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# Design Document

for

## HC Reimbursement Automation

Version 1.2

Prepared by

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**Date:** *13th February, 2022*



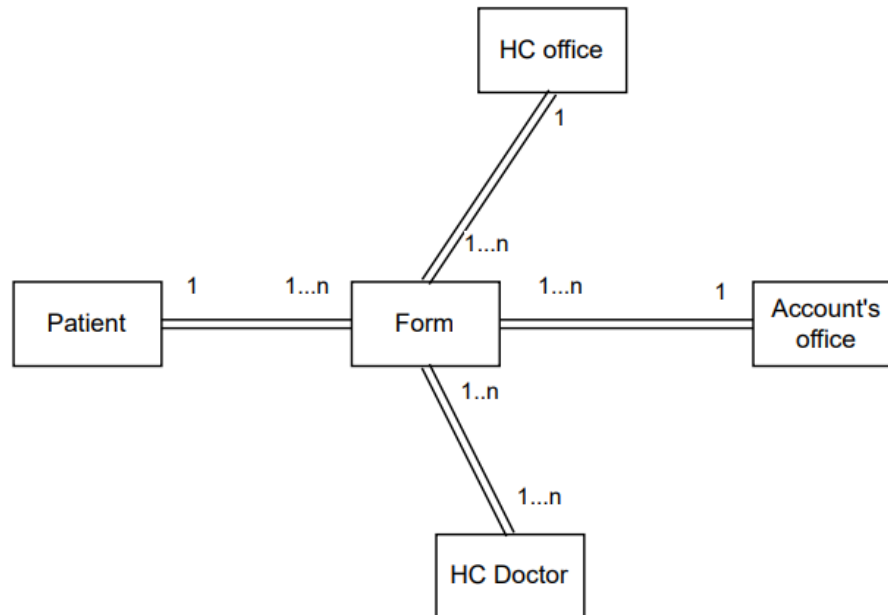
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## Revisions

Version	Primary Author(s)	Description of Version	Date Completed
Initial Draft (v1.0)	Harsh, Gaurav, Subhrojyoti, Atreya, Sanchit, Priyanka, Shorya, Nakula, Rahul, Shantanu	Initiated the document.	13/02/22
Revised Version (v1.1)	Sanchit	Updated the document with new design parameters	27/04/2022
Revised Version (v1.2)	Harsh, Gaurav	Updated the user interface display examples with actual UI snapshots	28/04/22

# 1 Context Design

## 1.1 Context Model



## 1.2 Human Interface Design

Login Page for website **[Updated]**:

HC Reimbursement Portal Sign Up Login

### LOGIN

Login to use the Portal

Don't have an account? [Sign up](#)

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

Dashboard	Profile	New Form	harshku	Logout
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## Dashboard

Latest Submitted Forms

Unique Form No.	Patient Name	Date of Submission	Status of Form		
14	Raghav	April 28, 2022, 6:14 p.m.	Form submitted	<a href="#">View Form</a>	<a href="#">View Request</a>
11	Rahul	April 28, 2022, 6:11 p.m.	Waiting Doctor approval	<a href="#">View Form</a>	<a href="#">View Request</a>
12	Utkarsh	April 28, 2022, 6:12 p.m.	Rejected by HC Admin	<a href="#">View Form</a>	<a href="#">View Request</a>
13	Ankit	April 28, 2022, 6:13 p.m.	Waiting Doctor approval	<a href="#">View Form</a>	<a href="#">View Request</a>
10	Rohit	April 28, 2022, 6:11 p.m.	Rejected by Doctor	<a href="#">View Form</a>	<a href="#">View Request</a>
9	Aditya	April 28, 2022, 6:08 p.m.	Sent to Accounts	<a href="#">View Form</a>	<a href="#">View Request</a>

[View all](#)

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

Dashboard	Profile	Medicine & Tests	Register User	test_hcadmin	Logout
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## Dashboard

Newly Added Forms

Form No.	Patient Name	Date of Submission			Action
14	Raghav	April 28, 2022, 6:14 p.m.	<a href="#">View Form</a>	<a href="#">View Request</a>	<a href="#">Forward To Doctor</a> <a href="#">Reject</a>

[View all](#)

Waiting For Doctor Approval

Form No.	Patient Name	Date of Submission	Date Sent for Doctor Approval		
11	Rahul	April 28, 2022, 6:11 p.m.	April 28, 2022, 6:25 p.m.	<a href="#">View Form</a>	<a href="#">View Request</a>
13	Ankit	April 28, 2022, 6:13 p.m.	April 28, 2022, 6:26 p.m.	<a href="#">View Form</a>	<a href="#">View Request</a>

[View all](#)

Arrived after Doctor Verification

Form No.	Patient Name	Date of Submission	Date of Arrival			Action
10	Rohit	April 28, 2022, 6:11 p.m.	April 28, 2022, 6:27 p.m.	<a href="#">View Form</a>	<a href="#">View Request</a>	Rejected By Doctor

[View all](#)

## Doctor's Home Page after Login [Updated]:

Dashboard	Profile	test_doctor	Logout
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## Dashboard

## Pending Forms

Form No.	Patient Name	Date of Submission	Date of Arrival			Action
11	Rahul	April 28, 2022, 6:11 p.m.	April 28, 2022, 6:25 p.m.	<a href="#">View Form</a>	<a href="#">View Request</a>	<a href="#">Accept</a> <a href="#">Reject</a>
13	Ankit	April 28, 2022, 6:13 p.m.	April 28, 2022, 6:26 p.m.	<a href="#">View Form</a>	<a href="#">View Request</a>	<a href="#">Accept</a> <a href="#">Reject</a>

[View all](#)

## Accepted Forms

Form No.	Patient Name	Date of Submission	Date of Arrival	Date of Approval		
2	XYZ	April 23, 2022, 10:09 a.m.	April 23, 2022, 10:10 a.m.	April 23, 2022, 10:13 a.m.	<a href="#">View Form</a>	<a href="#">View Request</a>
5	h	April 23, 2022, 3:37 p.m.	April 23, 2022, 3:42 p.m.	April 23, 2022, 3:44 p.m.	<a href="#">View Form</a>	<a href="#">View Request</a>
6	MG	April 23, 2022, 6:29 p.m.	April 23, 2022, 6:41 p.m.	April 23, 2022, 6:44 p.m.	<a href="#">View Form</a>	<a href="#">View Request</a>

## Account's Official Home Page [Updated]:

Dashboard	Profile	test_accounts	Logout
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## Dashboard

## Pending Forms

Form No.	Patient Name	Date of Submission	Date of Arrival			Action
9	Aditya	April 28, 2022, 6:08 p.m.	April 28, 2022, 6:29 p.m.	<a href="#">View Form</a>	<a href="#">View Request</a>	<a href="#">Accept</a> <a href="#">Reject</a>

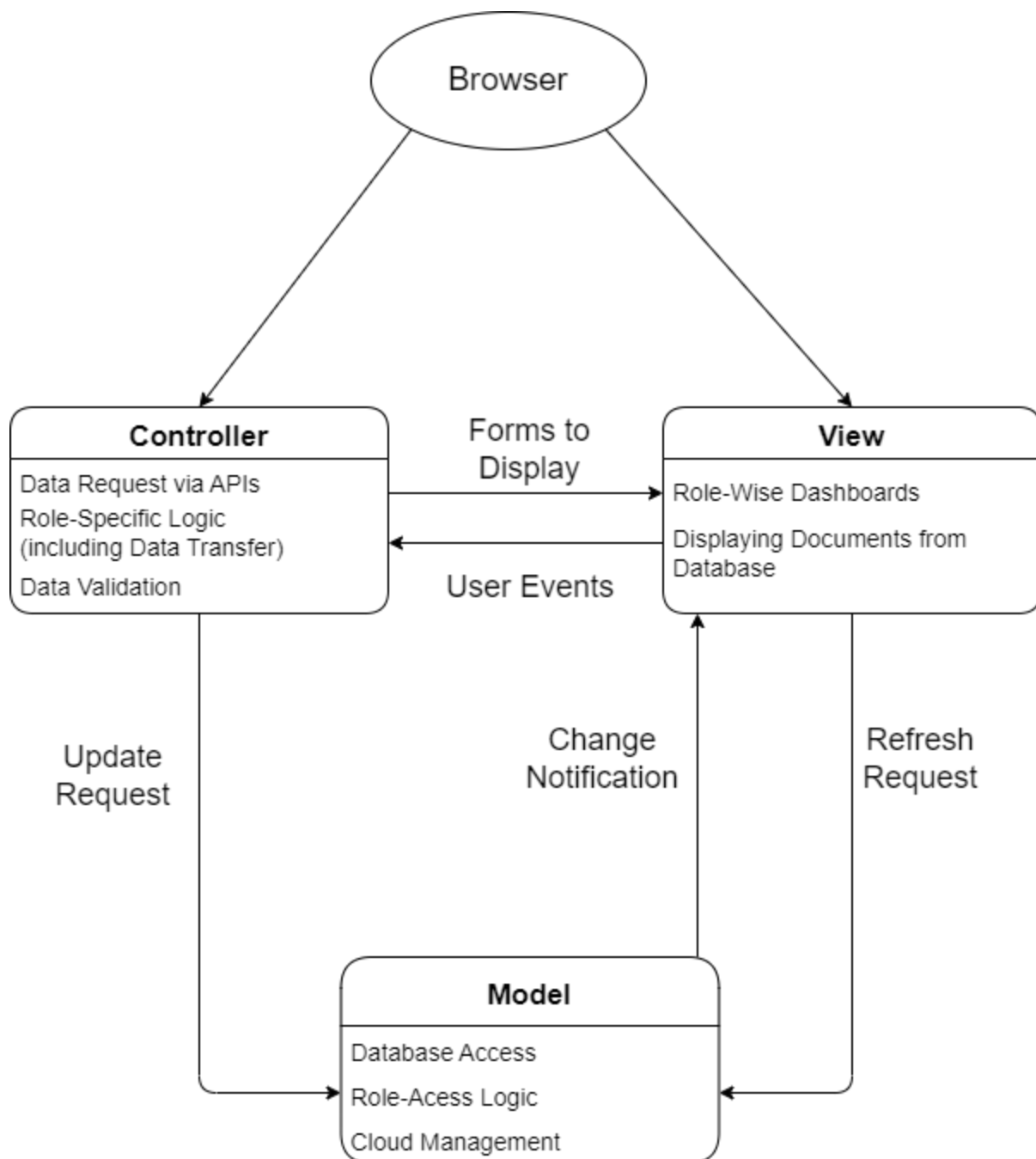
[View all](#)

## Accepted Forms

Form No.	Patient Name	Date of Submission	Date of Arrival	Date of Approval		
2	XYZ	April 23, 2022, 10:09 a.m.	April 23, 2022, 10:10 a.m.	April 23, 2022, 10:17 a.m.	<a href="#">View Form</a>	<a href="#">View Request</a>
6	MG	April 23, 2022, 6:29 p.m.	April 23, 2022, 6:41 p.m.	April 23, 2022, 6:47 p.m.	<a href="#">View Form</a>	<a href="#">View Request</a>
8	adsfsafd	April 23, 2022, 10:41 p.m.	April 23, 2022, 10:41 p.m.	April 23, 2022, 10:43 p.m.	<a href="#">View Form</a>	<a href="#">View Request</a>

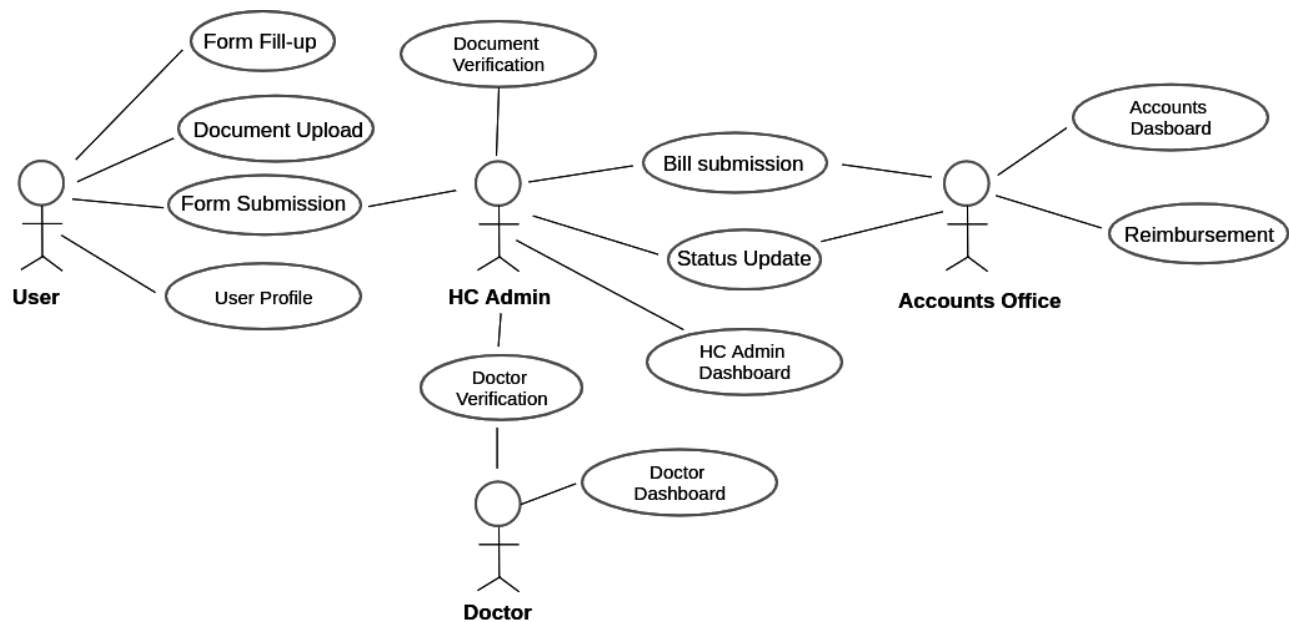
[View all](#)

## 2 Architecture Design



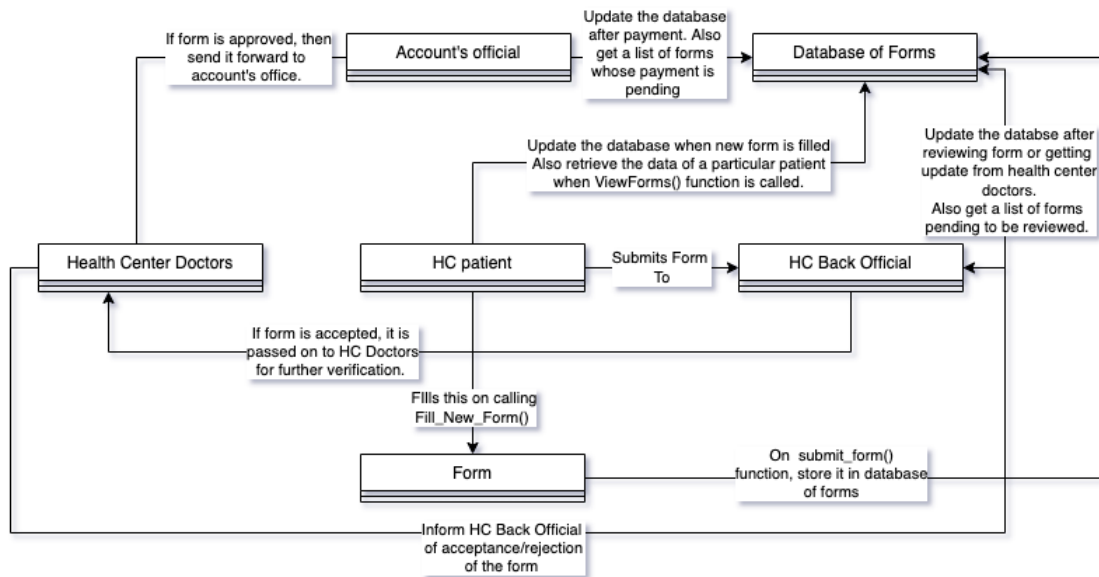
## 3 Object Oriented Design

### 3.1 Use Case Diagrams





## 3.2 Class Diagrams

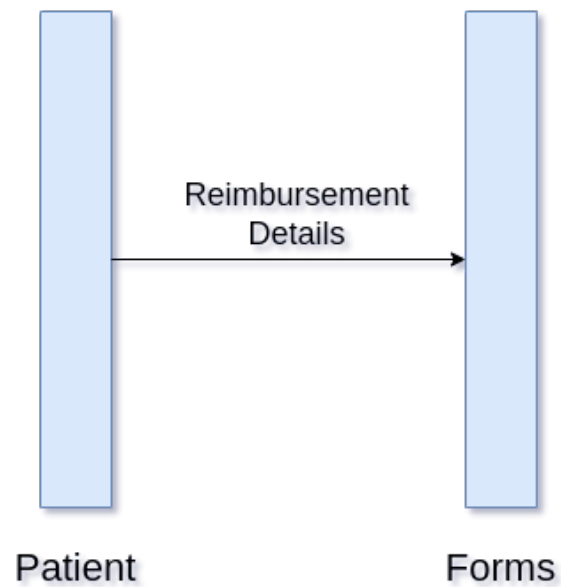


HC Patient	HC Back Official	HC Doctor	Account's Official
Login ID	Login ID	Login ID	Login ID
Login Password	Password	Password	Password
Name	Name	Name	Name
Address in Campus	Address in Campus	Address in Campus	Address in Campus
Roll No.	Email ID	Department of Work(e.g. General Physician, Ophthalmologist)	Email ID
Other Details .....	View_Pending_Forms()	View_Pending_Forms()	View_Pending_Forms()
Fill_New_Form()	View_Previously_Reviewed_Forms()	View_Previously_Reviewed_Forms()	View_Previously_Reviewed_Forms()
View_Previously_Filled_Forms()	Accept_Form()	Accept_Form()	Proceed_to_Pay()
	Reject_Form(string comment)	Reject_Form(string comment)	

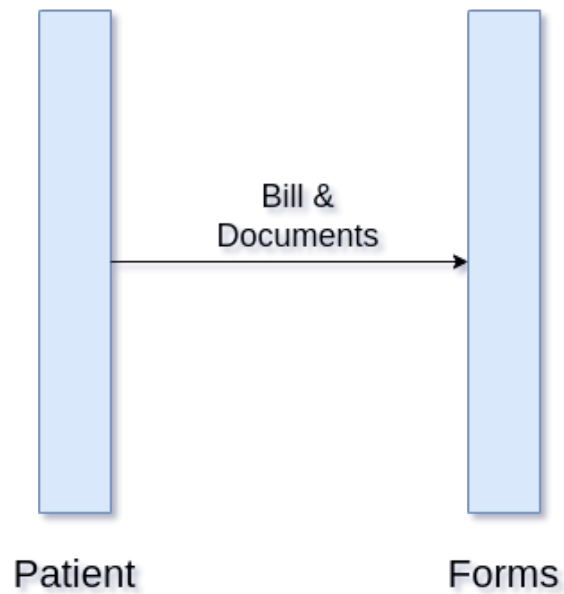
Form	Database of Forms
Name	A dynamically allocated array of quadruple of < form no., pointer or link to Form object corresponding to form no., Status of Form, Comments on Form>
Roll No.	Insert_New_Form(Form* form)
Doctor Visited	Update_Status(string new_status)
Details of tests done	Insert_New_Comment(string comment)
Details of medications given	
Submit_Form()	
Show_Form()	

### 3.3 Sequence Diagrams

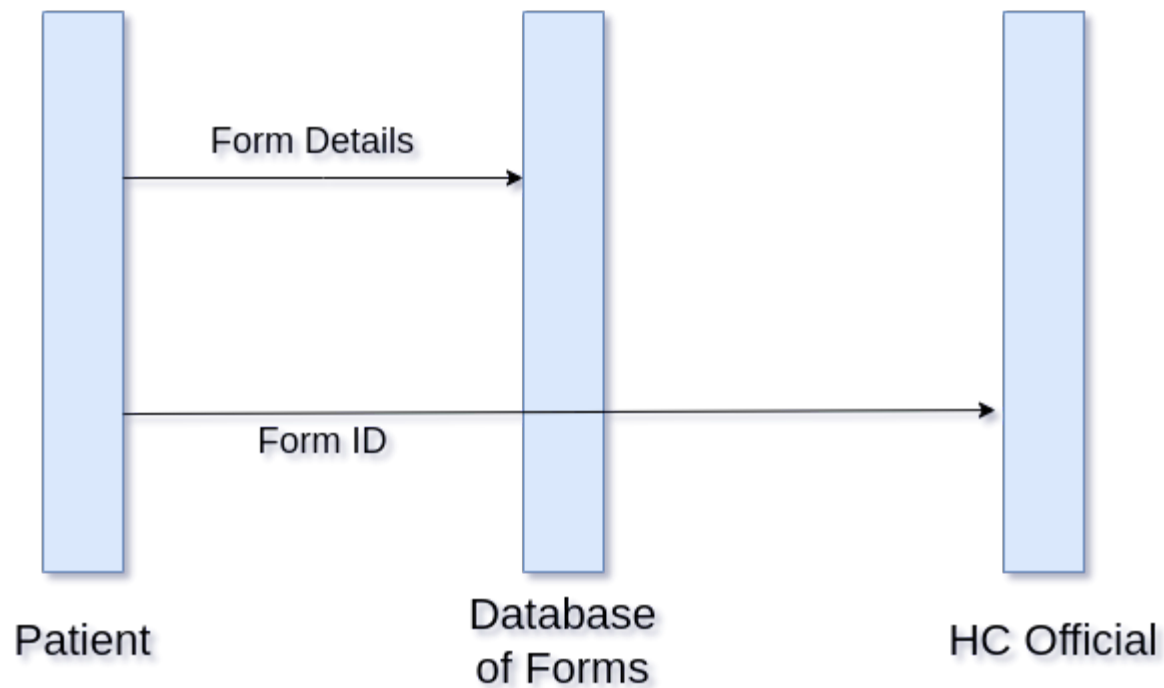
#### 3.3.1 Form Fillup



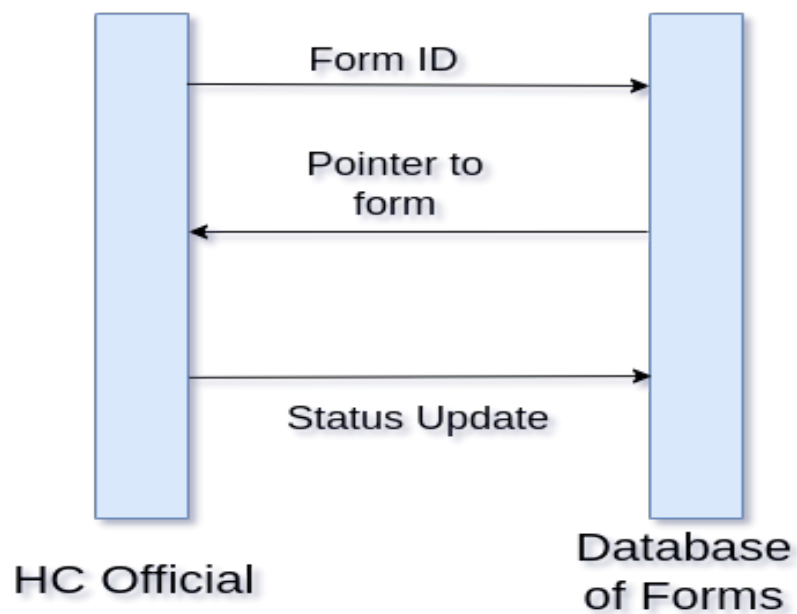
#### 3.3.2 Document Upload



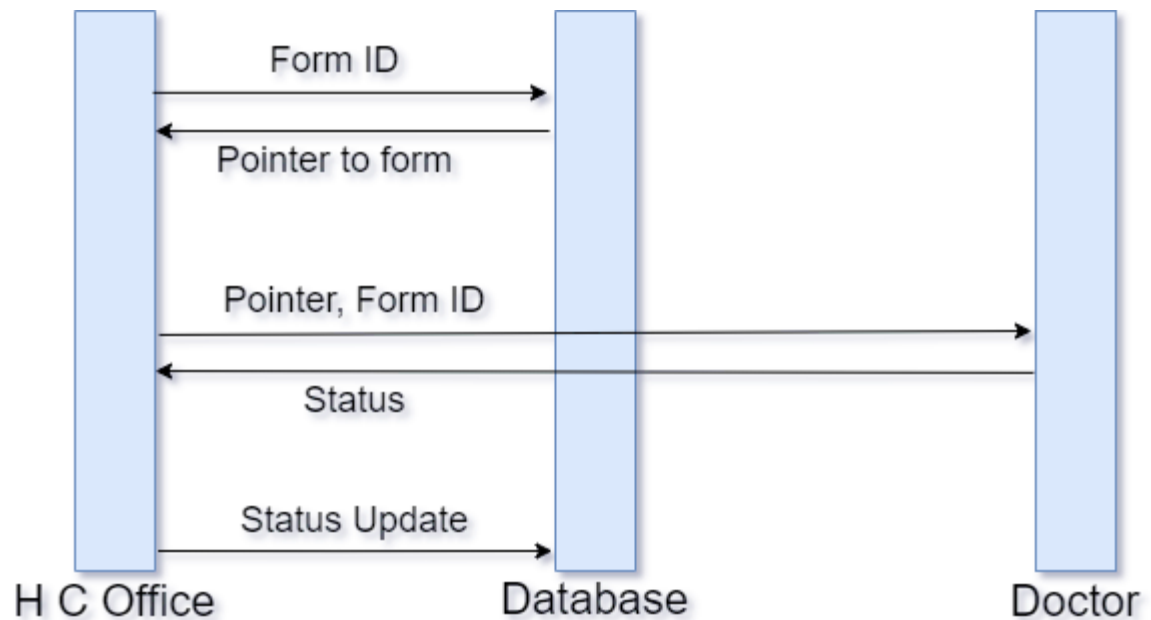
### 3.3.3 Form Submission



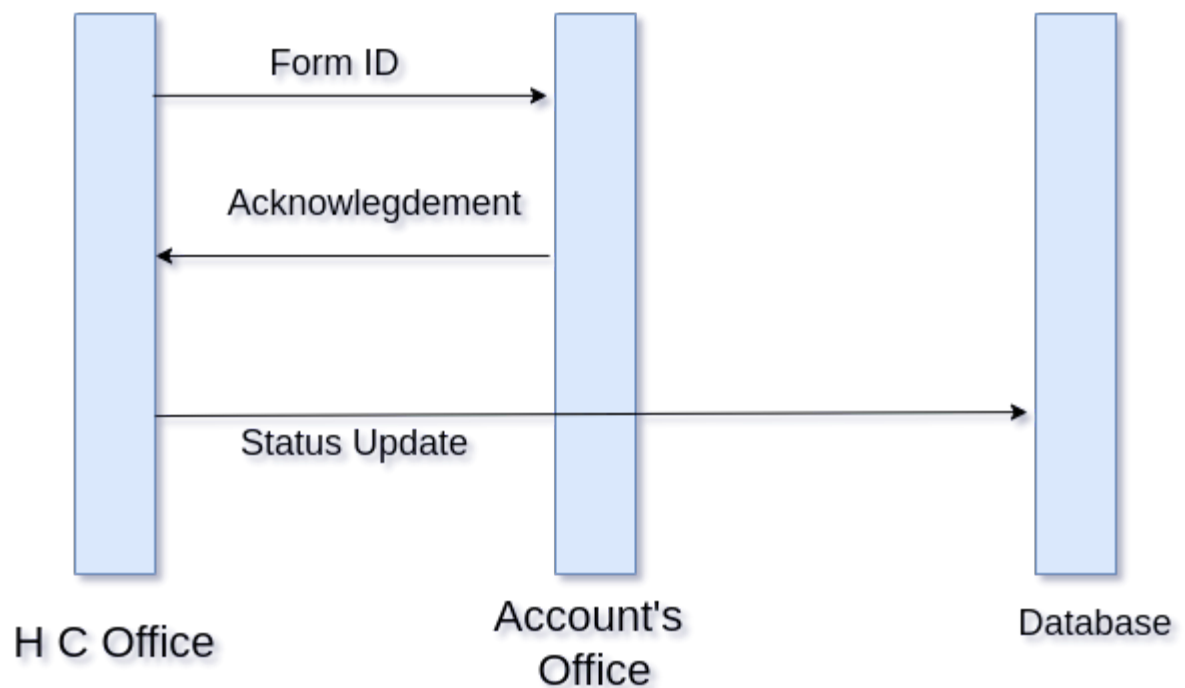
### 3.3.4 Document Verification by HC Admin



### 3.3.5 Doctor's Verification

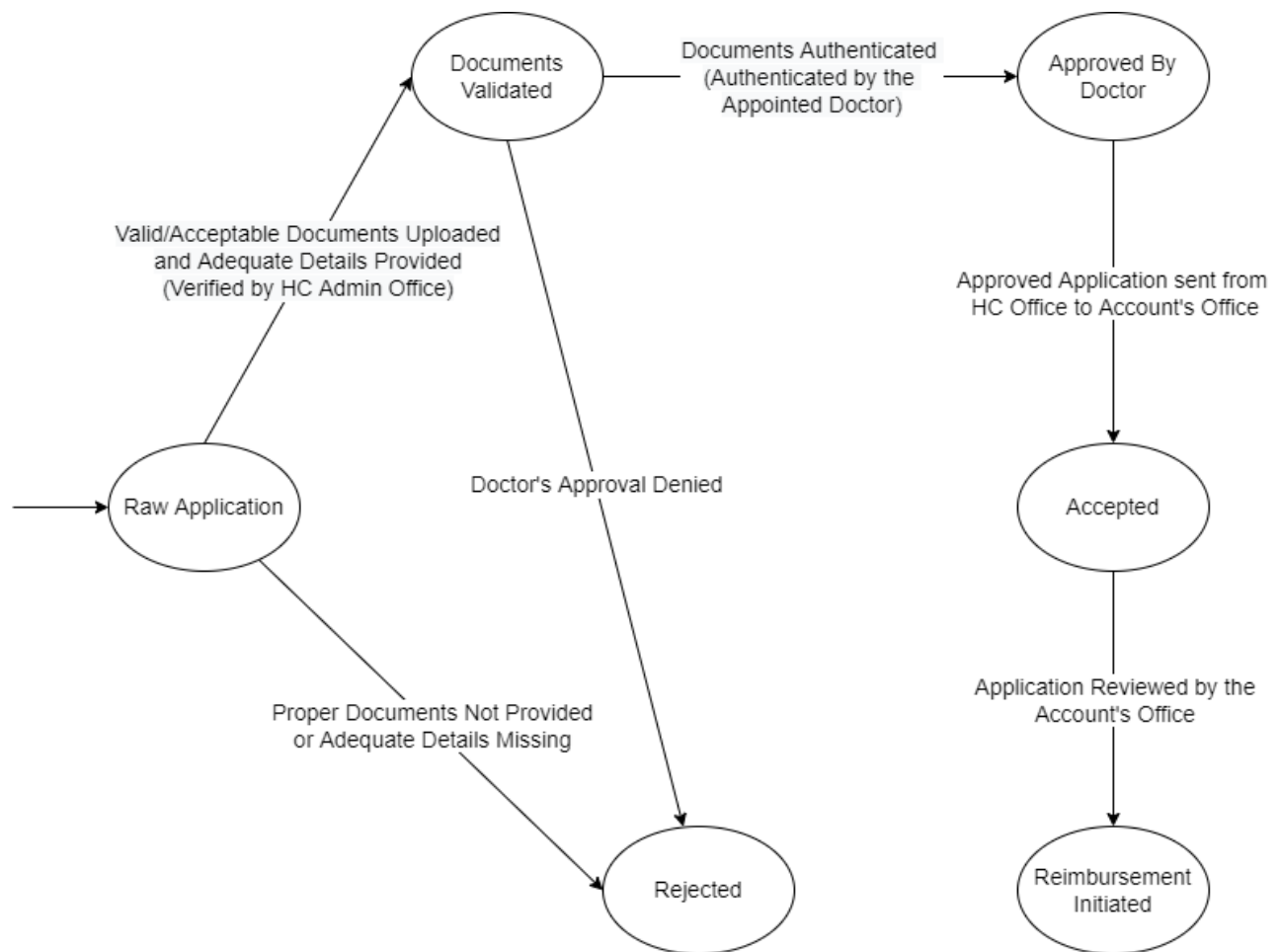


### 3.3.6 Bill Submission to Account's Office



### 3.4 State Diagrams

The Reimbursement Application filled by the Patient will have several states depending on the actions taken and the stage of the process it is at. The following State diagram helps visualise the states and actions taken to reach them.



## 4 Project Plan

- Frontend
  - Login Page- This page will be the entry page of the website for all the users. This page requires user identification and authentication, which will be performed by matching the credentials with the data saved in the database.
  - UI for different roles
    - User's Personal HomePage
      - Dashboard - This will have a dashboard to view the status of already filled forms which will be displayed in the form of table
      - Form UI- This page contains relevant data regarding the user and will contain forms to fill in the reimbursement claim.
      - Document Upload UI - This will be a form field allowing the user to upload documents important to claim reimbursement, which will be then saved in the cloud.
      - Profile Update UI - This will be a simple page allowing the user to view the profile details and update it.
    - Health Center Admin's Page
      - Dashboard - This page will contain a dashboard to view the already filled forms which will be shown in the form of tables.
      - Form and Document Access UI- This page will allow the user to accept and reject the pending reimbursement claims, to provide feedback, to request for more information and to forward forms to specific doctors for data verification.
      - Profile Update UI - This will be a simple page allowing the user to view the profile details and update it
      - Add user UI: This will be a page allowing the user to register any user into the system.
      - Add/Delete Medicines and Tests UI: This will be a simple page allowing the user to add new medicines/tests into the system or to delete already existing medicines/tests from the list of available medicines/tests.
    - Doctor's HomePage
      - Dashboard - This page will contain a dashboard to view the recommended forms.
      - Form and Document Access UI- This page will allow the user to verify data, to provide feedback and to update status of the form.
      - Profile Update UI - This will be a simple page allowing the user to view the profile details and update it
    - Accounts Officer HomePage

- Dashboard - This page will contain a dashboard to view the forms.
  - Form and Document Access UI- This page will allow the user to verify data, to provide feedback, to update status of the form and also help in carrying out the further process of reimbursement.
  - Profile Update UI - This will be a simple page allowing the user to view the profile details and update it
  - Registration Page: This page will allow any user to register new patients into the system.
- Backend
  - Database Designing
    - Deciding the detailed schema for different tables and their column entries, keys and structure. Basic structure-
      - LoginCredential - Store each user's login ID and passwords based on their rollno as keys. (Column entries- cc user id, cc user password)
      - UserInfo - Store user information to be displayed on the dashboard based on rollno as keys. (Column entries- cc\_user\_id, user\_type, name, roll no/Institute ID, phone no, dept,hall address, HC ID)
      - TransactionDetail - Store all transactions i.e reimbursement requests based on transaction\_id as key. (Column entries- cc\_user\_id, transaction\_id, date, status, form\_id, reimbursement\_id for accounts, feedback by HC )
      - FormDetail - Store documents and detailed information of transactions as uploaded by the patient. Column entries- (form\_id, other columns for other details, doc\_access\_cloud, reimbursement items). Every form will have a unique Id.
  - Logic Design
    - Implementing and designing core business logic i.e. the APIs enabling various functionality.
      - verifyLogin()- Returns login access of the user to the site, based on the login id and password given by the user.
      - user\_dashboard\_display()-Displays the dashboard for the logged in user(Patient/Doctor/HC Admin/Accounts Office)
      - register()- Register a user based on the details provided as input and add the details to the database
      - logout()- Access to users already logged into the site, to terminate the session and logout.
      - uploadDocument()- Add documents provided with a form submission to the cloud storage and database.
      - viewDocument()- Request to view a document stored in the database for verification by HC or doctor.
      - submitForm()- Verify the form submitted and add the transaction to the database.

- updateStatus()- Update the status of a transaction in the database based on various stages of reimbursement.
- addMedicineandTest()- Add medicine and tests into the system
- deleteMedicineandTest()- Delete medicine and tests from the system
- addComment()- Add a comment on a particular transaction.
- getTransactionInfo ()- Request information regarding the transaction between the accounts office and the user.
- filterbydate()- A filter option that segregates the transactions based on the transaction date.
- Storing Documents
  - Managing the storage and retrieval of documents.
- Cloud Management
  - Managing the storage and retrieval from the storage server
- Product Release / Testing
  - Deployment
    - The software will be hosted on online servers.
  - Alpha Testing
    - Will be tested by the team members
    - Functionality testing, Usability testing, Interface testing will be performed to detect any bugs.
      - Functionality testing- This will involve looking for dead pages, invalid requests, and to verify the workflow of the system.
      - Usability testing- This will involve testing contents, APIs and to detect any bug in the code.
      - Interface Testing- This will involve verifying the interface and the dataflow from one component to another.
  - Beta Testing
    - Software will be tested by users in a real environment
  - V1 General Availability

**Gantt Chart (attached below)**

**Link:-**

<https://app.smartsheet.com/sheets/vRWCgHqm4f67P5WP8fPPjRv49whrFCvcGf5G7wR1>

**Link:**

<https://docs.google.com/spreadsheets/d/1AsEFV4QeLTiK6URnoN8L04gbbMzu-a9arc3D4BhxN6c/edit#gid=2017939863>



## Appendix A - Group Log

<u>Date</u>	<u>Members Present</u>	<u>Topic of Discussion</u>
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
5th February, 2022	Shorya, Gaurav, Sanchit, Subhrojyoti, Atreya, Nakula, Rahul, Priyanka, Harsh	Software design document template
27th April, 2022	Snachit, Harsh, Shorya, Gaurav	Discuss the details to be updated