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PATIENT RECORD MANAGEMENT SYSTEM (PRMS)

System Requirements Specification (SRS) prepared
for
St. Joseph Marcy Hospital

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1. Introduction

1.1 Purpose

This documentation outlines in detail the purpose of the St. Joseph Mercy Hospital Patient Record Management System (PRMS): it will describe the functionalities of the system, features it will have, the interface and constraints which it is expected to operate under. This document is to operate as the Hospital expectations and to guide their understanding of the final product as the end user.

1.2 Document Convention

This documentation is created based on IEEE standard System Requirement Specification guidelines.

1.3 Intended Audience and Reading Suggestions

This documentation is expected to be used by persons with varying responsibilities throughout the development to release of the PRMS. It is only expected to be viewed by such person or persons the Hospital deem necessary. Based on your role you will want to pay attention to specific aspects of this document, as follows:

1. **Project Manager** – will want to be focused on the overall description of this document to gauge team milestones and remaining tasks as the system is developed.
2. **Developers** – will want to pay attention and understand the technical requirements with more focus on the System Features and Other Non-Functional sections outlined in this document to guide the development of the PRMS.
3. **Testers** – will want to understand in full the systems features and it's expected output to guide their tasks during beta testing phase.
4. **End users** – will be interested in the overall description of the PRMS to become ofay with the system functions and features.

2. Overall Description

This section of the document will give an overview of the system with regards to functionalities, user classification and constraints which the system is expected to operate under.

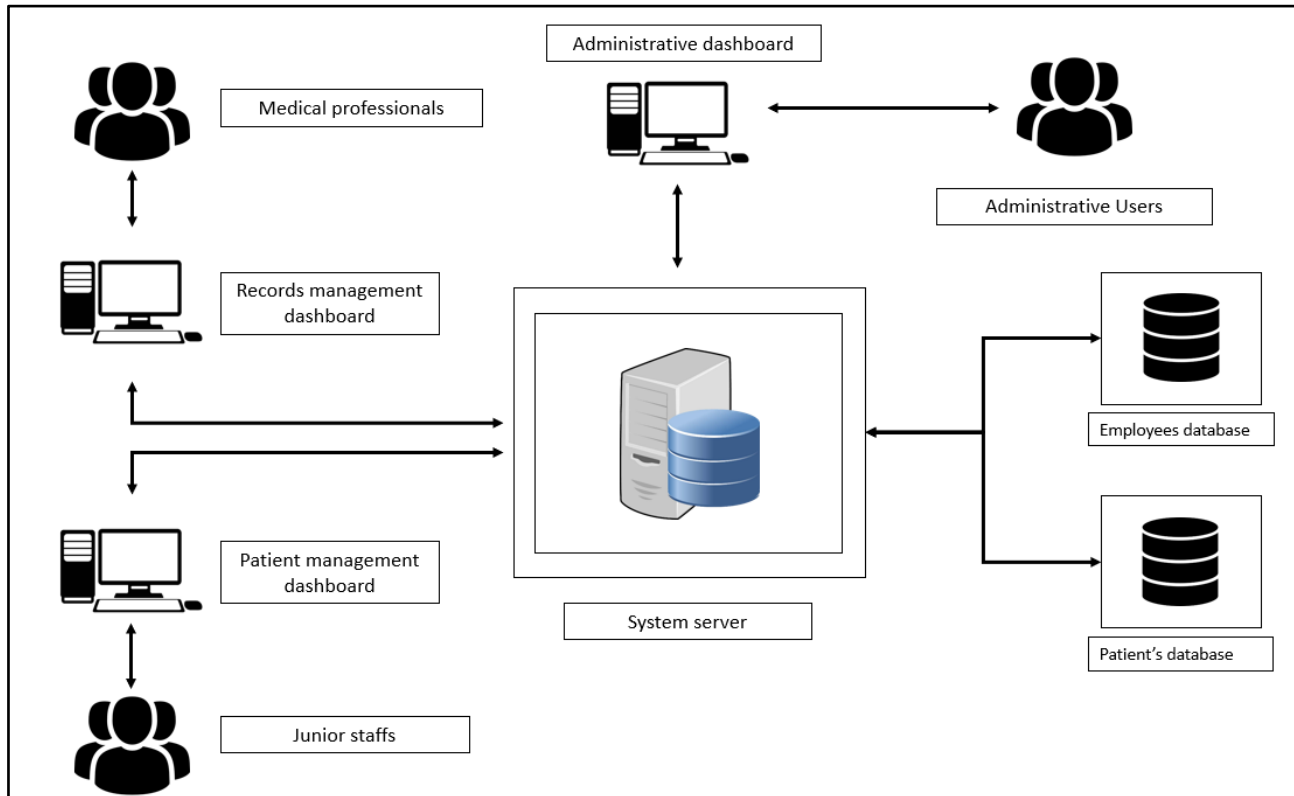


Figure 1. System environment.

2.1 Product Perspective

The PRMS is a standalone web-based system that provides functionalities outlined in the Product functions section of this document. It is expected to replace the current manual patient record keeping system at the Hospital.

2.2 Product Functions

The System Features section of this documentation outlines in detail the functionality of each feature the system is expected to have. Here is a summary of those functionalities:

- The system shall allow the user to login.

- The system shall allow the user to logout.
- The system shall allow the user to reset their password.
- The system shall allow the user to search for a patient.
- The system shall allow the user to create a new patient profile
- The system shall allow the user to view patient profile.
- The system shall allow the user to edit the patient profile.
- The system shall allow the user to set an appointment for the patient.
- The system shall remind the user assigned to the patient of their appointment.
- The system shall allow the user to add new records to patient profile.
- The system shall allow the user to make changes to the records added to the patient profile.
- The system should allow the user to export records from the patient profile.
- The system shall allow the user to issue an invoice.
- The system shall allow admin to create a new user profile.
- The system shall allow admin to create delete a user profile.
- The system shall allow admin to make changes to the user profile.
- The system shall allow admin to delete a patient profile.

2.3 User Classes and Characteristics

User Class	User Characteristics
Administrative users (Level 1)	<ul style="list-style-type: none">• Individual authorized with all privileges from the other users, such as the Dean of the hospital, Hospital administrator, managers etc.• Manage and maintain system.• Add new users and assign roles and privileges according to job title.• Able to delete patient profile or user profile.
Medical Professionals (Level 2)	<ul style="list-style-type: none">• Include individuals such as doctors, lab technicians, nurses etc.• Ability to view and add records or comments to patient profile and make changes to same.
Junior staff (Level 3)	<ul style="list-style-type: none">• Include receptionist, cashiers, front desk clerk etc.• Ability to create a new patient profile.• Ability to modify patient bio data on the patient profile.• Ability to set appointment.

2.4 Design and Implementation Constraints

The software will have only **one** language which is English and the device which the system is expected to operate on will have 250GB internal SSD as such the software cannot exceed this amount. The system requires a stable internet connection to work.

2.5 User Documentation

This software carries no user-manual, at the completion of the system a 3-4 hours workshop will be arranged to train current employees. Appropriate web tools will be used to create video tutorials for future trainings.

2.6 Assumptions and Dependencies

Users attached to the Hospital that will be working with this system will have sufficient knowledge of using a computer. The user will be able to read English language, as the user interface will be provided in English. Each user account must be created and authenticated by admin. This system is only accessible within company's intranet. Each user has to first login in order to access the database and no user can share their username and password to their colleagues and/or any other person.

3. System Features

This section of the documentation outlines the major functionalities of the system in greater detail.

These functionalities are given priority levels as follows:

- **High** – a core functionality, it must be created.
- **Medium** – can be implemented during the course of development.
- **Low** – add on feature.

Staff

This section outlines features that is to be implemented and made available to all levels of users; administrative users, medical professionals and junior staff.

3.1 Login.

3.1.1 Description and Priority

This feature shall allow the user to login at any given time. **High priority.**

3.1.2 Stimulus/Response Sequences

1. The user opens the portal.

2. The user will be prompted with a login screen.
3. The user will enter his/her login credentials (user ID and password).
4. The user will click on a “Login” button to authenticate his/her credentials.
5. The system will send the user to the dashboard upon successful authentication of the credentials.

3.1.4 Functional Requirements

REQ 1 – The system shall only ask the user for his/her 12-digit user ID and a password.

REQ 2 – The system shall authenticate the user credentials entered.

REQ 4 – The system shall restrict the user after 3 attempts at login.

3.1.4 Non- Functional Requirements

REQ 5 – The login screen should be the first page the user sees.

REQ 6 – The system should prompt an error if the user enters incorrect information and identify which of the credentials is incorrect.

3.2 Log out.

3.2.1 Description and Priority

This feature will allow the user to log out of the system at any point in time. **High Priority.**

3.2.2 Stimulus/Response Sequences

1. The user will click on a “Log out” button.
2. The user will be prompted with a box marking “Yes” and “No”,
3. They will select “Yes” to confirm log out or “No” to decline logging out.

3.2.3 Functional Requirements

REQ 7 – The system shall allow the user to log out.

REQ 8 – The system shall prompt the user to confirm that they would like to log out.

3.2.4 Non-Functional Requirements

REQ 9 – The user should be able to log out of the PRMS from any screen.

3.3 Password Recovery

3.3.1 Description and Priority

This feature will allow the user to reset his/her password at any point in time. **High Priority.**

3.3.2 Stimulus/Response Sequences

1. The user will click on a “Reset your password” button.
2. The user will be prompted with a box with “Yes” and “No”.
3. The user will be asked in a separate screen to enter his/her 12-digit user ID along with the most recent password.
4. The user will then be sent an email with a link to reset their password.

3.3.3 Functional Requirements

REQ 10 – The system shall allow the user to reset their password.

3.3.4 Non-Functional Requirements

REQ 11 – The user should be able to reset their password on any screen of the PRMS.

3.4 Search for patient

3.4.1 Description and Priority

This feature will allow users to search for a patient in the database. **High priority**

3.4.2 Stimulus/Response Sequences

1. The user will log into the system.
2. The user will be presented with a dashboard.
3. The user will then navigate to the search tab.
4. The user will then enter the patient First name, Last name or a combination of both.
5. The user will click on the “Search icon” or hit enter on the keyboard to initiate a search query for the patient.
6. The user will either be directed to the patient profile if that patient is the only person with the name entered otherwise be shown a list of patients.

3.4.3 Functional Requirements

REQ 12 – The system shall allow the user to search for patient profile.

3.4.4 Non-Functional Requirements

REQ 13 – The system should present a list of patient profiles if there are multiple profiles with the same name, otherwise take the user directly to the profile.

Administrative users (Level 1)

This section details features that are to be implemented and made available only to the administrative users.

3.5 Create user profile.

3.5.1 Description and Priority

This feature shall allow the administrative user to create a new user profile to access information and perform various tasks according to their assigned role and clearance level.

High priority.

3.5.2 Stimulus/Response Sequences

1. The administrative user logs into the system.
2. The administrative user is presented with the admin dashboard.
3. The administrative user clicks on “Create a new profile”.
4. The system displays a form where the administrative user is asked to enter:
 - i. Name.
 - ii. Date of Birth
 - iii. Contact details (email, cell number and alternative number)
 - iv. Address.
 - v. Job title.
5. The administrative user is then asked to select a designation from a drop-down menu to assign the new profile:
 - i. Administrative user
 - ii. Medical Professional
 - iii. Junior staff
6. The administrative user then clicks on “Save changes” to create the new profile.

3.5.3 Functional Requirements

REQ 14 – The system shall allow the administrative user to create a new user profile.

REQ 15 – The system shall generate a list of fields to accept information regarding the new user profile.

REQ 16 – The system shall generate a unique employee number for every user profile created.

REQ 17 – The system shall provide the administrative user with the ability to assign a designation to each user profile and grant relative privileges and access to information.

3.6 Delete user profile.

3.6.1 Description and Priority

This feature will allow the administrative user to delete a user profile from the system.

Medium priority.

3.6.2 Stimulus/Response Sequences

1. The administrative user will search for the user profile they would like to delete.
2. The administrative user will click on the user to open their profile.
3. The system displays a button “Delete Profile”.
4. The administrative user will click on “Delete Profile” to delete the user from the database.
5. The system will pop up a confirmation box stating “Yes” or “No” for deletion.
6. After deletion all other authorized users/colleagues will receive an email stating that changes were made to the system by the colleague who enacted the deletion.

3.6.3 Functional Requirements

REQ 18 – The system shall allow the administrative user to delete a user from the database.

REQ 19 – The system shall allow the administrative user to confirm deletion of the profile.

REQ 20 – The system shall not allow the administrative user to delete multiple profiles at once.

3.6.4 Non-functional Requirements

REQ 21 – The system shall place deleted profiles in an encrypted trash file for 30 days before complete deletion unless otherwise.

REQ 22 – The system should store a backup of the delete profile in a separate section of the database.

REQ 23 – The system shall not spam emails to authorized users upon every deletion. A report should be sent at the end of each month.

3.7 Delete Patient Profile.

3.7.1 Description and Priority

This feature will allow only the administrative user to select any one patient profile and permanently delete same. **Medium priority**

3.7.2 Stimulus/Response Sequences

1. The administrative user while on the admin dashboard will search for the patient profile using the patient's name.
2. The administrative user will click on the patient profile he/she wishes to delete to open it.
3. The administrative user while viewing the patient profile will navigate to the "Edit user profile" tab.
4. The administrative user will click on the "Delete profile" profile button to permanently delete the patient profile.

3.7.3 Functional Requirements

REQ 24 – The system shall allow the administrative user to delete a patient profile.

3.7.4 Non-Functional Requirements

REQ 25 – The system shall remove the patient profile from the database.

REQ 26 – The system should ask the administrative user to confirm the deletion of a patient profile.

Medical Professionals (Level 2)

This section details features that are to be implemented and made available only to the Medical Professionals users.

3.8 Add patient record

3.8.1 Description and Priority

This feature will allow Doctors, Nurses, Lab technicians or any other medical professional to add a record to the patient profile. **High priority**

3.8.2 Stimulus/Response Sequences

1. The medical professional will log into the system.
2. The medical professional searches and select a patient profile.
3. The medical professional will click the "Add New Record" button.
4. The medical professional will be prompted with a list of record types to choose from:
 - i. Physical and Visual Examination.
 - ii. Measurement.
 - iii. Genetic Testing.

- iv. Diagnostic Imaging.
 - v. Cellular and Chemical Analysis.
5. The medical professional will then be given another list with the names of forms/sheets specific to each record type listed previously.
 6. The medical professional will complete the form.
 7. The medical professional will then click on a “Save changes” button and a new record would be added to the patient’s medical history.

3.8.3 Functional Requirements

REQ 27 – The system shall provide the medical professional with the option to add a patient record.

REQ 28 – The system shall allow the medical professional to edit a patient record.

3.9 Export patient record

3.9.1 Description and Priority

This feature will allow Doctors, Nurses, Lab technicians or any other medical professional to export records from the patient profile. **High priority**

3.9.2 Stimulus/Response Sequences

1. The medical professional will log into the system.
2. The medical professional searches and select a patient profile.
3. The medical professional will click on the record they wish to export to open it.
4. The medical professional will click on the “Export” button at the bottom of the record.
5. The medical professional will then be prompted with a window asking to indicate the location to save the file.
6. The user will then click on “Save” button to save the file to the specified location.

3.9.3 Functional Requirements

REQ 29 – The system shall provide the medical professional with the option to export a patient record.

3.10 Edit patient record

3.10.1 Description and Priority

This feature allows for a patient record to be edited. **Medium priority**

3.10.2 Stimulus/Response Sequences

1. The user while on the patient profile will click on the patient record to open it.
2. The user will then click on the “Edit” button located at the bottom of the screen.
3. The user makes changes where necessary.
4. The user will then click on “Save changes” button to save the changes they made.

3.10.3 Functional Requirements

REQ 30 – The user shall be able to edit and save changes to a patient record.

3.11 Delete patient record

3.11.1 Description and Priority

This feature will allow for a patient record to be deleted. **Medium priority**

3.11.2 Stimulus/Response Sequences

1. The user while on the patient profile will click on the patient record to open it.
2. The user will then click on the “Delete” button.
3. The user is then prompted with a “Yes” or “No”.
4. The user will click “Yes” to delete the record or “No” to exit screen.

3.11.3 Functional Requirements

REQ 31 – The user shall be able to delete a record from the patient profile.

Junior staff (Level 3)

This section details features that are to be implemented and made available only to the Junior staff.

3.12 Create patient profile.

3.12.1 Description and Priority

This feature allows the junior staff to create a new patient profile. **High priority**

3.12.2 Stimulus/Response Sequences

1. The junior staff will login to the system.
2. The junior staff will click on a button marked “Add patient”.
3. The junior staff will then be provided with a form that will ask for the patient basic bio data and contact information.

4. The junior staff will then click on a button marked “Save changes” to save the profile.

3.12.3 Functional Requirements

REQ 32 – The system shall allow the junior staff to create a new patient profile.

REQ 33 – The system shall allow the junior staff to save the patient profile.

3.13 Edit patient profile.

3.13.1 Description and Priority

This feature allows for the manipulation/editing of a patient's profile. **High Priority**

3.13.2 Stimulus/Response Sequences

1. The user will search for the patient profile and click on the profile he/she would like to make changes to.
2. The user will click on the "Edit profile" button to edit the bio information or appointment for the patient
3. The users will then be required to click the “Save” button to apply changes.
4. The user will then be prompted with a window asking whether or not to go ahead with changes by selecting “Yes” or “No”.

3.13.3 Functional Requirements

REQ 34 – The system shall allow the junior staff to only make changes to the bio data and appointments on the patient profile.

3.13.4 Non-Functional requirements

REQ 35 – The system shall only allow the junior staff to edit one profile at a time.

REQ 36 – The system shall only allow a user profile to be edited twice each day.

3.14 Set appointment

3.14.1 Description and Priority

This feature allows the junior staff to create doctor appointments at specific time slots based on the doctor's availability for patients. **High Priority**

3.14.2 Stimulus/Response Sequences

1. The junior staff will log into the system.
2. The junior staff will search for the patient profile.

3. The junior staff will click on the “Set Appointment” button.
4. The system will display a calendar of the various departments and doctors respectively.
5. The junior staff can enter the name of the particular physician and/or department as a search filter.
6. The junior staff will select an available time from the list.
7. The patient's appointment will be added to the appointment queue and the doctor will be notified after the junior staff clicks on the "Save and submit" button.

3.14.3 Functional Requirements

REQ 37 – The system shall allow the junior staff to set appointment/s for the patient.

REQ 38 – The system shall allow the junior staff to cancel an appointment.

3.14.4 Non-Functional requirements

REQ 39 – The system shall notify patients of any cancellation by the doctor.

3.15 Issue invoice

3.15.1 Description and Priority

This feature allows the junior staff to create invoice for services rendered to the patient.

3.15.2 Stimulus/Response Sequences

1. The junior staff login to the system.
2. The junior staff searches for a patient.
3. The junior staff opens the patient profile.
4. The junior staff will click on “Create invoice” button.
5. The junior staff will then we asked to select from a list the service/s that was rendered to the customer.
6. The invoice will be populated and shown the screen.
7. The junior staff will click on the “Print invoice” button to print the invoice.

3.15.3 Functional Requirements

REQ 39 – The junior staff shall be able to issue invoice for the customer.

REQ 40 – The junior staff shall be presented with a list of services to choose from.

REQ 41 – The junior staff shall be able to print the invoice.

4. Other Nonfunctional Requirements

This section of the document will outline requirements that are meant to enhance the functioning of the system and support the features outlined.

4.1 Performance Requirements

1. To ensure an instantaneous feeling the system shall have a turnaround time of 100ms when any category of user performs an action.
2. The software should have high performance and low failure rates.
3. The system and any such other application supporting it shall be the only application/s running on the device it is expected to run on, this will allow for maximum use of the hardware efficiency.
4. All devices shall have the latest windows update installed, with the automatic update feature enabled.

4.2 Safety Requirements

1. The system shall not perform its own diagnosis, an administrative user is responsible for doing such diagnosis when necessary for any other level of user.
2. The system shall have the necessary firewall configured and active to prevent any virus attack to ensure patient and employees data is secured.
3. All information from the database should be backed up in the event the database either whole or part crashes to allow for swift restoration.

4.3 Security Requirements

1. The system requires a user to login first to perform any action.
2. The user password shall be 8-12 characters in length, it must have one capital letter, one lower case letter and one special character.
3. The system shall encrypt all user's login credentials.
4. The system shall request the user to reset their password once every 6 months.
5. The system shall only allow the user to access features that are specific to their level.

6. The system shall make a stamp for each action preformed on a patient profile or user profile.
This stamp will indicate the user ID and time the action is performed.
7. The system shall generate a report at the end of each month detailing the user profiles and patient profiles that were deleted.
8. All devices shall operate only on a LAN network.

4.4 Software Quality Attributes

4.4.1 Availability

The system should be available 24/7 for use.

4.4.2 Maintainability

The system should be easy to maintain and done bi-monthly. All source code should follow a standard and well organized to ensure easy readability and modification. All documentation accompanying the system should be in English language and formatted for each readability.

4.4.3 Reliability

The system should operate seamlessly at peak level. The system should prompt clear and informative messages when a component of the system doesn't work properly.

4.4.5 Usability: The system should be designed in English Language. The system should be designed using simple language for quick comprehension. The system interface should be designed in a way that all users, including those with minimal ICTs knowledge can perform tasks seamlessly

4.5 Business Rules

Each user can only access features that are enabled specifically for their level. Administrative users can interact with any feature that is specified.