



## **Project proposal**

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## Introduction

The healthcare sector plays a vital role in ensuring the well being of any society but in developing countries like Pakistan hospitals face multiple challenges such as high patient load shortage of staff inefficient record keeping and delays in service delivery. Public hospitals like **Pakistan Institute of Medical Sciences (PIMS) Islamabad** often operate under immense pressure due to the large number of patients they serve on a daily basis. In such environments the absence of a well structured digital system leads to problems including mismanagement of patient records long waiting times duplication of work errors in treatment history and administrative inefficiencies .A **Hospital Management System (HMS)** offers a modern solution to these issues by integrating technology into healthcare operations. HMS is a comprehensive computer based information system designed to manage both clinical and administrative aspects of hospitals. It automates routine processes such as **patient registration appointment scheduling medical record management billing pharmacy management laboratory integration and staff coordination**. By centralizing and digitizing hospital operations it reduces manual errors improves data accuracy enhances transparency and ensures timely access to patient information.

## Stakeholders

<i>Stakeholder</i>	<i>Role in the System</i>
<b>Patient</b>	Book appointment views reports
<b>Receptionist</b>	Registers patients schedules appointments
<b>Doctor</b>	Consults patients prescribes medicine tests
<b>Nurse</b>	Assists doctors updates vitals
<b>Lab Technician</b>	Manages lab reports
<b>Pharmacist</b>	Dispenses medications
<b>Admin</b>	Manages staff wards billing

## **Stakeholders-Wise Functional Requirement**

### **Patient Requirements**

- FR 1.1 Patient shall be able to create a new profile by providing personal details (name CNIC age gender contact).
- FR 1.2 Patient shall be able to update their personal information (address phone email).
- FR 1.3 Patient shall be able to securely log in and log out of the system.
- FR 1.4 Patient shall be able to schedule a new appointment with a doctor by selecting date time and department.
- FR 1.5 Patient shall be able to reschedule an appointment before the consultation date.
- FR 1.6 Patient shall be able to cancel an existing appointment before the scheduled time.
- FR 1.7 Patient shall be able to view all upcoming and past appointments in their profile.
- FR 1.8 Patient shall be able to check doctor availability before booking an appointment.
- FR 1.9 Patient shall be able to view and download medical history.
- FR 1.10 Patient shall be able to access and download lab reports uploaded by lab staff.
- FR 1.11 Patient shall be able to receive notifications (SMS ore mail) about appointment confirmations reschedules cancellations and lab report availability.
- FR 1.12 Patient shall be able to pay consultation lab and pharmacy bills online or via hospital counters.
- FR 1.13 Patient shall be able to view their payment history and generate receipts.
- FR 1.14 Patient shall be able to request and download discharge summaries after treatment.

### **Receptionist Requirements**

- FR 2.1 Receptionist shall be able to register a new patient and generate a unique patient ID.
- FR 2.2 Receptionist shall be able to search for patients by name CNIC or patient ID.
- FR 2.3 Receptionist shall be able to schedule appointments on behalf of patients.



- FR 2.4 Receptionist shall be able to reschedule or cancel appointments upon patient request.
- FR 2.5 Receptionist shall be able to check and update doctor availability for appointments.
- FR 2.6 Receptionist shall be able to manage walk in patients and assign them to available doctors.
- FR 2.7 Receptionist shall be able to print patient slips receipts and appointment confirmations.
- FR 2.8 Receptionist shall be able to handle inquiries regarding billing appointments and reports.
- FR 2.9 Receptionist shall be able to view their assigned duty location OPD desk emergency ward.
- FR 2.10 Receptionist shall be able to view their shift timing start time end time

#### **Doctor Requirements**

- FR 3.1 Doctor shall be able to log in securely with their credentials.
- FR 3.2 Doctor shall be able to view daily weekly and monthly appointment schedules.
- FR 3.3 Doctor shall be able to view patient details and complete medical history before consultation.
- FR 3.4 Doctor shall be able to record consultation notes for each patient visit.
- FR 3.5 Doctor shall be able to prescribe medicines electronically.
- FR 3.6 Doctor shall be able to request lab tests for patients directly from the system.
- FR 3.7 Doctor shall be able to view lab results uploaded by lab technicians.
- FR 3.8 Doctor shall be able to update diagnosis and treatment history.
- FR 3.9 Doctor shall be able to generate and approve discharge summaries for admitted patients.
- FR 3.10 Doctor shall be able to request follow up appointments for patients.
- FR 3.11 Doctor shall be able to view their assigned duty location ward OPD emergency.
- FR 3.12 Doctor shall be able to view their shift timing (start time end time).

#### **Nurse Requirements**

- FR 4.1 Nurse shall be able to view daily assigned patients and schedules.



- FR 4.2 Nurse shall be able to view their assigned duty location (ward/room/department).
- FR 4.3 Nurse shall be able to view their shift timing (start time – end time).
- FR 4.4 Nurse shall be able to record and update patient vitals (blood pressure temperature pulse ).
- FR 4.5 Nurse shall be able to mark triage levels (Critical Serious Stable) for emergency patients.
- FR 4.6 Nurse shall be able to assist doctors by updating patient progress notes.
- FR 4.7 Nurse shall be able to request immediate doctor attention in emergencies through alerts.

#### **Lab Technician Requirements**

- FR 5.1 Lab Technician shall be able to receive lab test requests from doctors.
- FR 5.2 Lab Technician shall be able to update the status of lab tests (pending in progress completed).
- FR 5.3 Lab Technician shall be able to upload lab test results into the system.
- FR 5.4 Lab Technician shall be able to print and deliver lab test reports for patients.
- FR 5.5 Lab Technician shall be able to notify patients or doctors when reports are ready.
- FR 5.6 Lab Technician shall be able to manage laboratory inventory (test kits equipment availability).
- FR 5.7 Lab Technician shall be able to view their shift timing (start time – end time).

#### **Pharmacist Requirements**

- FR 6.1 Pharmacist shall be able to receive electronic prescriptions from doctors.
- FR 6.2 Pharmacist shall be able to verify and dispense prescribed medicines.
- FR 6.3 Pharmacist shall be able to update stock levels after dispensing.
- FR 6.4 Pharmacist shall be able to generate alerts for low stock medicines.
- FR 6.5 Pharmacist shall be able to maintain purchase and expiry records of medicines.
- FR 6.6 Pharmacist shall be able to print medicine receipts for patients.
- FR 6.7 Pharmacist shall be able to view billing status before dispensing medicine.



## Admin Requirements

- FR 7.1 Admin shall be able to create update and delete user accounts (doctor nurse receptionist pharmacist lab technician patient).
- FR 7.2 Admin shall be able to assign roles and permissions to each user.
- FR 7.3 Admin shall be able to manage hospital wards rooms and bed allocations.
- FR 7.4 Admin shall be able to monitor system usage and generate activity logs.
- FR 7.5 Admin shall be able to manage billing modules for consultation pharmacy and admission.
- FR 7.6 Admin shall be able to generate financial reports for hospital management..
- FR 7.7 Admin shall be able to create and manage employee duty rosters (assigning duty locations).
- FR 7.8 Admin shall be able to assign and update employee shift timings.