Software Requirements Specification
for
Hospital Management System

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Chapter 1

Introduction

Hospital management system: an integrated software that handles different directions of clinic workflows.It provides the tasks, function, management and goals of the hospital management process.This SRS describes the system's design, scope, requirements, implementation and plans of the project.

The requirements of the system are:

- Work Scheduling
- Admissions
- Patience care
- Surgery management
- Ward management
- Waiting list
- Emergency service
- Check out
- Billing

1.1 Purpose

The primary target of this design is to make hospital experience better than the traditional system.The purpose of the document or system is to maintain the hospital system which is under the software. Stake holders of the project's are doctors, nurses, administrative staff, developers. Hospital management's team members and users uses this document as the communication requirements with the developing team.The intentions of the system are to reduce over-time pay and increase the number of patients that can be treated accurately.

1.2 Intended Audience

The document is intended for the developers, users, testers, marketing teams, staff, project managers, writers. The SRS contains the system's design, scope, requirements, implementation and plans of the project. The requirements used in this document are reports, personal health numbers, Database or the collection of information, front desk staff, password, id, GUI etc. Doctors will also use the system to keep track of the patients assigned to them. The intentions of the system are to reduce over-time pay and increase the number of patients that can be treated accurately.

1.3   Intended Use

Software requirements provides the framework that every project involved in the development process. The development, quality, assurance, operations and maintenance of the hospital management system. Several types of interfaces project requires for user, hardware, software, communication of the project. Hospital management system manages the activities of the hospital bed assignment, operations scheduling, personnel management and administrative issues. The stakeholders involves in the entire hospital system.

1.4   Product Scope

The project or document is specified for hospital management system and will maintain the doctor and patience communication, relation, working process management. System allows the users and stakeholders the ability to optimize and digitize processes to improve patience service and communication with the different sectors within the hospital, streamline search of medical records, bills, patience, doctors. It improves the healthcare performance. The main goal of this project is to improve the cost and management time and process.The requirements of the statement are both functional and non-functional.The scope of the system is to create a software which can be customized for deployment and integration into any hospital's use; however, once developed, will be customized to the needs of our client.

1.5   Risk Analysis

Risks are needed to be identified and evaluated as a means to reduce injury to patients, staff members, and visitors within an organization. Risk managers work proactively and reactively to either prevent incident or to minimize the damages following an event.Risk analysis could be encountered in using medical devices. Risk analysis of medical devices includes:

- Achieve compliance to ISO 14971.

- Perform a Fault Tree Analysis (FTA) on device.

- Include a compatibility mode

The possible risks are reviewed and then rated to assess which risk or risks pose the highest vulnerability.The issues identified during the brainstorming session are categorized and documented on the Risk Assessment form. Some risks posed to patient safety can be mitigated using patient-specific risk management strategies such as:

1. Not filling expired prescriptions - Sending patients adequate notification of prescription expiration will support communication between patients and physicians thus reducing potential prescription medication abuse.

2. Following up on missing test results - Patients who need to take additional medical tests following appointments may fail to do so, or the test results might get lost. Developing a plan to monitor receipt of test results guarantees the results are reviewed, so patients can then be consulted.

3. Tracking missed appointments - Implementing a system to follow-up with patients who miss appointments but fail to reschedule is another proactive step in managing patient risks.

4. Prevent falls and immobility - Making minor modifications to things like bed rails, bathtubs and toilets lacking grab bars, institutional lighting, and the conditions of the ground can significantly reduce the risks of such hazards.

Chapter 2

Overall Description

2.1 Product Perspective

This Hospital Management System is a self-contained system that manages activities of the hospital as bed assignment, operations scheduling, personnel management and administrative issues. Various stakeholders are involved in the hospital system.Accessing data can be better monitored, organized and time conscientious.

2.2 User Classes and Characteristics

The entire system has a set of users, each with different security privileges.The administrators,doctors, nurses and front-desk staff will be the main users. The system is also designed to be user-friendly. It uses a Graphical User Interface (GUI).

Administrators: Every administrator must have basic computer training. They are responsible for all of the scheduling and updating day/night employee shifts. Administrators in the wards are also responsible for assigning doctors and nurses to patients.

Front-desk staff: They all have general reception and secretarial duties.They are responsible for patient's check-in or notification of appropriate people (e.g. notify administrator or nurse when an event occurs).

Doctors: All doctors have a medical degree. Some have further specialized training and are computer literate.Doctors will use the system to check their patient's list.The doctor can receive data in/out of a health network from the database with permission from a head doctor/nurse, but the data is read-only.

Nurses: All nurses have post-secondary education in nursing.Consulting nurses to whom patients give short descriptions of their conditions are also responsible for assigning patients to appropriate wards if the beds are available, otherwise putting patients on the waiting list. Nurses in wards will use the system to check their patient list.

Patient: Patients are normal users.They will be able to browse through available doctors and ask for appointments. We can also check our previous history. The patient's functionality is limited based on their need. They will only be able to change their personal information and other things. Obviously they can look for their desired doctors to request an appointment.

2.3 Product Features

The following features are the high-level requirements that this system satisfies:

- Work Scheduling - Assigning nurses to doctors and doctors to patients

- Admissions-Admitting patients, assigning the patients to appropriate wards

- Patient Care - Monitoring patients while they are in the hospital

- Surgery Management - Planning and organizing the work that surgeons and nurses perform in the operating rooms

- Ward Management - Planning and coordinating the management of wards and rooms

- Waiting list - Monitoring to see if there are any patients waiting for available beds, assigning them to doctors and beds once these become available

- Emergency service-Emergency Patients need immediate response so here the emergency calls will be received and managed.

- Check Out- If a patient checks out, the administrative staff shall delete his ID from the system and the just evacuated bed is included in available bed list.

- Billing- It includes the payment details of the patient. Depending on the payments bill report is generated.

2.4 User Documentation

The program will come with a "About" tab enabling users to access the HTML.hlp support manual offline and online. With each new service kit, this manual will be revised. Other user documentation contains a user manual for low-level users, a technical document explaining in detail the features of the subsection for the use of technicians, a copy of the documentation and a link for potential contributors to the current source.

2.5 Operating Environment

Th program runs on Windows 7, for 32-bit/x86 and 64-bit/x64 PC architectures. The software for this system will be written in-

- PHP

- jQuery

- JavaScript

- HTML

- CSS

and the tools are-

- Wamp Server

- NetBeans

- Firebug on Firefox

- HTML and CSS

- JavaScript Console

- Extensions

- FlashFirebug

2.6 Constraints

- The system must be delivered by deadline.

- The system must be user-friendly

- Due to the large nature of the project, keeping track of the source code between the developer sub-teams will be difficult.

2.7 Assumptions and Dependencies

- It is assumed that compatible computers will be available before the system is installed and tested.

- It is assumed that the Hospital will have enough trained staff to take care of the system

- Users will be restricted from creating multiple user accounts.

Chapter 3

Requirements

3.1 Functional Requirements

Functional requirements define the basic software or system's behavior. The functional requirements of this document is the registration process, medical matter management (doctor, patient), check out, database process, report generation. They are given below:

As an Admin-

1. I want to log in.

   Confirmation/Acceptance:

   - Open the application or website
   - Enter ID and Password
   - Submit

   (a)Success -"Remember me" ticked : store cookie/automatic login next time and Profile is shown - "Remember me" not ticked:force login next time and Profile is shown

   (b)Failure- Error message shown and asked to retry.

2. I want to check my profile

   Confirmation/Acceptance:

   - Open the application or website
   - Login
   - Click my profile

   (a)Success – Profile is shown

   (b)Failure- Error message shown and asked to retry.

3. I want to add staffs

   Confirmation/Acceptance:

   - Open the application or website
   - Login
   - Go to ADD NEW STAFF
   - Select staff type
   - Add information

- Submit (a)Success – New staff is added
  (b)Failure- Error message shown and asked to retry.

4. I want to remove staffs

   Confirmation/Acceptance:

   - Open the application or website
   - Login
   - Go to STAFF
   - Select staff type
   - Select staff ID
   - Remove

   (a)Success – Staff is removed

   (b)Failure- Error message shown and asked to retry.

As a Receptionist-

1. I want to log in.

   Confirmation/Acceptance:

   - Open the application or website
   - Enter ID and Password
   - Submit

   (a)Success -"Remember me" ticked : store cookie/automatic login next time and Profile is shown - "Remember me" not ticked:force login next time and Profile is shown

   (b)Failure- Error message shown and asked to retry.

2. I want to check the available appointment

   Confirmation/Acceptance:

   - Open the application or website
   - Login
   - Go to Appointments
   - Check the details

   (a)Success – Appointment chart is shown

   (b)Failure- Error message shown and asked to retry.

3. I want to book an appointment for a patient.

   Confirmation/Acceptance:

   - Open the application or website
   - Login
   - Go to APPOINTMENTS
   - Check the available dates
   - Confirm the appointment
     (a)Success – Appointment confirmed message is shown
     (b)Failure- Error message shown and asked to retry.

4. I want to add new patients to the system and add it to the patient's record.

   Confirmation/Acceptance:

- Open the application or website
- Login
- Go to ADD NEW PATIENT.
- Enter all the information
- Submit

(a)Success – New patient added.

(b)Failure- Error message shown and asked to retry.

5. I want to discharge a patient from the system

    Confirmation/Acceptance:

    - Open the application or website
    - Login
    - Go to PATIENT LIST.
    - Enter patient ID
    - Click discharge

    (a)Success – The patient is deleted.

    (b)Failure- Error message shown and asked to retry.

6. I want to add to available bed list after patient is discharged.

    Confirmation/Acceptance:

    - Open the application or website
    - Login
    - Go to BED LIST.
    - Enter patient ID
    - Click Now available.

    (a)Success – Bed is added to available bed list.

    (b)Failure- Error message shown and asked to retry.

7. I want to notify the doctor of the patient.

    Confirmation/Acceptance:

    - Open the application or website
    - Login
    - Go to DOCTOR LIST.
    - Click doctor name
    - Click Notify.

    (a)Success – Notification message has been sent message is shown

    (b)Failure- Error message shown and asked to retry.

8. I want to update patient information.

    Confirmation/Acceptance:

    - Open the application or website
    - Login
    - Go to PATIENT LIST.
    - Enter patient ID

- Update

(a)Success – Patient information is updated.

(b)Failure- Error message shown and asked to retry.

As a Doctor-

1. I want to log in.

   Confirmation/Acceptance:

   - Open the application or website
   - Enter ID and Password
   - Submit

   (a)Success -"Remember me" ticked : store cookie/automatic login next time and Profile is shown - "Remember me" not ticked:force login next time and Profile is shown

   (b)Failure- Error message shown and asked to retry.

2. I want to check my profile.

   Confirmation/Acceptance:

   - Open the application or website
   - Login
   - Click my profile

   (a)Success – Profile is shown

   (b)Failure- Error message shown and asked to retry.

3. I want to check my appointments.

   Confirmation/Acceptance:

   - Open the application or website
   - Login
   - Click MY APPOINTMENTS (a)Success – Appointments is shown
     (b)Failure- Error message shown and asked to retry.

4. I want to check my patients details.

   Confirmation/Acceptance:

   - Open the application or website
   - Login
   - Click MY PATIENTS
   - Select patient
   - Click details

   (a)Success – Patient details is shown

   (b)Failure- Error message shown and asked to retry.

5. I want to cancel an appointment.

   Confirmation/Acceptance:

   - Open the application or website
   - Login
   - Click MY APPOINTMENTS

- Cancel

(a)Success – Appointment is cancelled, and message is sent to patients- is shown

(b)Failure- Error message shown and asked to retry.

As a Patient-

1. I want to log in.
   Confirmation/Acceptance:

   - Open the application or website
   - Enter ID and Password
   - Submit

   (a)Success -"Remember me" ticked : store cookie/automatic login next time and Profile is shown - "Remember me" not ticked:force login next time and Profile is shown

   (b)Failure- Error message shown and asked to retry.

2. I want to check my profile.
   Confirmation/Acceptance:

   - Open the application or website
   - Login
   - Click my profile

   (a)Success – Profile is shown

   (b)Failure- Error message shown and asked to retry.

3. I want to check my appointments .
   Confirmation/Acceptance:

   - Open the application or website
   - Login
   - Click MY APPOINTMENTS (a)Success – Appointments are shown
     (b)Failure- Error message shown and asked to retry.

4. I want to check my reports.
   Confirmation/Acceptance:

   - Open the application or website
   - Login
   - Click MY REPORTS
   - Click details

   (a)Success – Report is shown

   (b)Failure- Error message shown and asked to retry.

5. I want to cancel an appointment.
   Confirmation/Acceptance:

   - Open the application or website
   - Login
   - Click MY APPOINTMENTS
   - Cancel

(a)Success – Appointment is cancelled, and message is sent to doctor- is shown

(b)Failure- Error message shown and asked to retry.

As a Nurse-

1. I want to log in.

   Confirmation/Acceptance:

   - Open the application or website
   - Enter ID and Password
   - Submit

   (a)Success -"Remember me" ticked : store cookie/automatic login next time and Profile is shown - "Remember me" not ticked:force login next time and Profile is shown

   (b)Failure- Error message shown and asked to retry.

2. I want to check my profile.

   Confirmation/Acceptance:

   - Open the application or website
   - Login
   - Click my profile

   (a)Success – Profile is shown

   (b)Failure- Error message shown and asked to retry.

3. I want to check appointments

   Confirmation/Acceptance:

   - Open the application or website
   - Login
   - Click APPOINTMENTS (a)Success – Appointments are shown
     (b)Failure- Error message shown and asked to retry.

4. I want to upload reports of patients in Database.

   Confirmation/Acceptance:

   - Open the application or website
   - Login
   - Go to UPLOAD REPORTS
     (a)Success – Report is uploaded
     (b)Failure- Error message shown and asked to retry.

5. I want to Arrange Operation schedule.

   Confirmation/Acceptance:

   - Open the application or website
   - Login
   - Go to OPERATION SCHEDULE
   - Arrange
     (a)Success – schedule is arranged and notified
     (b)Failure- Error message shown and asked to retry.

3.2   Non Functional Requirements

The non-functional requirements are the security, performance, maintainability, patience identification, font desk staff rights, administrator's right, doctor's and nurse rights of the system. Non-functional requirements define system behavior, features and general systems that affects the user interfaces. They serve as the constrains or restrictions of the design of the system. The non-functional requirements of this document is given below:

Performance Requirements: There should be high performance and low failure rates for the software. With high baud rates ranging from Mbps to Gbps, the software should be able to transmit/receive data from databases. Machines should have all the latest Windows updates installed, and viruses should not compromise their stability. Machines must use mounted firewalls and active virus scanning tools. In order to optimize efficiency and security, machines should solely be used for operation of the software.

Safety Requirements: The safety of the system is very important for the information. The security of the system includes the development and implementation if the security countermeasures.All database queries and data receiving/transmitting should be done using higher security transmission.Both offline and online access will be controlled for the purpose of accountability and to reduce the system's misuse and unauthorized access. Before it will finally be done, most acts will require a yes/no confirmation.

Security Requirements: In order to keep the private medical and social security details of the patient out of the wrong hands, all data receipt and transmission should be performed using higher encryption.In order to check if recent device security exploits/hacks are patched, applications must be inspected. The user-permissions system referred to in §2.3 will also be enforced.An organization username, an ID number, and a password must be entered before any user can access the system. The length of each password must be between 8-12 characters and must contain at least one capital letter, one number and one special character. With a specific password, passwords will need to be updated every half-year.

Software Quality Attributes: Flexibility, re-usability, robustness, and maintainability of the HMS system should be maximized, in order for clients to be able to deploy custom settings of the system to their individual hospital network needs.The system shall provide the capability to back-up the data. The user-interface screen shall respond within 5 seconds.

Appendices

Appendix A

Glossary

SRS

1. Software Requirements Statement

2. Statement clarifying the what a software project is

3. supposed to be engineered to do Specifies the limits, constraints, and big-picture, abstract plan of the software engineering

SQL

1. Structured Query Language

PHN

1. Personal Health Number on health card

Database

1. Collection of information in a structured form

GUI

1. Graphical User Interface

Report

1. An account of patients