Software Requirements Specification

for

HC Reimbursement Automation

Version 1.2

Prepared by

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Revisions

Version	Primary Author(s)	Description of Version	Date Completed
Initial Draft (v1)	Gaurav, Shorya, Sanchit, Atreya, Subhrojyoti, Harsh, Rahul, Nakula, Priyanka	Initiated the document. Added product scope, intended audience and requirement specification for the software.	26/01/22
Revised Version (v1.1)	Sanchit, Gaurav	Discussed about the updates required and then Updated the document.	27/04/2022
Revised Version (v1.2)	Harsh	Updated the user interface display examples with actual UI snapshots	28/04/22

1 Introduction

1.1 Product Scope

Our product aims to automate the reimbursement facility provided by the health center, which is currently manual and paper-based. To claim reimbursement, one needs to visit the HC, fill out the paper forms, attach bills and printouts, and submit. It is also not possible to track the application's progress remotely, and the applicant needs to visit the HC for any information regarding the application. Also, visiting the HC just for this is risky given the COVID scenarios and also time-consuming and tedious & everything is maintained on paper, even from the Administration side.

Our software enables an entirely online application process which will eliminate the need to visit the HC. The users can track the status of the application remotely and even apply for referrals directly through the form. Users no longer have to go through a painstaking visit to HC.

1.2 Intended Audience and Document Overview

This document is meant to facilitate any interested parties to go through the proposed model for our product. It includes the user requirements as collected by the team and the corresponding specifications for the system to fulfill those requirements.

- Section 2 consists of the summarized description of the model of our system. This section is mainly intended for the project managers and the developers as it summarizes the entire model.
- Section 3 consists of the technical requirements of our system. The developers need to pay close attention to this section as this contains detailed information regarding the interfaces used in creating the system. Along with it, the project managers can also find this section useful while supervising the project team. The documentation writers also need to be extra careful while writing this section. Even a slight detail mismatch can lead to a bad build of our product
- Section 4 consists of all other non-functional requirements and specifications of our system. The testers and the users can go through this section to understand the non-functional behavior of the system.

1.3 Definitions, Acronyms, and Abbreviations

SRS	Software Requirement Specification
HC	Health Center

1.4 Document Conventions

- Arial font size 11 is maintained throughout the document.
- Document is single spaced and a common margin is maintained throughout.
- Italics have been used for commenting
- Yellow highlighting has been used to highlight the updated text in the document.

1.5 References and Acknowledgments

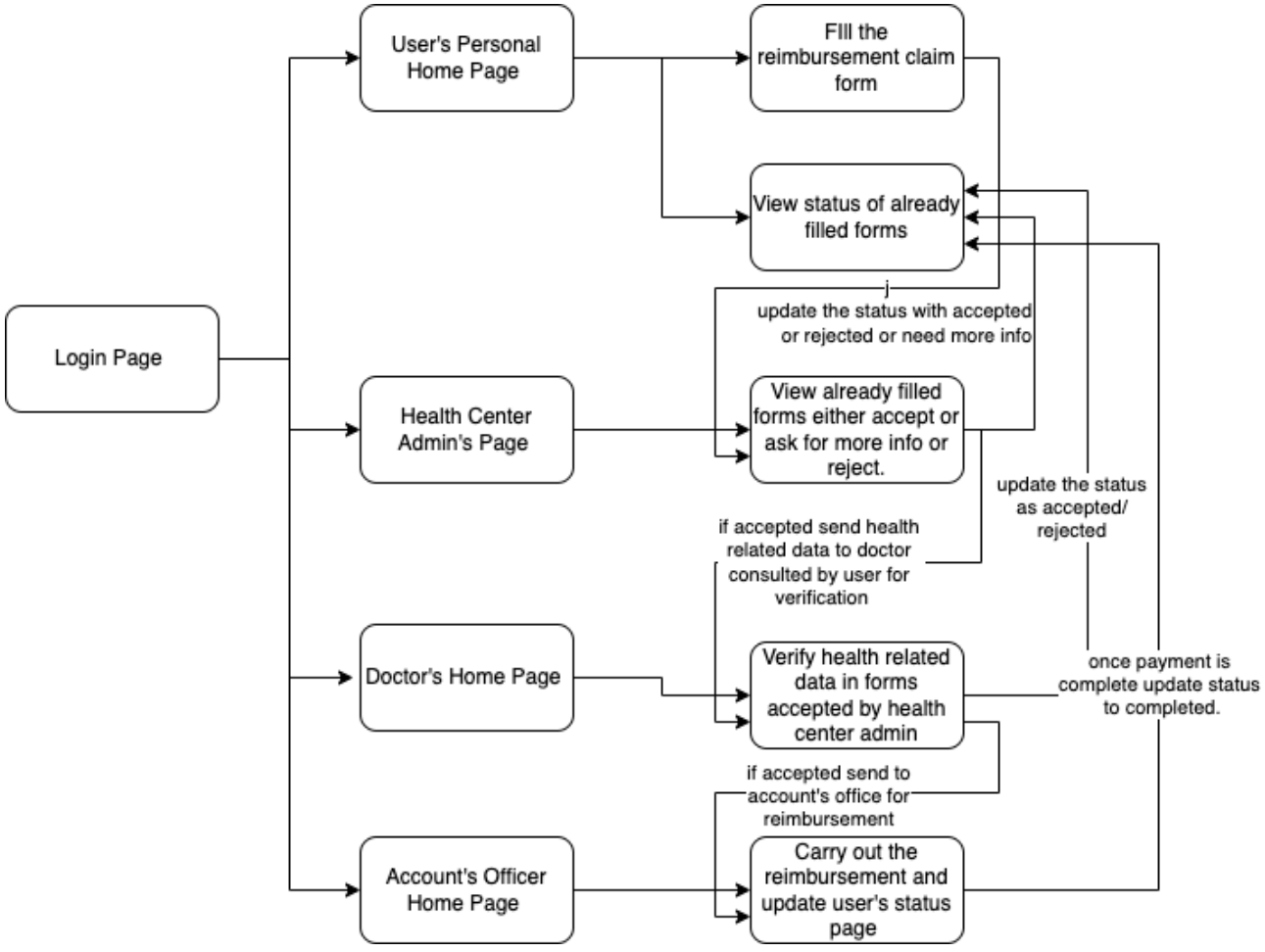
- All the different stages and processes related to the reimbursement process were discussed with the Office Automation Department and HC Back Office members.
- Keeping in mind the future scope of integrating our software with Office Automation Portal, all technicalities followed by the Office Automation portal were discussed and noted to keep that integration as smooth as possible.
- We would also like to acknowledge the help of our TA Mr. Nikhil Kumar Singh and our instructor Mr. Indranil Saha for guiding us through the document, and providing this SRS template.

2 Overall Description

2.1 Product Overview

<Describe the context and origin of the product being specified in this SRS. For example, state whether this product is a follow-on member of a product family, a replacement for certain existing systems, or a new, self-contained product. If the SRS defines a component of a larger system, relate the requirements of the larger system to the functionality of this software and identify interfaces between the two. In this part, make sure to include a simple diagram that shows the major components of the overall system, subsystem interconnections, and external interface. In this section it is crucial that you will be creative and provide as much information as possible.
TO DO: Provide at least one paragraph describing product perspective. Provide a general diagram that will illustrate how your product interacts with the environment and in what context it is being used. This is not a formal diagram, but rather something that is used to illustrate the product at a high level.>

This is a standalone software with its registration and login facilities. It is a new, self-contained product and such a software for the specific purpose of easing Health Center Reimbursement is not available. It is not part of any larger system. The following is a diagram connecting all the significant components.



2.2 Product Functionality

<*Summarize the major functions the product must perform or must let the user perform. Details will be provided in Section 3, so only a high level summary is needed here. These can be at the level given in the project description.*>
TO DO:
1. Provide a bulleted list of all the major functions of the system

Our product will have the following functionalities -

- The users will be able to apply for reimbursement claims online using our system, by filling an online form and submitting scanned copies of the required documents.
- The system would also help users view already submitted forms and their status.
- The HC staff can scrutinize and verify the applications. Then they can approve and send the details to the Accounts department or reject the claims and update the status of the form accordingly (adding comments/reasons for the same).

2.3 Design and Implementation Constraints

<*Describe any items or issues that will limit the options available to the developers. These might include: hardware limitations (timing requirements, memory requirements); interfaces to other applications; specific technologies, tools, and databases to be used; parallel operations; language requirements; communications protocols; security considerations; design conventions or programming standards (for example, if the customer's organization will be responsible for maintaining the delivered software). You can be creative here to some degree.*>

- As the user would have to upload bills and other documents, there would need to be dedicated storage space in the server with periodic recycling of data contained in the claims that have already been processed.
- ~~In order to allow integration to the OA portal in the future, it is preferable that our backend is compatible with the OA portal. Hence JAVA will be used for backend development.~~
- ~~We will be using a MySQL database for our application , which will be hosted online~~
- We will be using a SQlite database for our application.
- We will be using a Django for backend.
- To address security concerns, we will be storing the salted hash of user passwords .
- As our software is web-based, Frontend will be developed using HTML, CSS,Javascript.
- Our system will use HTTP protocol for communication between servers.
- We will be using the Object-Oriented Programming paradigm to design our application.

2.4 Assumptions and Dependencies

<*List any assumed factors (as opposed to known facts) that could affect the requirements stated in the SRS. These could include third-party or commercial components that you plan to use, issues around the development or operating environment, or constraints. The project could be affected if these assumptions are incorrect, are not shared, or change. Also identify any dependencies the*

project has on external factors, such as software components that you intend to reuse from another project.
TO DO: Provide a short list of some major assumptions that might significantly affect your design.>

Following are some of the assumptions and dependencies that might affect our design:

- We assume that the dummy data which we will be using for testing and development purposes mimics the exact data correctly.
- We assume an already existing HC staff database can be accessed for profile management and regulating access control of HC staff.
- We assume that the HC back office and Accounts office do not behave in an undesired way. (i.e none of the patients is censored, or none of the valid requests are rejected).

3 Specific Requirements

3.1 External Interface Requirements

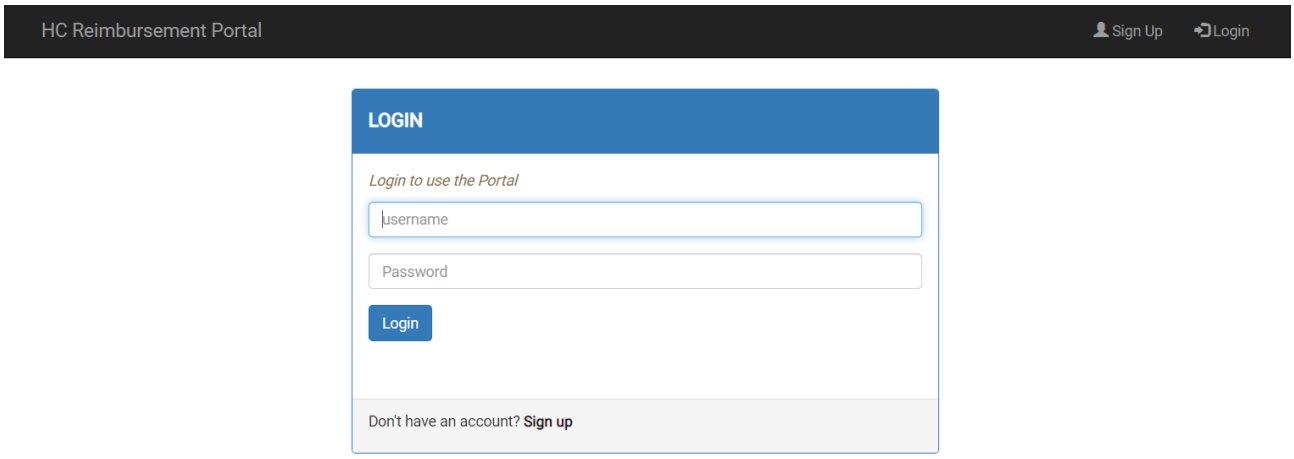
3.1.1 User Interfaces

<*Describe the logical characteristics of each interface between the software product and the users. For your project, you only need to be concerned with the main thermostat (not the mobile app) and can use the graphic from the project description as the basis for your user interface*
TO DO: Provide the graphic for the user interface and provide a basic description as to how users will interact (e.g. menus, etc.).>

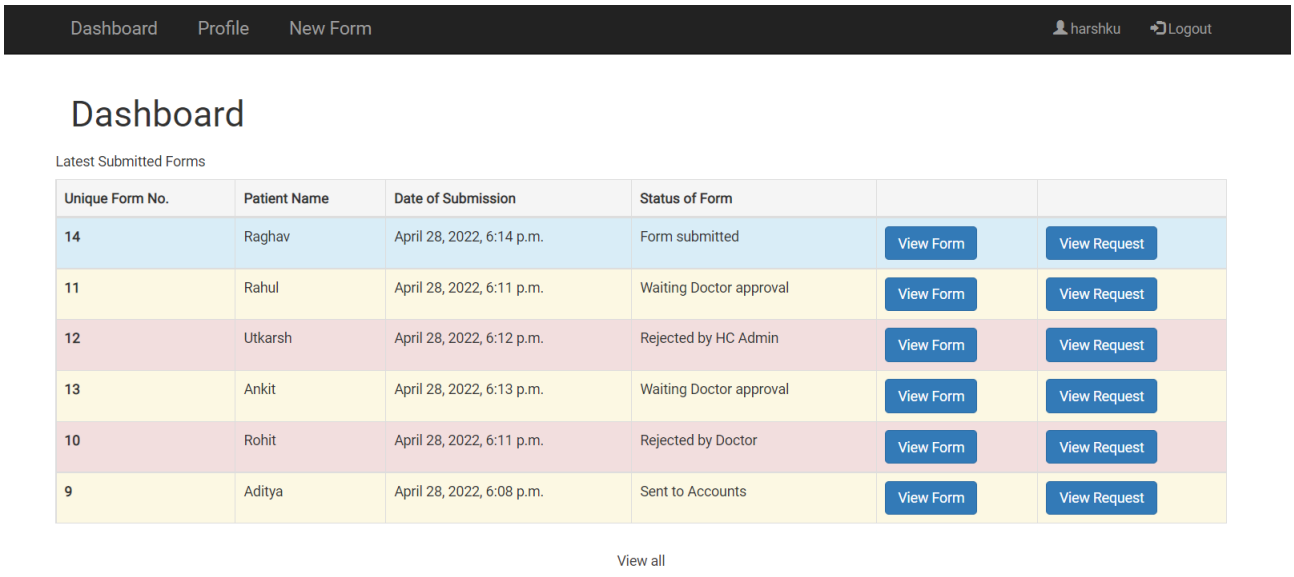
- Webpage: This will act as an interface for users to interact with our system.
- Dashboards: This page will primarily be used to display pending/approved reimbursements, to save important data corresponding to the user, and to display the current status of the reimbursement claim.
- Forms: This will be used by the users(patients) to fill in their requests for reimbursements.

The following is our planned layout for the web page or the user interface.

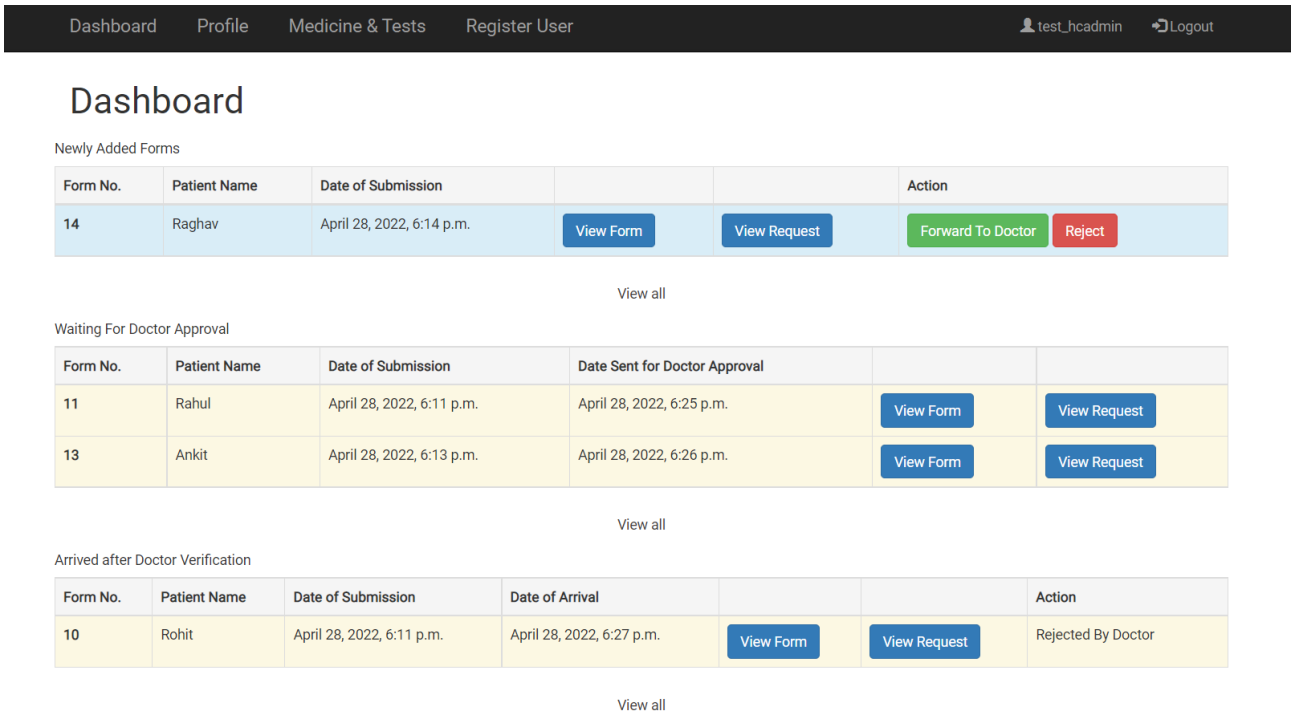
Login Page for website [Updated]:



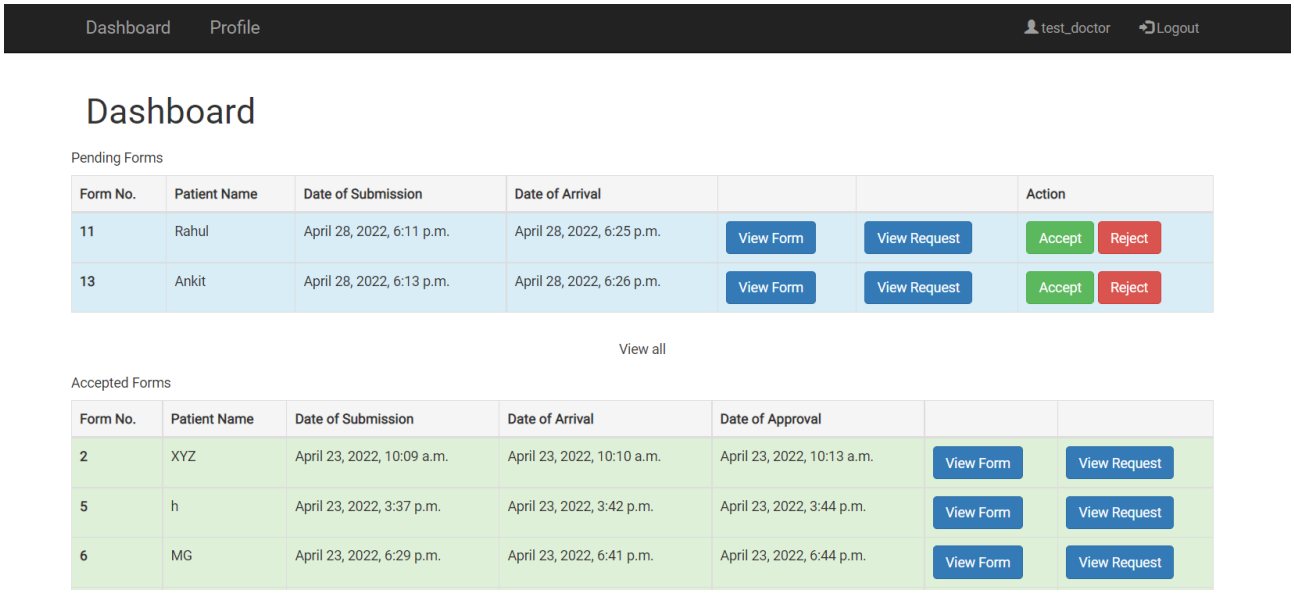
User's / Patient's Home Page after Login [Updated]:



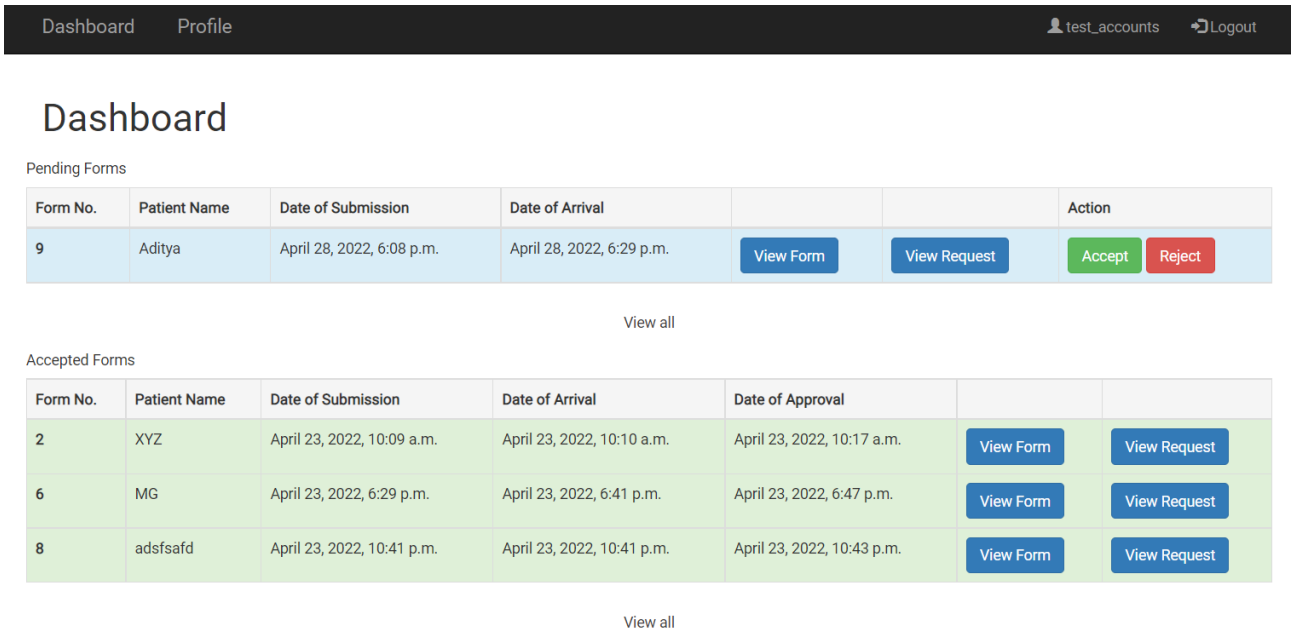
HC Official's Home Page after Login [Updated]:



Doctor's Home Page after Login [Updated]:



Account's Official Home Page [Updated]:



3.1.2 Hardware Interfaces

<*Describe the logical and physical characteristics of each interface between the software product and the hardware components of the system. This may include the supported device types, the nature of the data and control interactions between the software and the hardware. You are not required to specify what protocols you will be using to communicate with the hardware, but it will be usually included in this part as well.*
TO DO: Please provide a short description of the different hardware interfaces. This can simply be a list of the devices you must interact with at this point. >

- A physical device (mobile/laptops/computers) will be required to interact with the software via a web browser.
- Printers and Scanners might be connected to print/upload receipts for claiming reimbursements. The same can be used by the HC office, if physical documents are needed.
- Hardware devices for memory management to store details of reimbursements (completed and requested) will be required.

3.1.3 Software Interfaces

<*Describe the connections between this product and other specific software components (in your case, just the mobile app that can send commands).*>

- Our system will require APIs to connect with the database to fetch user data or reimbursement status data.

- Our system will need APIs for different user interactions (like Uploading, Making Requests, Approving Requests, Rejecting Requests).
- Our system will require APIs to validate the login and registration process in the system.

3.2 Functional Requirements

< Functional requirements capture the intended behavior of the system. This behavior may be expressed as services, tasks or functions the system is required to perform. This section is the direct continuation of section 2.2 where you have specified the general functional requirements. Here, you should list in detail the different product functions. >

3.2.1 Apply for reimbursement claims online: fill an online form and submit scanned copies of the required documents

The users shall be able to fill in an online reimbursement form which asks for all the details asked in the offline form and provide the scanned copies of the required documents which were otherwise asked to submit along with the offline form.

3.2.2 The system would also help users view already submitted forms and their status.

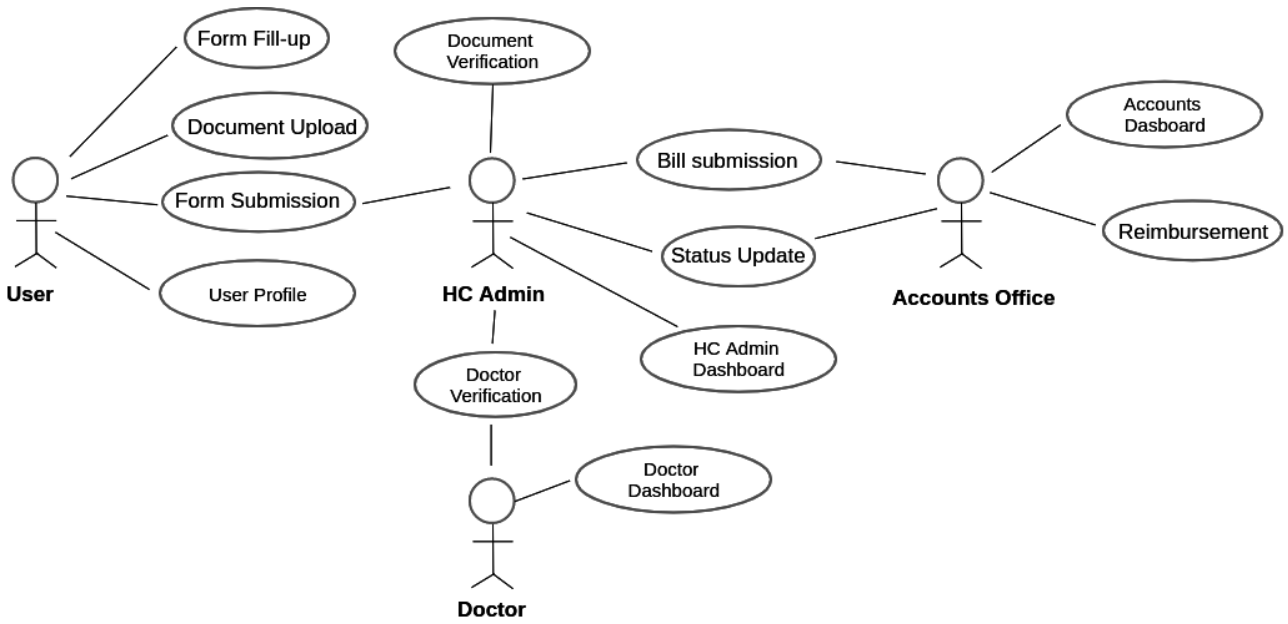
The user will have a dashboard to view previously submitted forms and their status. We will also provide a feature to view previous reimbursement claims by a user. They will also be shown comments alongside the status of their claim. Also, the back office staff and doctors will see a log of claims they have accepted or rejected or deferred for the moment. The application status should correctly display the current location of the form within the system at all times.

3.2.3 The HC staff can scrutinize and verify the applications. Then they can approve and send the details to the Accounts department or reject the claims and update the status of the form accordingly.

The HC officials can see all reimbursement forms pending approval/rejection. They will have an option to approve or reject ~~or even ask for specific information through comments~~. If rejected they can tell why through comments as well. The user's dashboard will be updated accordingly. The doctors can also see all the health-related details of the forms approved by the health center officials. The doctors can verify whether they were consulted and the details provided are correct. They can accordingly update the form status. The Accounts Office officials shall also update the dashboard and end the reimbursement claim, and complete the procedure after paying the amount.

3.3 Use Case Model

TO DO: Provide a use case diagram that will encapsulate the entire system and all actors.



3.3.1 U1 - Form fillup

TO DO: Provide a specification for each use case diagram

Author – Shorya

Purpose - It allows the user to fill the reimbursement details in a form.

Requirements Traceability – Users should possess valid bills and HC reimbursement slips.

Priority - HIGH

Preconditions - User should possess the login credentials

Post conditions - The draft of the submitted form will be saved on the user dashboard.

Actors – Patient/user

Exceptions - None

Includes - None

Notes/Issues - None

3.3.2 U2: Documents Upload

Author – Atreya

Purpose - Allows the user to upload the HC reimbursement slip and bills to the portal.

Requirements Traceability – The user should be registered in the portal and should be logged in using the correct credentials.

Priority - High

Preconditions - The size of the document should be within the specified limit and the document should be in an acceptable format(single page document). (image/pdf)

Post conditions - After document upload, the file should be available on the server and can be accessed by the user who has uploaded the file through the dashboard.

Actors – Patient/User

E**xceptions** - None

Includes None

Notes/Issues - Space required for storage and maintenance as well as the document size limit.

3.3.3 U3: Form Submission

Author – Gaurav

Purpose - Allows the user to submit the reimbursement form so that it can be further sent to HC Admin to be reviewed for further process.

Requirements Traceability – Form is filled properly e.g. mandatory fields are filled.

Priority - HIGH

Preconditions - The form is filled properly with required details & required documents are uploaded properly.

Post conditions - The HC Admin receives the request regarding the reimbursement request. Submitted form appears in the dashboard.

Actors – User who claims the reimbursement

Exceptions - None

Includes U1 U2

Notes/Issues - None

3.3.4 U4: Status Update

Author – Shorya

Purpose - It allows the HC admin, chosen doctors and the Accounts Office to update the status of reimbursement application on the portal

Requirements Traceability – Status/Feedback of the form changes.

Priority - MEDIUM

Preconditions - NONE

Post conditions - The profile of the User is synced with the latest update of the application with the HC.

Actors – HC Admin, Accounts Office

Exceptions - None

Includes U3, U5, U6,U7

Notes/Issues - None

3.3.5 U5: HC verification

Author – Shorya

Purpose - It allows the HC admin to verify that the application is valid, that is the uploaded documents and form are valid.

Requirements Traceability – NONE

Priority - MEDIUM

Preconditions - HC admin should have received an application request on the HC admin portal.

Post conditions - After the Verification the form is updated by the state .

Actors – HC Admin

Exceptions - None

Includes (other use case IDs)- None

Notes/Issues - Any relevant notes or issues that need to be resolved*

3.3.6 U6: Bill Submission

Author – Atreya

Purpose - It allows the HC admin to submit the reimbursement bill for further procedure to be undertaken by the Accounts office.

Requirements Traceability – HC admin should be able to access the bill.

Priority - High priority

Preconditions - The bill has been verified by the doctor.

Post conditions - After bill submission, the Accounts office should be able to access the submitted bill for further process.

Actors – HC Admin, Accounts office

Exceptions - None

Includes - None

Notes/Issues - None

3.3.7 U7: Doctor Verification

Author – Nakula

Purpose - To verify if the information provided in U1 and U2 is consistent by the doctor.

Requirements Traceability – The form should be valid as per U5

Priority - High

Preconditions - NONE

Post conditions - The doctor will pass-on/reject the form based on the verification, the status will be updated on the dashboard.

Actors – The Doctor sends the verified form to the doctor. The doctor again verifies the form and the bills uploaded by the user.

Exceptions - None

Includes - None

Notes/Issues - None

3.3.8 U8: User Profile

Author – Atreya

Purpose - It allows the user to view the uploaded bills and documents and status of past reimbursement requests.

Requirements Traceability – The user should be registered in the portal and should be logged in using the correct credentials.

Priority - Medium

Preconditions - The profile view of the user should always be in sync with the status of reimbursement requests.

Post conditions - None

Actors – User

Exceptions - None

Includes U4

Notes/Issues - None

3.3.9 U9: Account's Dashboard

Author – Gaurav

Purpose - Shows the claims that have been forwarded to the Accounts department from the HC admin, and the claims that have been verified by the Accounts Office for further reimbursements processing related to payment.

Requirements Traceability – Accounts office should be able to access the bill.

Priority - Medium

Preconditions - The bill has been verified by the HC Admin and the doctors and is passed to the Accounts office and previous requests status are present.

Post conditions - After update of status of any reimbursement request the update is reflected on the dashboard.

Actors – Accounts office

Exceptions - None

Includes (other use case IDs) None

Notes/Issues - None

3.3.10 U10: Doctor's Dashboard

Author – Nakula

Purpose - Shows the claims that have been forwarded to the doctor from the HC admin, and the claims that have been passed by the Doctor after verification.

Requirements Traceability – The dashboard should reflect if the Doctor has processed the specific claim or not. The Doctor should verify the claim.

Priority - High priority

Preconditions - The bills to be verified have been passed by the HC admin. The Doctor should possess his login credentials.

Post conditions - The bill has been passed onto the Accounts dept., with the status being reflected on the user dashboard.

Actors – HC Admin, Doctor,

Exceptions - None

Includes U8

Notes/Issues - None

3.3.11 U11: HC Admin Dashboard

Author – Priyanka

Purpose - Shows the reimbursement forms which have been submitted by any user as well as the bill status and comments.

Requirements Traceability – The admin should have the required credentials and has login to the system.

Priority - Medium

Preconditions - The user has submitted the form and the required documents, and the current status of pending applications are reflected on the dashboard.

Post conditions - The admin can perform form verifications as well as update the status of the reimbursement applications present on the dashboard.

Actors – HC Admin

Exceptions - None

Includes - U5

Notes/Issues - None

3.3.12 U12: Adding Medicines and Tests

Author – Sanchit

Purpose - To add new medicines or tests in the list of present medicines and tests.

Requirements Traceability – The admin should have the required credentials and has login to the system.

Priority - Medium

Preconditions - The user is logged into the system.

Post conditions - New medicine and tests have been added into the system.

Actors – HC Admin

Exceptions - None

Includes - None

Notes - Only HC Admin can add medicines and tests.

3.3.13 U13: Deleting Medicines and Tests

Author – Sanchit

Purpose - To delete medicine and tests from the list of already present medicines and tests.

Requirements Traceability – The admin should have the required credentials and has login to the system.

Priority - Medium

Preconditions - The user should be logged into the system.

Post conditions - The deleted medicine or test should be removed from the list of available medicines and tests

Actors – HC Admin

Exceptions - None

Includes - None

Notes - Only HC Admin can delete medicines and tests.

3.3.14 U14 : Registering Users

Author – Sanchit

Purpose - To register users in the system

Requirements Traceability – The admin should have the required credentials for the user to register.

Priority - Hight

Preconditions - None.

Post conditions - The user should be registered into the system.

Actors – HC Admin/ User

Exceptions - None.

Includes - None

Notes- Only HC Admins can register users with any role, else everyone can only add patients in the system

4 Other Non-functional Requirements

4.1 Performance Requirements

<*If there are performance requirements for the product under various circumstances, state them here and explain their rationale, to help the developers understand the intent and make suitable design choices. Specify the timing relationships for real time systems. Make such requirements as specific as possible. You may need to state performance requirements for individual functional requirements or features.*
TODO: Provide performance requirements based on the information you collected from the client.>

- API calls must return in less than 1000ms.
- The webpage should load and be usable within 3 seconds.
- The software/server side should be able to handle moderate to high traffic.
- The status of the applications should be updated in real-time

4.2 Safety and Security Requirements

<*Specify those requirements that are concerned with possible loss, damage, or harm that could result from the use of the product. Define any safeguards or actions that must be taken, as well as actions that must be prevented. Refer to any external policies or regulations that state safety issues that affect the product's design or use. Define any safety certifications that must be satisfied. Specify any requirements regarding security or privacy issues surrounding use of the product or protection of the data used or created by the product. Define any user identity authentication requirements.*
TODO: Provide safety/security requirements based on your interview with the client - again you may need to be somewhat creative here. At the least, you should have some security for login.>

- Every party using the application will have a well defined scope and any party will not be able to access any part of the application out of his/her scope. Login to the scope will be secured by a login portal which requires access credentials.
- To address security concerns, we will be storing the salted hash of user passwords in our database. No plaintexts passwords will be in the database.

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4.3 Software Quality Attributes

<*Specify any additional quality characteristics for the product that will be important to either the customers or the developers. Some to consider are: adaptability, availability, correctness, flexibility, interoperability, maintainability, portability, reliability, reusability, robustness, testability, and usability. Write these to be specific, quantitative, and verifiable when possible. At the least, clarify the relative preferences for various attributes, such as ease of use over ease of learning.*

TODO: Use subsections (e.g., 4.3.1 Reliability, 4.3.2 Adaptability, etc…) to provide requirements related to the different software quality attributes. Make sure that you do not just write "This software shall be maintainable…" Indicate how you plan to achieve it, & etc…
*Please note that you need to include **at least** 2 quality attributes. You can Google for examples that may pertain to your system.>*

4.3.1 Portability

We are using HTML5, CSS3 and JavaScript to design the front end part of our application, thus our application is portable, responsive and can run on any modern web browser.

4.3.2 Maintainability

Our software is easily maintainable as our use of OOPS technique will ensure that any modification in any of the components will not affect the overall structure of the application. Also there will be a web interface to access the backend directly (accessible to admin) through which the webapp can be easily maintained periodically.

Appendix A – Data Dictionary

<Data dictionary is used to track all the different variables, states and functional requirements that you described in your document. Make sure to include the complete list of all constants, state variables (and their possible states), inputs and outputs in a table. In the table, include the description of these items as well as all related operations and requirements.>

Appendix B - Group Log

Date	*Members Present*	*Topic of Discussion*
26th January, 2022	Shorya, Gaurav, Sanchit, Harsh, Subhrojyoti	Work distribution for preparing the initial draft of the SRS document
30th January,2022	Shorya, Gaurav, Sanchit, Subhrojyoti, Atreya, Nakula, Rahul, Priyanka	Use Case Diagrams finalisation
27th April, 2022	Sanchit, Harsh, Shorya, Gaurav	Discuss the details to be updated