UCS503- Software Engineering Lab

MeraQi

UCS503 Software Engineering Project Report

Mid-Semester Evaluation

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BE Third Year, CoE

Group No:

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Associate Professor CSED

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(Deemed to be University)

Computer Science and Engineering Department

TIET, Patiala

September 2022

UCS503- Software Engineering Lab

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1.1 Software Bid

Software Engineering Project Proposal

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Group : 3CO17 **Dated: 01-08-2022**

S. No.	Member Name	Roll Number	Proficiency
1.	Aneesh Agrawal	102003434	C++, HTML, CSS and JS
2.	Bandhan Sher Singh	102003440	C++, HTML, CSS and JS
3.	Himanshu Raj	102053044	C++, HTML, CSS, Python
4.	Priyanshi	102003437	C++, HTML, CSS and JS
5.	Shashwat Krishna Shukla	102003429	Java, C++, XML,Firebase,Android Studio,C

Programming Language / Environment Experience

1. Java

2. C++

3. Firebase

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4. XML

5. Android Studio

Choices of Projects:

These are the 2 projects on which we'd like to work on :

First Choice	MeraQi Mobile App - HR Workflow Management App to ease repetitive tasks for HR employees
Second Choice	Credit Card Management App - App to manage multiple credit cards with different quality of life features for the users.

2.1 Project Write Up

PROJECT NAME - meraQi (HR Workflow Management(Mobile Application))

MOTIVATION-

The main goal of the HR team in companies is to drive employee success, however, it also involves some repetitive and mundane responsibilities such as creating different kinds of letters, onboarding, off boarding forms etc. We are looking for a platform to enhance the efficiency of the HR department by freeing employees from tedious manual tasks, and allowing them to focus on complex tasks like decision making and strategizing. By automating standard and repetitive HR activities, organisations can reduce the cost and time they spend on manual HR planning and processing. This includes automation of the creation of different types of letters, certificates, badges etc, which can be completed in a few clicks.

APPLICATION -

- Software will categorise the complaints of employees so the HR team can save time and choose more pressing issues.

  (complaints - leave, abuse, appraisal etc.)

- Software will register the complaints requiring physical presence of a representative and will appoint the representative on the site whose schedule is free.

- It will store the personal information of the candidate and will use it for future references in case of any complaints, medical emergencies, leave applications etc.
- Software will have a fingerprint sensor detection algorithm which will track employees and workers in and out time from the office(Future Implementation).
- Our design is modifiable to an extent where we change the code to improve the functionality of our system. Long term plans will include improvements in the primitive algorithms used in the code so as to increase efficiency.

FUNCTIONAL REQUIREMENTS -

Login for HR and Employee - The app should have a Login page where predefined user id and password will be extracted from the database and matched for correct authentication.

Employee Information- There should be an Employee Dashboard in the app to help get information about the list of employees.

Raise Complaint/Requests - The app should contain a panel where all the complaints/requests can be searched according to category, name, email, etc.

Leave Approval- (Assumptions- The email id of the employee asking for leave is present in the database, Constraints- the employee should be registered in the organisation.)

Personal Data Retrieval- The app should be able to retrieve personal data about the employees.

NON-FUNCTIONAL REQUIREMENTS -

Performance - The system must be interactive and the updates must be fast. So, in every action-response of the system, there are no immediate delays. In case of adding or changing tasks, classes or exams the changes made must appear seamless and immediate. Also connecting to user accounts shouldn't take more than 2 seconds.

Scalability - The app should be able to adapt itself to increased usage or be able to handle more data as time progresses. When the user data increases the app should be capable of handling them without delay by optimising the way storage is done and accessed.

Responsiveness - The application should be responsive to the user input or to any external interrupt which is of highest priority and return back to the same state.

Usability - Users should be able to understand the flow of the app easily, that is users should be able to use the app without any guideline or help from manuals.

Security - The application should be reliable to perform the business, i.e. when the user performs some action it should be acknowledged with confirmation.

2.2 Feasibility Report

FEASIBILITY REPORT

1. Technical Feasibility: The project is a Mobile App created with HTML, CSS, ReactJS, SQL, and Python. The App development software is already in existence. The front end of the website is made to look user-friendly by utilising HTML and CSS.

2. Economic Feasibility: The project's development has no associated costs. The project is free to use because it is meant to assist people. With the use of adverts, the project can make money from the App. It is a self-sustaining endeavour because India has an abundance of Corporate institutions.

3. Schedule Feasibility: Given that the team regularly works on it, the project can be completed on schedule. On the team, there are people working on the App's front end, back end, and database management, respectively.

4. Operational Feasibility: The App is being created to assist every corporation in getting their everyday HR workflow done easily and effectively. The portal will be easy to use and can be used by anyone who knows how to use the internet and has basic computer knowledge.

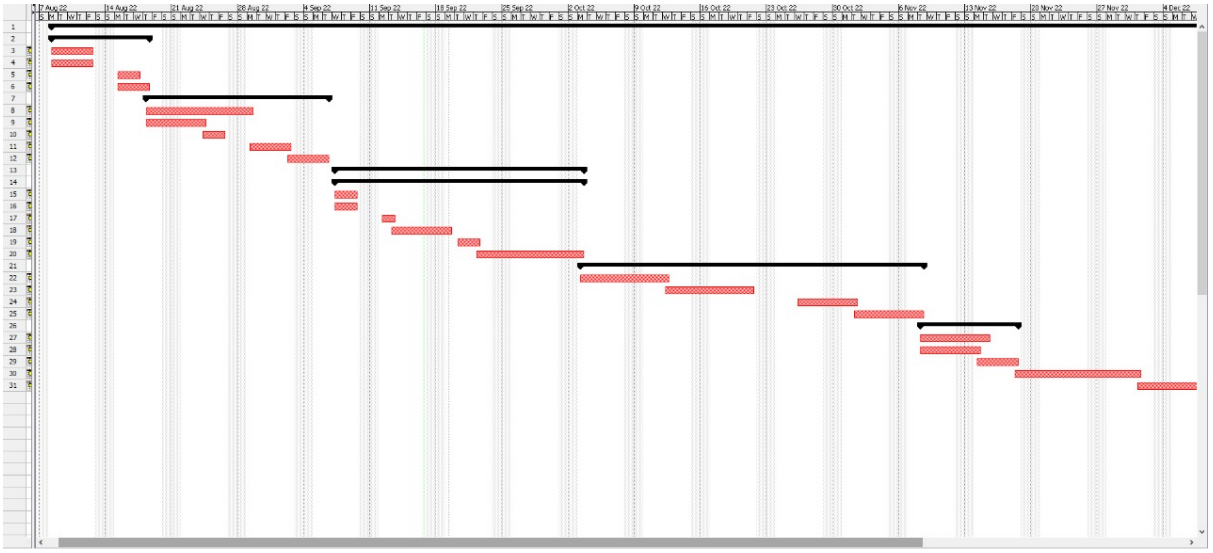
5. Cultural Behaviour: The App is easy to use because everything is clearly categorised. It is simple for employees to choose their requirements and provide feedback. The requirement is easily accessible to the HR. The solutions are pre-categorised for the HR to resolve repeating requirements and complaints without any hassle.

6. Legal Feasibility: With a copyright, the project can be sold to various institutions, corporations etc. while still retaining ownership of the app with its creators. Due to the usage of solely licensed software in creating

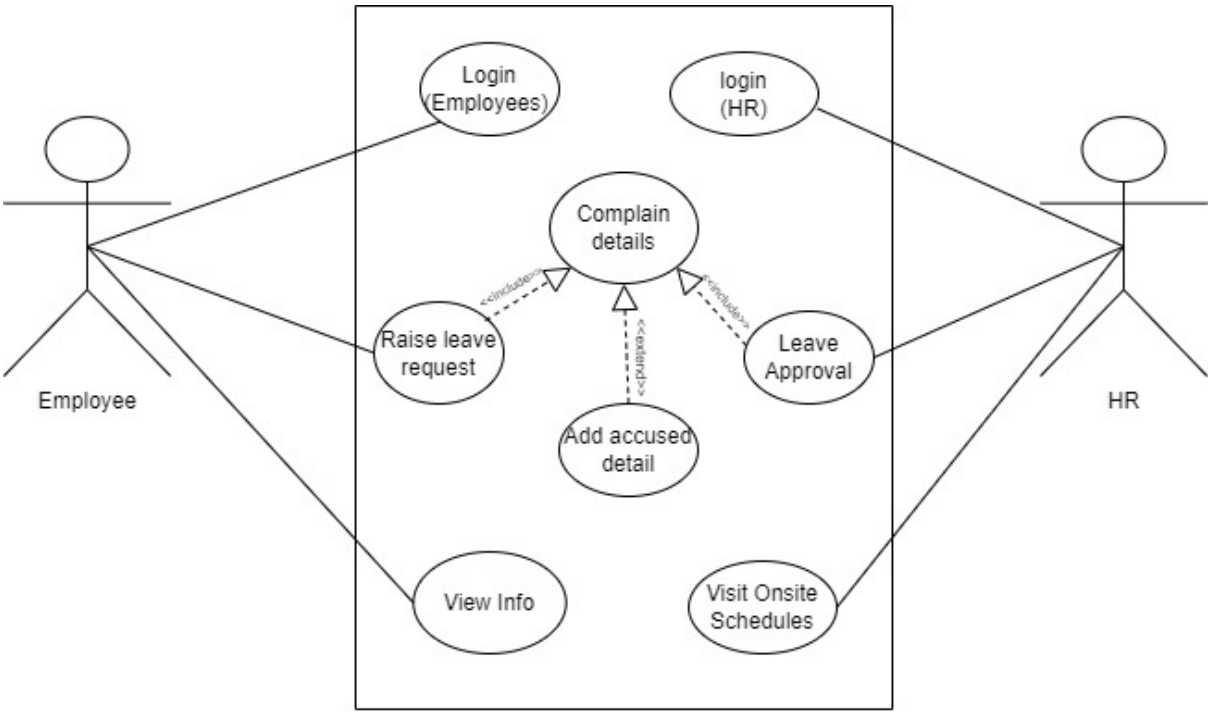
the app, it won't encounter any legal problems. The app won't request any permissions and will only store user data.

2.3 Gantt Chart

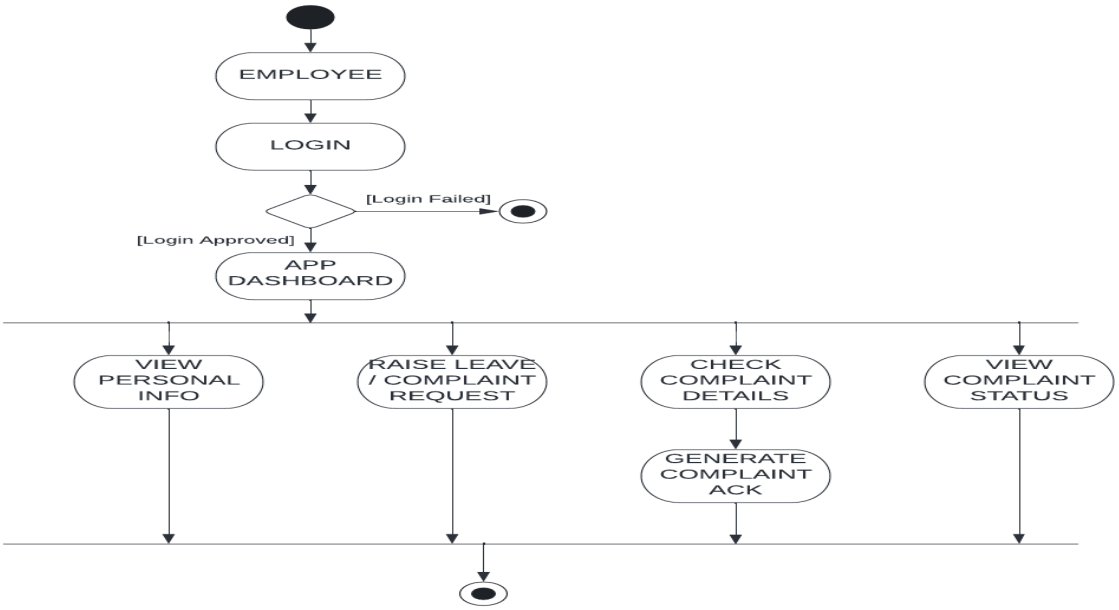
		Name	Duration	Start	Finish
1		**MeraQi**	93 days?	**8/8/22 8:00 AM**	**12/14/22 5:00 PM**
2		**Planning**	9 days	**8/8/22 8:00 AM**	**8/18/22 5:00 PM**
3		Scheduling Feasibility	5 days	8/8/22 8:00 AM	8/12/22 5:00 PM
4		Cost Feasibility	5 days	8/8/22 8:00 AM	8/12/22 5:00 PM
5		Operational Feasibility	3 days	8/13/22 8:00 AM	8/17/22 5:00 PM
6		Technical Feasibility	4 days	8/13/22 8:00 AM	8/18/22 5:00 PM
7		**Requirement Analysis**	14 days	**8/18/22 8:00 AM**	**9/6/22 5:00 PM**
8		Software Requirements Specification	8 days	8/18/22 8:00 AM	8/29/22 5:00 PM
9		Functional Requirements	5 days	8/18/22 8:00 AM	8/24/22 5:00 PM
10		Non Functional Requirements	3 days	8/24/22 8:00 AM	8/26/22 5:00 PM
11		Define Required Skills And Specifications	5 days	8/29/22 8:00 AM	9/2/22 5:00 PM
12		Gather Requirements	3 days	9/2/22 8:00 AM	9/6/22 5:00 PM
13		**Design Phase**	19 days	**9/7/22 8:00 AM**	**10/3/22 5:00 PM**
14		**Develop GUI**	19 days	**9/7/22 8:00 AM**	**10/3/22 5:00 PM**
15		App Template Design	3 days	9/7/22 8:00 AM	9/9/22 5:00 PM
16		Create Design Specifications	3 days	9/7/22 8:00 AM	9/9/22 5:00 PM
17		Decide Prelimnary UI Interface	2 days	9/10/22 8:00 AM	9/13/22 5:00 PM
18		Generate Scenario Based Testing	5 days	9/13/22 8:00 AM	9/19/22 5:00 PM
19		Draw UML Diagrams	3 days	9/20/22 8:00 AM	9/22/22 5:00 PM
20		Create ER Diagrams for Database	8 days	9/22/22 8:00 AM	10/3/22 5:00 PM
21		**Development Phase**	27 days	**10/3/22 8:00 AM**	**11/8/22 5:00 PM**
22		Front-End Development	8 days	10/3/22 8:00 AM	10/12/22 5:00 PM
23		Develop Screen Layouts	8 days	10/12/22 8:00 AM	10/21/22 5:00 PM
24		Landing Screen Designing	5 days	10/26/22 8:00 AM	11/1/22 5:00 PM
25		Page Styling	6 days	11/1/22 8:00 AM	11/8/22 5:00 PM
26		**Back-End Development**	9 days	**11/8/22 8:00 AM**	**11/18/22 5:00 PM**
27		Design Database	6 days	11/8/22 8:00 AM	11/15/22 5:00 PM
28		Create Models And Views	5 days	11/8/22 8:00 AM	11/14/22 5:00 PM
29		Data Bindings	5 days	11/14/22 8:00 AM	11/18/22 5:00 PM
30		Testing And Debugging	10 days?	11/18/22 8:00 AM	12/1/22 5:00 PM
31		Deployment	10 days?	12/1/22 8:00 AM	12/14/22 5:00 PM

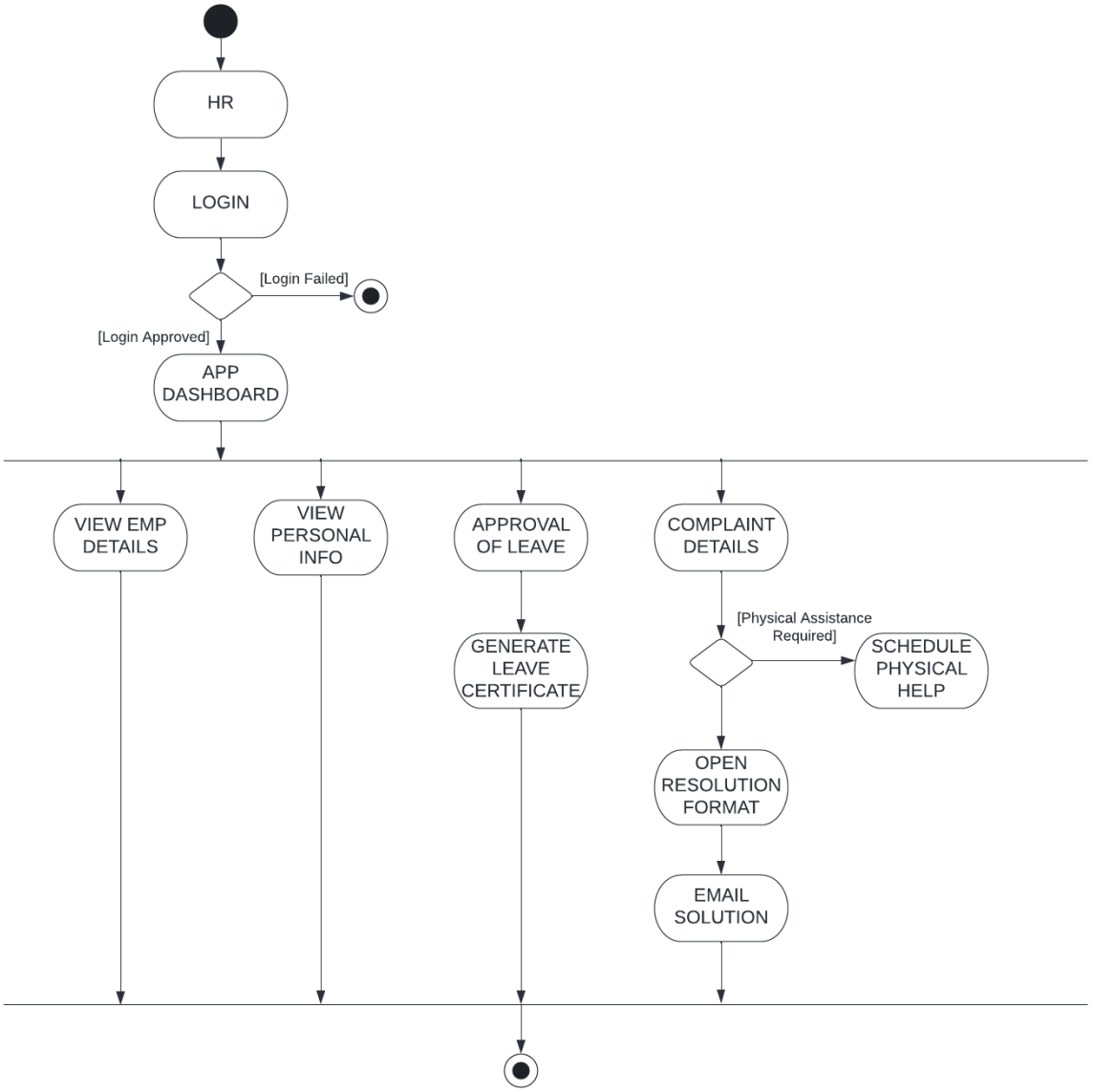


3.1 Use Case Diagram



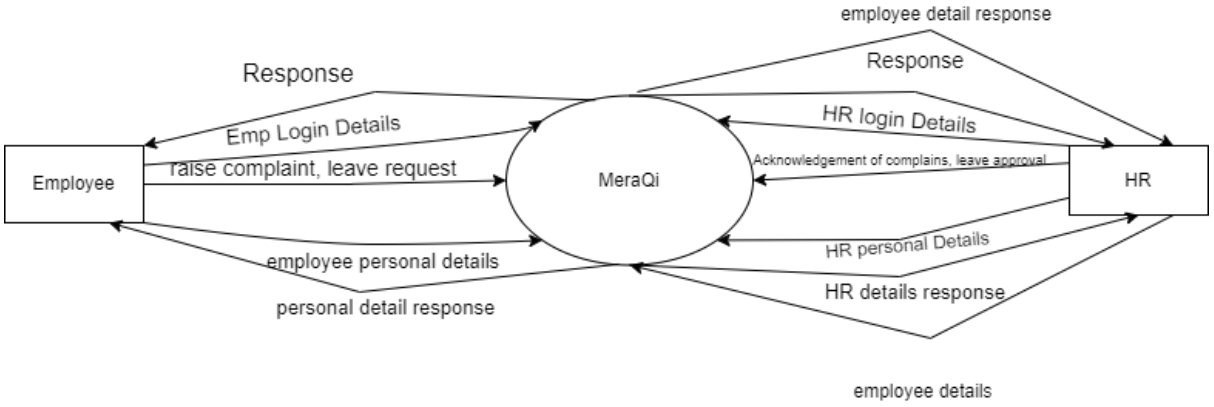
3.3 Swimlane Diagram


EMPLOYEE
LOGIN
[Login Failed]
[Login Approved]
APP DASHBOARD
VIEW PERSONAL INFO
RAISE LEAVE / COMPLAINT REQUEST
CHECK COMPLAINT DETAILS
GENERATE COMPLAINT ACK
VIEW COMPLAINT STATUS

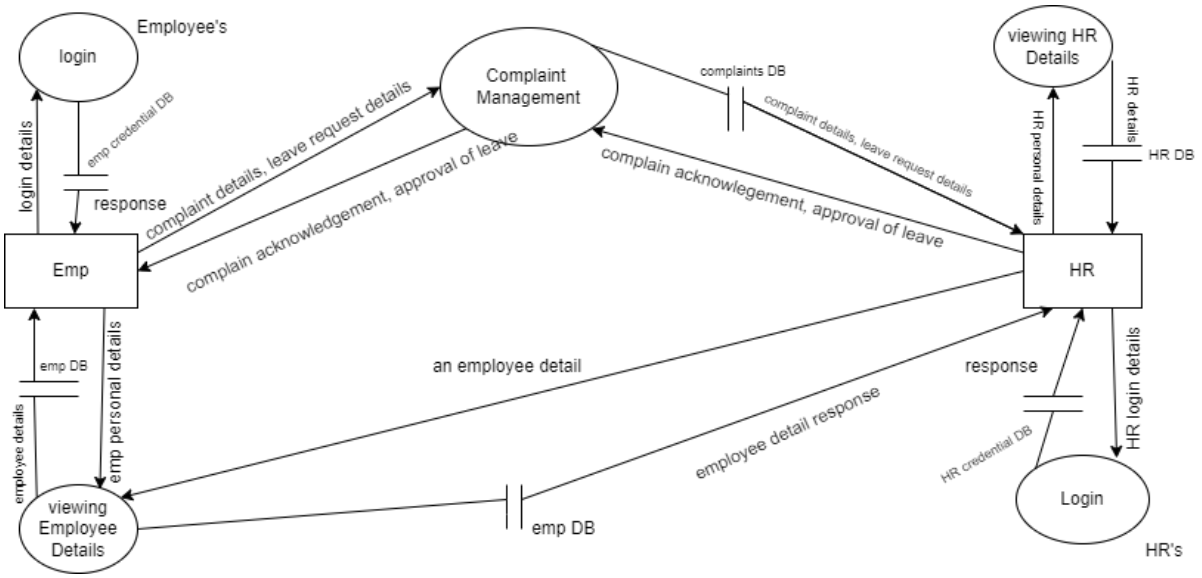

HR
LOGIN
[Login Failed]
[Login Approved]
APP DASHBOARD
VIEW EMP DETAILS
VIEW PERSONAL INFO
APPROVAL OF LEAVE
COMPLAINT DETAILS
GENERATE LEAVE CERTIFICATE
[Physical Assistance Required]
SCHEDULE PHYSICAL HELP
OPEN RESOLUTION FORMAT
EMAIL SOLUTION

3.4 Data Flow Diagrams

Level 0



Level 1



3.5 Software Requirements Specification

Software Requirements Specification Document

MeraQi(HR Workflow Management System)

Table of Contents

1. INTRODUCTION

1.1. Purpose

The purpose of this SRS document is to provide details regarding the software product that we have developed. The document aims to inform the reader's about the objective, design, construction and future scope of the product. Moreover, it contains details about the target audience, user modes available and hardware and software requirements of the product.

1.2. Project Scope

We are looking for a platform to enhance the efficiency of the HR department by freeing employees from tedious manual tasks, and allowing them to focus on complex tasks like decision making and strategizing. By automating standard and repetitive HR activities, organisations can reduce the cost and time they spend on manual HR planning and processing. This includes automation of the creation of different types of letters, certificates, badges etc, which can be completed in a few clicks.

The system must be able to perform the following functions:

Login for HR and Employee - The app should have a Login page where predefined user id and password will be extracted from the database and matched for correct authentication.

Employee Information- There should be an Employee Dashboard in the app to help get information about the list of employees.

Raise Complaint/Requests - The app should contain a panel where all the complaints/requests can be searched according to category, name, email, etc.

Leave Approval- (Assumptions- The email id of the employee asking for leave is present in the database, Constraints- the employee should be registered in the organisation.)

Personal Data Retrieval- The app should be able to retrieve personal data about the employees.

1.3 Intended Audience and Reading Suggestions

This document is intended for, such as developers who follow the guidelines according to use case diagrams and develop the modules. Project managers use this SRS for checking project milestones and deadlines. Users use SRS to verify the functional requirements and approve the project according to mentioned criteria. Testers use SRS for testing purpose such as alpha testing, integration testing, etc. The project is also used by company employees. So, these are the audience for the SRS and in this document product scope, purpose, project description and all the references are mentioned which is useful for all the audience. Sequence of reading the document beginning with purpose and product scope then references from where we take some knowledge then overall description of project then interface requirements then system features and non-functional requirements.

1.4 Definitions

ER Diagram	An entity–relationship model describes interrelated things of interest in a specific domain of knowledge. A basic ER model is composed of entity types and specifies relationships that can exist between entities.
Firebase	It is a platform developed by Google for creating mobile and web applications. It even acts as an online database for the web/app implementation.
Java	For development of the backend and frontend of the application both for the HR as well as the employee interface.
XML	(eXtensible Markup Language) Used for designing the front end of the application.
Usecase	A use case is a list of actions or event steps typically defining the interactions between a role (known in the Unified Modeling Language (UML) as an actor)
Android Studio	Android Studio provides the fastest tools for building apps on every type of Android device.
Data Flow Diagram	It represents a flow of data through a process or a system. The DFD also provides information about the outputs

	and inputs of each entity and the process itself

1.5. Overview

There main sections of this document provides a general description, including characteristics of the users of this project, the product's hardware, and the functional and data requirements of the product. General description of the project is discussed in section 2 of this document. Section 2 gives the functional requirements, data requirements and constraints and assumptions made while designing the multi-utility system. It also gives the user a viewpoint of the product’s use. Section3 gives the specific requirements of the product. Section3 also discusses the external interface requirements and gives detailed description of functional requirements.

4. Change History

Version 1.0 – Initial Release

5. Document Approvers

SRS for CSC based Multi-Utility System (including Access Control and Attendance Monitoring) approved by:

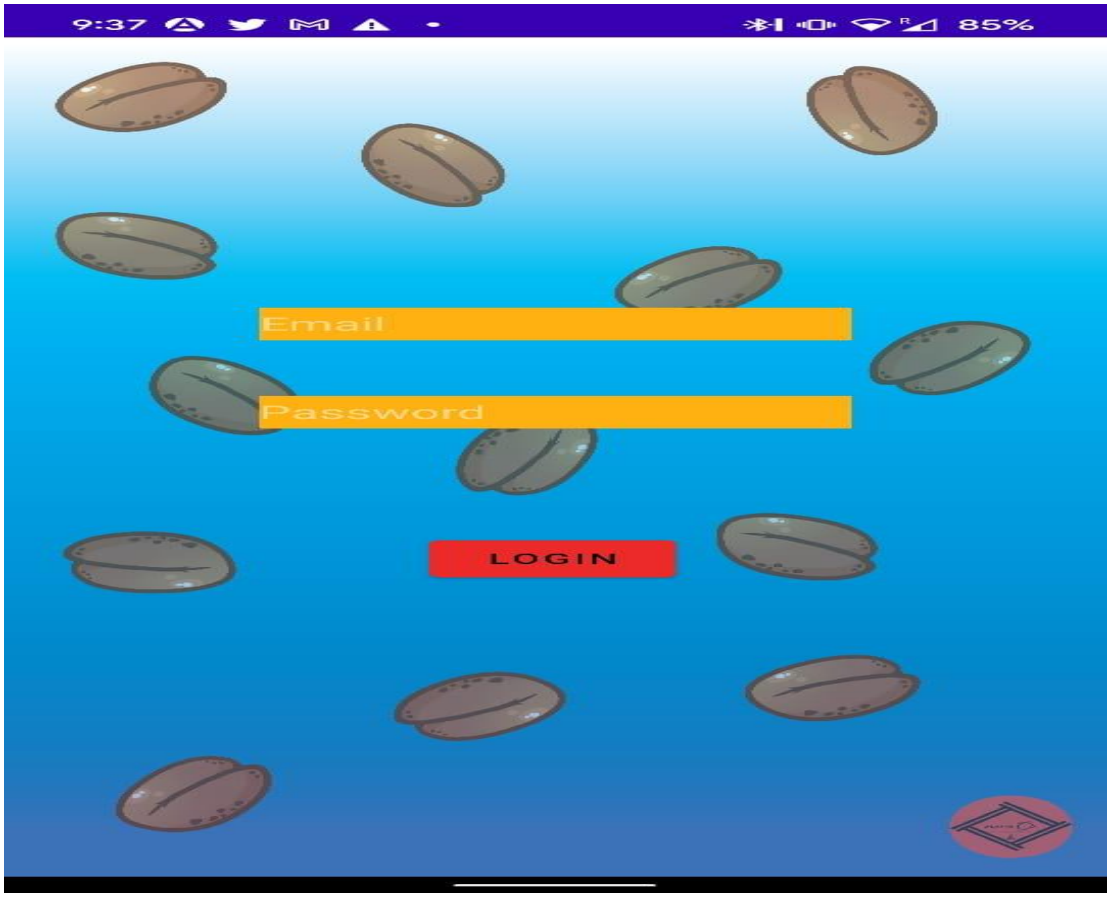
(name) Designation Date:

2.5 USER STORY CARDs

User Story Card 1

#0001 USER LOGIN

As a [HR/Employee], I want to [login], so I can [access my dashboard]



Confirmation

Success: valid user logged in and redirected to dashboard

a) Complaints displayed

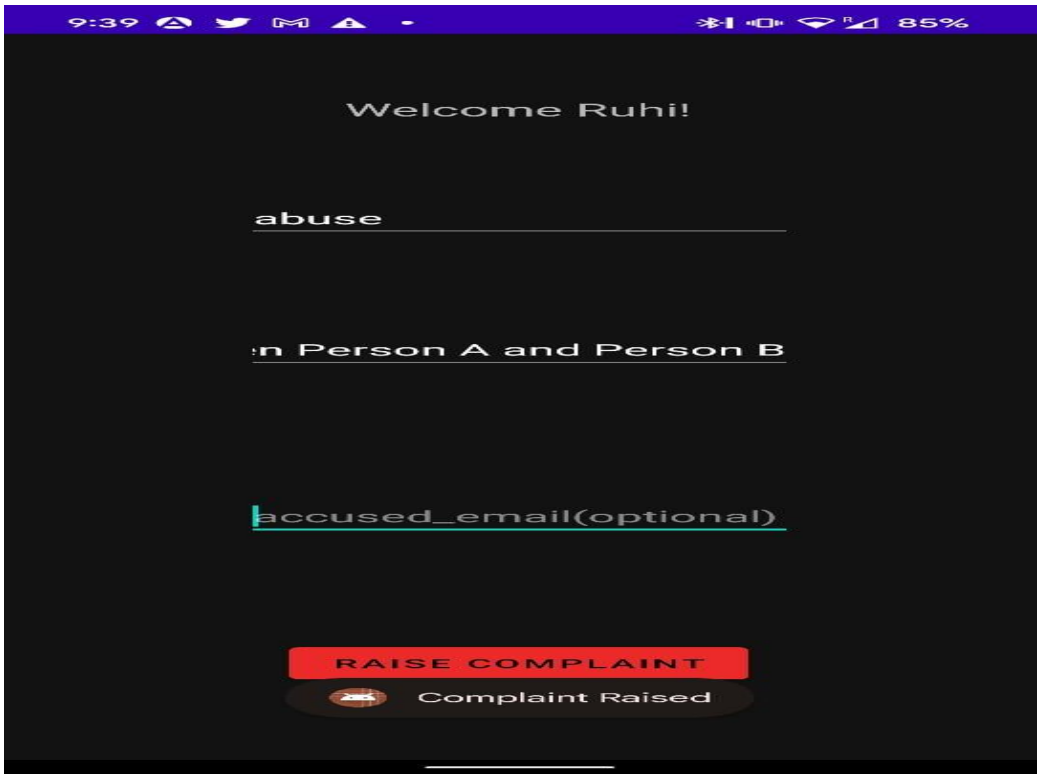
Failure: Display message

a) Invalid email or password

User Story Card 2

#0002 RAISE COMPLAIN

As a [EMPLOYEE], I want to [view dashboard], so I can [raise complains]



Confirmation

Success: if category and description valid

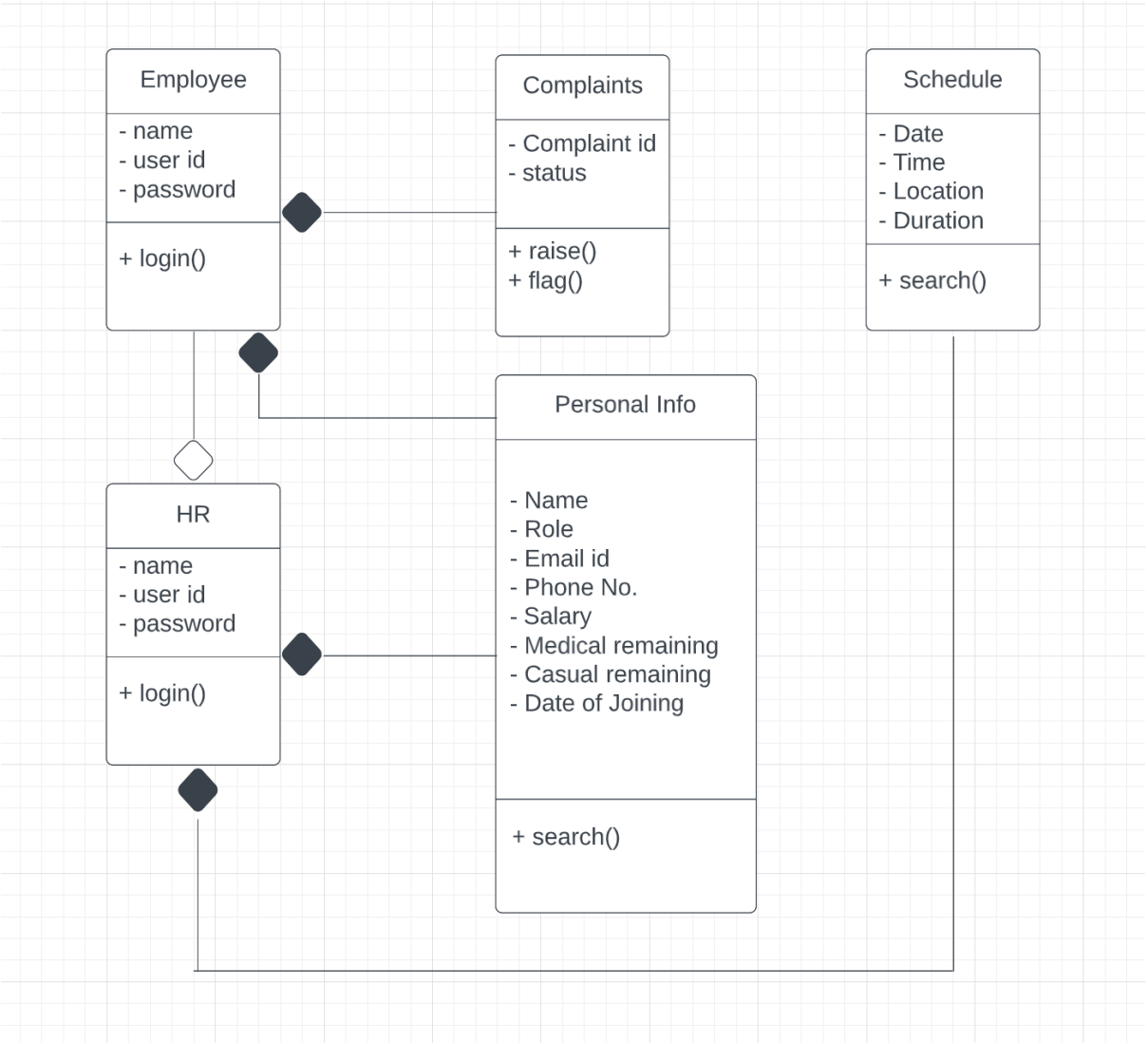
a) Successfully raise complaint

Failure: display message

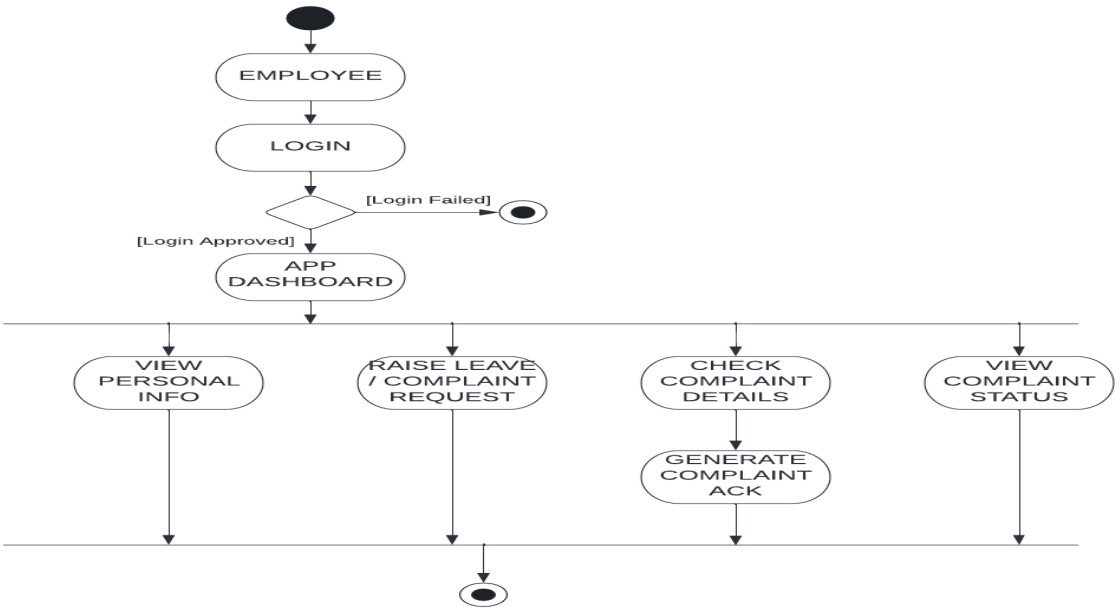
a) Invalid category or description

3.DESIGN PHASE

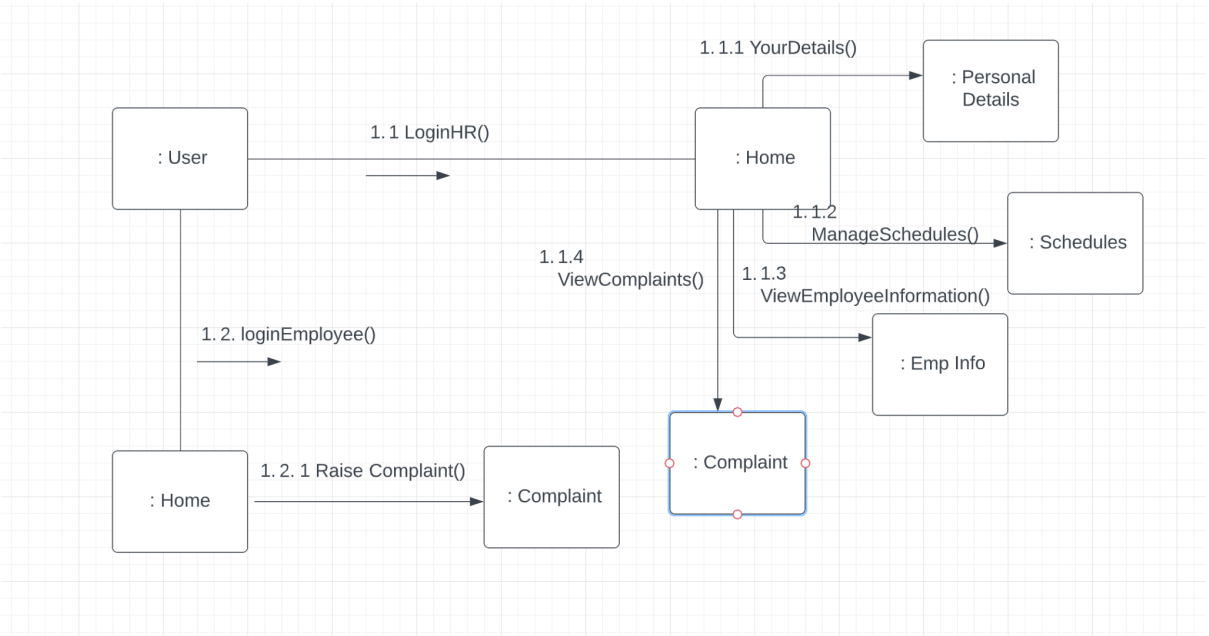
3.1 Class Diagram and Object Diagram



3.2 Sequence Diagram

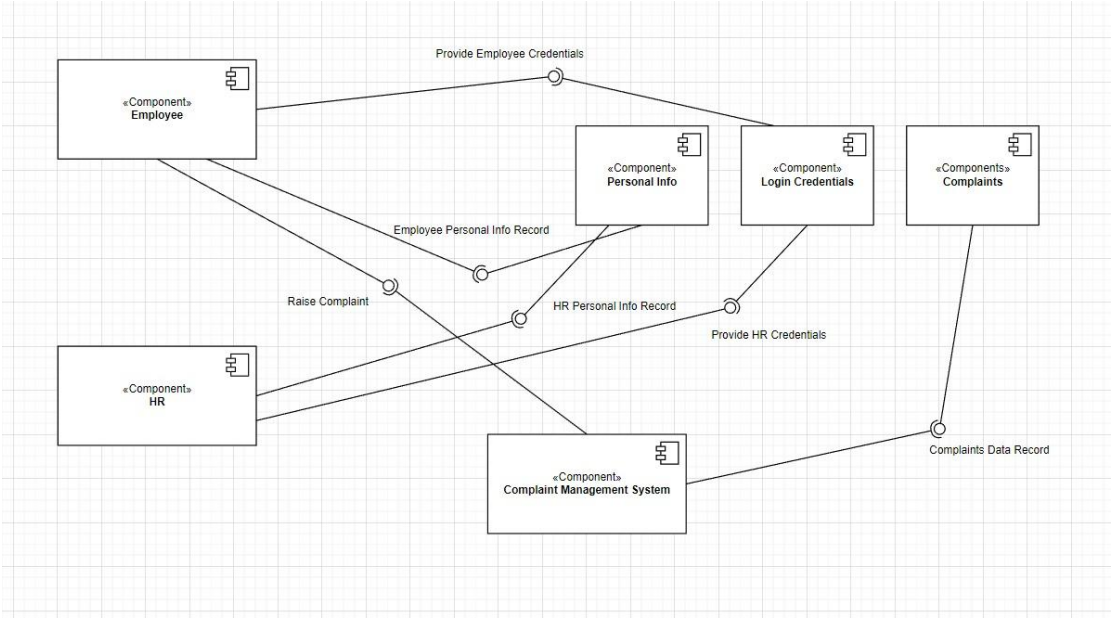


3.3 Collaboration Diagram

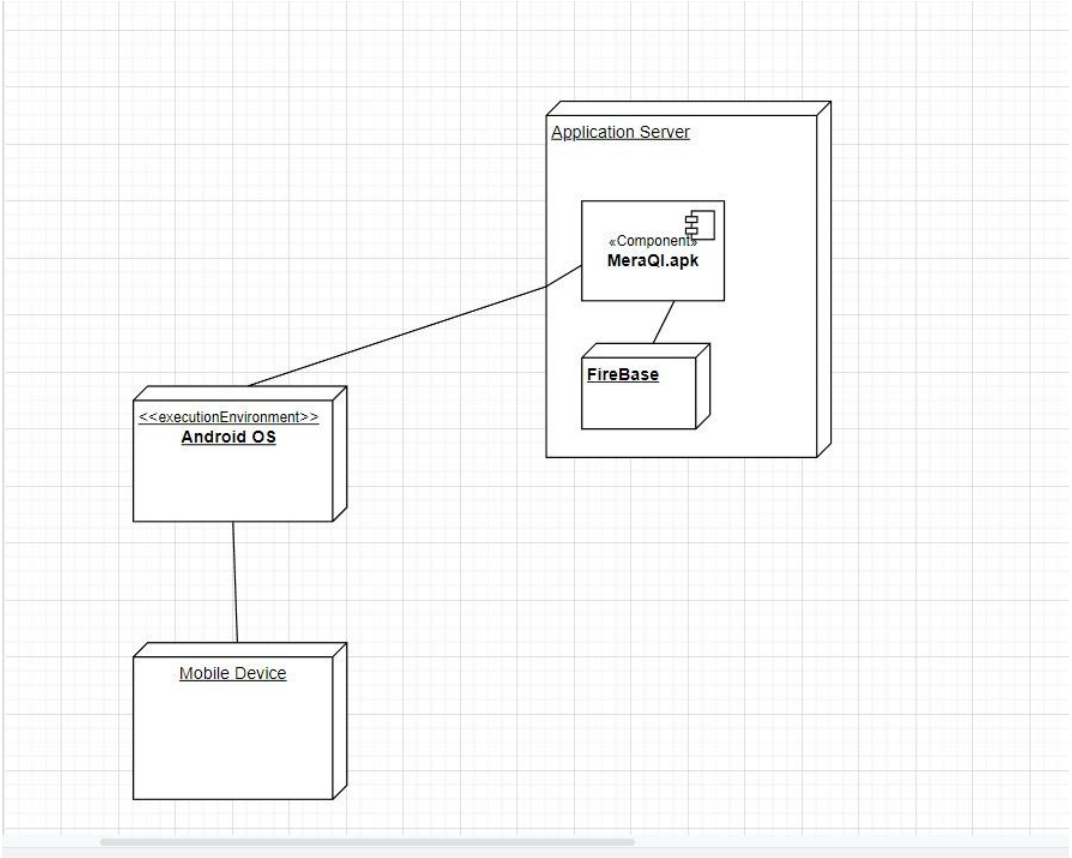


4. Implementation

4.1 Component Diagrams



4.2 Deployment Diagrams



4.3 Screenshots of Working Project

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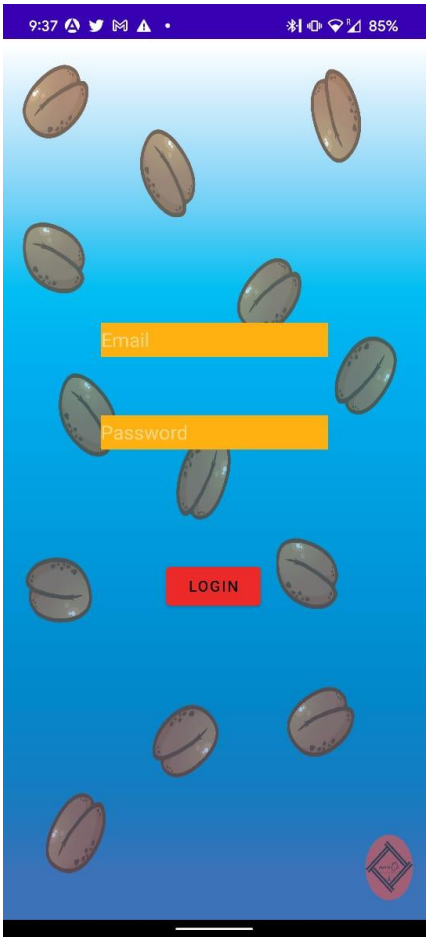
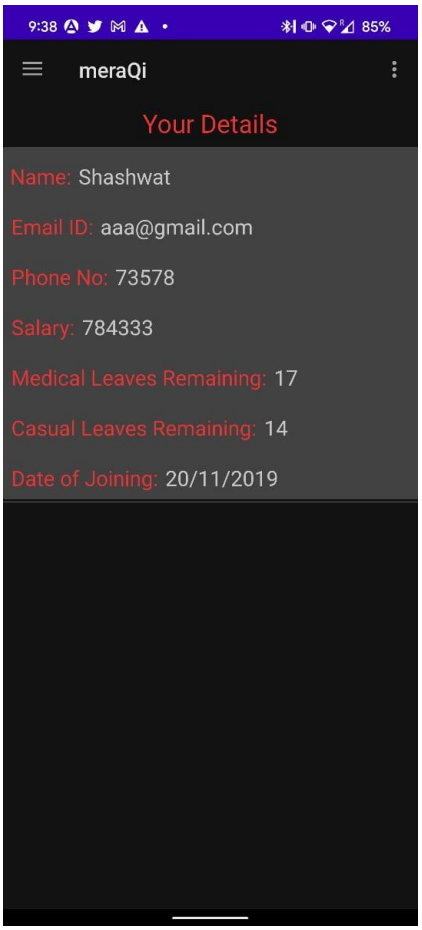
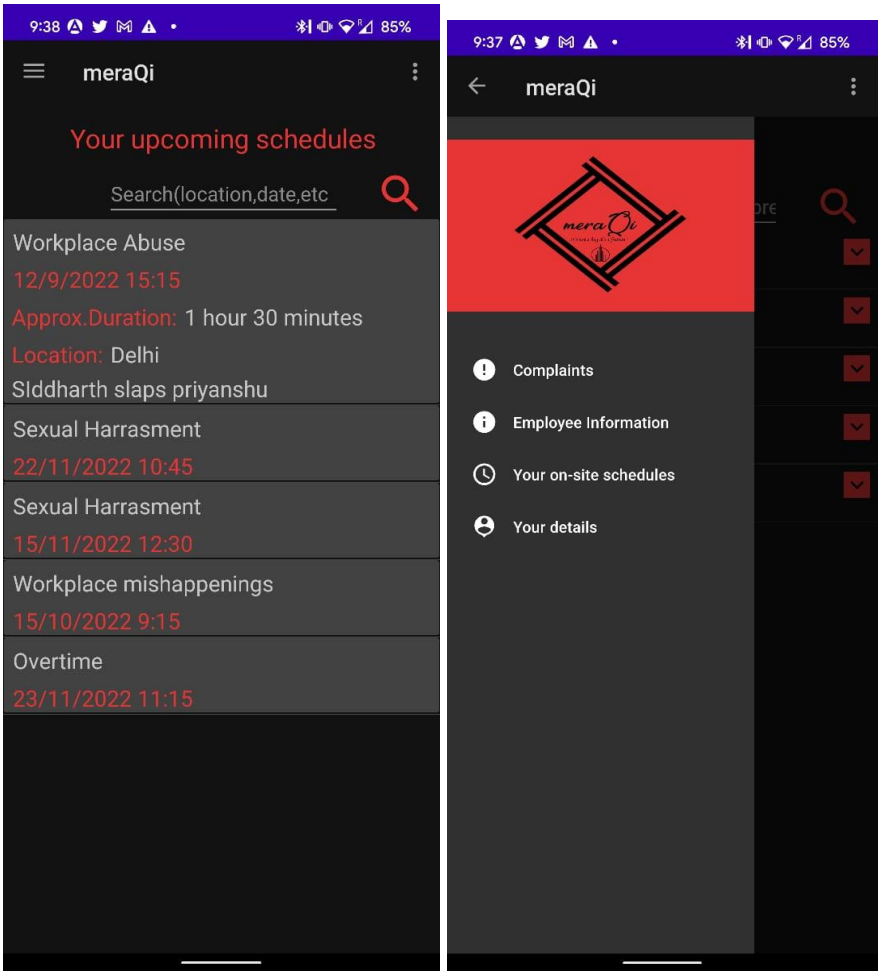
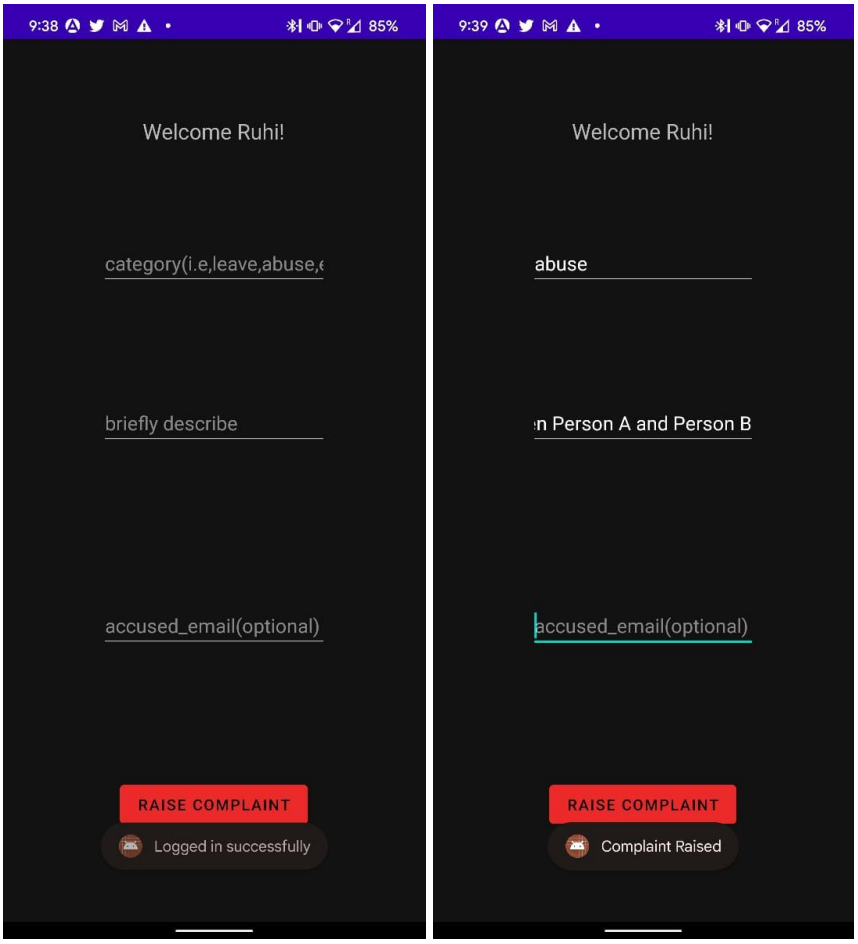





9:38
85%
meraQi
Your upcoming schedules
Search(location,date,etc
Workplace Abuse
12/9/2022 15:15
Approx.Duration: 1 hour 30 minutes
Location: Delhi
SIddharth slaps priyanshu
Sexual Harrasment
22/11/2022 10:45
Sexual Harrasment
15/11/2022 12:30
Workplace mishappenings
15/10/2022 9:15
Overtime
23/11/2022 11:15
9:37
85%
meraQi
Complaints
Employee Information
Your on-site schedules
Your details



Test Case and Template

Test Case Example1 (simple test)

Step	**Action**	**Expected System Response**	**Pass/ Fail**	**Comment**
1	**Login**	Login according to the id of HR or Employee opening the respective interface	pass	
2	**Raise Complaint**	Push a complaint to the database table, Complaints (only accessible to Employee)	pass	
3	**View Complaint**	See the raised complaints by employees (only accessible to HR)	pass	

4	**Personal Information**	HR can see their own personal information registered in the company	pass	
5	**Employee Information**	HR can view information of employees registered in the company	pass	