

Software Construction & Development Proposal (Revision 3)



Submitted by:

Muhammad Roshaan Idrees (56177)
Muhammad Waqas (55632)

Submitted to:

Sir Muhammad Islam Abbasi

Dated:

11th September 2025

RIPHAH International University
Fall 2025
Faculty of Computing

Introduction

The **EHospital System** is a web-based application designed to digitize core operations of a hospital. It replaces paper-based records with a centralized, secure database to manage patients, appointments and clinical data. The system main aims or goals to improve efficiency, reduce errors, and provide a better experience for staff and patients by making smooth workflows like patient registration, doctor appointments, and billing.

Stakeholders

This system will serve the following stakeholders:

- **Receptionist:** They will be responsible for managing patient check-ins, scheduling appointments, updating consultation statuses, and coordinating communication between patients and medical staff.
- **Doctors:** They will be in charge of maintaining the appointments and accessing patient clinical information.
- **Patients:** They will have a smooth registration and appointment booking system.
- **Hospital Administration:** They will use it to oversee the entire hospital, managing user accounts (Patients and Staff) and generating reports.

Functional Requirements

This project shall have the following functional requirements:

Receptionist Module

- **FR1.1:** The receptionist shall create a new patient record with a unique, auto-incrementing Patient ID.
- **FR1.2:** The receptionist shall store the following patient information in their profile:
 - i) **Core Identifiers:** Patient ID, Registration Date.
 - ii) **Personal Details:** Full Name, Date of Birth, Gender.
 - iii) **Contact Information:** Address, Primary Phone Number, Email Address (Optional).
 - iv) **Medical Overview:** Known Allergies (Optional), Blood Group (Optional).
 - v) **Status:** Patient Type (Inpatient/Outpatient).
- **FR1.3:** Receptionist shall be able to search for patients by their Name, Patient ID, or Phone Number.
- **FR1.4:** Receptionist shall be able to view the schedule of doctors and staff.

Doctor Module

- **FR2.1:** A doctor shall be able to view a list of all patients who have appointments with them.
- **FR2.2:** A doctor shall be able to add clinical notes, diagnoses, and prescriptions to the record of a patient they have seen.
- **FR2.3:** A doctor shall be able to view a patient's full medical history, including past visits, notes, and prescriptions.

Patient Module

- **FR3.1:** A patient shall be able to securely login and logout of the portal.
- **FR3.2:** A patient shall be able to view available time slots for a selected doctor.
- **FR3.3:** A patient shall be able to book an appointment.
- **FR3.4:** A patient shall be able to delete an appointment.
- **FR3.5:** A patient shall be able to view his appointment history.

Hospital Administration Module

- **FR4.1:** The administrator shall provide a secure login portal for users with roles: Patient, Doctor, and Administrators.
- **FR4.2:** The administrator shall store user passwords using a strong hashing algorithm.
- **FR4.3:** The administrator shall provide a "Forgot Password" feature allowing users to reset their password via a secure, time-limited link sent to their registered email.
- **FR4.4:** Upon login, the administrator shall redirect users to a role-specific dashboard (e.g., Doctor dashboard shows appointments, Admin dashboard shows system reports).
- **FR4.5:** User sessions shall expire after 30 minutes of inactivity, requiring re-authentication.
- **FR4.6:** The administrator shall be able to assign, reschedule, and cancel appointments for any patient and doctor.
- **FR4.7:** Administrators shall be able to view and update a patient's contact details and status. Patient records shall be deactivated (soft delete) rather than permanently deleted from the database.

- **FR4.8:** The administrator shall enforce access control so a doctor can only view the hospital records of patients who are assigned to them (have an appointment or history).
 - **FR4.9:** The administrator shall maintain an audit log for all hospital data changes, recording the user ID, action taken (create/update/delete), and exact date and time.
 - **FR4.10:** The system shall prevent double-booking of a doctor for the same time slot.
 - **FR4.11:** The system shall automatically send an email confirmation to the patient upon successful booking and an email reminder 24 hours before the scheduled appointment.
-