# Microsoft Teams Clone

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| Revision | Date | Description |
|----------|------|-------------|
| 1.0 | June 18th, 2021 | Initial Revision |
| 1.1 | June 29th, 2021 | Second Revision |
| 1.2 | July 5th, 2021 | Final Revision |

## Table of Contents

# 1 Introduction

## 1.1 Purpose

The purpose of the software Requirements Specification is to describe the specific requirements of the Microsoft Teams clone that has to be made as part of the Microsoft Engage Mentorship 21. Included with the description of the requirements is a description of any constraints or assumptions that the project is working within.

This document also provides a description of any project dependencies that need to be explicitly expressed. Along with the requirements descriptions, it is also the purpose of this document to describe any performance requirements that need to be met, if there are any standards that need to be considered when developing the software are also listed.

Lastly, the purpose of this document is to communicate the system attributes of the Microsoft Teams Clone. These system attributes include reliability, availability, scalability, maintainability and portability.

## 1.2 Scope

The scope of this project is that in a very short span it provides users with many facilities. It provides users to connect over a video call, chat with each other during the video call. It also provides the user an option to create teams, add people in the teams and chat with them inside their respective teams. Inside Team Channel users can look up on the history of the Chats. Summarizing it in points we can say the MS teams clone build by me let's users,

- Connect over a video Call.
- Have a 1:1 or and 1:n video call.
- Chat during the video call.
- Create New teams.
- Add people in the teams.
- Chat in the team channel as well as look up to the history of the chats.
- During video call users can mute their audio and Video.
- Hang up a call.

## 1.3 Definitions, Acronyms and Abbreviations.

Table of Definitions, Acronyms and Abbreviations.

| Definitions, Acronyms and Abbreviations | Description |
|---|---|
| SRS | Software Requirements Specification |
| 1:1 | One to one Video Calling. |
| 1:N | One to many Video Calling. |
| Db | Database. |

## 1.4 References

Table of references

| References | Description |
|---|---|
| https://webrtc.org/ | For Video Calling Purpose, The video Calling feature has been made by using WebRTC. |
| https://socket.io/ | Learning the Emit events and making Real Time chatting. |
| https://peerjs.com/ | The Peer connection is established using the Peer js library. |

# 2 Overall Description

## 2.1 Product Perspective

A Application where people can easily connect over a video call, which is very important given today's scenario of covid'19 where all the major things are on work from home basis. Students can attend classes online through teams and also ask doubts over chats and be in touch with each other constantly. This is a light version as I have not included any monetary inclusions for this project for this time being only upto 4 people can come together on a call.

The Following is a high level use Case model for how each subsystem should interact with each other.
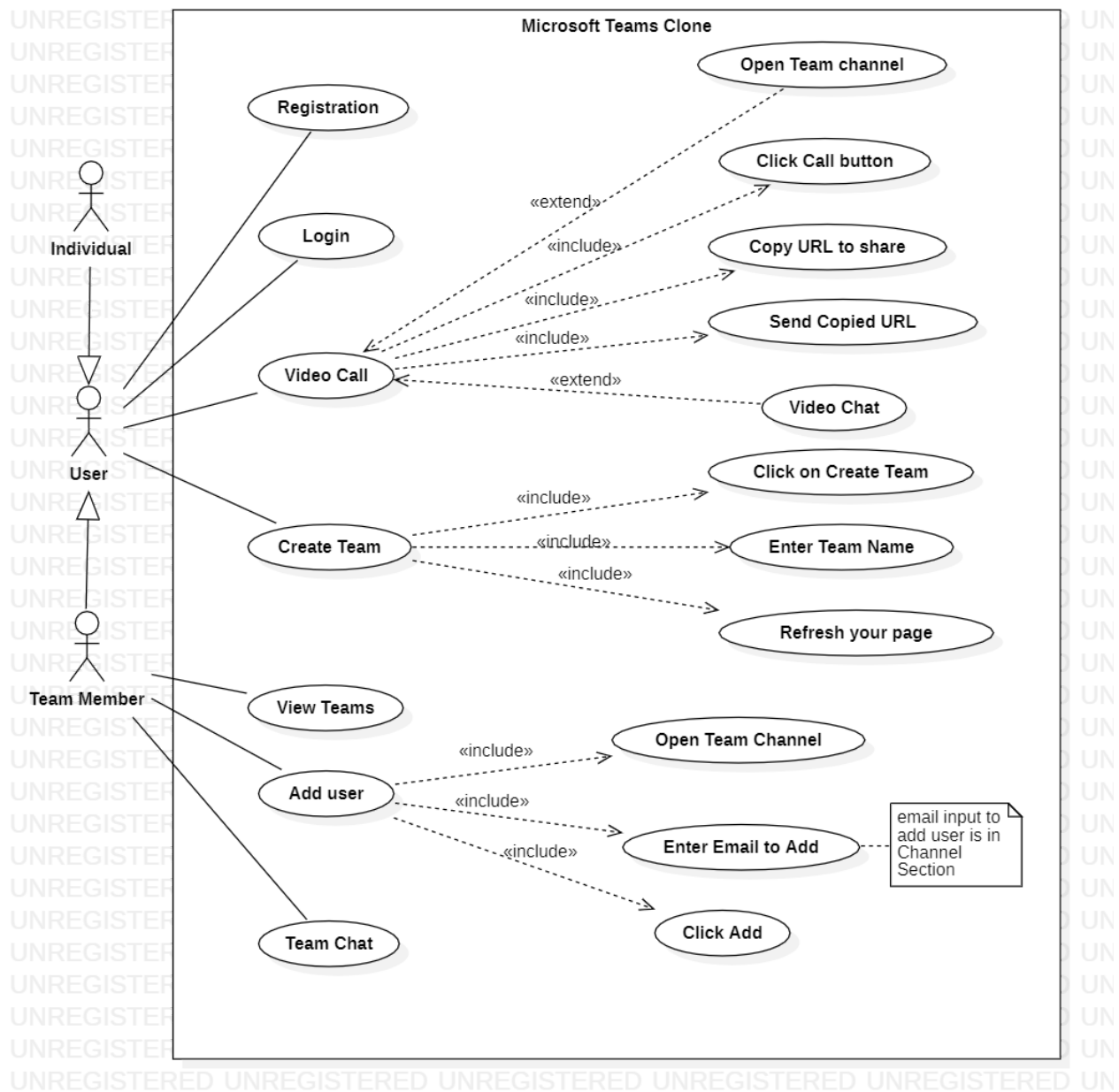
## 2.2 User Characteristics

The following table identifies and describes the different users of the Microsoft Teams Clone. The information gathered about different users of the system helped define what software needs to do. Also, these users are referenced in the requirements and diagrams.

| User | Description |
|------|-------------|
| Non-team User | A user who is not in any team but is attending the call using the invite link just needs to create an account first and then can join the call. |
| Team User | This user is having teams so he can attend the video call using the links not just that he can also create new teams, Glide into the team channel and start chatting there again. User can add new user to the team. And even start a new call. |

## 2.3 Data Flows

The following figures represent the data flow diagrams of the Microsoft Teams clone.
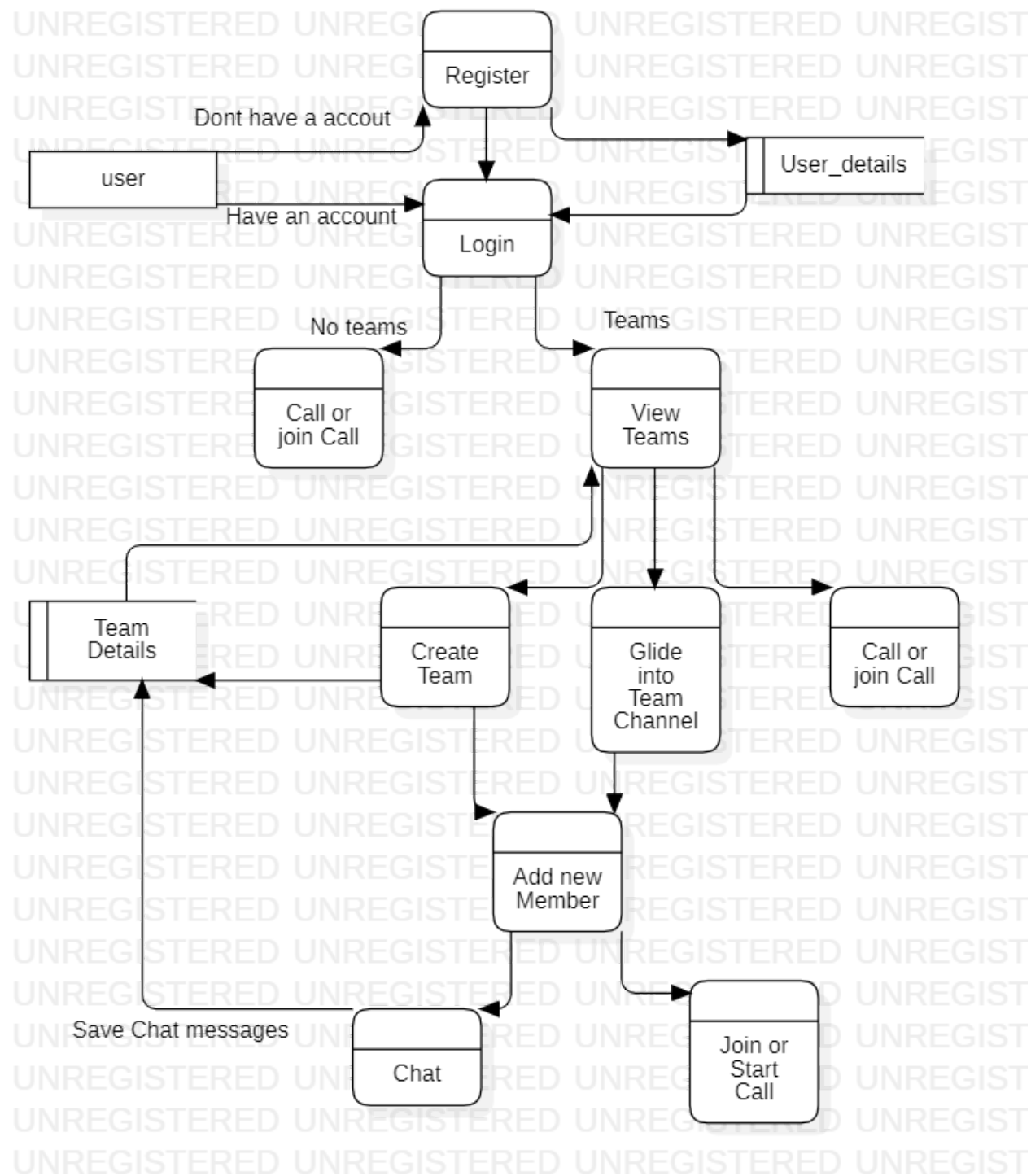
Level 0 Data Flow Diagram for users who have no teams.
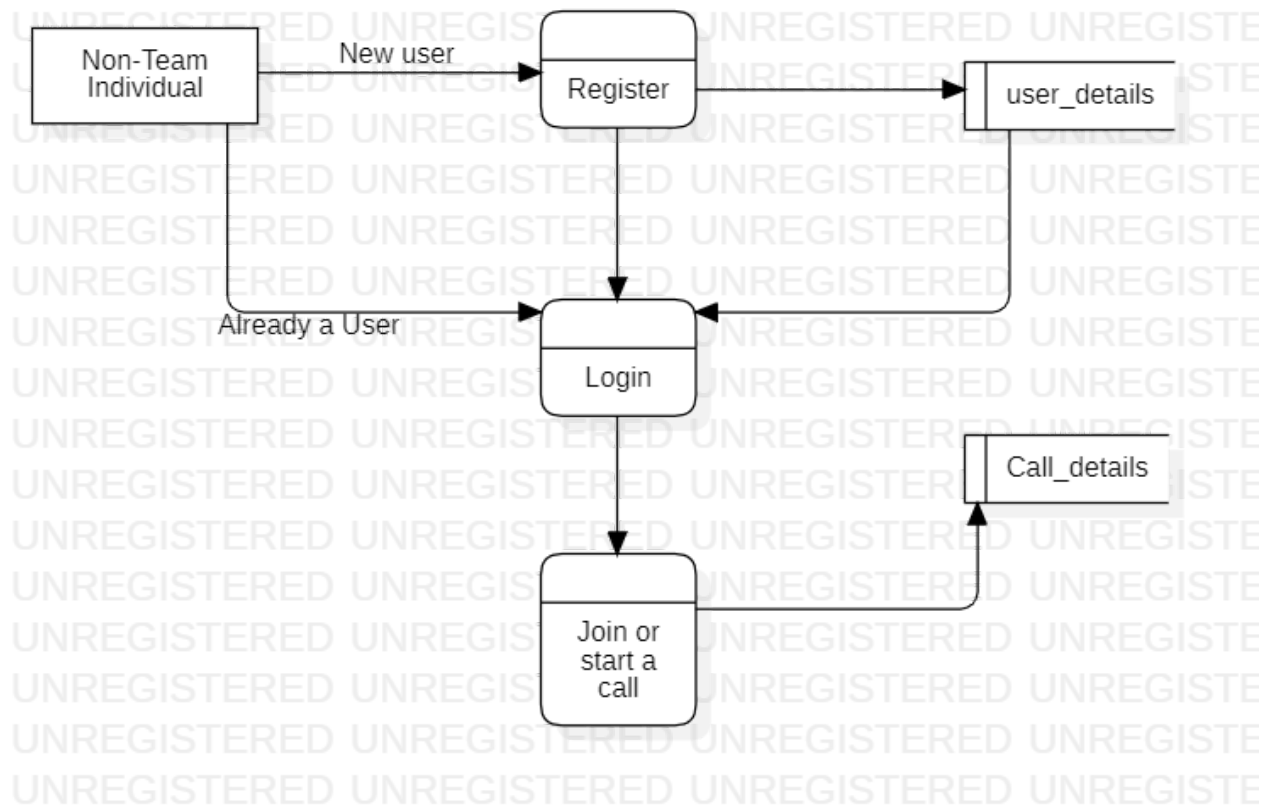
Level 0 Data flow diagram For users who are in at least one Team.
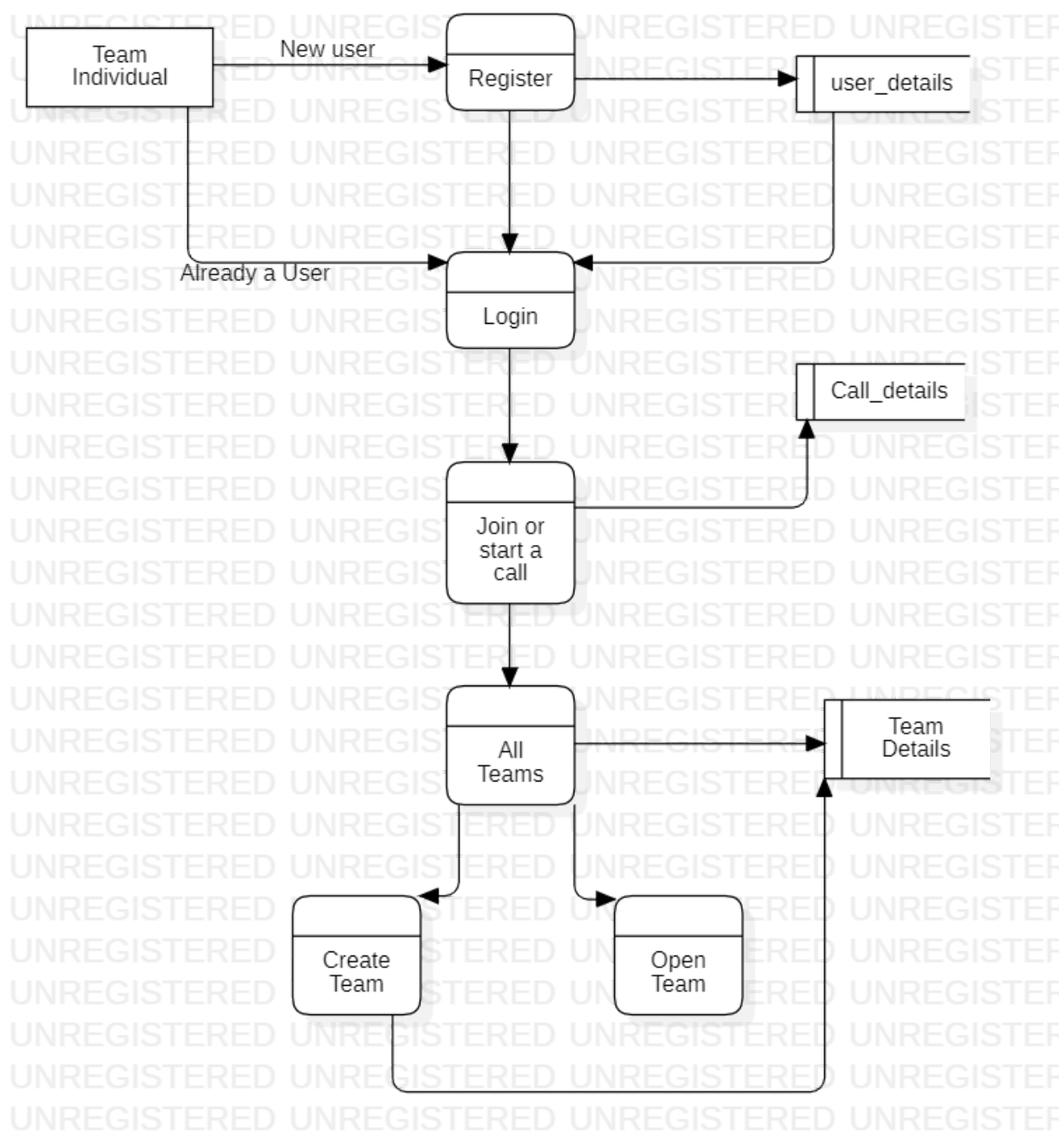
Level -01 Data Flow Diagram for Microsoft Teams clone.

## 2.4 Data Dictionary

The following tables in this section make up the data dictionary for the Microsoft Teams Clone. Using data flow diagrams, the following data dictionary elements were defined.

- User details
- Team details

| Data Dictionary attribute | Detail |
|---|---|
| Name | User Details |
| Aliases | User_info, login_info |
| Where Used | User registration and Login. |
| Description | This is used to store the user details such as name,email when a user creates a new account. And thus in return can be used in the entire application. Login details are also cross verified if they match the user is redirected to their Account. Further checks such as no duplication of email, or constraints for passwords are also checked. |

| Data Dictionary attribute | Detail |
|---|---|
| Name | Team Details |
| Aliases | team_info,chat_info |
| Where used | CRUD operations with user's teams |
| Description | This is used to create,update,delete the formed teams of the user. All the chat history is saved along with this. From adding new user to the team to all the call history is also saved in this. |

## 2.5 State Transition Diagram

The following figure shows the state transition diagram.
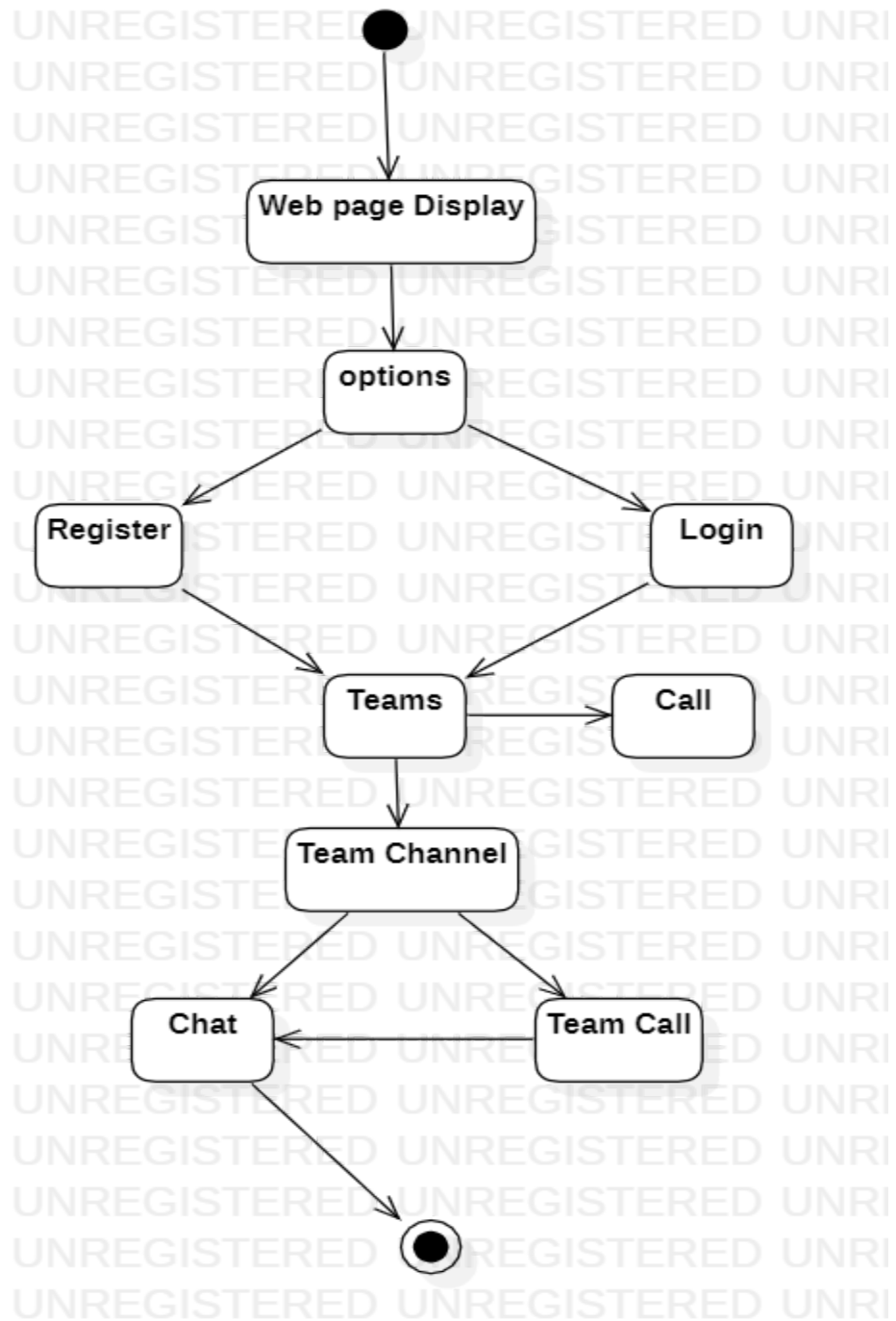
# 3 Specific Requirements

## 3.1 Functional Requirements

The following are the functional requirements for the Microsoft Teams clone.

- One on one Video Calling by the users.
- One to many Video calling by the users.
- Creation of Teams.
- Adding users to the Teams.
- Creation of User authentication.
- Chat feature for In video Calling.
- Chat feature for the In Team channel.

## 3.2 Stimulus Response

| User Actions | System Actions |
|---|---|
| (1) User Creates a Account | |
| | (2) Data is checked for constraints all passed, then an account is created and the user redirected to the Homepage. |
| (3) If a user has an account, the user log's in. | |
| | (4) If credentials match, the user is redirected to the homepage. |
| (5) User can see their Teams. | |
| (6) User starts a Call. | |
| | (7) User is Redirected to a new Room. |
| (8) User after allowing for Audio and video permissions. | |

| | |
|---|---|
| | (9) Users video is shown along with audio. |
| (10) Only when a user sees the video they can now share the URL to the people they want to invite to the room. | |
| | (11) New users are joined and the user can see their video and can listen to their audio. |
| (12) User can mute their audio as well as video. | |
| | (13) The other members should not be able to see the video or be able to listen to your muted voice. |
| (14)  Users can create a new Team. | |
| | (15) System will ask the name which you want to create the team. |
| (16) Users can go into the Team and start Chatting. | |
| | (17) People who are also in the same team can see the chats. |
| (18) Users can also start a call inside the Team. | |

## 3.3 Performance Requirements

The following table lists the performance requirements of the Microsoft Teams Clone.

| Performance Requirement | Description |
|---|---|
| Database Capacity | Current Database capacity is 300Mb as mongo provides only that much in free Tier. |
| RunTime Errors (Backend) | All the errors are handled. |
| Errors (frontend) | Errors on the Frontend are also handled. |

| Video Calling Size | Due to No monetary support and to avoid problems with video calling I have allowed only upto Four people in the Video Call. |
|---|---|

## 3.4 Non-Functional Requirements.

- Usability Requirement: The system shall allow the users to access the system from any browsers but for video calling feature it is recommended to use the latest updated respective browser versions to avoid video and audio not sharing problem.

  (Chrome is most Recommended).

- Availability Requirement: The system is available for all the users although as I have used MongoDb the database pauses if there is no activity for months.

- Accuracy:  The system should provide real time information taking into consideration various issues. The system shall provide 100% access reliability.

- Performance Requirements: The information is refreshed at regular intervals depending upon whether any updates have occurred or not.

- It is allowed to function on any Operating System and the website should be user friendly.

- Security Requirements: System will use a secured database and the system will have different users and each user has different types of constraints.