SOFTWARE ENGINEERING AND PROJECT MANAGEMENT

LAB REPORT

Submitted by

Rushaan Gandhi [RA2011028010105]

Under the Guidance of

Dr. K. Deepa Thilak

Assistant Professor, Department of Network and Communication

In partial satisfaction of the requirements for the degree of

BACHELOR OF TECHNOLOGY
in
COMPUTER SCIENCE ENGINEERING

with specialization in Cloud Computing

SCHOOL OF COMPUTING

COLLEGE OF ENGINEERING AND TECHNOLOGY

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

KATTANKULATHUR - 603203

JUNE 2022

SRM INSTITUTION OF SCIENCE AND TECHNOLOGY
KATTANKULATHUR-603203

BONAFIDE CERTIFICATE

Certified that this lab report titled **"MEDIX"** is the bonafide work done by **Rushaan Gandhi [RA2011028010105]** carried out the lab exercises under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form part of any other work.

SIGNATURE

Dr. K. Deepa Thilak

SEPM – Course Faculty

Assistant Professor

Department of Network and Communication

List Of Experiments

S. No	Name of the Experiment	Page Numbers
1	Problem Statement	
2	Stake Holders & Process Models	
3	Identifying Requirements	
4	Project Plan & Effort	
5	Work Breakdown Structure and Risk Analysis	
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Department of Networking and Communications

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	1
Title of Experiment	To identify the Software Project, Create Business Case, Arrive at a problem Statement
Name of the candidate	Rushaan Gandhi
Team Members	Jayesh S Chaudhari (RA2011028010094), Aditya Singh (RA2011028010089)
Register Number	RA2011028010105, RA2011028010094, RA2011028010089
Date of Experiment	13-02-22

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

Aim

To Frame a project team, analyse, and identify a Software project. To create a business case and Arrive at a Problem Statement for the project title **Shortcomings - Pharmaceutical Apps.**

Team Members:

S. No	Register No	Name	Role
1	RA2011028010105	Rushaan Gandhi	**Lead/Rep**
2	RA2011028010089	Aditya Singh	**Member**
3	RA2011028010094	Jayesh Chaurdhari	**Member**

Project Title: Shortcomings - Pharmaceutical Apps

Project Description: In India, big pharmaceutical giants like Netmeds, Pharmeasy and Apollo Pharmacy are providing their services to public and adhering to their needs through their vast supply chain, trading, and delivery partners. However, on testing and researching on these applications with the point of view of public, our team concluded that there can be some improvements in the service provision to make the system more consumer friendly.

Database and Map Integration: It will pinpoint the location of the drug needed by the consumer in the nearest medical store and database would help the consumer to find the current services offered by the store.

The current applications do not support the public database, and government's schemes regarding public health facilities. Our application on verifying the information of the user will show various schemes and services they can adhere in the nearby private and government medical institutions.

DATE	16/03/2022
SUBMITTED BY	Rushaan Gandhi, Aditya Singh Jayesh S Chaudhari
TITLE / ROLE	Medix

THE PROJECT

In bullet points, describe the problem this project aims to solve or the opportunity it aims to develop.

- Aims to assist public to get medical help faster as compared to other pharmaceutical applications in India.
- To help underprivileged and senior citizens of the society to avail medical benefits at government and private medical institutions.
- To help increasing transparency between customers and medical institutions and pharmaceutical centers.
- AI to set reminders for medicine intake according to the scanned prescription.
- Medical history and track record of patient.

THE HISTORY

In bullet points, describe the current situation.

- No fast-track delivery of medicines.
- People have general information but lack specifications.
- Language barriers and difficulty in communication.
- Alien environment for people not so technically sound.

LIMITATIONS

List what could prevent the success of the project, such as the need for expensive equipment, bad weather, lack of special training, etc.

- Personalization
  It has become important to provide services that caters to the desires and trends of their customers.
- Cost
  Customer Engagement: A customer with an interest in certain destination and food culture should receive special offers via app.
- Data authenticity threats and possible leaks.

APPROACH

List what is needed to complete the project.

I. To have a full-scale developer team which will be handling the technical part of the project.
II. To have a team lead, project manager and developer(s) having expertise in the field of app and web dev, graphic designers etc.

Application design: - To have a user-friendly app which to an extent solves the user's problem.
Wire frame: - A proper wireframe blueprint for helping our programmers and designers think and communicate about the structure of the application.

III. user flow
IV. Front end development
V. Back-end development
VI. API integration
VII. Quality Assurance
VIII. UI testing
IX. Functional Testing
X. Performance testing

Deployment
Marketing
Maintenance and Support

XI. Usability and Compatibility

BENEFITS

In bullet points, list the benefits that this project will bring to the organization.

- Single app to complete all your medicine delivery, and appointment bookings.
- A platform that crosses language barriers
- Time efficient
- Transparent platform between consumer and businesses.

Result: - Thus, the project team formed, the project is described, the business case was prepared, and the problem statement was arrived.

Department of Networking and Communications

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	2
Title of Experiment	Identification of Process Methodology and Stakeholder Description
Name of the candidate	Rushaan Gandhi
Team Members	Aditya Singh Jayesh Chaudhari
Register Numbers	RA2011028010105 RA2011028010089 RA2011028010094
Date of experiment	23-03-22

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

Aim

To identify the appropriate Process Model for the project and prepare Stakeholder and User Description.

Team Members:

S. No	Register No	Name	Role
1	RA2011028010105	**Rushaan Gandhi**	**Rep/Member**
2	RA2011028010089	**Aditya Singh**	**Member**
3	RA2011028010094	**Jayesh Chaudhari**	**Member**

Project Title: Medix

Selection of Methodology

We will be going forward with the **"conventional model"** under which we will be following the **"Agile Model."**

We are going to use the agile model as it allows developmental approaches that employ **continuous planning,** l **earning, improvement, team collaboration, evolutionary development**, and early delivery of the app to the end users.

It allows us to follow the **SCRUM** flow method. As the app "Medix" is an app which will have a lot of testing and design changes throughout, therefore **SCRUM will help to manage tasks within a team-based development environment.**

- **Scrum Master**

  Scrum Master is responsible for setting up the team, sprint meetings and removing obstacles to progress.

- **Product owner**

  The Product Owner is responsible for the delivery of the functionality at each iteration.

- **Scrum Team**

Team manages its own work and organizes the work to complete the cycle.

Upon following the agile methodology, it helps different teams working on the app unite under a shared vision, then brings it to life the way they know is best. Each team sets their own standards for quality, usability, and completeness.

Incorporate information to below table regarding stakeholders of the project:

Stakeholder Name	Activity/ Area /Phase	Interest	Influence	Priority (High/ Medium/ Low)
Central Drugs Standard Control Organization (CDSCO)	licensing and approval for distribution and conduct of clinical trials	Medium	Medium	3
Ministry of Health and Welfare	Provision of Verified Data	Medium	Medium	3
Owner	Initialize targets and selects appropriate team for its development	High	High	1
Team Members	New project excitement, Opportunity to upgrade skills	High	High	2
Project Managers	Leading the team Members and accountable for project scope	High	High	2
Investors	Expand Market Scope, Provides Financial Support, Promoting investments	Low	Low	4

Clients	Chemists, Private and Government Hospitals and Distributors who are the real members of market.	High	High	5
End Users	Providing Feedback	Low	Low	6

Result: - Thus the Project Methodology was identified and the stakeholders were described.

Department Of Networking and Communications

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	3
Title of Experiment	System, Functional and Non-Functional Requirements of the Project
Name of the Candidate	Rushaan Gandhi
Team Members	Aditya Singh, Jayesh Chaudhari
Register Number	RA2011028010105 RA2011028010089 RA2011028010094
Date of Experiment	31-03-22

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

Aim

To identify the system, functional and non-functional requirements for the project.

Team Members:

S No	Register No	Name	Role
1	RA2011028010105	Rushaan Gandhi	Rep/Member
2	RA2011028010089	Aditya Singh	Member
3	RA2011028010094	Jayesh Chaudhari	Member

Project Title: Medix

System Requirements:

Amazon EC2:

EC2 helps allocate system requirements (RAM, CPU)

Amazon DynamoDB:

NoSQL database service that supports key

Amazon S3:

Simple Storage Service is a service offered by Amazon Web Services that provides object storage through a web service interface.

Amazon Cognito:

Amazon Cognito lets you add user sign-up, sign-in, and access control to your web and mobile apps quickly and easily.

Functional Requirements:

Login/Signup Page:

The user has the option to set up or login his/her account.

Input: login details

Output: login successful/ failed

Maps:

Users are shown the exact location of the desired service(lab/pharmacy/hospital).

Input: medicine/hospital/salt combination name

Output: exact location of the desired service

E-commerce:

The E-commerce platform allows users to book/buy services/medicines.

Input: service name/ medicine name/ lab test name

Output: Delivery

Google APIs:

Google API of Maps and Translate

AI Scanner:

Users are able to upload prescriptions directly to app and purchase medicines

Input: Scanned copy of prescriptions by doctor/ salt combination

Output: Smart Reminder, location pin-point

Smart Reminder:

Users are able to to set reminder for their medicine intake schedule

Non-Functional Requirements:

Usability: Users are able to full fill their purchasing needs as quickly and effortlessly as possible

Security: The information of user's and government data is kept safe with confidentiality and integrity i.e., the data is not openly shared and is not accessible to unauthorized entities. Moreover, there are no alterations made in the data.

Maintainability: Maintainability implies that solutions change both in terms of database and application interface.

Scalability: Looking at the current situation of the pharmaceutical industry in India, we see that our project is scalable.

Result: - Thus the requirements were identified and accordingly described.

Department of Networking and Communications

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	4
Title of Experiment	Prepare Project Plan based on scope, Calculate Project effort based on resources and Job roles and responsibilities
Name of the candidate	Rushaan Gandhi
Team Members	Aditya Singh, Jayesh Chaudhari
Register Number	RA2011028010105 RA2011028010089 RA2011028010094
Date of Experiment	31-03-22

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
Total		**10**	

Staff Signature with date

Aim

To Prepare Project Plan based on scope, Calculate Project effort based on resources, Find Job roles and responsibilities

Team Members:

Sl No	Register No	Name	Role
1	**RA2011028010105**	**RUSHAAN GANDHI**	**Lead**
2	**RA2011028010089**	**ADITYA SINGH**	**Member**
3	**RA2011028010094**	**JAYESH S CHAUDHARI**	**Member**

Requirements

1. Project Management Plan

Focus Area	Detail
Quality Management	- Managing Quality of each and every pharmacy - Keeping Quality Check for all medical Hospitals - Checks on Lab test outcomes
Integration Management	- Integrating some feature may require physical presence - Getting Government Certifications may be an issue
Resource Management	- Auditing may require skilled people - Financing and budgeting professionals are required

2. Estimation

2.1. Effort and Cost Estimation

Activity Description	**Sub task**	**Sub task Description**	**Efforts (in hours)**	**Cost**
Design the user screen	**E1R1A1T1 (Effort-Requirement -Activity-Tak)**	Confirm User Requirement	2	2000
	E1R1A1T2	Prototyping the Interface and creating the UX	30	30000
	E1R1A1T3	Coding the front End	50	50000
IT Cloud	**E2R2A1T1**	Setting up Backend	20	20000
	E2R2A1T2	Connecting Backend	5	5000
	E2R2A1T3	Deploying Application	2	2000
API	**E3R3A1T1**	Linking APIs to app	2	2000

Effort (hr)	**Cost (INR)**
1	1000

2.2. Infrastructure/Resource Cost [CapEx]

Infrastructure Requirement	Qty	Cost per qty	Cost per item
IR1	3		
IR2	10		

2.3. Maintenance and Support Cost [OpEx]

Category	Details	Qty	Cost per qty per annum	Cost per item
People	Network, System, Middleware and DB admin, Cloud Engineer, Cloud Solution Architect, Cloud Devops, AI/ML Specialist Engineer	10	2,000,000	20,000,000
License	Middleware IDE Government	15	10000	150,000
Infrastructures	Cloud	Depends on Demand	Pay as you go	-

3. Project Team Formation

3.1. Identification Team members

Name	Role	Responsibilities
ADRUJA	Key Business User (Product Owner)	Provide clear business and user requirements
RUSHAAN	Project Manager	Manage the project
RUSHAAN	Business Analyst	Discuss and Document Requirements
ADITYA	Technical Lead	Design the end-to-end architecture
JAYESH	UX Designer	Design the user experience
RUSHAAN	Frontend Developer	Develop user interface
JAYESH	Backend Developer	Design, Develop and Unit Test Services/API/DB
JAYESH	Cloud Architect	Design the cost effective, highly available and scalable architecture
ADITYA	Cloud Operations	Provision required Services
ADITYA	Tester	Define Test Cases and Perform Testing
ADITYA	Auditor	Audits Labs and Pharmacy

3.2. Responsibility Assignment Matrix

RACI Matrix	**Team Members**			
Activity	**Name (BA)**	**Name (Developer)**	**Name (Project Manager)**	**Key Business User**
User Requirement Documentation	A	C/I	I	R
Budgeting	A/R	C/I	I	I
UI UX Development	I	A/R	A	C/I
Front End	I	A/R	A	I
Back End	I	A/R	A	I
Deployment	R	R	A/R	I

A	Accountable
R	Responsible
C	Consult
I	Inform

Result: Thus, the Project Plan was documented successfully.

Department of Networking and Communications

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	5
Title of Experiment	Prepare Work breakdown structure, Timeline chart, Risk identification table
Name of the candidate	Rushaan Gandhi
Team Members	Aditya Singh, Jayesh Chaudhari
Register Number	RA2011028010105 RA2011028010089 RA2011028010094
Date of Experiment	07-04-2022

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Signature with date

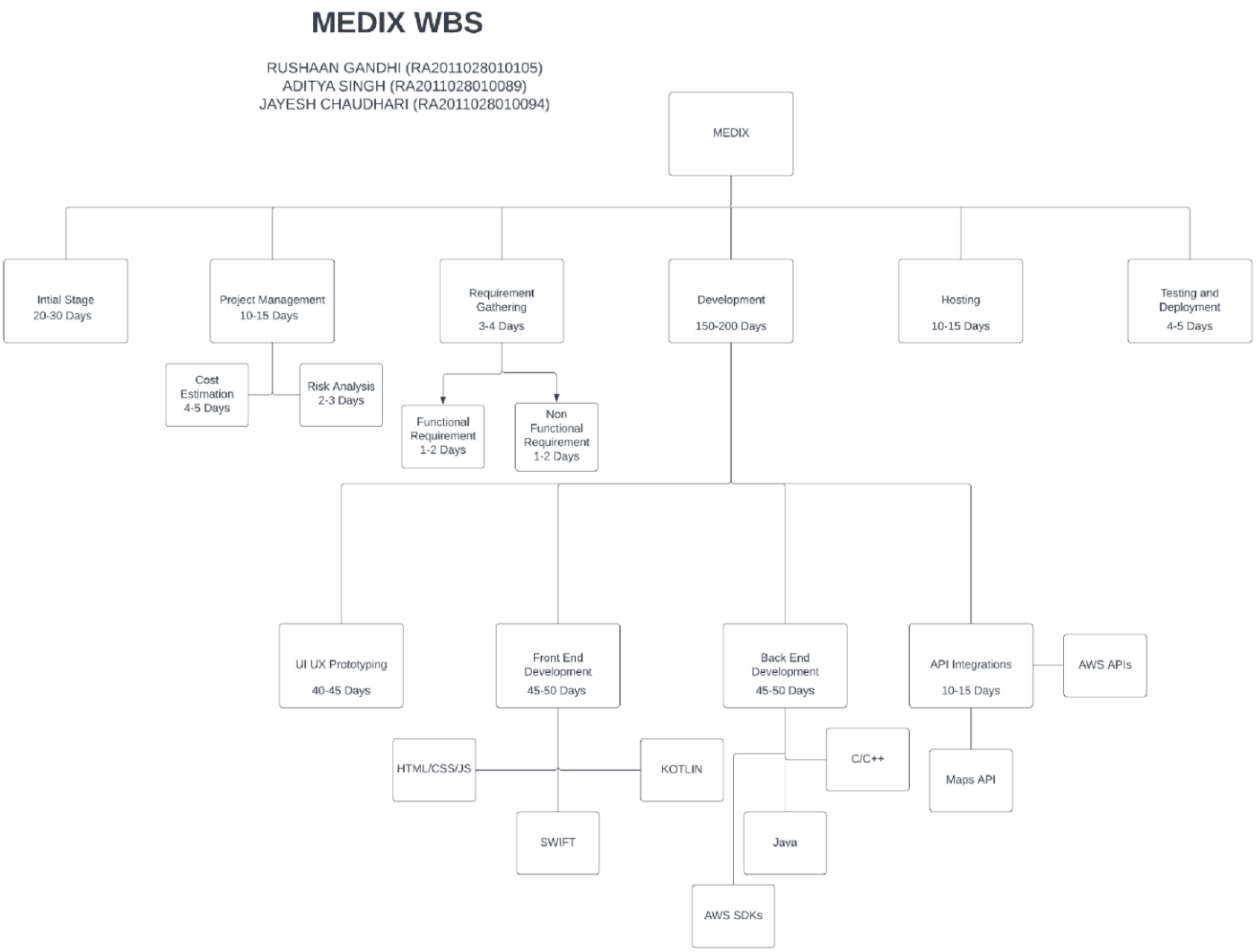
Aim

To Prepare Work breakdown structure, Timeline chart and Risk identification table

eam Members:

Sl No	Register No	Name	Role
1	RA2011028010105	RUSHAAN GANDHI	Rep
2	RA2011028010089	ADITYA SINGH	Member
3	RA2011028010094	JAYESH CHAUDHARI	Member

MEDIX WBS



1. **Initial Stage**
2. **Project Management**

    2.1 Cost estimation

    2.2 Risk Analysis

3. **Requirement Gathering**

    3.1 Functional Requirement

    3.2 Non-Functional Requirement

4. **Development**

    4.1 UI/UX Prototyping 4.2 Front End Development

    4.2.1 HTML/CSS/JS

    4.2.2 SWIFT

    4.2.3 KOTLIN

    4.3 Back End Development

    4.3.1 Java

    4.3.2 C/C++

    4.3.3 AWS SDKs

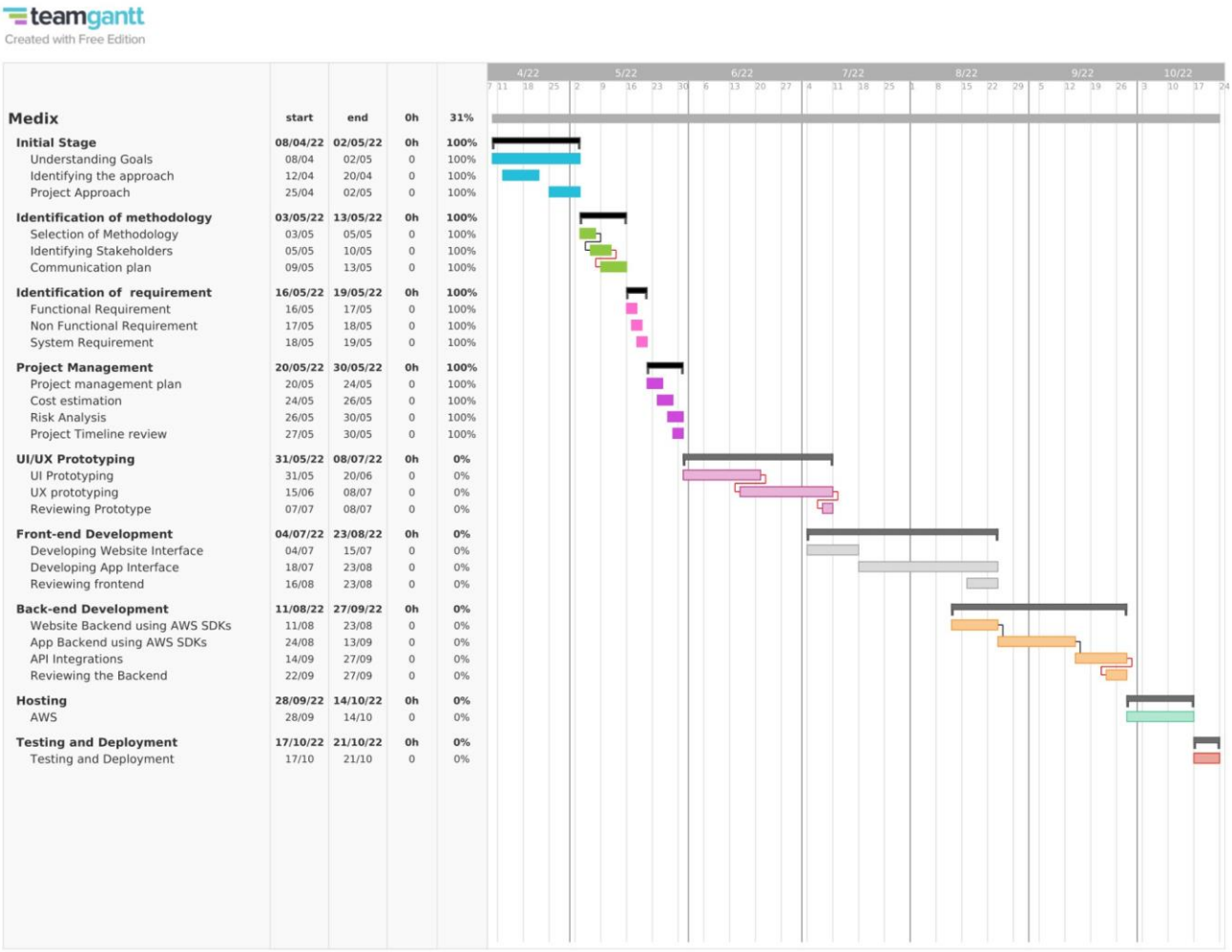
    4.4 API Integrations

    4.4.1 Maps API

    4.4.2 AWS API

5. **Hosting**
6. **Testing and Deployment**

MEDIX GANTT CHART



Medix	start	end	0h	31%
Initial Stage	**08/04/22**	**02/05/22**	**0h**	**100%**
Understanding Goals	08/04	02/05	0	100%
Identifying the approach	12/04	20/04	0	100%
Project Approach	25/04	02/05	0	100%
Identification of methodology	**03/05/22**	**13/05/22**	**0h**	**100%**
Selection of Methodology	03/05	05/05	0	100%
Identifying Stakeholders	05/05	10/05	0	100%
Communication plan	09/05	13/05	0	100%
Identification of requirement	**16/05/22**	**19/05/22**	**0h**	**100%**
Functional Requirement	16/05	17/05	0	100%
Non Functional Requirement	17/05	18/05	0	100%
System Requirement	18/05	19/05	0	100%
Project Management	**20/05/22**	**30/05/22**	**0h**	**100%**
Project management plan	20/05	24/05	0	100%
Cost estimation	24/05	26/05	0	100%
Risk Analysis	26/05	30/05	0	100%
Project Timeline review	27/05	30/05	0	100%
UI/UX Prototyping	**31/05/22**	**08/07/22**	**0h**	**0%**
UI Prototyping	31/05	20/06	0	0%
UX prototyping	15/06	08/07	0	0%
Reviewing Prototype	07/07	08/07	0	0%
Front-end Development	**04/07/22**	**23/08/22**	**0h**	**0%**
Developing Website Interface	04/07	15/07	0	0%
Developing App Interface	18/07	23/08	0	0%
Reviewing frontend	16/08	23/08	0	0%
Back-end Development	**11/08/22**	**27/09/22**	**0h**	**0%**
Website Backend using AWS SDKs	11/08	23/08	0	0%
App Backend using AWS SDKs	24/08	13/09	0	0%
API Integrations	14/09	27/09	0	0%
Reviewing the Backend	22/09	27/09	0	0%
Hosting	**28/09/22**	**14/10/22**	**0h**	**0%**
AWS	28/09	14/10	0	0%
Testing and Deployment	**17/10/22**	**21/10/22**	**0h**	**0%**
Testing and Deployment	17/10	21/10	0	0%

Figure 5.2 Gantt Chart

Figure 5.3 SWOT Analysis

Medix Risk Table

Risks	Category	Probability	Impact	Strategy
Project size may be significantly large and complex	PS	60%	2	Risk Mitigation
End users resist system	BU	30%	2	Risk avoidance
Tight delivery deadline	BU	70%	3	Risk Mitigation
Funding Risks	BU	70%	1	Risk Transfer
Changing customer requirement s	PS	80%	2	Risk Acceptance
Lack of Training tools	TR	70%	4	Risk Avoidance
Staff Inexperience d	TR	60%	1	Risk Avoidance

Result: Thus, the work breakdown structure with timeline chart and risk table were formulated successful.

Department of Networking and Communications

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	6
Title of Experiment	Design a System Architecture, Use Case and Class Diagram
Name of the candidate	Rushaan Gandhi
Team Members	Aditya Singh, Jayesh Chaudhari
Register Number	RA2011028010105 RA2011028010089 RA2011028010094
Date of Experiment	18-04-2022

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

Aim

To Design a System Architecture, use case and Class Diagram

Team Members:

S. No	Register No	Name	Role
1	RA2011028010105	RUSHAAN GANDHI	Rep
2	RA2011028010089	ADITYA SINGH	Member
3	RA2011028010094	JAYESH CHAUDHARI	Member

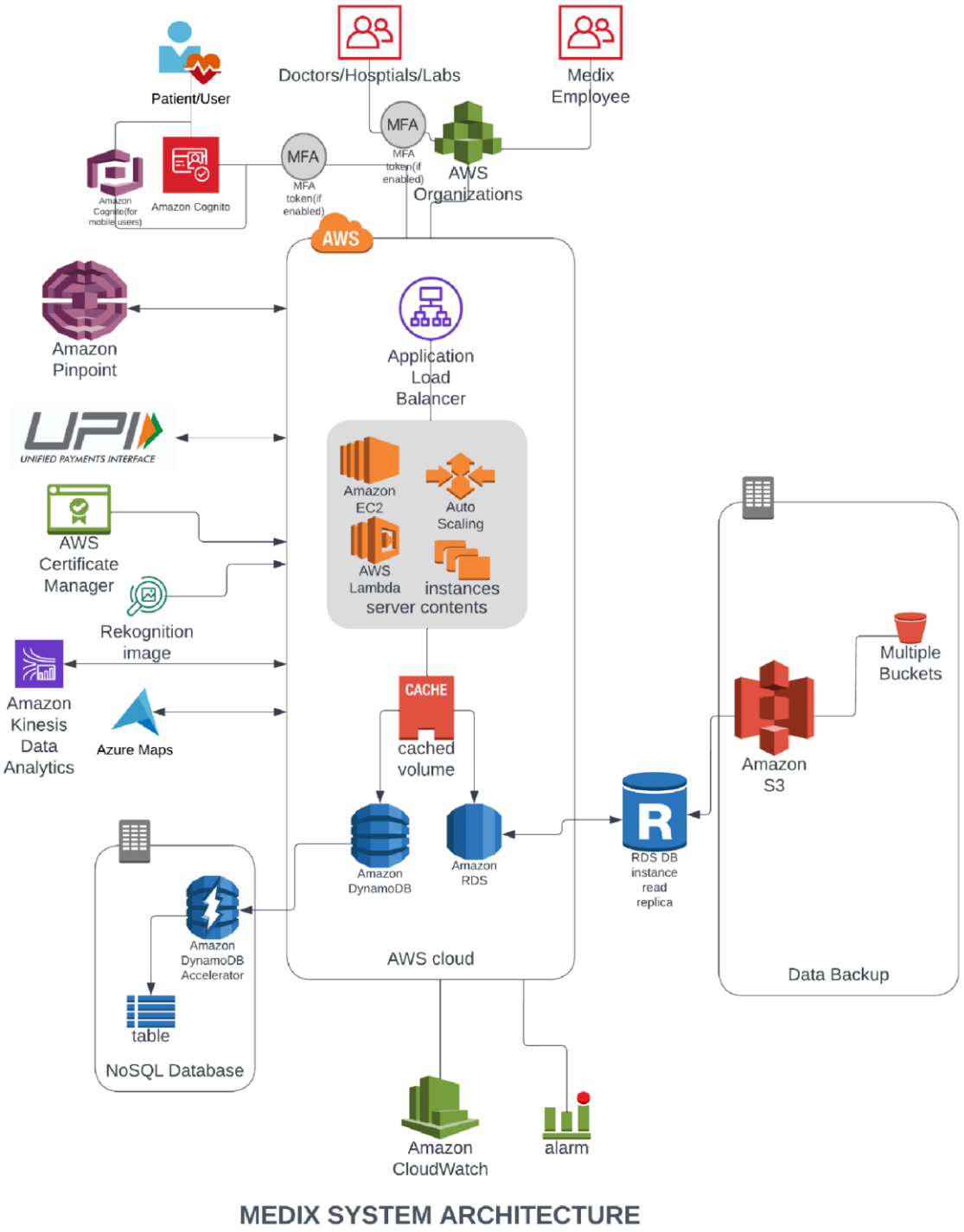


Figure 6.1 SYSTEM ARCHITECTURE DIAGRAM

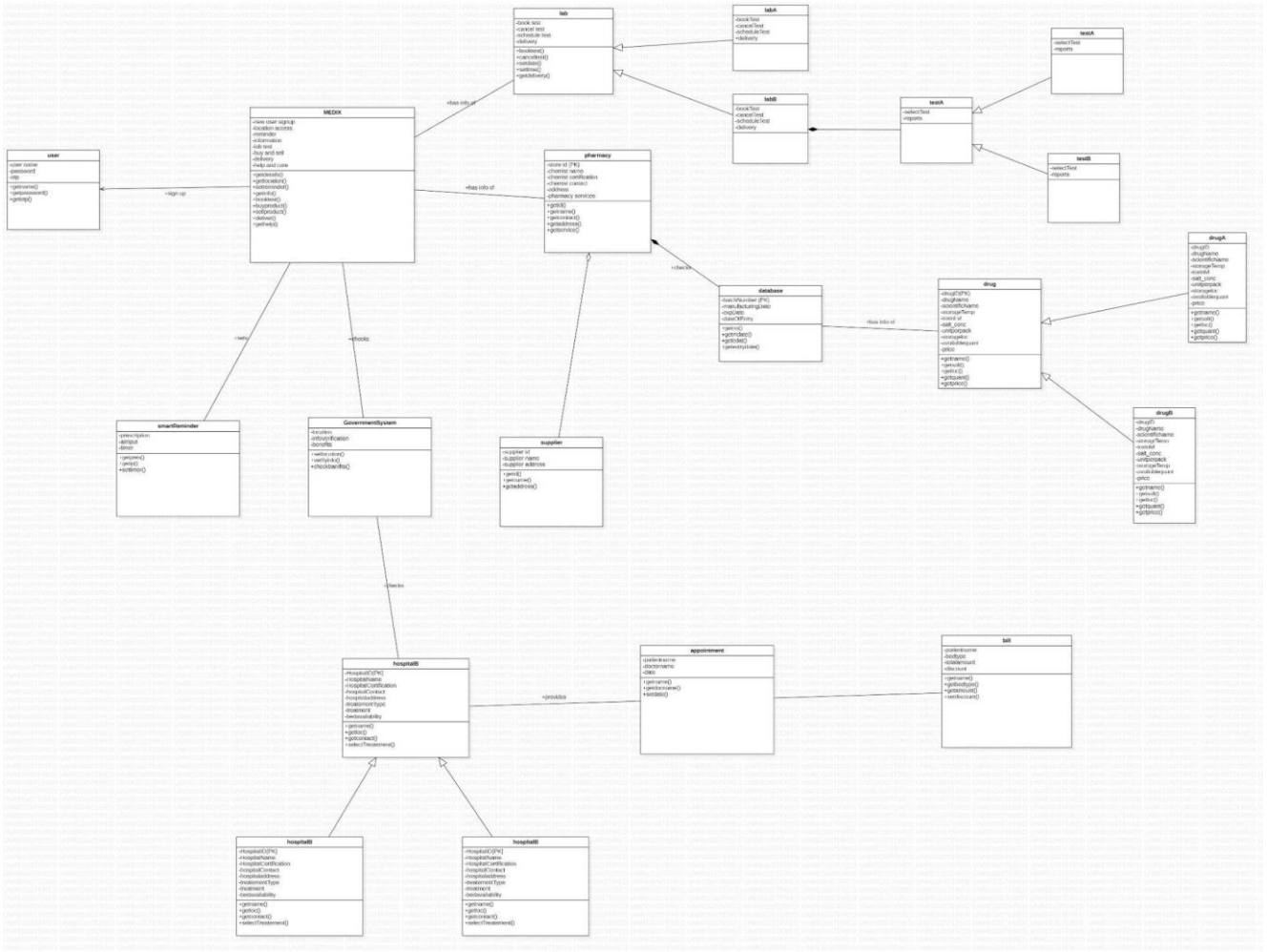


FIGURE 6.2 MEDIX CLASS DIAGRAM REPRESENTATION

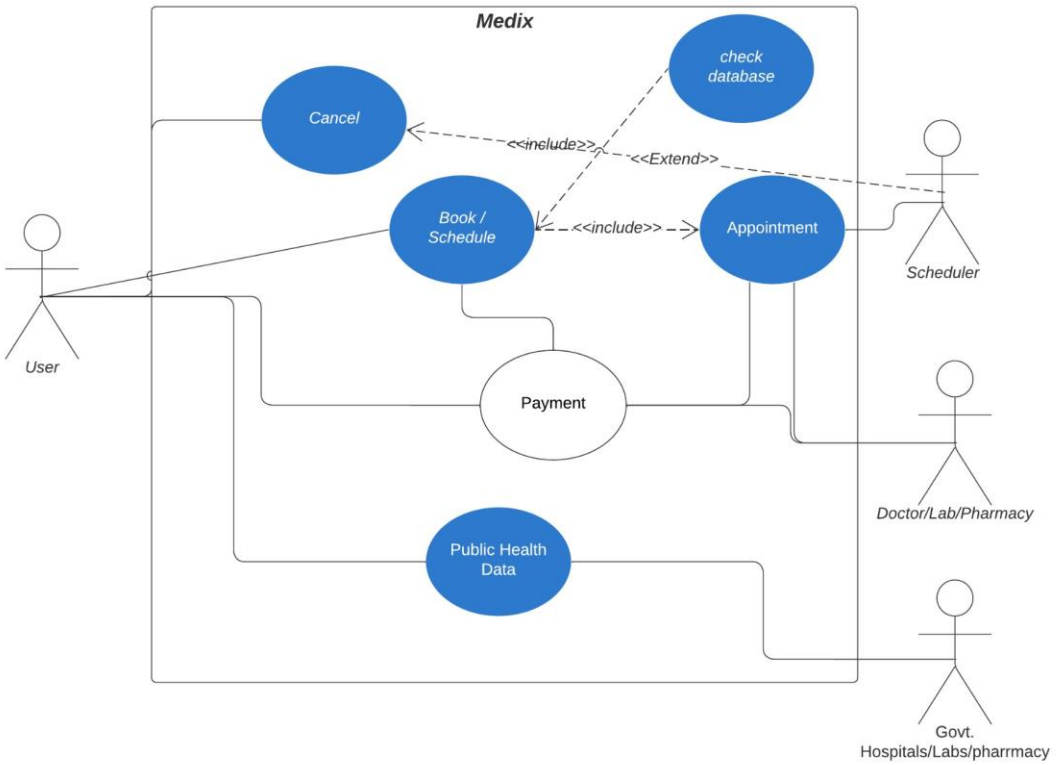


FIGURE 6.3 MEDIX USE CASE DIAGRAM

Result: Thus, the system architecture, use case and class diagram created successfully.

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SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	7
Title of Experiment	Design an Entity relationship diagram
Name of the candidate	Rushaan Gandhi
Team Members	Aditya Singh, Jayesh Chaudhari
Register Number	RA2011028010105 RA2011028010089 RA2011028010094
Date of Experiment	18-04-2022

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Aim

To create the Entity Relationship Diagram

Team Members:

S No	Register No	Name	Role
1	RA2011028010105	RUSHAAN GANDHI	Rep
2	RA2011028010089	ADITYA SINGH	Member
3	RA2011028010094	JAYESH CHAUDHARI	Member

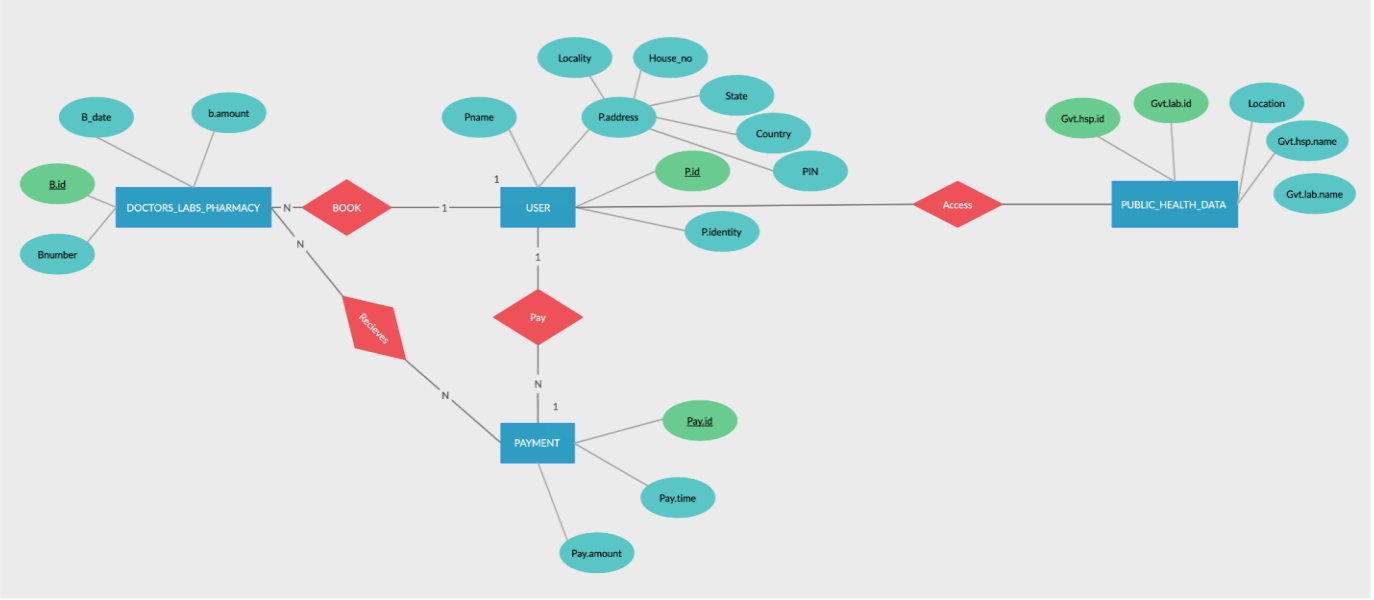


Figure 7.1 ER Diagram

Result: Thus, the entity relationship diagram was created successfully.

School of Computing

SRM IST, Kattankulathur – 603 203 Course

Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	8
Title of Experiment	Develop a Data Flow Diagram (Process-Up to Level 1)
Name of the candidate	Rushaan Gandhi
Team Members	Aditya Singh, Jayesh Chaudhari
Register Number	RA2011028010105 RA2011028010089 RA2011028010094
Date of Experiment	25-04-2022

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

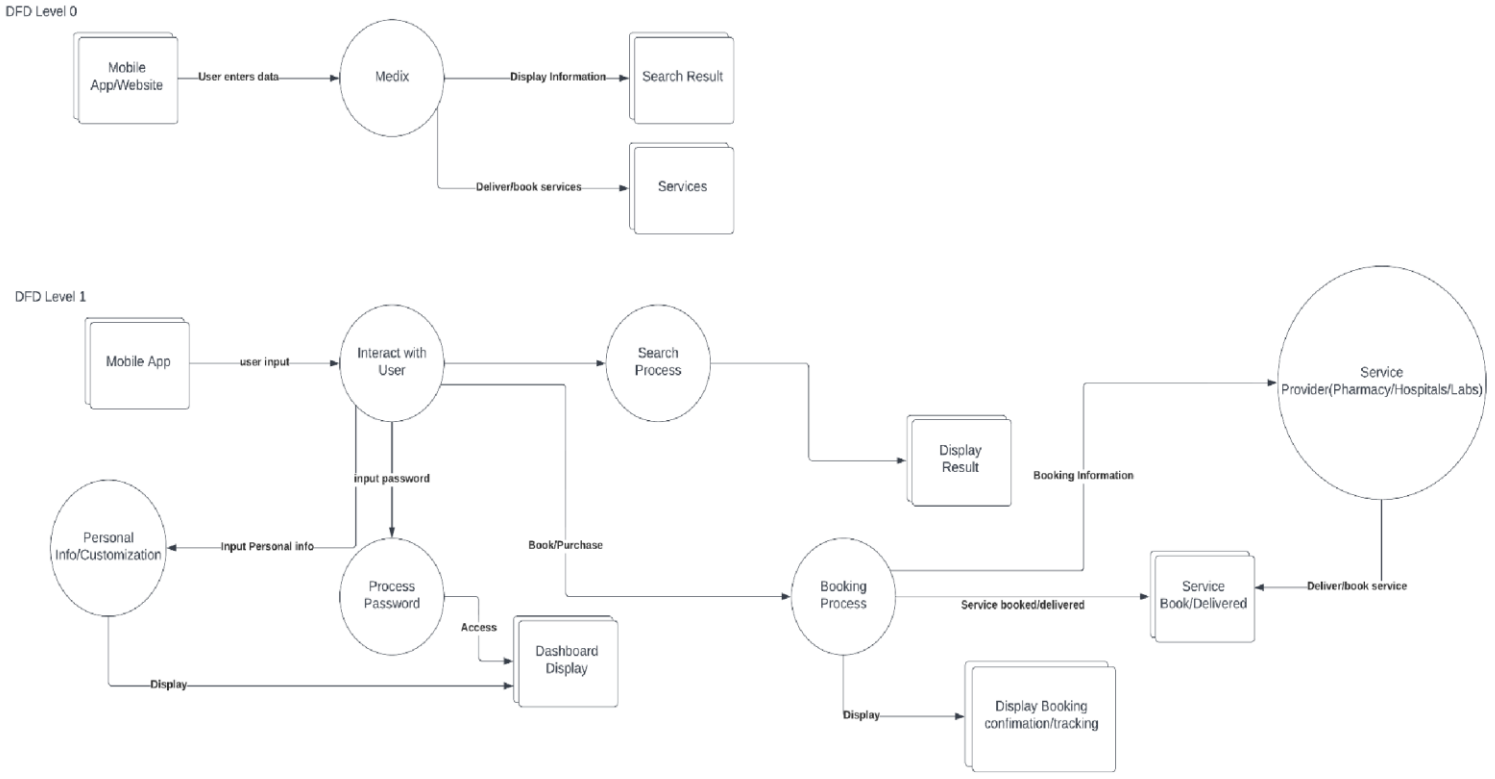
Staff Signature with date

Aim

To develop the data flow diagram up to level 1 for the <project name>

Team Members:

S No	Register No	Name	Role
1	RA2011028010105	RUSHAAN GANDHI	Rep
2	RA2011028010089	ADITYA SINGH	Member
3	RA2011028010094	JAYESH CHAUDHARI	Member



Medix DFD Diagrams

Figure 8.1 DFD LEVEL 0

Figure 8.2 DFD LEVEL 1

Result: Thus, the data flow diagrams have been created for the Medix.

School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	9
Title of Experiment	Design a Sequence and Collaboration Diagram
Name of the candidate	Rushaan Gandhi
Team Members	Aditya Singh, Jayesh Chaudhari
Register Number	RA2011028010105 RA2011028010089 RA2011028010094
Date of experiment	10-05-22

Mark Split Up

S. No	Description	Maximum Marks	Marks Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

Aim

To create the sequence and collaboration diagram for the <project name>

Team Members:

S No	Register No	Name Role
1	RA2011028010105	Rushaan Gandhi Rep/Member
2	RA2011028010089	Aditya Singh Member
3	RA2011028010094	Jayesh Chaudhari Member

Medix Sequence Diagram:

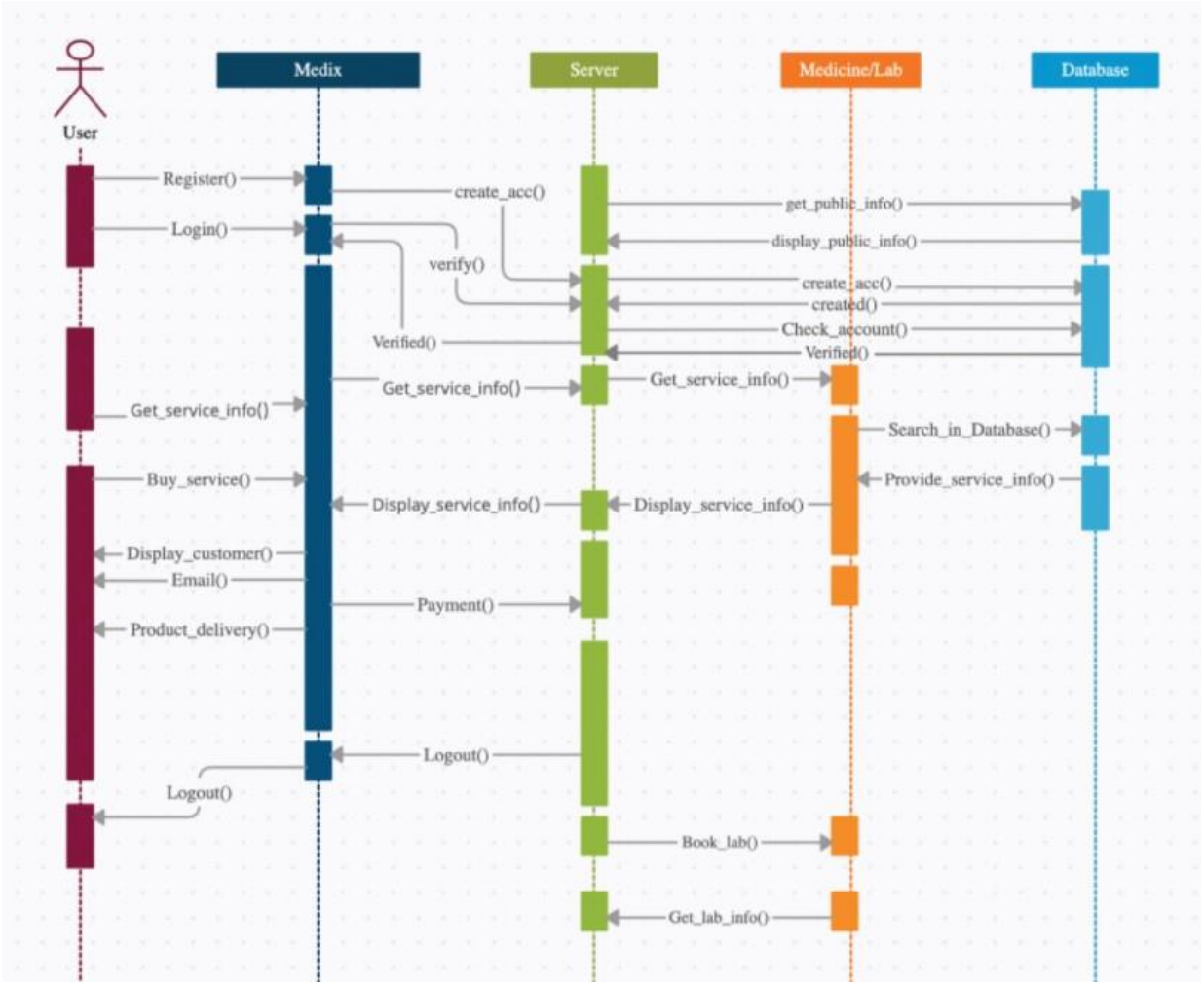


Figure 9.1 Sequence Diagram

Medix Collaboration Diagram:

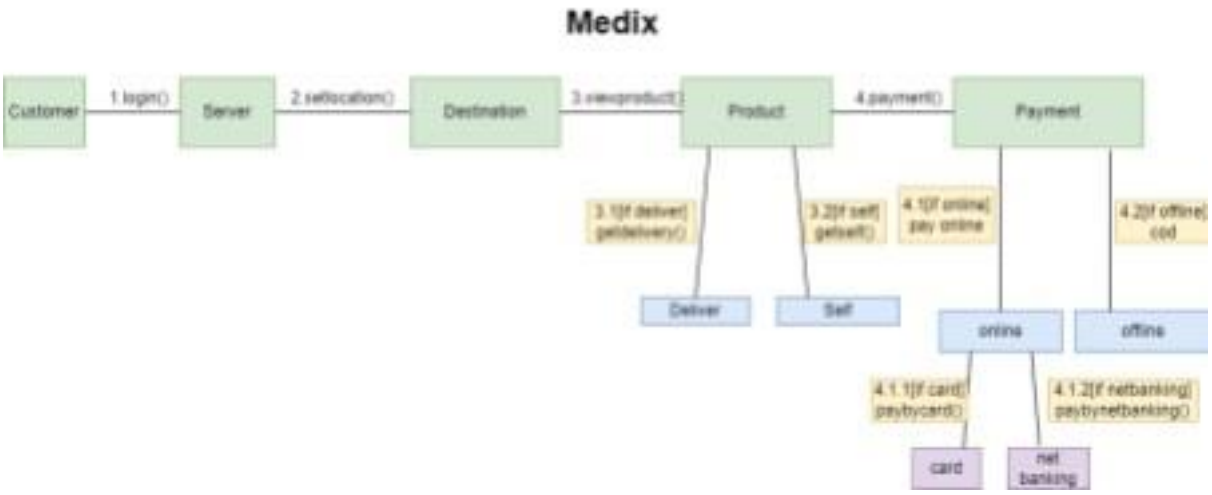


Figure 9.2 Collaboration Diagram

Result: Thus, the sequence and collaboration diagrams were created for Medix.

School of Computing

SRM IST, Kattankulathur – 603 203 Course

Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	10
Title of Experiment	Develop a Testing Framework/User Interface
Name of the candidate	Rushaan Gandhi
Team Members	Aditya Singh, Jayesh Chaudhari
Register Number	RA2011028010105 RA2011028010089 RA2011028010094
Date of Experiment	17-05-22

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

Aim

To develop the testing framework and/or user interface framework

Team Members:

S No	Register No	Name	Role
1	RA2011028010105	Rushaan Gandhi	Lead
2	RA2011028010089	Aditya Singh	Member
3	RA2011028010094	Jayesh Chaudhari	Member

Executive Summary

The scope for testing our medical app MEDIX is to conduct a comprehensive series of mostly automated tests, to ensure smooth flow of data (stored majorly via using DynamoDB) and control amongst the numerous components. For each component, even prior to finishing development, tests are written to ensure they produce the results expected. As we're using the ReactJS, it ships right out of the box with all the tools required to set up a set of tests with ease, it even automatically completes the job of creating a dummy database so that the tests do not cause any undesirable change in the production database.

Test Plan

We have decided that the testing will follow a bottom-up approach. First, we design the smaller components, then test their functionality and error handling capabilities, and then other minute details. After completing the functional testing, we will move on to the testing of NFR (Non-functional requirements).

Scope of Testing

The scope of testing of MEDIX is mostly limited to computer generated tests, making test-cases for different modules to make sure the code can handle absolutely whatever the end user throws at it.

Functional Testing:

Testing is done on these 4 stages/steps-

- **Unit testing-** Unit testing is the first level of testing and will be performed by the developers themselves. It is the process of ensuring individual components of a piece of software at the code level are functional and work as they were designed to.
- **Integration testing-** After each unit is thoroughly tested, it is integrated with other units to create modules or components that are designed to perform specific tasks or activities.
- **System testing-** System testing is a black box testing method used to evaluate the completed and integrated system, as a whole, to ensure it meets specified requirements
- **Acceptance testing-** Acceptance testing is the last phase of functional testing and is used to assess whether or not the final piece of software is ready for delivery

Non-Functional:

- **Performance testing-** Will be mostly used to monitor whether the application is able to withstand increased network traffic during peak hours, and to figure out whether performance needs to be upped via software methods (ex. a C extension) or via hardware methods (ex. allocating more resources).
- **Security testing –** A pen-testing specialist would be appointed to try to expose any security flaws that might be left in the software.
- **Usability testing-** Usability testing is a testing method that measures an application's ease of-use from the end-user perspective and is often performed during the system or acceptance testing stages.
- **Compatibility testing-** Compatibility testing is used to gauge how an application or piece of software will work in different environments.

Types of Testing, Methodology, Tools

Category	Methodology	Testing Tools
Functional Requirements	• **Manual**	**Selenium** **Test Complete** **Watir**
Non-Functional Requirements	• **Manual** • **User/Crowd Validation**	**LoadRunner** **Selenium** **New node**

Result: Thus, the testing framework/user interface framework has been created

School of Computing

SRM IST, Kattankulathur – 603 203 Course

Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	11
Title of Experiment	Test Cases
Name of the candidate	Rushaan Gandhi
Team Members	Aditya Singh , Jayesh Chaudhari
Register Number	RA2011028010105
Date of Experiment	24-05-2022

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

Aim

To develop the test cases manual for the Medix

Team Members:

S No	Register No	Name	Role
1	RA2011028010105	Rushaan Gandhi	Rep
2	RA2011028010089	Aditya Singh	Member
3	RA2011028010094	Jayesh Chaudhari	Member

Test Case

Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
TEST_1_A	**Login:**Positive flow system testing.	Accept valid mobile numbers on the login page.	1. User clicks on User Registration link 2. Enter the mobile Number on the text box 3. Click Register button	number accepted, OTP sent	number accepted, OTP sent	Pass	Success
TEST_1_B	**Login:**Negative flow system testing.	Does not accept non mobile numbers on the login page.	1. User cannot proceed	1. User is redirected back to the login page.	User taken back to the login page.	Pass	Success

TEST _2 _A	**Searching:** Positive flow system testing.	Finds correct locations/medicines/labs/pharmacy	1. User searches query 2. Click Find.	User is shown the Location/medici ne/labs/pharmacy and showed related results	User is shown the Location/medicine/labs/pharmacy	Pass	Success
TEST _2 _B	**Searching:** Negative flow system testing.	Verify whether locations/medicines/labs/pharmacy are wrong	1.User cannot find query	query not found	query not found	Pass	Success
TEST _3 _A	**Payment:**Positive flow system testing	1. It should check whether correct account number or address is chosen for the respective member, provider or broker for the payment	1. User clicks on the “proceed for payment” option. 2. Choose payment convenience (Net banking/debit card/credit card/UPI. 3. Enter CVV number/ pin and pay.	Payment is successful. receipt printed	Payment is successful. receipt printed	Pass	Success

TEST _3 _B	**Payment:**Negative flow system testing.	1. Verify whether payment is done for an invalid member or provider. 2. Verify whether payment is done for an invalid amount for the member or provider.	1. User clickson the "proceed for payment" option. 2. Choosepayment covinience(Net banking/debit card/credit card/UPI. 3. User entersthe wrong credentials.	payment failure	Payment failure.	Pass	Success

TEST_4 _A	**Scanning:**Positive flow system testing.	scans correct medicines and salts	1. User scansreal-time object 2. Click Find.	search results found	search results found	Pass	Success
TEST_4 _B	**Scanning:**Negative flow system testing.	Verify whether locations/medicines/labs/pharmacy are wrong	1.User cannot find a query.	User is shown error message	User is shown error message	Pass	Success

NON-FUNCTIONAL TEST CASE

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
TEST_1_A	User authentication(security)	correct username correct password	Hash Key matching	user verified	user verified	Pass	Success
TEST_1_B	User authentication(security)	correct username wrong password	Hash Key matching	user verification fails	user verification fails	Pass	Success
TEST_1_C	User authentication(security)	wrong username correct password	Hash Key matching	user verification fails	user verification fails	Pass	Success
TEST_1_D	User authentication(security)	wrong username wrong password	Hash Key matching	user verification fails	user verification fails	Pass	Success
TEST_2	Information Disclosure(security)	information protection from cyber attacks	strong encryption method	Authorizes information flow	Authorizes information flow	Pass	Success
TEST_3	system integration	Validate the feed to members system, finance system	check interconnectivity of modules.	Validation executed	Validation executed	Pass	Success

Result: Thus, the test case manual has been created for the Medix.

School of Computing

SRM IST, Kattankulathur – 603 203 Course

Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	12
Title of Experiment	Manual Test Case Reporting
Name of the candidate	Rushaan Gandhi
Team Members	Aditya Singh, Jayesh Chaudhari
Register Number	RA2011028010105 RA2011028010089 RA2011028010094
Date of Experiment	31-05-2022

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

Aim

To prepare the manual test case report for the Medix

Team Members:

S No	Register No	Name	Role
1	RA2011028010105	Rushaan Gandhi	Rep/Member
2	RA2011028010089	Aditya Singh	Member
3	RA2011028010094	Jayesh Chaudhari	Member

Summarize the current status of the Testing

We are still in progress for implementation of module 1 and module 2 which includes user verification, login and searching. Module 3 is yet to be started.
Non-functional testing is in progress as well.

Present obstacles to proceed further: -

The obstacles we are facing and obstacles we might face while implementing our functionalities are as follows: -

1. Requires interoperability, compliance, regulatory, security, safety testing besides regular testing techniques (Non-Functional, Functional and Integration testing).
2. A health-care product should comply with various standards like FDA, ISO, and CMMI before it can be used.
3. Requires expertise in testing and usually, it is high in cost.
4. A significant amount of overhead could be involved to determine the state of the database transactions.
5. New test data has to be designed after cleaning up the old test data.
6. A PartiQL generator is required to transform PartiQL validators in order to ensure the PartiQL queries are apt for handling the required database test cases.
7. The above-mentioned prerequisite ensures that the set-up of the database testing procedure could be costly as well as time consuming.
8. There should be a fine balance between quality and overall project schedule duration.

Seek help from stakeholders to remove obstacles/constraints: -

1. Interoperability Testing: - Testing conformance to interoperability standards (E.g.; DICOM, HL7, CCD/CDA)

2. A health-care product should comply with various standards like ISO, and CMMI before it can be used.

3. The overall process planning and timing should be organized so that no time and cost-based issues appear.

4. A prior plan and methodology for test data generation should be at hand.

5. Maintenance of the SQL queries and their continuous updating is a significant part of the overall testing process which should be part of the overall test strategy.

Category	**Progress Against Plan**	**Status**
Functional Testing	Amber	In-Progress
Non-Functional Testing	Amber	In-Progress

Functional	**Test Case Coverage (%)**	**Status**
Login (MD_TC_01)	100%	Completed
Searching (MD_TC_02)	35%	In-progress
Payment (MD_TC_03)	25%	In-progress
Scanning (MD_TC_04)	10%	In-progress

Result: Thus, the test case report has been created for the Medix.

School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	13
Title of Experiment	Provide the details of Architecture Design/Framework/Implementation
Name of the candidate	Rushaan Gandhi
Team Members	Aditya Singh, Jayesh Chaudhari
Register Numbers	RA2011028010105 RA2011028010089 RA2011028010094
Date of Experiment	

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

Aim

To provide the details of architectural design/framework/implementation

Team Members:

S No	Register No	Name	Role
1	RA2011028010105	RUSHAAN GANDHI	Rep/Member
2	RA2011028010089	ADITYA SINGH	Member
3	RA2011028010094	JAYESH CHAUDHARI	Member

Code:

Login/Sign Up:

```
<!DOCTYPE  html >
<html>
<head>
   <title> Medix </title>
                <link   rel = " shortcut  icon "            href=  "
favicon.ico "
 type = " image/x-icon"  >
       <link  rel = " stylesheet "  type= "  text/css"   href= "  slide
                                                                navbar
 style.css " >
      <link  href = "
https://fonts.googleapis.com/css2?family=Jost:wght@500&display=sw  ap "
rel= "  stylesheet ">
     < link  rel=  " stylesheet"   href= "  style.css ">
      </head>
     <body>
         <img  src = " medix_black.png "  alt = " bl_medix "  class =
        " bl_medix"  >


                                                                <script
 src= "  https://unpkg.com/@lottiefiles/lottie-
player@latest/dist/lottie-pl  ayer.js"  ></script>

                                                                <script
```

```
 src= "  https://unpkg.com/@lottiefiles/lottie-
player@latest/dist/lottie-pl  ayer.js " ></script>
      <lottie-player                        src          =          "
https://assets8.lottiefiles.com/private_files/lf30_brec9S.json        "
background = " transparent"   speed = " 1 "  style = " width:  400px;
height:
 400px; "  loop  autoplay  class ="  med"  ></lottie-player>
         <h1  class = " promo " > Get Labs/Medicines on your Finger
        Tips </h2>
       <div  id=  " main_pg " >

         <div  class= "  main" >

            <input  type = " checkbox "  id = " chk "  aria-hidden =
           " true ">

                <div  class=  " signup " >
                 <form  action ="  Home.html " >
      < label  for= "  chk "  aria-hidden= "  true" >  Sign Up
      </label>
 <input  type= "  text "  name = " txt"   placeholder=  " User name "
required = "">
      <input  type = " email"   name= "  email"   placeholder= "
Email"   required = "" >  <input  type = " password "  name=  " pswd "
placeholder ="  Password "  required = "">
                      <button> Sign up </button>

                   < p  class = " quest" >  Already  have  an  account
 Login! </p>

                   < /form>
                </div>

                <div  class= "  login " >
                 <form  action = " Home.html " >

                                                <label  for= "  chk "
 aria-hidden = " true"  > Login </label>
                             <input  type = " email "  name = " email"
```

```
placeholder= "  Email "  required = "">
                            <input  type=  " password "  name ="  pswd"
placeholder ="  Password"   required=  "">
                       <button> Login </button>
                         <p  class=  " ques" >  New User? Sign Up Now!
                    </p>  </form>
                 </div>
          </div>
       </div>
       <footer> © 2022 Medix </footer>
       </body>
       </html>
```

Home:

```
       <!DOCTYPE  html >
       <html  lang = " en " >
      <head>
          <meta  charset= "  UTF-8 " >
          <meta  http-equiv = " X-UA-Compatible"   content= "  IE=edge
         ">
             <meta  name= "  viewport "  content=  " width=device-width,
 initial-scale=1.0"  >
          <link  rel=  " stylesheet "  href = " card-style.css ">
                 < link   rel ="  shortcut  icon "              href ="
favicon.ico"
 type = " image/x-icon " >

          <title> Medix | Home </title>
       </head>
       <body>
       <  center ><h1> WELCOME TO MEDIX </h1></ center>



       <div  class= "  wrapper " >
          <button  class = ""  onclick = " location . href =
         'index.html'" >
            <span> Log Out </span>
          </button>
```

```
        </div>

          <div>
       <div  class = " container" >
          <div  class= "  card"  >
              <div  class ="  imgBx " >
                  <img  src = " dolo650.png"   alt = " dolo" >
              </div>

              <div  class ="  contentBx"  >
                  <h2> Dolo650 </h2>

           <form  action = " product.html " >  <input  type=  " button "
value = " Buy Now"   class = " buy " ></form>
                  <a  href = " product.html ">  Buy Now </a>
              </div>
       </div>
       <div  class =" container" >
          <div  class= "  card"  >
              <div  class= "  imgBx"  >
                  <img  src=  " remdesivir.png"   alt = " remdi"  >
              </div>

              <div  class =" contentBx "

                 >  <h2> Remdesivir< /h2>

              <form  action=  " index.html " >  <input  type=  " button"
value=  " Buy Now "  class=  " buy " ></form>
                  <a  href = " product2.html " > Buy Now
             </a>  </div>
       </div>
       <div  class = " container"  >
          <div  class = " card " >
              <div  class = " imgBx"  >
                  <img  src = " remdesivir.png"   alt = " cough_syrup"
                 >
              </div>
```

```
            <div  class= "  contentBx" >

               < h2> Benadryl Syrup< /h2>

            <form  action = " index.html " >  <input  type = " button "
value ="  Buy Now "  class = " buy " ></form>
                <a  href= "  index.html" >  Buy Now </a>
            </div>
      </div>
      <div  class = " container " >
         <div  class=  " card"  >
            <div  class = " imgBx " >
               <img  src = " dolo650.png "  alt = " dolo " >
            </div>

            <div  class = " contentBx " >

               <h2> Dolo650 </h2>

            <form  action=  " index.html"  > < input  type= "  button"
value ="  Buy Now "  class= "  buy " ></form>
               <a  href= "  index.html" >  Buy Now </a>
            </div>
      </div>

      </div>
      </body>
      </html>
```

Product:

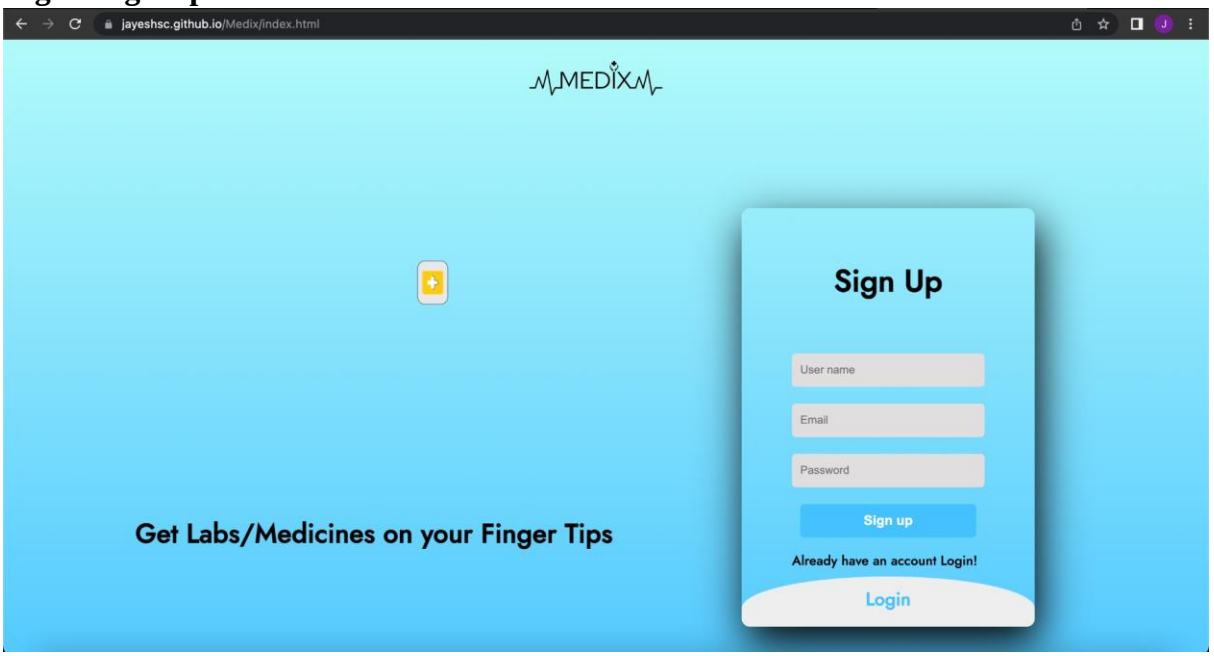
```
<!DOCTYPE  html >
<html  lang = " en"  >
<head>
    <meta  charset=  " UTF-8 ">
   < meta  http-equiv ="  X-UA-Compatible "  content = " IE=edge"  >
```

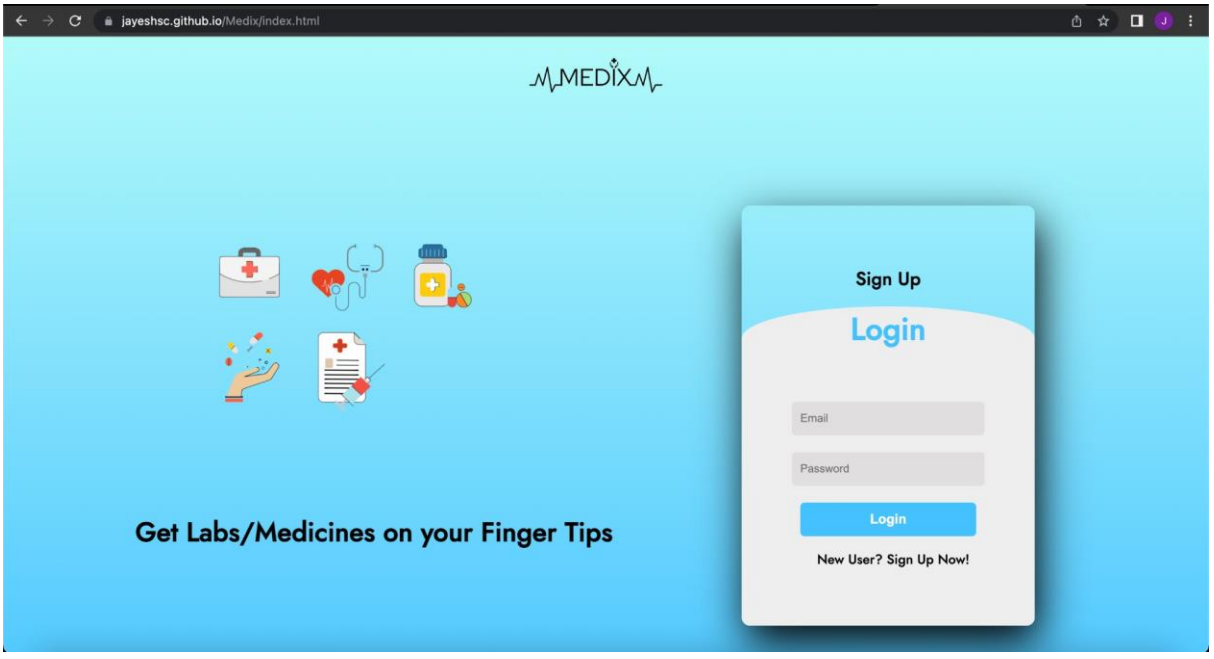
```
    <meta  name=  " viewport "  content ="  width=device-width,
initial-scale=1.0 ">
    <link  rel = " stylesheet "  href ="  product.css " >
    <link  rel=  " shortcut icon "  href = " favicon.ico "  type=  "
   image/x-icon " >

   < title> Medix | Product< /title>
 </head>
 <body>
<  center ><img  src = " medix_black.png"   alt = "
medix_logo "  class = " logo " ></ center>
 <div  class ="  product ">
 <img  src = " dolo650.png "  alt = " product_img"   class= "  prodimg
">
 < center >
    <h1> Dolo 650 </h1>
    <h2> Price : Rs 100 </h2>
    <h3> About Product </h3>
 <p>
    Dolo 650 is a brand name, and it has 650 MG of paracetamol is also
called Acetaminophen. It comes under non-steroidal anti-inflammatory
drugs (NSAIDs) drug class. Paracetamol has antipyretic and analgesic,
which helps in decreasing fever and pain, and it has a minimal  anti-
inflammatory action.
 </p>
 <button  onclick = " location.  href=  'thank.html'">  Check Out
</button>
 </ center >
 </div>
 </div>
 </body>
 </html>
```

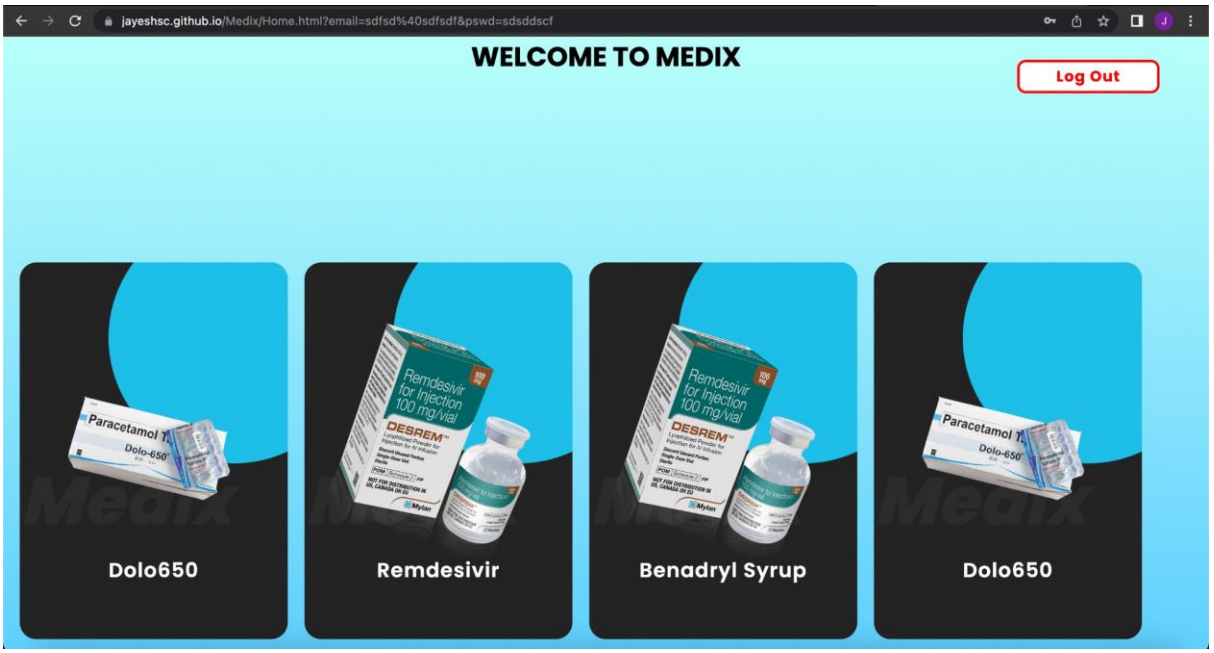
Implementation Screenshots

Log In/Sign Up

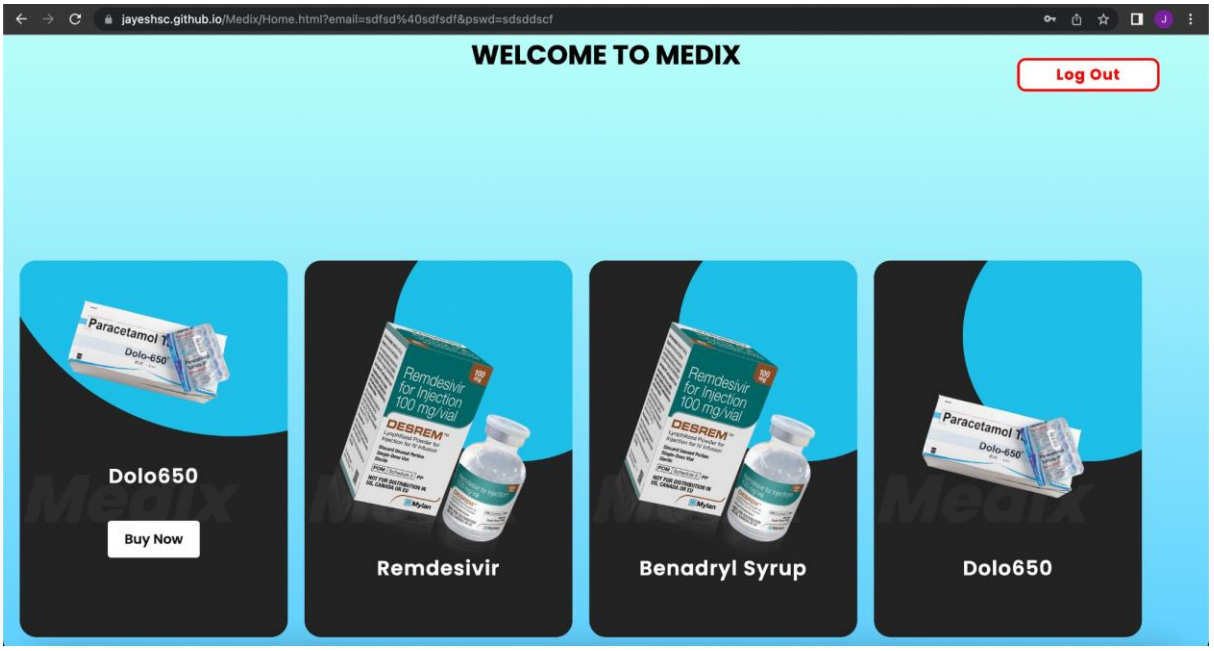




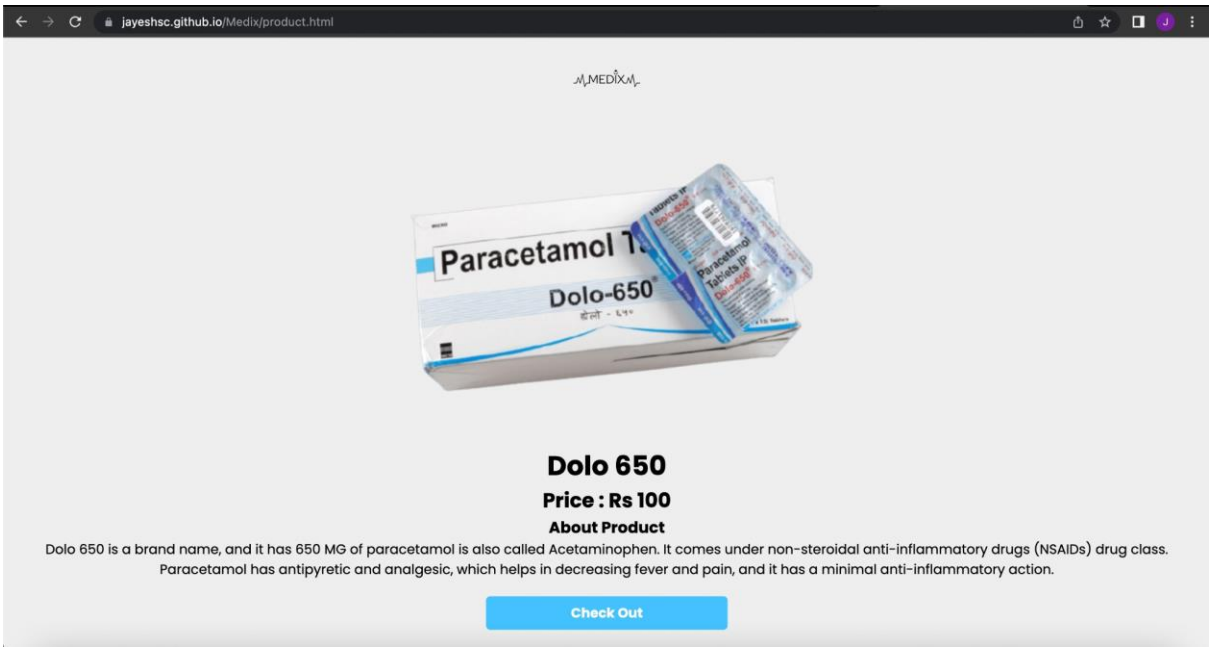
Home


jayeshsc.github.io/Medix/Home.html?email=sdfsd%40sdfsdf&pswd=sdsddscf
WELCOME TO MEDIX
Log Out
Dolo650
Remdesivir
Benadryl Syrup
Dolo650

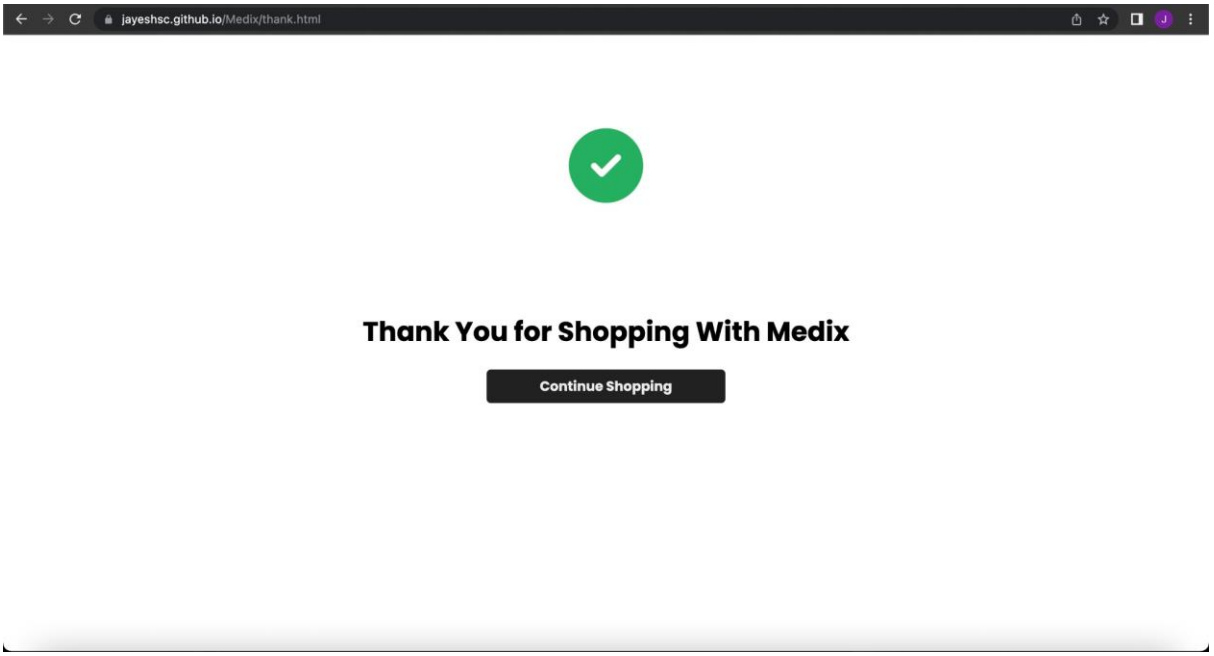
Buy Now


jayeshsc.github.io/Medix/Home.html?email=sdfsd%40sdfsdf&pswd=sdsddscf
WELCOME TO MEDIX
Log Out
Dolo650
Buy Now
Remdesivir
Benadryl Syrup
Dolo650

Product



Product Purchased



Result: Thus, the details of architectural design/framework/implementation along with the screenshots were provided.

Conclusion

We are pleased to learn how to implement and document a software. Throughout the course we learnt about what diagrams and what are the things need to be done process by process to implement a software. Our documentation can give a layman basic idea on how the software development process follows

Reference

1. https://www.wrike.com/project-management-guide/faq/what-is-software-project-management/
2. https://www.cprime.com/resources/what-is-agile-what-is-scrum/
3. https://www.gantt.com/
4. https://www.workbreakdownstructure.com/
5. https://www.tutorialspoint.com/software_testing_dictionary/test_case.htm