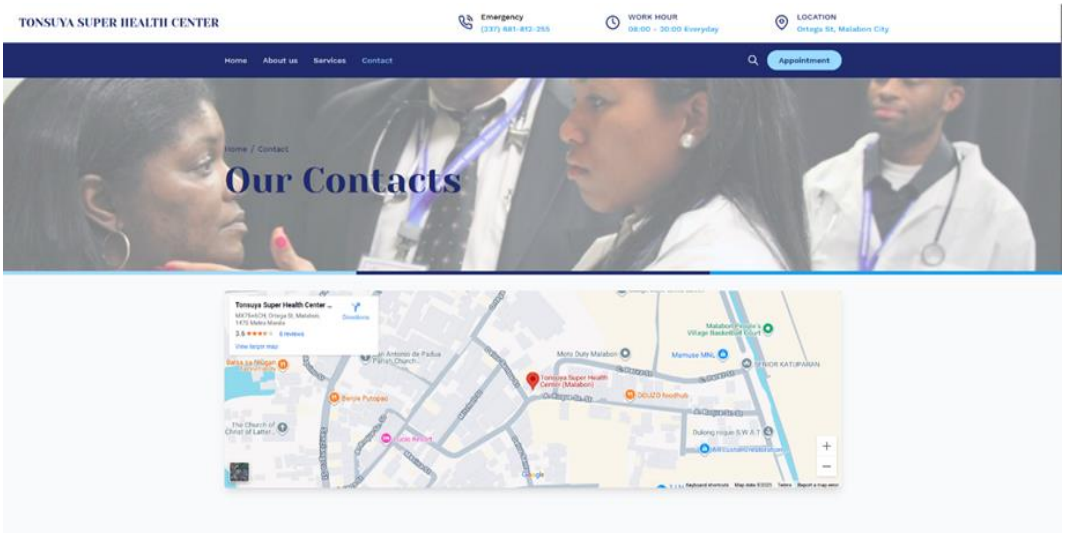


figure A.4 Contact us

Appendix A.5 Appointment

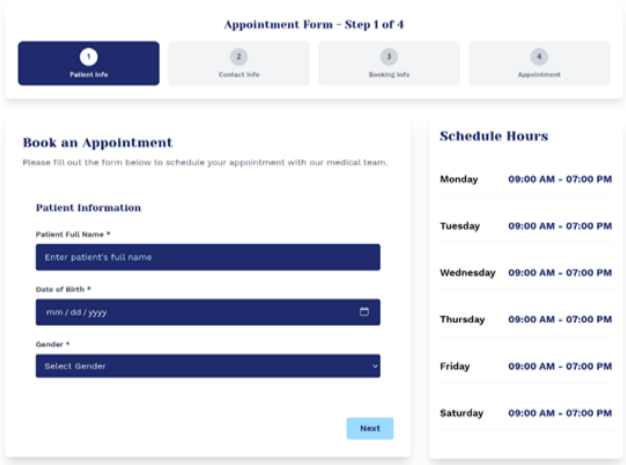


Figure A.5 Appointment,

Appendix B: Diagrams

This section presents the diagrams that illustrate the structure, processes, and interactions within the Online Clinic Appointment and Walk-In Queue Management System for Tonsuya Super Health Center. Each figure provides a visual representation of system design and work.

Appendix B.1 Use Case Diagram

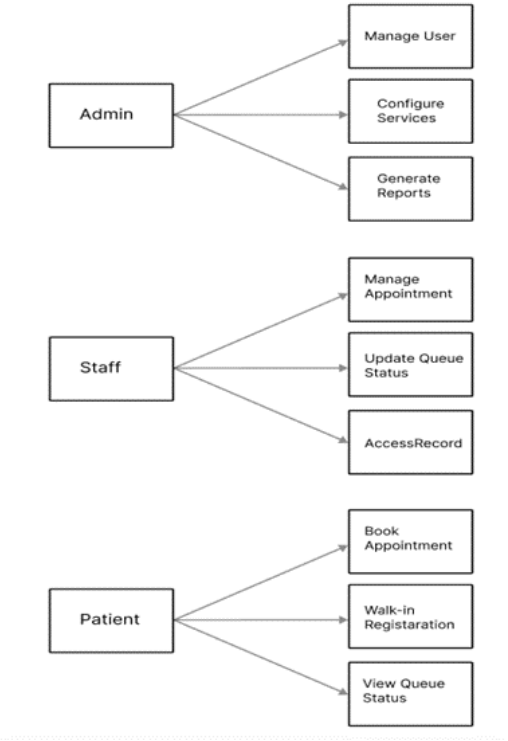


Figure B.1: Use Case Table