ABV-INDIAN INSTITUTE OF INFORMATION TECHNOLOGY AND MANAGEMENT

Software Engineering
Project Report

SEMESTER - IV

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Contents

1.0 Introduction

1.1 Purpose

In this section, we are going to give the definition of the problem, introduction of the purpose and scope of this document, definitions, acronyms and abbreviations, references and overview. In the following sections, we are going to introduce an overall description and features of the project, present the specific requirements, use cases and their detailed description and the constraints under which it must operate.

1.2 Problem Definition

This software requirements document specification provides complete information about the system called WeChat which will be developed by our project team. Recently, millions of people have been using the social network sites on the Internet like WhatsApp, Instagram etc. However, one of the most crucial lacks of these networks is the fact that they do not give users the capability of communicating in an audio-visual manner.

In this project, we propose to develop a video conferencing and chatting software in which people can have audio-visual interaction with many others and even enjoy text messaging. The first aim of the project is to provide people with a framework in which two or more people can make audio-visual conferencing in the same window. Secondly, we aim to develop a chatting feature in which multiple users can chat in groups or privately among two.

1.3 Intended Audience and Reading Suggestions

The document is intended for all stakeholders, customers and the developers. The reader is assumed to have a basic knowledge of video calling and chatting services.

1.4 Scope Our project

Our project will assist people's needs to make video conferencing with multiple people and also send text messages in the same platform. The users can be either clients or hosts in the system. Any user who wants to start a meeting can be the host, and invite people to join. The requirement to join the meeting will be a link or code that users will need to join the meeting. Our project is aimed to handle multiple users at the same time. The system also contains a relational database containing a list of Users and their account information.

1.5 Glossary

User- Anyone who uses this application for its features and their requirements is a user.

Stakeholder- Any person who is not a developer but has some contribution with the system.

Account- A detailed record of a single user which he or she uses to use the features of the application.

Uses- We Chat can be used for video conferencing, video chat, audio chat, text messaging, screen sharing etc.

Admin- The main administrator who has special permissions for managing and controlling the system.

Database- Collection of all the information monitored by this system. Information will contain the user details.

Software Requirements Specification- A document that completely describes all of the functions of a proposed system and the constraints under which it must operate. For example, this document.

1.6 References

IEEE Std 830-1998: IEEE Recommended Practice for Software Requirements Specifications

1.7 Overview

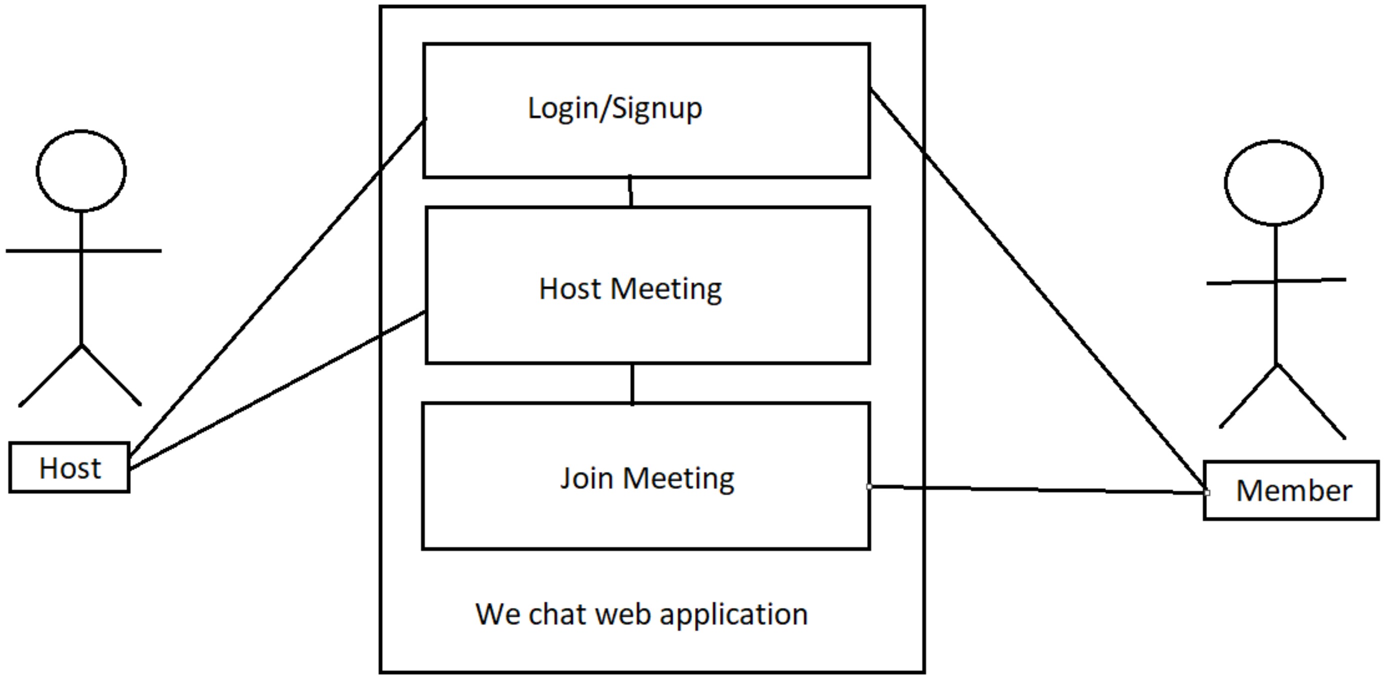
Readers get a clear understanding of the project and project requirements by examining this requirements analysis report. With the help of the sequence, behaviour, and use-case diagrams, the behaviour of the product and the functions of the system are defined clearly to the user.

The other two sections in this report are Overall Description section and Requirement Specification section. The Overall Description section gives an overview of the functionality of the product i.e. what functions the user can perform and how to perform them.

The last section, Requirement Specification section gives the details of the requirements and technical specifications of all the functionalities. This section contains a lot of technical terms and is primarily focussed for the developers.

2.0 Overall Description

2.1 System Environment



System Environment will have three active features:

1. **User** - It shows the user information such as name and email id after login with username and password.
2. **LogIn/Signup** - It is for user authentication, it will need user email and password for authentication.
3.Meetings - in which users can host meetings and others can join meetings with Meeting Id.

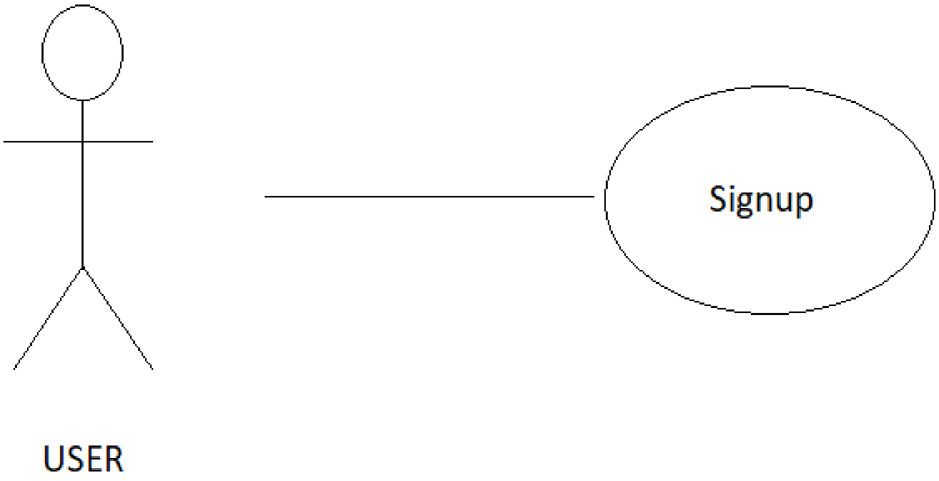
2.2 Functional Requirements Specification

This section outlines the use cases for each of the active users separately. The users, the admin and the host have only one use case apiece while the host is the main actor in this system.

2.2.1 User use case

Use case: Sign Up

Diagram:



Brief Description:

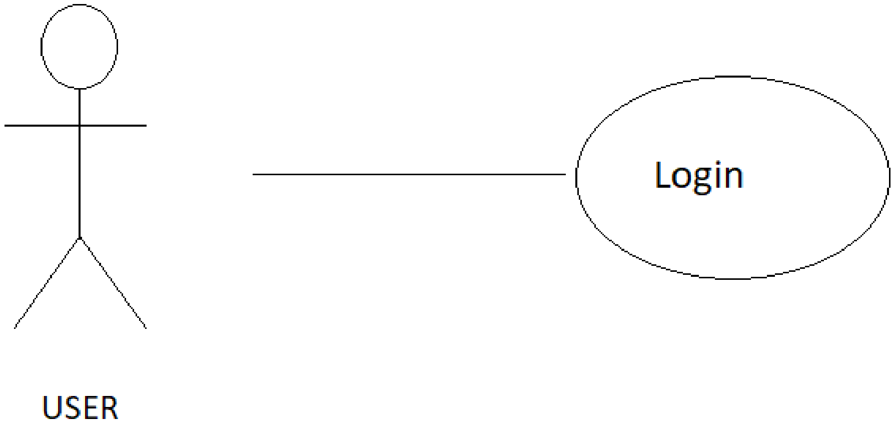
The user should be able to do the registrations easily. The requirements for registration should be mentioned in an understandable way. The user must provide user-name, password and email address. The user can choose to provide a regularly used phone number. In order for a user to register on the application of the same. They can easily register through google aslo with the help of gmail.

Initial Step-by-Step Description

1. The user chooses either google authentication or Sign up.
2. On the Sign up page the user must provide user-name, password and email address.
3. Users have to provide OTP that is provided by the system on users email-id.

Use case: Login

Diagram:



Brief Description:

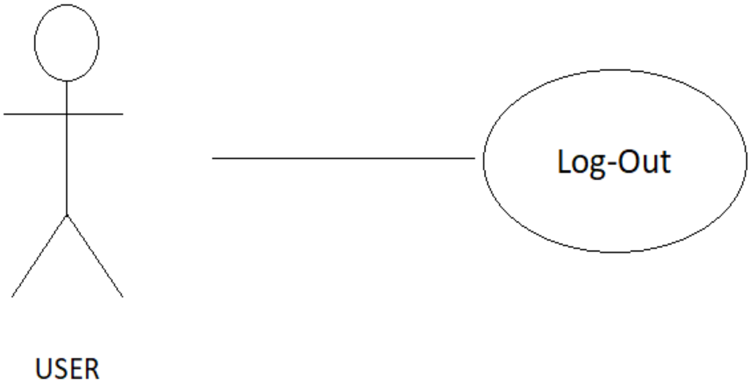
Given that a user has registered from the website, then the user should be able to log in to the application.

Initial Step-by Step Description

1. Once the user is registered, he can log in into his/her account.
2. On the login page, he has to enter his email ID and password.
3. If the details are found correct, the user is redirected to the main dashboard.

Use Case: Logout

Diagram:



Brief Description:

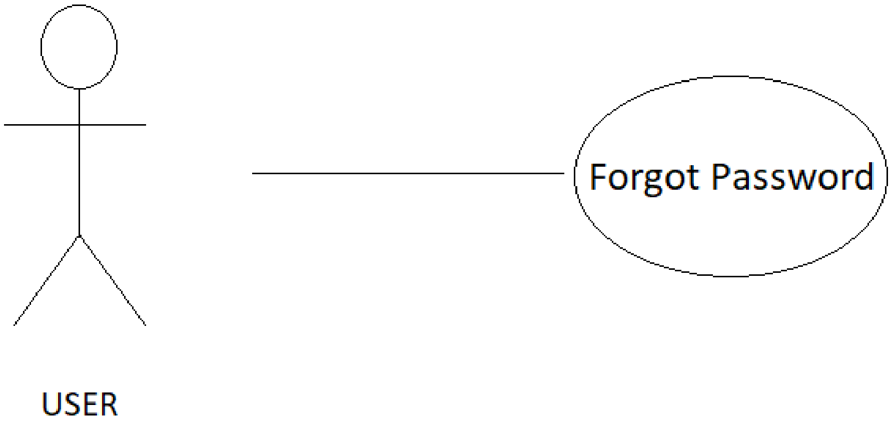
Before this use case users must be logged in. To logout their account users only need to click on the logout button and then users will come back on the home page.out their account users only need to click on the logout button and then users will come back on the home page.

Initial Step-by-Step Description:

1. Users will be provided a logout button at the top-left corner of the system, by clicking on that button users will be redirected to the home page.

Use Case: Forgot Password

Diagram:



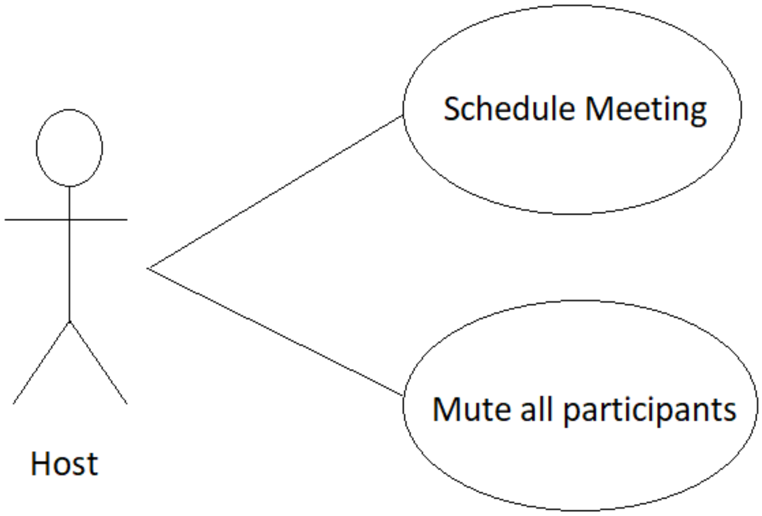
Brief Description:

Given that a user has registered, then the user should be able to retrieve his/ her password by email.

Initial Step-by-Step Description

1. When a user clicks on the Forget Password Button, he will be sent an email to change his/her password.
2. Using that link provided in his/her email user registered with, he can change his password.

2.2.2 Host Use Case



Use Case: Schedule Meeting

Brief Description:
System will provide a schedule button to host through which the host can schedule a meeting at instant and also for future.

Initial Step-by-Step Description

1. Host will choose between two options, meeting at instant or meeting later.
2. Meeting at instant will redirect to a meeting and the system will provide a link to the host to share a meeting link to the other members.
3. For the meeting later , the host has to provide the date and duration of the meeting.
4. In the meeting , only the host can give permission to enter the meeting.

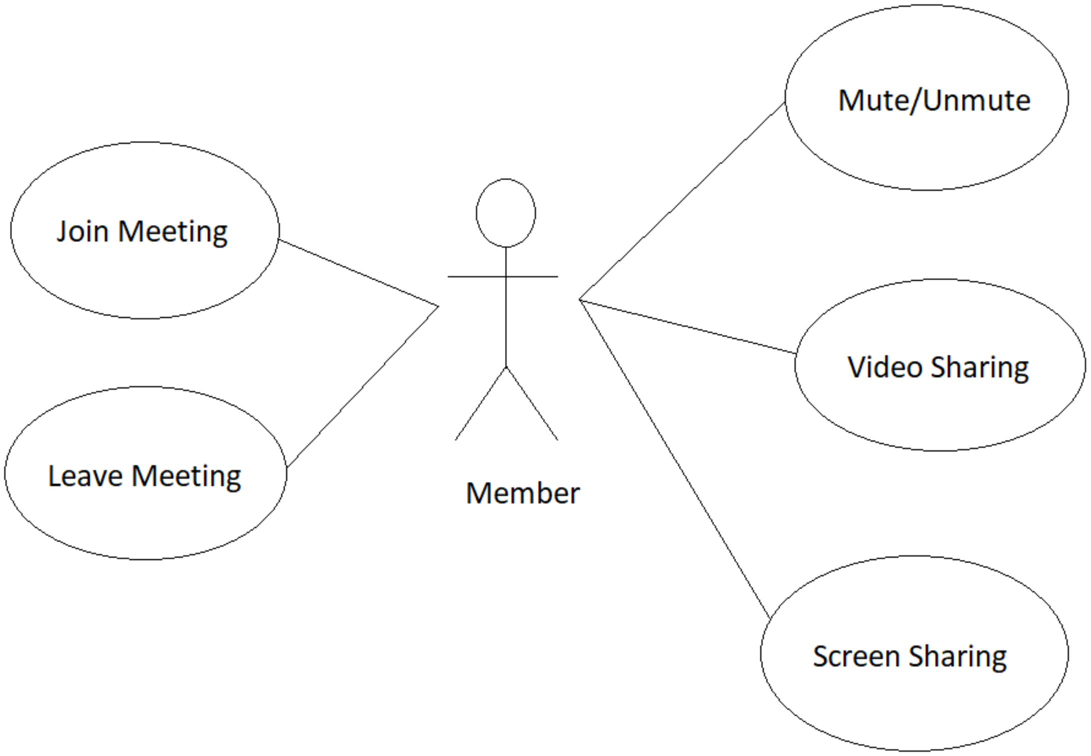
Use Case: Mute all Participants

Brief Description:
The host of a meeting can mute all the participants and allow others to unmute themselves.

Step-By-Step Description

1. If the host wants to mute other participants he can click on this button.
2. Other users except the host of the meeting, can not unmute themselves now.

2.2.3 Members Use Case:



Use Case: Join Meeting

Brief Description:

The users other than the host will have an option to join the meeting using a meeting link.

Step-By-Step Description:

1. The user will be required to enter the meeting link as input and then press the join button.
2. Then he/she becomes a member of the meeting and will enter the meeting.

Use Case: Mute/Unmute

Brief Description:

The member of the meeting has an option to mute or unmute himself/herself.

Step-By-Step Description

1. If the host of the meeting has allowed other users to to unmute them, then the user can unmute.
2. Once the user unmutes himself, his audio will be shared with all other members of the meeting.

Use Case: Video Sharing

Brief Description:

The members have the option to share their video with all other users of the meeting.

Step-By-Step Description

1. The member of a meeting has the option to share a screen with all other members.
2. If the host of the meeting has allowed, the member can turn on his video sharing using this.

Use Case: Screen Sharing

Brief Description:

The member of the meeting has an option to share their screen to the other members. At a time only one member can share their screen with all other users in the meeting.

Step-By-Step Description

1. The members have to select a particular tab to share or whole screen sharing.
2. At the time of sharing his/her screen, they have an option to stop sharing .

Use Case: Leave Meeting

Brief Description: Every member of the meeting will have an option to leave the meeting at any time they want.

Step-By-Step Description

1. The member after pressing the leave meeting button will be redirected to the join/host page.
2. In order to join the meeting again the join meeting procedure is to be followed again.

2.3 User Characteristics

The Reader is expected to be Internet literate and be able to use a search engine.

There are two user types of the system: Host and Client. Which system functionalities that system users can access is classified by these user types.

The users are classified according to this rule:

- ❖ If the user starts a conversation, he/she turns out to become a Host.
- ❖ If the user joins a conversation, he/she turns out to become a Client.

2.4 Design and Implementation Constraints

- Login

Validate user

- Validate user.
- Valid username and password

Validate for Wrong username and password:

- Validate for wrong password.
- If the username is not correct, prompt error message.
- If password is wrong, prompt error message as Invalid username/Password

Validate for Meeting ID

- The ID user provi is checked if it exists
- IF the ID does not match, the user is prompted with an error message.

3.0 Requirements Specification

3.1 External Interface Requirements

This section provides a detailed description of all inputs into and outputs from the system. It also gives a description of the hardware, software and communication interfaces and provides basic prototypes of the user interface.

3.1.1 User Interfaces

A first-time user of the website should see the log-in page when he/she opens the website. If the user is not registered, then he/she should be able to do that on the log-in page. So there should be an option for Sign-Up as well. If the user is not a first-time user, he/she should be able to see the search page directly when the website is opened. Every user should have a profile page where they can edit their email address, phone number and password.

3.1.2 Hardware Interfaces

The hardware should have following specifications:

- ➢ 128 MB of RAM required
- ➢ Processor
- ➢ Internet
- ➢ Mouse
- ➢ Keyboard
- ➢ Camera
- ➢ Microphone

3.2 Security Requirements

3.2.1 Communication Security

Security of the communication between the system and server. The messages should be encrypted for log-in communications, so others cannot get user-name and password from those messages. Attempts to get user-name and password through obtained messages on

1000 log-in sessions during testing. 100% of the Communication Messages in the communication of a log-in session should be encrypted.

3.2.2 Admin Login Account Security

Security of accounts. If an admin tries to log in to the web portal with a non-existing account then the admin should not be logged in. The admin should be notified about log-in failure.

3.3 Functional Requirements

3.3.1 **Signup/Register**

Use Case Name	Sign Up
XRef	Section 2.2.1
Trigger	The user clicks on the Signup button
Precondition	The user is on the main page on the website.
Basic Path	1. The user chooses either google authentication or Sign up. 2. On the Sign up page the user must provide user-name, password and email address. 3. Users have to provide OTP that is provided by the system on users email-id
Alternate path	If the user clicks on options which requires him to be a user, he/she is redirected to the signup page.
Post Condition	The user is redirected to the home page.
Exception Paths	If the user is logged in, or his/her account exists in the database, then he can't access this page. He/She will be redirected to the home page.
Other	The user details will be stored in the database once he/she registers on the website.

3.3.2 Login

Use Case Name	Login
XRef	Section 2.2.1
Trigger	The user clicks on the login button
Precondition	The user is on the main page on the website.
Basic Path	1.Once the user is registered, he can log in into his/her account. 2.On the login page, he has to enter his email ID and password. 3.If the details are found correct, the user is redirected to the main dashboard.
Alternate path	If the user clicks on options which require him to use our system, he/she is redirected to the home page as a user.
Post Condition	The user is redirected to the home page.
Exception Paths	If the user is already logged in, or his/her account exists in the database, then he can't access this page. He/She will be redirected to the home page

3.3.3 Logout

Use Case Name	Logout
XRef	Section 2.2.1
Trigger	The user clicks on the Logout button
Precondition	The user is logged in to the system.
Basic Path	Users will be provided a logout button at the top-left corner of the system, by clicking on that button users will be redirected to the home page.
Alternate path	If the user clicks on options which require him to use our system, he/she is redirected to the home page as a user.
Post Condition	The user is redirected to the login page again.
Exception Paths	If the user is not logged in, or his/her account exists in the database, then he can't access this page.
Other	The user data stored in the local storage will be cleared.

3.3.4 Forgot Password

Use Case Name	Forgot Password
XRef	Section 2.2.1,
Trigger	The user clicks on the Forgot Password button
Precondition	The user is not logged in to the system and is on the login page.
Basic Path	1. When a user clicks on the Forget Password Button, he will be sent an email to change his/her password. 2. Using that link provided in his/her email user registered with, he can change his password.
Alternate path	None
Post Condition	The user is redirected to the login page again after changing the password.
Exception Paths	If the user is already logged in, or his/her account exists in the database, then he can't access this feature.

3.3.3 Schedule Meetings

Use Case Name	Schedule Meetings
XRef	Section 2.2.2
Trigger	The user clicks on the Schedule Meetings
Precondition	The user has logged in to the app and successfully verified.
Basic Path	1. If the user is logged in, he has the option to schedule meetings. 2. Once the meeting is scheduled, other users can join that room.
Alternate path	If the user clicks on options which requires him to be a use
Exception Paths	If the user is not logged in then the user can't access this feature .

3.3.4 Leave Meetings

Use Case Name	Leave Meetings
XRef	Section 2.2.2
Trigger	The user clicks on the Leave meetings
Precondition	The user is entered on one of the Meetings
Basic Path	1. The member after pressing the leave meeting button will be redirected to the join/host page. 2. In order to join the meeting again the join meeting procedure is to be followed again
Post Condition	The user is redirected to the home page.
Exception Paths	1. If a user is not logged in then he can’t access the end meetings feature. 2. Users must join one of the meetings otherwise he/she can't access this feature.

3.3.5 Join Meetings

Use Case Name	Join Meetings
XRef	Section 2.2.3
Trigger	The user clicks on the Join Meeting button.
Precondition	The user is logged in and verified.
Basic Path	1. The user will be required to enter the meeting link as input and then press the join button. 2. Then he/she becomes a member of the meeting and will enter the meeting.
Post Condition	The user will be directed into the meeting.
Exception Paths	If the user is not logged in then the user can’t access this feature .

3.3.7 Screen Sharing

Use Case Name	Screen Sharing
XRef	Section 2.2.3
Trigger	The user clicks on Screen Sharing
Precondition	The user is a member of a valid meeting which was scheduled by hosts.
Basic Path	1. User Must log in Id and Password 2. User must join one of the meetings 3. Once the user joins the meeting, then he/she will have the option to share the screen with other members of meetings. 4.Once User clicks the screen share then she/he can show his/her own screen.
Alternate path	If the user clicks on options which requires him to be a use
Post Condition	The computer screen of the user will become visible to all other members.
Exception Paths	1. If the user is not logged in then the user can’t access this feature . 2. User must have to join the meeting to use this feature 3. If the host hasn't been allowed to share a screen share a screen.

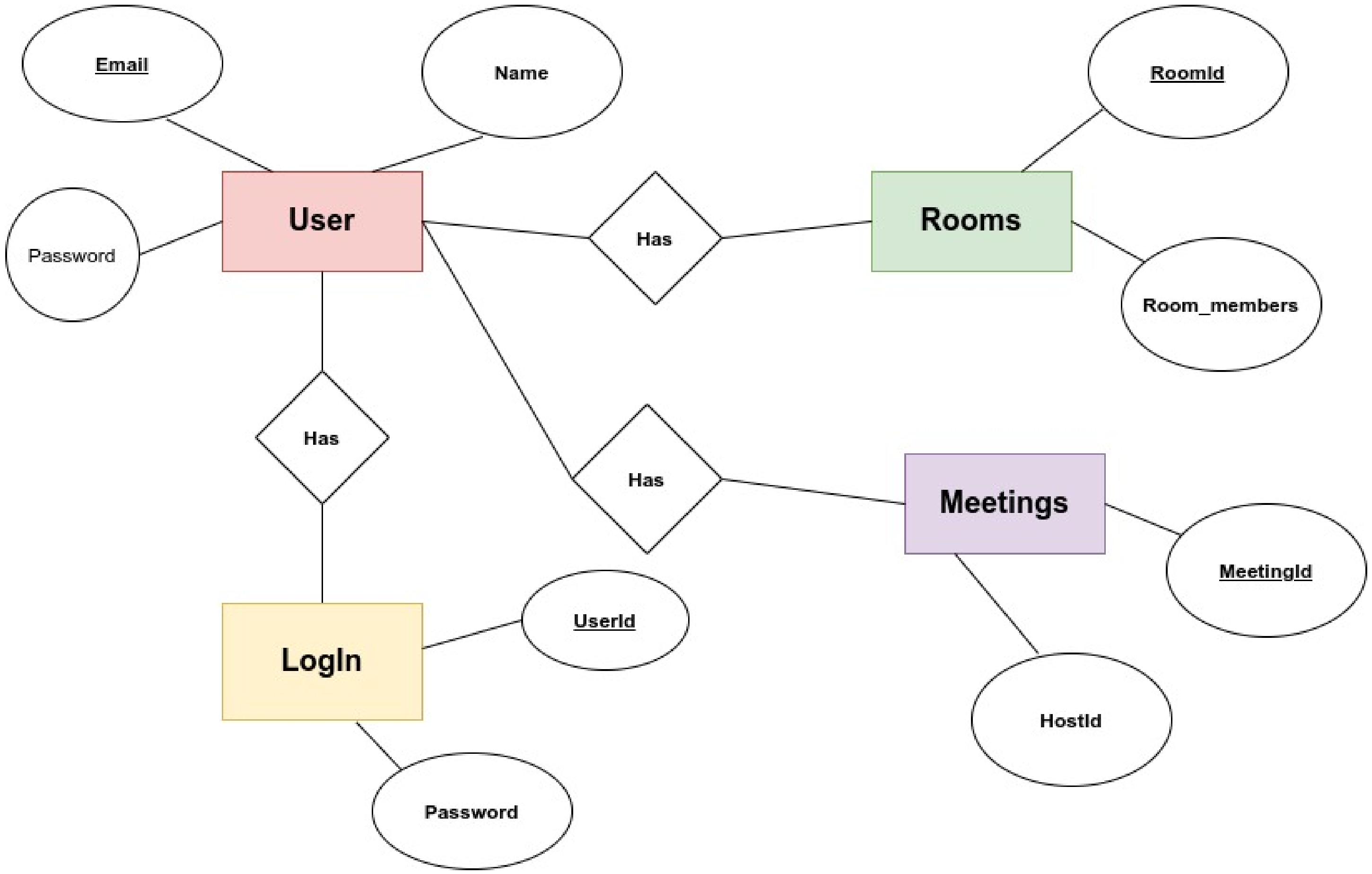
3.3.8 Mute/Unmute

Use Case Name	Mute/Unmute
XRef	Section 2.2.3
Trigger	The user clicks on the mute/unmute button
Precondition	The user is a member of a valid meeting which was scheduled by hosts.
Basic Path	1. If the host of the meeting has allowed other users to to unmute them, then the user can unmute. 2.Once the user unmutes himself, his audio will be shared with all other members of the meeting.
Alternate path	If the user clicks on options which requires him to be a use
Post Condition	The user’s audio will be shared with all other members of the meeting
Exception Paths	1. If a user has not joined a meeting 2. User is not logged in. 3. The host hasn't been allowed to unmute.

3.4 Detailed Non-Functional Requirements

3.4.1 Logical Structure of the Data

The logical structure of the data to be stored in the internal Web Meet is given below.



Logical Structure of the Project In form of ER Model

The data descriptions of each of these data entities is as follows:

User Data Entity

	Type	**Description**	**Comment**
Name	Text	Name of the User	
Email Address	Email	Email address of User	Will be unique for each user
Password	Password	Password of the user	

Rooms Data Entity

Data Item	**Type**	**Description**	**Comment**
RoomID	Text	Room Id	Maybe several for each user
Room_members	Integer and Text	It will have userId's of each member whoever is part of the room	It can have multiple Entries

LogIn   Data Entity

Data Item	**Type**	**Description**	**Comment**
UserId	Text	This will have User in form Email maybe	It will have unique user id for each user
Password	Password	It will have password for authentication	There can be same password for multiple users

Meetings Data Entity

Data Item	**Type**	**Description**	**Comment**
MeetingsId	Text	It will have Ongoing Meetings Id	Meeting Id will be unique for each meeting
HostId	Text	It will have User of Host of the Meeting	It will have only one Host Id

- END OF REPORT -