

Research Paper

**MEDICINE AND DOCTOR AVAILABILITY ANALYSIS SYSTEM IN
GOVERNMENT HOSPITALS**

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Abstract

Government hospitals provide essential healthcare services to a large number of patients. However, patients may face difficulties in finding information about the availability of doctors, medicines, departments, and healthcare services. Manual maintenance of medicine stock and doctor availability records can result in delays, outdated information, and difficulty in accessing the required information.

The **Medicine and Doctor Availability Analysis System in Government Hospitals** is a digital system designed to analyze and manage information related to medicine stock and doctor availability. The system maintains records of available medicines, quantities, departments, doctors, working schedules, and availability status.

The proposed approach therefore combines **database management, data analysis, doctor scheduling, medicine inventory management, and a user-friendly interface** to improve information accessibility and hospital resource management.

Keywords: Government Hospitals, Medicine Availability, Doctor Availability, Healthcare Management, Medicine Inventory, Data Analysis, Hospital Management System, Resource Management.

Introduction

Government hospitals serve a large number of patients every day and provide healthcare services through different departments and medical professionals. Efficient management of medicines and doctors is important for providing timely healthcare services.

Patients may sometimes visit a hospital without knowing whether the required doctor is available or whether a particular medicine is currently in stock. Similarly, hospital staff may need to manually check medicine records and doctor schedules.

Manual record management can make it difficult to maintain updated information about medicine quantities, expiry dates, doctor schedules, and availability.

The proposed **Medicine and Doctor Availability Analysis System** provides a centralized digital platform where medicine inventory and doctor availability information can be maintained and analyzed.

The system can provide information such as:

- Available medicines
- Medicine quantity
- Medicine stock status
- Medicine expiry information
- Doctor name
- Department
- Doctor availability
- Consultation schedule

- Appointment information

Problem Statement

Government hospitals manage large quantities of medicines and provide healthcare services through doctors from different departments.

Patients require timely information regarding medicine availability and doctor schedules. Hospital administrators also require accurate information about medicine stock, consumption, and doctor availability for effective resource management.

Manual or distributed systems can make this process difficult and time-consuming.

Therefore, there is a need for a centralized

Medicine and Doctor Availability Analysis System that can maintain, analyze, and display medicine and doctor availability information.

The proposed system should achieve:

- Accurate medicine stock information.
- Easy medicine search.
- Doctor availability tracking.
- Department-wise doctor information.
- Medicine stock-level monitoring.
- Low-stock identification.
- Centralized data management.
- Easy access for authorized users.
- Data-based analysis for hospital administrators.

Existing System

In many conventional hospital environments, medicine inventory and doctor schedules may be maintained using registers, spreadsheets, or separate software systems.

Medicine stock information may be updated manually by hospital staff. Patients may need to visit the pharmacy or ask hospital staff to determine whether a particular medicine is available.

Similarly, information about doctor availability may be displayed on notice boards or obtained from hospital staff.

Although existing hospital management systems may provide some digital functionality, information can remain distributed across different departments or systems.

A centralized availability-analysis system can provide a common platform for managing medicine and doctor information.

Disadvantages of Existing System

The major disadvantages of conventional systems include:

1. Manual Record Maintenance

Medicine stock and doctor schedules may require frequent manual updates.

2. Outdated Information

If records are not updated immediately, users may receive incorrect availability information.

3. Difficulty in Medicine Search

Patients may need to visit or contact the hospital to determine whether a particular medicine is available.

4. Doctor Availability Uncertainty

Patients may not have convenient access to current doctor schedules.

5. Stock Management Problems

Manual inventory management can make it difficult to identify medicines that are running low.

6. Lack of Centralized Information

Medicine and doctor information may be maintained separately.

7. Limited Data Analysis

Traditional systems may not provide sufficient analysis of medicine consumption, stock levels, or doctor availability patterns.

Proposed System

The proposed system provides a centralized platform for managing and analyzing medicine and doctor availability information in government hospitals.

The system maintains a database containing medicine and doctor records.

Medicine information can include:

- Medicine name
- Medicine ID
- Category
- Available quantity
- Expiry date
- Stock status
- Department/pharmacy

Doctor information can include:

- Doctor ID
- Doctor name
- Specialization
- Department
- Working days
- Consultation timings
- Availability status

Patients can search for a medicine or doctor using the system.

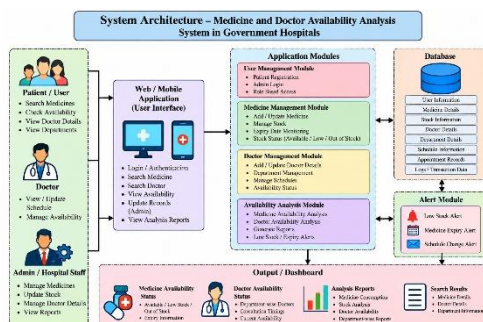
Hospital administrators can update medicine quantities, doctor schedules, and availability status.

The system can also analyze medicine consumption and generate alerts when stock reaches a predefined threshold.

Basic Flow:

User/Admin → System Interface → Database → Availability Analysis → Medicine/Doctor Status → Display Result

System Architecture



Proposed Methodology

The methodology consists of the following sequential stages:

Step 1: Data Collection

The system collects information related to medicines and doctors from the hospital.

Medicine data may include:

- Medicine name
- Quantity
- Batch information
- Expiry date
- Stock level

Doctor data may include:

- Doctor name
- Department
- Specialization
- Schedule
- Availability

The collected information is stored in the hospital database.

Step 2: Data Preprocessing

The collected data is checked for incomplete or duplicate records.

The preprocessing stage includes:

- Removing duplicate records.
- Handling missing values.
- Validating medicine quantities.
- Validating doctor schedules.
- Standardizing department names.
- Checking date formats.

This improves data consistency.

Step 3: Medicine Inventory Analysis

The system analyzes the current medicine stock.

Each medicine can be assigned a stock status such as:

- Available
- Low Stock
- Out of Stock

The status can be determined based on configured inventory thresholds.

For example:

Quantity > Minimum Level → Available

Quantity ≤ Minimum Level → Low Stock

Quantity = 0 → Out of Stock

Step 4: Medicine Expiry Monitoring

The system can monitor medicine expiry dates.

Medicines approaching their expiry date can be identified for administrative review.

The system can display information such as:

- Medicine name
- Batch
- Expiry date
- Available quantity
- Expiry status

This can help hospital staff manage inventory more effectively.

Step 5: Doctor Availability Analysis

The system maintains doctor schedules and current availability information.

The availability can be determined using:

- Working day
- Consultation time
- Department
- Leave status
- Duty schedule

The system can display whether a doctor is currently available or scheduled for a particular period.

System Implementation

The proposed system can be implemented using **Python/Java, a relational database, and a web-based application.**

The backend can handle:

- Medicine management
- Doctor management
- Availability analysis
- Search requests
- Alert generation
- Report generation

A database such as MySQL can store:

- Medicine details
- Medicine stock
- Expiry information
- Doctor profiles
- Doctor schedules
- Department information
- Availability records
- User information

The frontend can provide separate interfaces for patients and authorized hospital staff.

The implementation can contain the following modules:

1. **Admin Login**
2. **Patient/User Login**
3. **Medicine Management**
4. **Doctor Management**
5. **Department Management**
6. **Medicine Search**
7. **Doctor Search**
8. **Availability Analysis**
9. **Low-Stock Alert**
10. **Expiry Monitoring**

11. Reports

12. Admin Dashboard

Experimental Setup

The system can be tested using sample or real authorized hospital inventory and doctor-schedule data.

The dataset can contain:

Medicine Data

- Medicine ID
- Medicine Name
- Category
- Quantity
- Minimum Stock Level
- Expiry Date

Doctor Data

- Doctor ID
- Doctor Name
- Department
- Specialization
- Working Days
- Consultation Time
- Availability Status

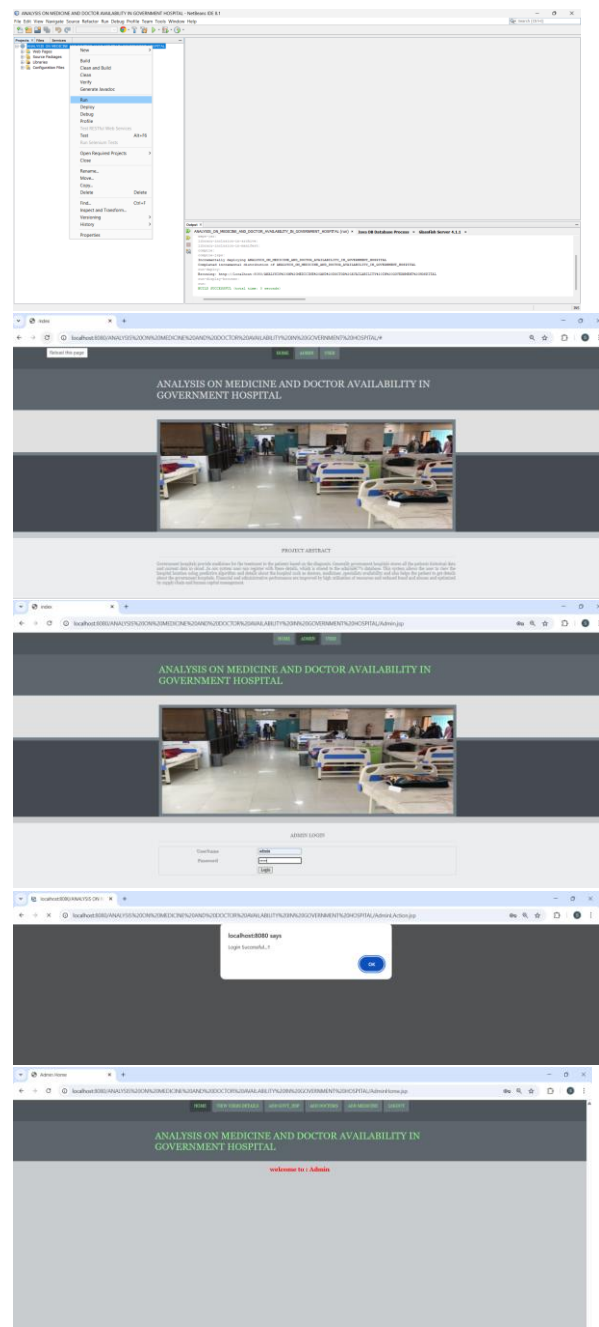
An experimental configuration may use:

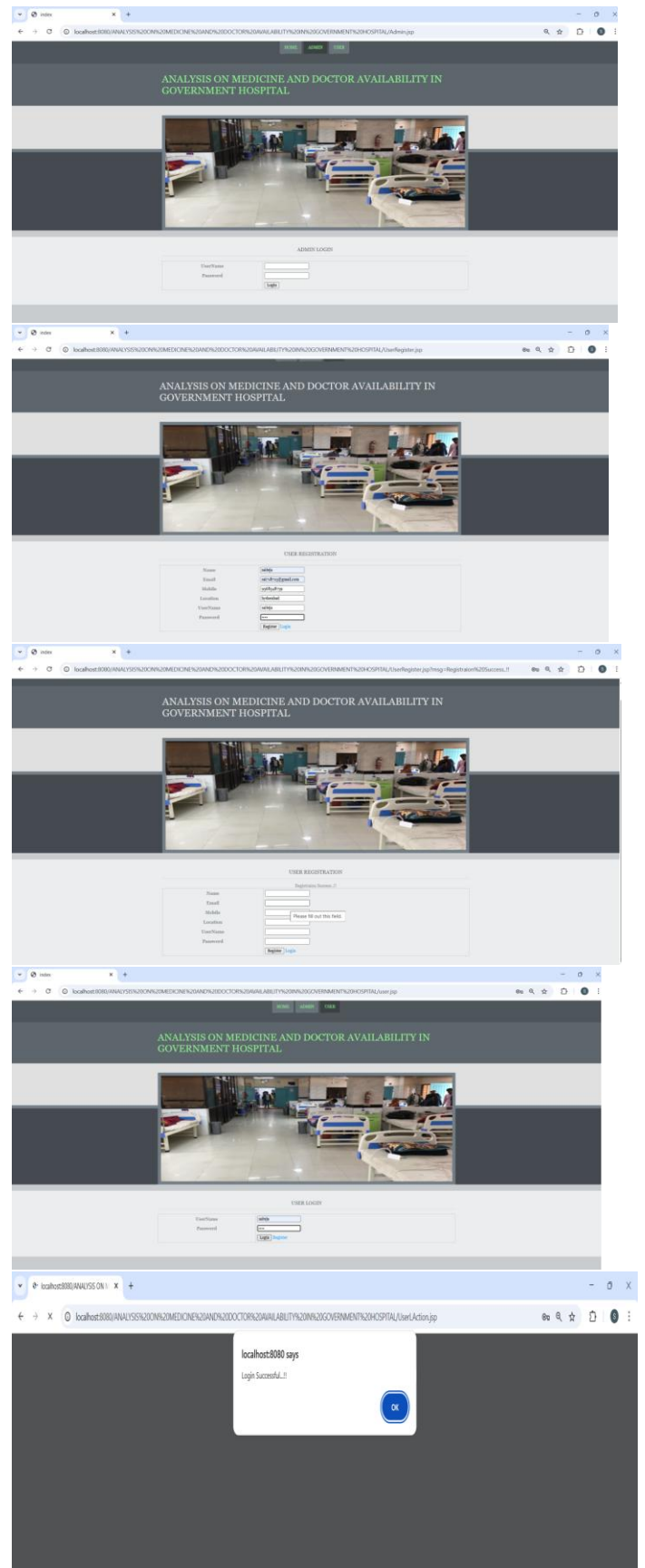
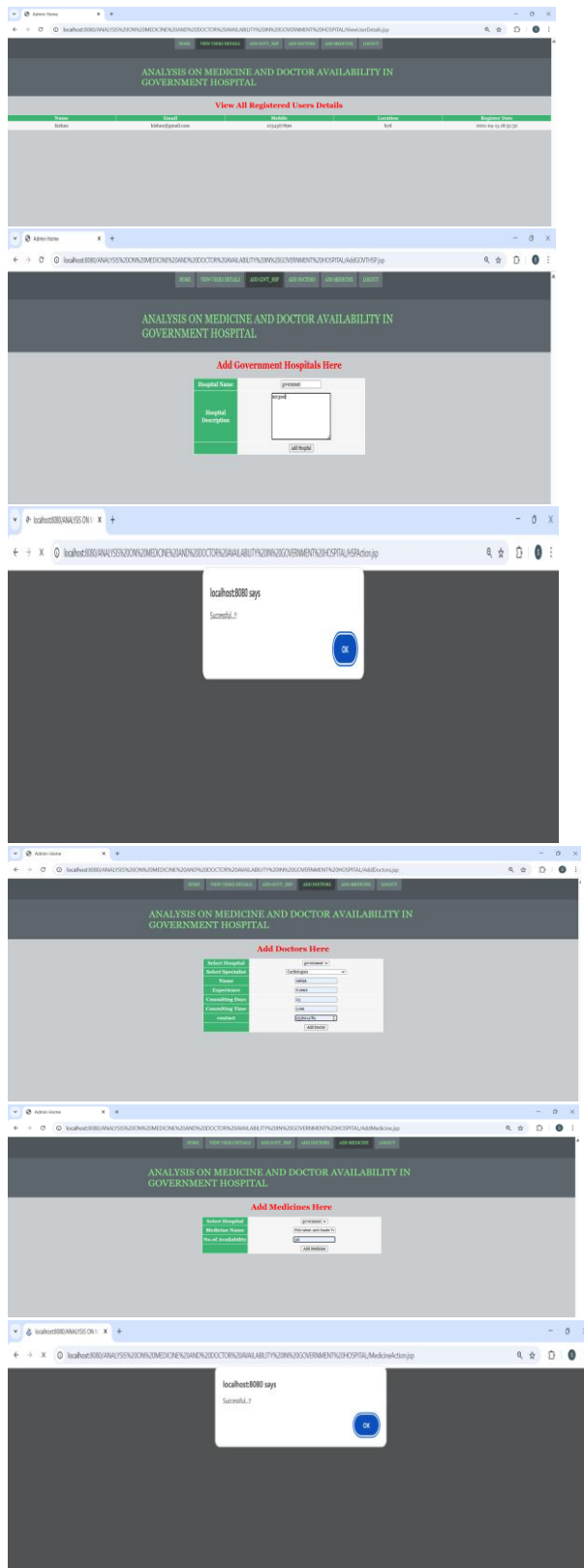
Parameter	Configuration
Programming Language	Python / Java
Database	MySQL
Application Type	Web Application
Medicine Module	Inventory Management
Doctor Module	Schedule Management

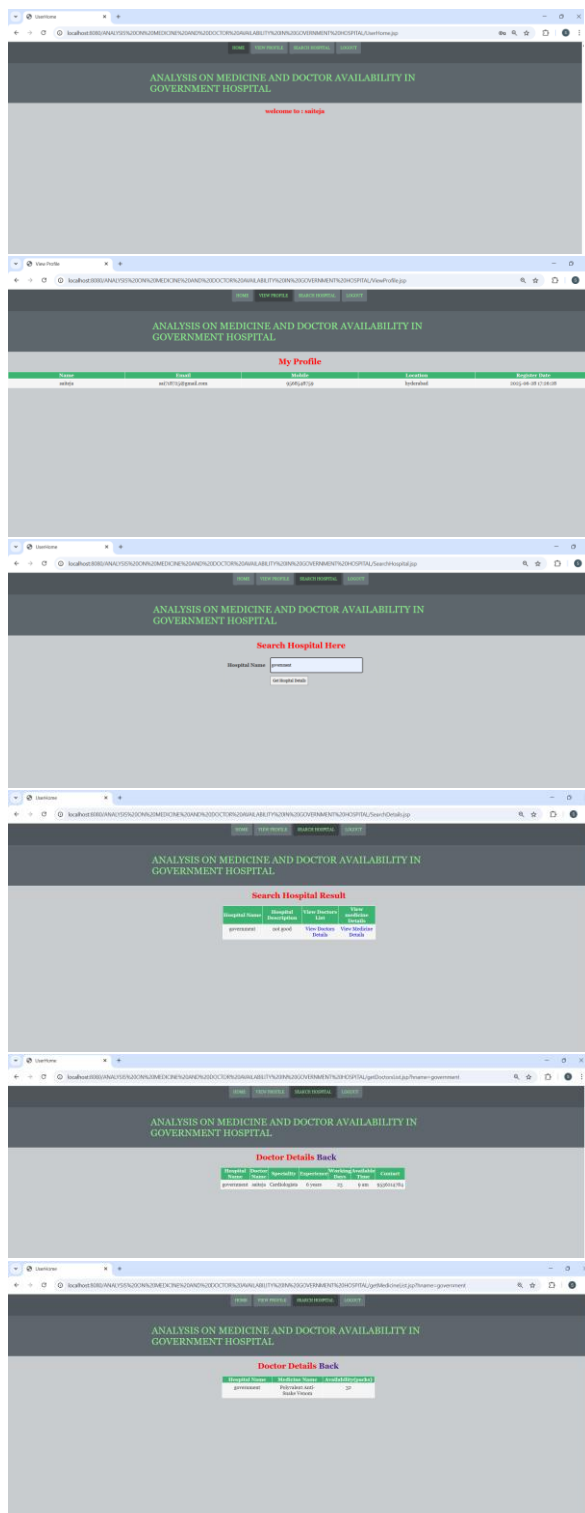
Analysis	Availability & Stock Analysis
Alerts	Low Stock / Expiry
Interface	Web Dashboard

The system can be tested using different medicine quantities, expiry dates, doctor schedules, and search queries.

Results and Discussions







Future Work

Future improvements can extend the proposed system in several directions.

1. Mobile Application

A mobile application can allow patients to check medicine and doctor availability conveniently.

2. Real-Time Inventory Updates

Barcode or QR-code scanning can be integrated for faster medicine stock updates.

3. Medicine Demand Prediction

Machine-learning models can be used to predict future medicine demand based on historical consumption.

4. Doctor Availability Prediction

Historical schedules and hospital workload data can be analyzed to improve staff planning.

5. Multi-Hospital Integration

The system can be extended to connect multiple government hospitals and provide availability information across hospitals.

6. Notification System

SMS, email, or mobile notifications can be used for important alerts.

7. Advanced Analytics

Dashboards can provide department-wise, medicine-wise, and time-based analytical reports.

8. Multilingual Support

The system can support regional languages to make it easier for a wider range of patients to access information.

Conclusion

The **Medicine and Doctor Availability Analysis System in Government Hospitals** provides a centralized approach for managing and analyzing information related to medicines and doctors. The system can maintain medicine stock, expiry information, doctor schedules, departments, and availability status in a structured database.

Patients can search for required medicines and doctors, while authorized hospital staff can update inventory and schedule information. The system can also identify low-stock medicines, monitor expiry dates, and generate useful analytical reports.

By combining **database management, inventory analysis, doctor scheduling, availability tracking, alerts, and data analytics**, the proposed system can improve access to hospital resource information and support more efficient hospital administration.

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