
Software Requirements Specification

For Platform for Vacancy Availability and Treatment Check for Hospitals

Version 1.0

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1 Introduction

1.1 Document Purpose

This document is a Software Requirements Specification (SRS) for the Hospital Management System (HMS) for a city. It lays out the functional, non-functional and behavioural requirements. It includes a set of use cases such as various health problems and user interactions that this software should implement. The SRS is organized into several sections to help and assist the development of the system in the user perspective. This enables both the hospitals and the patients in the long run with ease in terms of time management. The SRS will be periodically updated based on the incorporation of new features and the feedback received from the users.

1.2 Product Scope

The Hospital Management System is a web application intended to convey the patients and hospital management about various sectors like availability of vacancy, medical bills and also other important aspects which could enable the management of hospitals for a proper growth and functionality. This application is mainly intended for the social community all well as the public and private hospitals of a particular city.

1. This project enables all the various departments in the medical area such as ENT, child care, cardiac hospitals, oncology hospitals, etc to post their services in public.
2. This enables the patients to find nearest hospitals immediately and also the hospital to make required arrangements when an emergency case arrives.
3. Patients can easily view the hospital services and register in advance.

1.3 Intended Audience and Document Overview

This SRS is intended for several people including the citizens of the particular city, as well as the hospital sectors and system design developers.

1. The user can check the vacancy availability in the nearest hospitals and also the surgeons corresponding to the severe emergency cases.
2. The developers can use the SRS to design the system in such a way that it meets the requirements of the client.
3. The users can give the review of the services provided in the hospitals anonymously.

1.4 Definitions, Acronyms and Abbreviations

HMS: Hospital Management System
SRS: Software Requirements System
ER: Entity Relationship diagram

1.5 Document Conventions

Formatting Conventions are followed:

ITALICS

BOLD

Headings & Subheadings

Font color

Font Size

Line

Spacing

Header and Footer

1.6 References and Acknowledgments

<https://ieeexplore.ieee.org/document/278253> - IEEE Guide for Software Requirements Specifications

2 Overall Description

2.1 Product Overview

This software is a web based application and it is not a component of any other program and is basically intended for the HMS. Our application's data is stored in MySQL Server which can be accessed by the developer and can be retrieved in the required format by the user.

2.2 Product Functionality

- Provides a secure database of the hospitals which register in the management system and containing the login credentials and personal information.
- Facilitates a process of entering, retrieving, modifying and deleting the data of both the ends.
- Provide necessary access to the patients with simple interface documentation.

- Easily update details of hospital functions and the user needs into the database.
- Provide a list of systems of hospitals and their services.
- Provides a query section to the developers such that users can contact the system developers any time.
- Basically, without registration, people are enabled to access the information of nearest hospitals, specialisations and the expected advance amount to pay.
- The system also provides features like vacancy check, the pay of treatment, the availability of doctors, distance measurement between current location and hospitals, working hours.
- Patients can find the hospital details by entering the hospital name and also can search which hospital would solve their health issue by entering it.
- The system enables registered patients to provide reviews who have completed the treatment in the hospital.
- The system helps the users to store prescribed medicines information and help them to edit and make changes, so that they can have an idea of what all medicines they still need to buy.
- The system tells if the specialised doctors corresponding to a health issue are available or not
- Suggestions given by the doctors for a treatment or common health issues.
- Non register patients can have the access to read-only features which are vacancy check, nearest hospitals check, available doctors check and the pay for the treatment.
- Registered patients can register in advance to consult the doctor.

2.3 Design and Implementation Constraints

- Safety and Security: Users are given access to the website so that they can register into the website with the help of any simple OTP.
- The website runs all day long as in 24 X 7.
- Implementation of the database using a centralized database system.
- The challenges in developing the system are the required number of users. The expected number of users once launched will be around 5000 at the first point of implementation.

2.4 Assumptions and Dependencies

1. The System assumes that the patients who register have mobile phone access to them every time so that they can avail the features of the system.
2. The System depends on the hospital registered and their services.
3. The System assumes that there exists fair play from both the ends and the details or information given by them are solemnly true.
4. The registered hospitals should have a minimum of 100 Kbps to update the information.

3. Specific Requirements

3.1 External Interface Requirements

3.1.1 System Interface

The User Inputs data via the web server using HTML forms. The actual program that performs the operation will be written in PHP.

3.1.2 User Interfaces

The new system shall provide a very intuitive and simple interface to the user and the administrator, so that the user can easily navigate through and find the nearer and best hospital. They can also give review and ratings to the hospital, so that the users can get to know the quality of the treatment. Users can also check the availability of different services provided by the hospitals with ease

3.1.3 Software Interfaces

- Front end development requires HTML, CSS
- Back end Interfacing using PHP
- Database Setup using MySQL

3.1.4 Hardware Interfaces

MySQL	MySQL is an open-source relational database management system
PHP	PHP is a general-purpose programming language originally designed for web development
HTML	HTML is the standard markup language for documents designed to be displayed in a web browser
CSS	CSS defines style rules in separate CSS files.

3.2 Functional Requirements

3.2.1 Use Case Scenario

3.2.1.1 Use Case Scenario 1- user login

Purpose	User logs in to the system using One time password(otp).
User	A user can create a profile with a unique username and password.
Input Data	Profile username and password.
Output Data	Corresponding page data.
Invariants	Profile table data and user information.
Pre-conditions	User is not logged in to a profile, input profile exists in database, user password matches profile.
Post-conditions	User's computer has been supplied with appropriate cookie, page data is appropriate for selected profile
Basic Flow:	Webpage looks up profile data and returns the matching cookie. Web Page is updated to match new user data.
Alternative Flow(s):	Invalid password, invalid username, or mismatched username and password redirect to error message and previous page.

3.2.1.2 Use Case Scenario 2 – Availability Checking

A user logs into the system and can check the nearer hospitals and the vacancy availability in them.

To check the nearer hospitals and vacancy availability:

Purpose	A user wants to check the nearer hospitals and vacancy availability in them.
User	A legitimate user logged into the system
Input Data	User's location and the Health issue.
Output Data	Hospitals(provided the health issue can be treatable in them)are displayed in the ascending order of the distance from the user location and vacancy availability in them and the address,contact number,review of the hospital will also be displayed.
Invariants	Permission for location access has to be enabled by the user.
Pre-conditions	User is Logged in.
Post-conditions	Users could be able to get the list of hospitals.
Basic Flow:	The user has to give access to the location.After that,hospital names in the ascending order of the distance from the user's place to the hospital will be displayed on the screen.Among them,the user has to choose one.

3.2.1.3 Use Case Scenario 3 – Doctor Availability Checking

A user can check the availability of the specialised doctor corresponding to his health issue.

Purpose	A user wants to check whether the specialised doctor who treats his/her health issue is available or not.
User	relative of the patient or patient itself.
Input Data	Health issue.
Output Data	List of doctors and the time in which they are free.
Invariants	Health issues have to be treatable in that hospital chosen.(i.e., we can't go to the eye hospital for fever.)
Pre-conditions	User is Logged in; Hospital they've chosen has specialised doctors for the health issue
Post-conditions	If the specialised doctor is not available,one could search for another hospital.
Basic Flow:	Users can check whether the doctor will be available or not and he/she can move to the other hospital,if the doctor is not available.

3.2.1.4 Use Case Scenario 4 – Appointment for Doctor Consultancy in advance

Purpose	To take an appointment in advance to consult the doctor.
User	A legitimate user logged into the system
Input Data	Time slot in which the user can visit the hospital(in the free time of doctors)
Output Data	a message saying “you’re registered” if they entered the free time of doctors. error,if they enter busy time the doctor has to be popped.
Invariants	The registered user patient must be in one of the cities of the system.
Pre-conditions	User is logged in.
Post-conditions	A document which tells that the user successfully registered to consult the doctor.
Basic Flow	The registered user should login into the system and should search the health issue and should select a doctor whom he/she wants to consult so that he gets to register in advance and then he/she gets a printable document they successfully applied to consult the doctor.

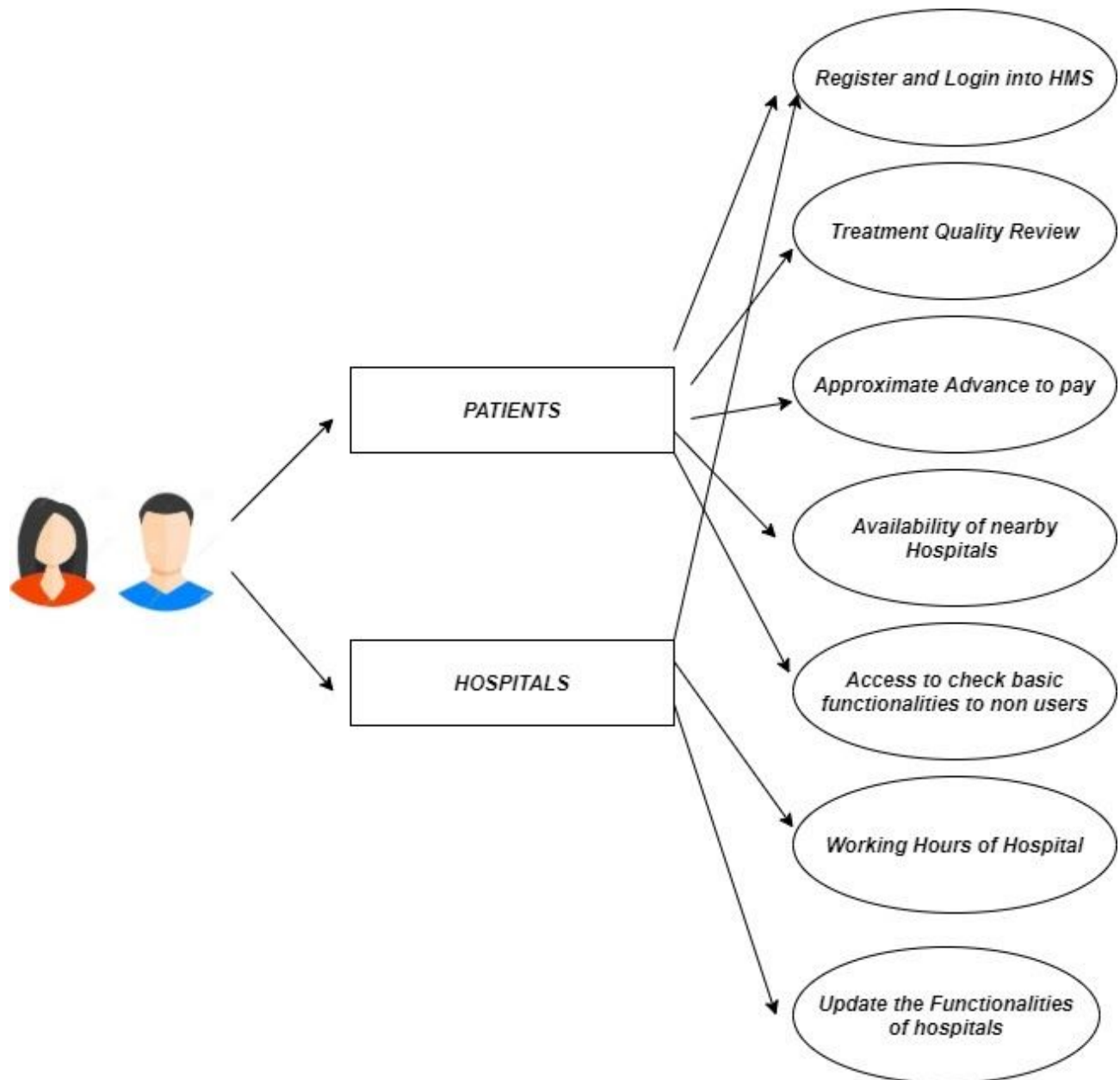
3.2.1.5 Use Case Scenario 5 –Ratings and reviews for the treatment

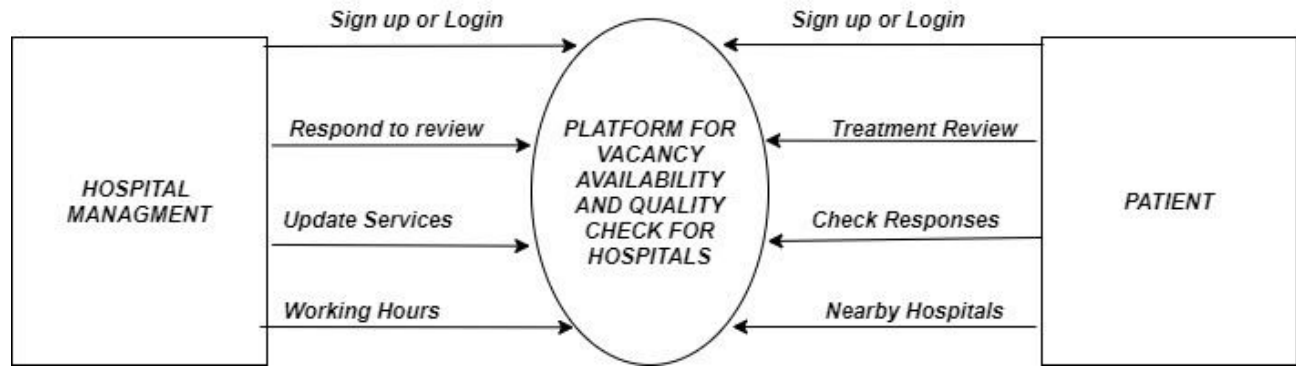
A user can give the review and ratings regarding the treatment they have taken.

Purpose	To give review or rating for a hospital based on experience of treatment
User	A legitimate user logged into the system
Input Data	The hospital and specialization the user took treatment from
Output Data	a message saying “Thank you for your response” after finishing the review.
Invariants	The patient must have taken the treatment from the hospital entered
Pre-conditions	User is logged in.
Post-conditions	NIL
Basic Flow	The registered user should login into the system and should input the hospital in which he/she took the treatment and should give the review based on the experience and the result and then there comes a message entering “Thank you for your response” after finishing the review. This could be useful for the other patients to check how the treatment is.

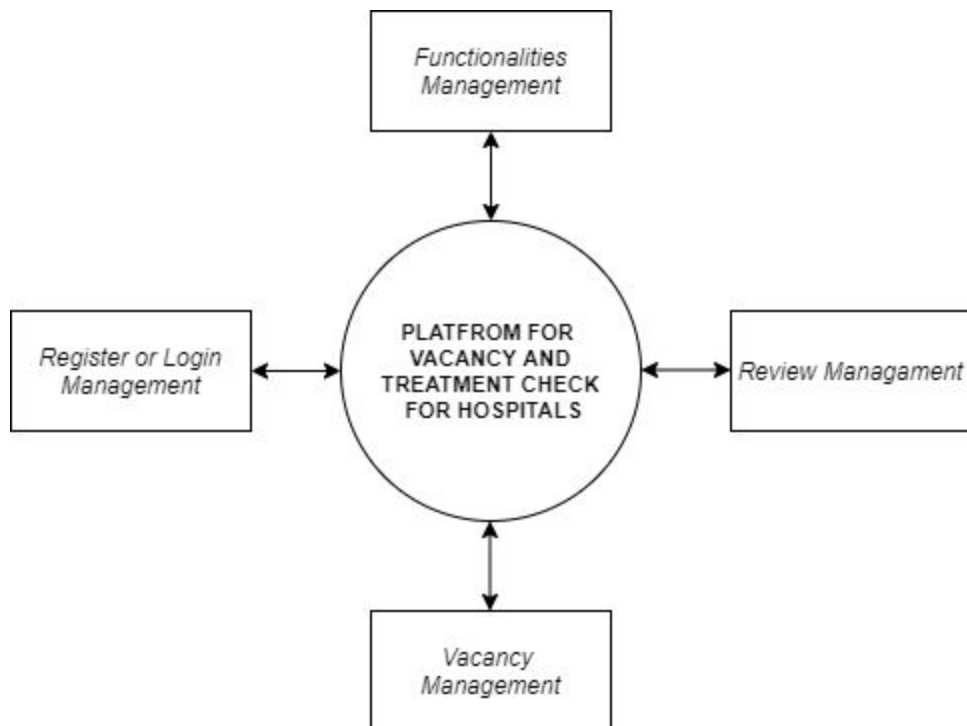
3.3 Use Case Model

3.3.1 Use Case #1





3.3.2 Use Case #2



4.Other Non-functional Requirements

4.1 Performance Requirements

- The end product is web based and needs a running server to host it.
- The request response time will depend on the latency of the server and the network speed.
- So, an adequate server capable of handling concurrent requests of 750-1000 users at a time is required.
- The run time of the application also depends on the hardware of the server hosted on.

4.2 Safety and Security Requirements

- The data(of both patients and doctors) in the server has to be backed up periodically.
- Users are to be asked to create unique user ids and OTPs. (They can register using mobile numbers at first)
- Secure processing and storage of sensitive information like login credentials and personal information.
- Users are classified on various authorization levels based on which they can access, retrieve and modify data in the database.
- Masked password entry will be provided.
- The people who avail the basic functionalities like viewing nearest hospitals, available vacancies and the pay have the access of read-only display.

4.3 Software Quality Attributes

Reliability
Operability
Performance efficiency
Security
Compatibility
Maintainability

4.3.1 Reliability

- Vacancy availability in the hospitals has to be updated periodically
- Basically any UPDATE is reflected in the database in minimal time.
- The data of the hospital can be fetched at any point by the patients.

4.3.2 Operability and Compatibility

- The user can easily get accustomed to the developed interface.
- The created web application will ensure smooth user experience and a designated help section will be provided for standard FAQs.
- Appropriate error messages are shown up when errors are encountered.

- Easy navigation panes and visual cues and images to enable the users to interact with the website comfortably.

4.3.3 Performance Efficiency

- An attempt to incorporate the best website and database practices like normalization to ensure faster request response times.
- Since event registration, and user access is real time, an attempt will be made to perform these operations in the least possible time, so that the emergency cases can make the best use of it.

4.3.4 Security

- Users are requested to create a unique user id (error message will be popped up if they enter a username that already presents in the database).
- The web browser will not display the password while entering in the field instead special characters will be displayed to assist the user for example ‘*’.
- The system’s backend will be accessible to only authorized levels of users i.e the main overlooking system of hospitals.

4.3.5 Maintainability

- Our SQL Server has a database maintenance routine scheduled every week/ or whenever there’s an issue.
- Periodic testing and bug fixes will be rolled out based on the feedback from the users(both patients and the hospitals).

5 Other Requirements

5.1 Business Rules

- *All the registered users are expected to have a unique user id which can be made using mobile number.*
- *The hospital management corresponding to a hospital can update their vacancy availability and the doctors availability and many other features which can be done with a minimum of 100 Kbps internet upload speed.*
- *Requires proper input for the fields during registration for an event which will be validated by the already pre-existing data we have.*

5.2 Other Expected Requirements

- *All the users are expected to be familiar with basic web browsing and web interfaces.*
- *The users are also expected to raise concerns about the existing bugs and issues so that they can be rectified.*
- *The language of the entire web interface will be in English. So basic English is assumed to be known by the corresponding users.*