SOFTWARE REQUIREMENT SPECIFICATION

HOSPITAL MANAGEMENT SYSTEM (HMS)

Group Number- 15
Prof. Saurabh Tiwari

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1.INTRODUCTION

1. 1 Purpose

The purpose of this Software Requirements Specifications (SRS) is to document the specifications and requirements for the Hospital Management System (HMS).The purpose of this HMS software is to develop a Web-application to optimize and digitalize allsort of operations from patient registration to appointment scheduling, document management,consultation management, prescription generation, staff management etc.

1.2 Intended Audience

This document is intended for clients, developers, project managers, marketing staff, users, testers,and documentation writers.

1.3 Product Scope

Small- to medium-sized hospitals with an outpatient department can use this programme. The purpose of this software is to provide an electronic system for managing hospital operations. The hospital process is currently managed by a manual system. The procedure involves documenting the patient's doctor appointment, prior visits and prescription information, symptoms that have been diagnosed, medications that have been prescribed, and information on hospital staff who are now employed.

2. Overall Description

2.1 Product Perspective

Hospital Management Software (HMS) is a comprehensive and integrated solution designed to streamline and enhance the efficiency of healthcare facilities. It serves as the backbone of modern hospitals, connecting various departments, optimizing workflows, and improving overall patient care. The perspective of this product revolves around addressing the unique challenges faced by healthcare institutions, with a focus on improving operational efficiency, patient experience, and data management.

This type of systems are really useful when it comes to real life application or use.The fully functional hospital management system will eliminate the drawbacks of the manual system by improving the reliability, efficiency, security and performance. The usage of a database to store details will accommodate easy access, retrieval,search and manipulation of data.The system's security will be improved by the access restrictions offered by the login feature. Concurrent access and convenience for doctors, patients, and receptionists will be made possible by the system.

2.2 Product Functions

→ Secure sign-in.
→ Manage appointments.
→ Schedule and reschedule appointments
→ Store and retrieve patients and employee details.
→ Generate prescriptions.
→ Generate Bills.
→ Add or remove employees
→ view and edit prescriptions
→ Apply for leave
→ Make payment for convenience fees
→ Analysis

2.3 User Classes and Characteristics

- **Interface for Administrator:**
  → Admin can add, edit and remove employees.
  → Admin can approve or deny the leave request.
  → Can view overall stats of hospital

- **Interface for Doctor:**
  → He/She can access patients' previous visits history.
  → Doctor can apply for leave
  → Doctors can add prescriptions.
  → View patients details
  → mark patient as visited patient

- **Interface for Receptionist:**
  → He/She can add new patients
  → Apply for leave.
  → View patient details using a unique patient id.
  → Generate bills
  → modify appointments
  → Search for the patient

- **Interface for Patient:**
  → Patients can request an appointment
  → Patient can view his/her prescription
  → Patient can reschedule(cancel) the appointment.
  → Patient can make payment

2.4 Operating Environment

2.4.1 Software requirements (Minimum)

- Windows 7
- Mongodb server

2.4.2 Hardware Requirements (Minimum)

- Core i5 processor
- 4GB Ram
- 10GB of hard disk space

2.5 Design and Implementation Constraints

- Should use less RAM and processing power.
- Each user should have a unique ID and password to login.
- Software is accessible through the internet.

2.6 Assumptions and dependencies

- **If the database interface changes, all the interfaces will be updated accordingly.**
- **User has a system with minimum hardware and software requirements.**
- **The system is dependent on the availability and performance of third-party APIs for payment processing.**
- **The system is dependent on the availability and reliability of the internet connection.**
- **The successful implementation of the system is dependent on the timely completion of development, testing, and deployment phases.**

3. External Interface Requirements

3.1 User Interfaces

To enable users to log into their individual accounts, the system will offer a Sign In page. Users will be able to access various system capabilities based on their role and assigned permissions through an intuitive dashboard interface after logging in successfully.

3.1.1 Admin Interface

- Admin has mainly 4 options available on the screen 1) Add/remove employee (2) View employee (3) view patients (4) analysis

3.1.2 Receptionist Interface:

- **Add new patient**
  → Receptionists can add new patients by entering required patient details.

- **Generate bills**
  → This interface shows a table where the receptionist enters required Details to generate bills.

- **Update patient visit**
  → This interface allows receptionists to update patient visit details. This interface shows a box where receptionist enter the patient id and the mark patient as visited patient.

- **Search patient**
  → This page shows a box where by entering the patient id the receptionist can get the patient's details.

- **Apply for leave**
  → If the receptionist wants to apply for leave then he/she can open this page and select the dates so he/she can apply for

leave.

- **View and edit appointment**
  → This page allows you to select the date and by selecting the date, the receptionist can view and edit the appointment for the selected Date.

3.1.3 Doctor Interface

- **Visited patient**
  → If the patient has visited the on time then doctor can mark that patient as visited patient

- **Search Patient**
  → If doctor wants to search the patient then he/she can click on search patient and then by entering the patient id doctor can fetch the patient's Data

- Observation and prescriptions
  → After the diagnosis of the patient doctor can add his/her observation and prescription for patient

3.1.4 Patient interface

- **Book appointment**
  → Patient can book the appointment by clicking on the book appointment option and then patient has to select the doctor,date and time slot and then after patient has to give some convenience fees for appointment Booking

- **Vlew and edit appointment**
  → For some reason patient wants to cancel the appointment then he/she can go to edit appointment option and then patient can cancel the Appointment

- **View prescription**
  → If patient wants to view his/her prescription then patient can go to view prescription option

3.2 Hardware Interfaces

Our application directly involved the use of a hardware interface. Device should be with the internet and has enough resources to run a web browser. This is a requirement needed to work with the staff and members. The admin shall have a PC with internet connection to get the best experience.

3.3 Communications Interfaces

• Web Browser: Microsoft Edge, Chrome or Firefox

4. Features and requirements

4.1 User Sign In

4.1.1 Description and Priority

The employees that are working in the hospital and the patient should be able to
login and access their dashboard.
Priority: High

4.1.2 Response Sequences

This is the first page of the software which is presented to the user.

4.1.3 Functional Requirements

Success:
When the user selects a valid role, enters correct login credential i.e. username and password, he/she must be able to login into their account and access the dashboard.
Failure:
When the user selects incorrect role or provides invalid login credentials he/she should not be able to login into the system ad well as an error should be displayed 'No such account exists Please insert valid credentials'.

4.2 Book an appointment

4.2.1 Description and priority

The patient can book the appointment using our software.User has to select the doctor,date and time slot and then by paying some charges the user can book the appointment.
Priority: **High**

4.2.2 Response Sequences

The patient has to be a registered user and then by clicking on 'Book appointment' and filling the required details, the user can book the Appointment.

2.2.3 Functional Requirements

Success:

When patient is willing to book the appointment ,he/she will go to book appointment option and the by filling the required details patient will click on book appointment option and then a screen will show to pay some booking charges if the patient enters the valid payment details and click on pay the appointment will be booked

Failure:

After filling the required details at the time of payment if patient enters invalid payment details then the appointment will not book

4.3 Dashboard

4.3.1 Description and Priority

The employees and the patients should be able to access different functionalities of the system as per their role and assigned permissions.

Priority: High

4.3.2 Response Sequences

The user has to first login using login form. Then if login is successful, the user can access his dashboard.

4.3.3 Functional Requirements

The user should be able to access different functionalities of the system as per their role and assigned permissions.

4.4 Add/Remove Employee(Admin Interface)

4.4.1 Description and Priority

The administrator can see list of all active employees in the hospital, add new employee remove existing employee, edit particular employee details.
Priority: High

4.4.2 Response Sequences

The admin logs into his account using valid login credentials. Then click on the 'Add Employee' option on the side navbar to add new employee details.Click on 'AllEmployees' option to see a list of employees. Then click 'View' button in front of his/her name and then click on 'Delete' button to remove employee or 'Edit' button to edit his details.

4.4.3 Functional Requirements

Success:
When the administrator adds new employee details in the system, an account is created for him/her and login credentials are set to employee id (as username) and Aadhar number (as password). When an administrator Removes an employee account, his/her account must be closed and he/she should not be able to login.
Failure:
When administrator is not able to add or remove an employee, an error a message should be displayed describing what caused the problem.

4.5 Leave Approval(Admin interface)

4.5.1 Description and priority

The admin can see the leave request and approve or disapprove as the need of the staff
Priority : High

4.5.2 Response sequence

The admin access his/her dashboard by logging into the system and then Choose option of 'Leaves' to view the leaves.Then admin can approve or disapprove the leave on clicking the approve leave or disapprove of the leave button.

4.5.3 Functional requirement

Success
When admin login using the appropriate id and password,then admin choose the correct option for approving or disapproving leave.
Failure
Admin mistakenly chose the wrong option.

4.6 Edit User Login Credentials and Details

4.6.1 Description and Priority

The employees and the patients can change their login as well as personal details.
Priority: Medium

4.6.2 Response Sequences

The user accesses his/her dashboard by logging in. Then choose 'edit' option to change login credentials and then enter username

and a new password. Choose the ‘personal info’ option to see and edit personal details.

4.6.3 Functional Requirements

Success:
When user enters new login credentials, he must be able to log in using new Credentials not the previous one. When user changes his/her personal details those changes should be reflected to his/her profile and patients details section in doctor’s dashboard in case of patients.
Failure:
When the user enters different password in password and confirm password fields while changing login credentials an error should be displayed ‘password and confirm the password must match’.When the user tries to change his own unique id provided by system while updating personal details error should displayed.

4.7 Add new patient(Receptionist Interface)

4.7.1 Description and Priority

The receptionist can add new patient’s data in the system.
Priority: High

4.7.2 Response Sequences

The receptionist logs in his/her account. Then click on ‘add patient’ option to add new patients details and assign a doctor.

4.7.3 Functional Requirements

Success:
When the patient details are filled and submitted patients account must be created and he/she must be assigned unique id and should be able to login into their account and access their dashboard.

Failure:

When receptionist is not able to add patient's details, an error message should be displayed describing what caused the problem.

4.8 Print Prescription(Receptionist Interface)

4.8.1 Description and Priority

The receptionist can take a printout of the prescription given by the doctor.

Priority: High

4.8.2 Response Sequences

The receptionist logs in his/her account. Then choose the 'prescriptions' option. Then click on 'print' button to get printout of particular patient's Prescription.

4.8.3 Functional Requirements

Success:

When the receptionist clicks on 'print' button, the print of the prescription is generated.Printer can be attached to get a copy of the prescription.

Failure:

When receptionist is not able to print patient's prescription, an error message should be displayed describing what caused the problem.

4.9 Prescription and Observations

4.9.1 Description and Priority

The doctor can record patient's observations and prescription data in the system.

Priority: High

4.9.2 Response Sequences

The doctor logs in his/her account. Select particular patient by clicking the 'view' button. Then choose the 'observations and

prescription' option.

4.9.3 Functional Requirements

Success:

When the doctor chooses observations and prescription option, he/she should be able to record the patient's symptoms and diagnosis which will be accessible only to the doctor alongside he/she should be able to note down prescription for patient i.e. medicine's and dosage, do's, don'ts, investigations, follow-up, fees. When clicked on submit prescription should be generated and sent to the receptionist.

Failure:

When doctor is not able to note patient's observations and prescription, an an error message should be displayed describing what caused the problem.

5 Non Functional requirements

5.8.1 Usability
Software can be used again and again without distortion.

5.8.2 Availability
Availability*:* The system should be available 99.9% of the time during standard operating hours, excluding scheduled maintenance.

5.8.3 Reliability
The systems operates consistently and reliably over time providing accurate and dependable services to users.

5.8.4 Accessibility
Administrator and many other users can access the system but the access level is controlled for each user according to their work scope.

5.5.8 Data integrity
Data stored in the system should remain accurate and consistent over time.

5.5.9 Security
The system should be secure so that consumers will put their trust in it.All sensitive patient data should be stored and transmitted using industry standard encryption algorithms.

5.5.10 Compatibility
Browser Compatibility: The system should be compatible with the latest versions of major web browsers (Chrome, Firefox, Safari, and Edge).

5.5.11 Maintainability
The source code should be well-documented and follow coding

standards to facilitate easy maintenance by the development team.The system should support seamless upgrades without causing disruptions to existing data or workflows

6 Appendix

6.1 Appendix A: Payment

API - Application Programming Interface : API stands for Application Programming Interface. It is a set of protocols, routines, and tools for building software applications. APIs define how software components should interact with each other, providing a way for developers to access functionality or data from another application or service.We have used payment API to book and confirm the appointment.

6.2Appendix B: Usecase diagram