Hospital Management System (HMS) - Project Presentation

Software Requirements Specification (SRS)

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Project Overview

- **Project Title:** Hospital Management System (HMS)
- **Institution:** University of Bangladesh
- **Team Members:**
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Introduction

- The Hospital Management System (HMS) is designed to streamline hospital operations in Bangladesh
- Inspired by leading institutions like Ibn Sina, Labaid, and Bardem

Objectives:

- Automate administrative processes
- Improve patient care through digital records
- Enhance operational efficiency
- Ensure data security and compliance

Bangladesh Healthcare Context

Bangladesh's healthcare sector features modern facilities:

- **Ibn Sina Hospital:** Multi-specialty with cardiology, oncology, emergency services
- **Labaid Specialized Hospital:** Known for cardiac care and cancer treatment
- **BIRDEM:** Specialized in diabetes and endocrine disorders

Our HMS aims to emulate these institutions' digital solutions.

System Scope

The HMS covers:

- Patient Management
- Doctor and Staff Management
- Appointment Scheduling
- Medical Records & Prescriptions
- Billing & Payment System
- Pharmacy Management
- Laboratory Management
- Ward/Room Management
- Reporting & Analytics

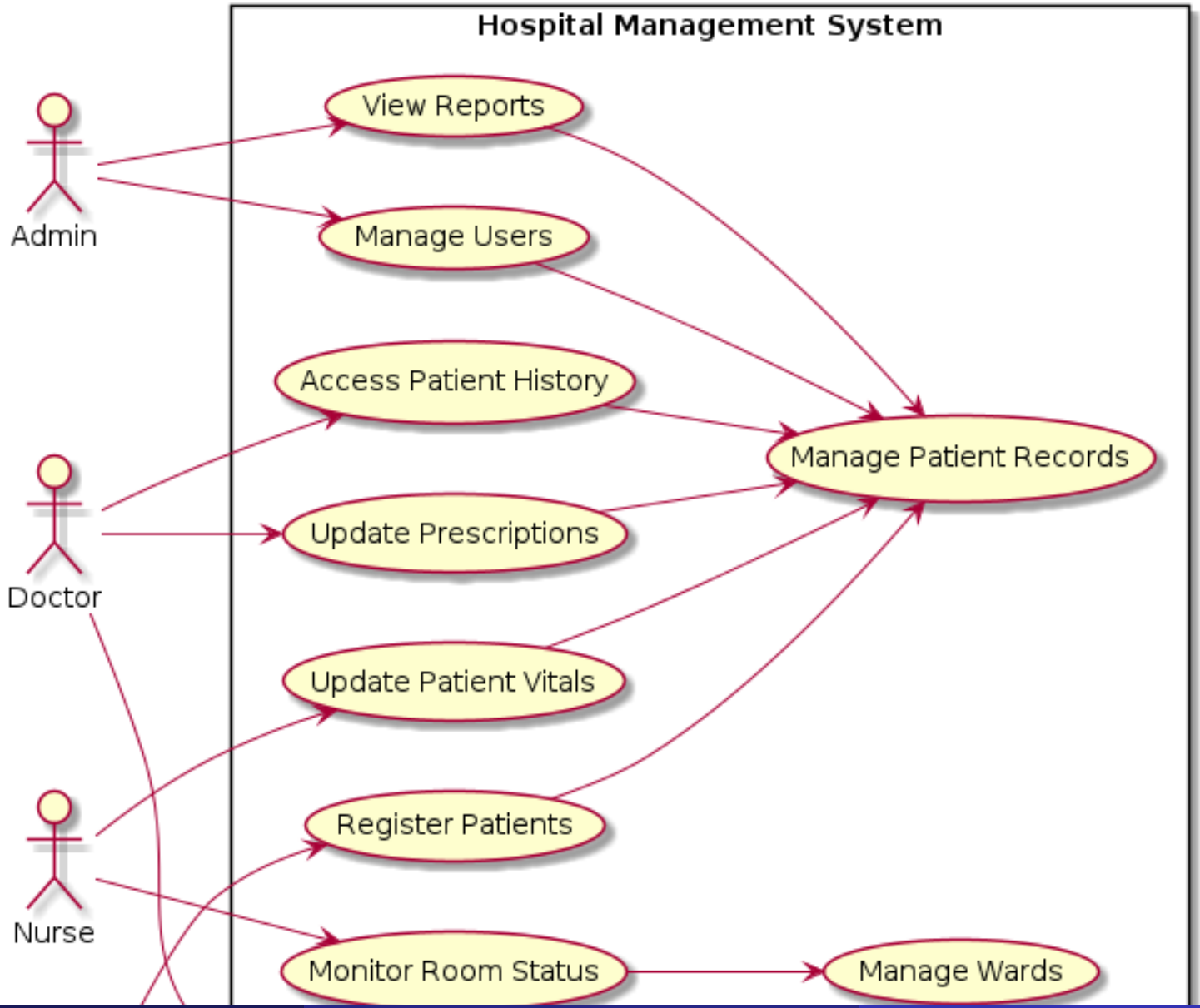
System Users and Roles

User Role	Description	Key Activities
Admin	System management	User management, reports
Doctor	Healthcare provider	Appointments, prescriptions
Nurse	Patient care	Vital updates, room monitoring
Receptionist	Front desk	Patient registration, scheduling
Pharmacist	Medicine management	Drug issuance, inventory
Accountant	Financial operations	Billing, payment tracking
Patient	Service recipient	Appointment booking

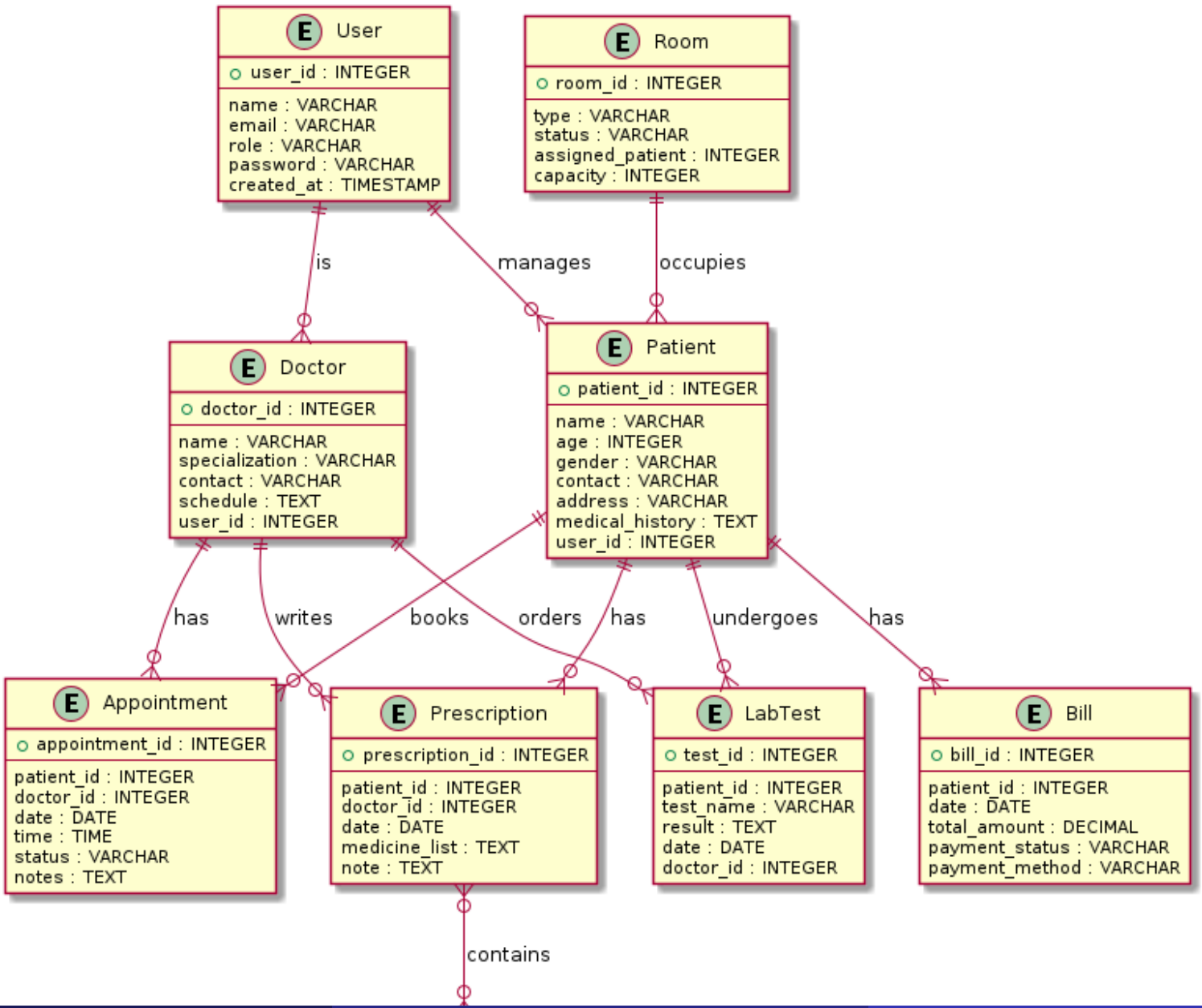
System Architecture

- **Frontend:** React.js/Next.js (Responsive web app)
- **Backend:** Django REST Framework/Node.js (API services)
- **Database:** PostgreSQL/MySQL (Data storage)
- **Hosting:** Vercel (Frontend), DigitalOcean/AWS (Backend)

Use Case Diagram



ER Diagram


User
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name : VARCHAR
email : VARCHAR
role : VARCHAR
password : VARCHAR
created_at : TIMESTAMP
Room
room_id : INTEGER
type : VARCHAR
status : VARCHAR
assigned_patient : INTEGER
capacity : INTEGER
is
manages
occupies
Doctor
doctor_id : INTEGER
name : VARCHAR
specialization : VARCHAR
contact : VARCHAR
schedule : TEXT
user_id : INTEGER
Patient
patient_id : INTEGER
name : VARCHAR
age : INTEGER
gender : VARCHAR
contact : VARCHAR
address : VARCHAR
medical_history : TEXT
user_id : INTEGER
has
writes
books
orders
has
undergoes
has
Appointment
appointment_id : INTEGER
patient_id : INTEGER
doctor_id : INTEGER
date : DATE
time : TIME
status : VARCHAR
notes : TEXT
Prescription
prescription_id : INTEGER
patient_id : INTEGER
doctor_id : INTEGER
date : DATE
medicine_list : TEXT
note : TEXT
LabTest
test_id : INTEGER
patient_id : INTEGER
test_name : VARCHAR
result : TEXT
date : DATE
doctor_id : INTEGER
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bill_id : INTEGER
patient_id : INTEGER
date : DATE
total_amount : DECIMAL
payment_status : VARCHAR
payment_method : VARCHAR
contains

DFD Level 0

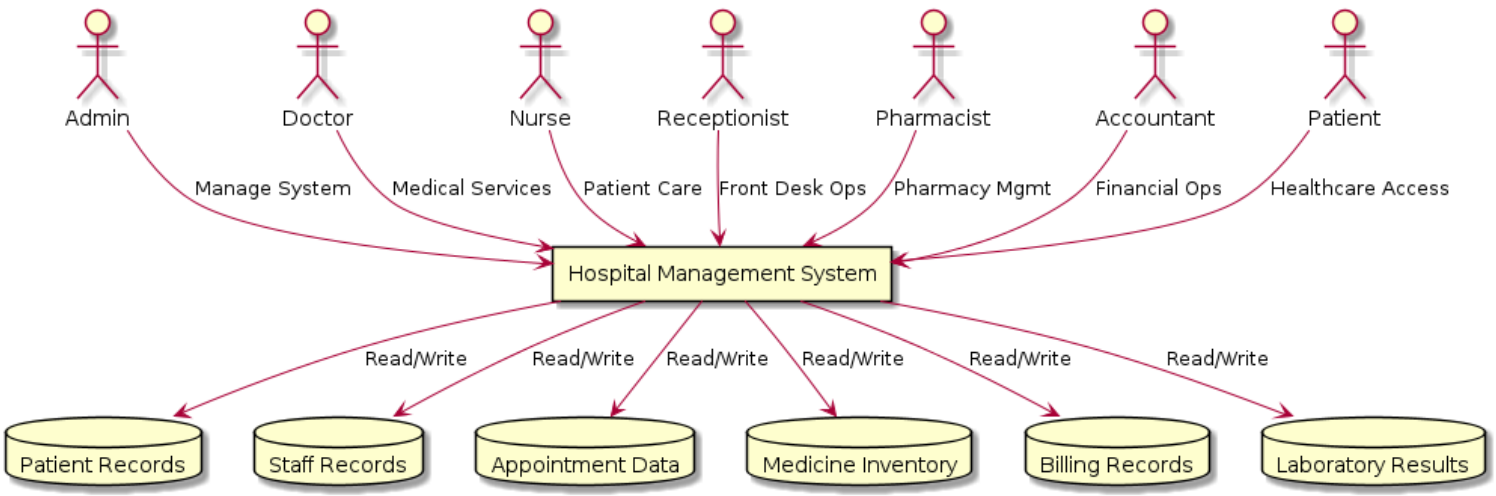

Figure: Level 0 Data Flow Diagram

Functional Requirements

1. FR1: Patient Registration
2. FR2: Appointment Booking
3. FR3: Medical Record Management
4. FR4: Billing System
5. FR5: User Access Control
6. FR6: Reporting

Non-Functional Requirements

- **Performance:** ¡2 seconds load time
- **Security:** Encrypted passwords, JWT authentication
- **Scalability:** Handle 100+ concurrent users
- **Reliability:** 99.9% uptime
- **Usability:** Intuitive dashboards
- **Compatibility:** Cross-browser, mobile responsive

Implementation Plan

1. **Phase 1:** Requirement Analysis (SRS completion)
2. **Phase 2:** System Design (UML diagrams, database schema)
3. **Phase 3:** Development (Frontend & Backend modules)
4. **Phase 4:** Testing (Unit, Integration, System testing)
5. **Phase 5:** Deployment (Production environment)
6. **Phase 6:** Maintenance (Updates and support)

Tools and Technologies

- **Programming:** Python (Django), JavaScript (React)
- **Database:** PostgreSQL
- **Diagrams:** Draw.io, PlantUML
- **Testing:** Postman, Jest, Pytest
- **Version Control:** Git + GitHub
- **Deployment:** Vercel, DigitalOcean, Docker

Deliverables

- Software Requirements Specification (SRS)
- System Design Diagrams (Use Case, ER, DFD)
- Database Schema
- Source Code Repository
- Test Cases and Results
- User Manual
- Deployment Guide

Conclusion

The HMS provides a comprehensive digital solution for Bangladesh's healthcare needs, incorporating best practices from leading hospitals while ensuring compliance with international standards.

Key Benefits:

- Improved patient care
- Operational efficiency
- Data security
- Scalable architecture

Thank You!

Questions?

Contact: [Team Email/Contact Information]