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Institute of Information and Communication Technology

# IT314 - Software Engineering

## Lab 3 - Specifying Functional and Non-Functional Requirements

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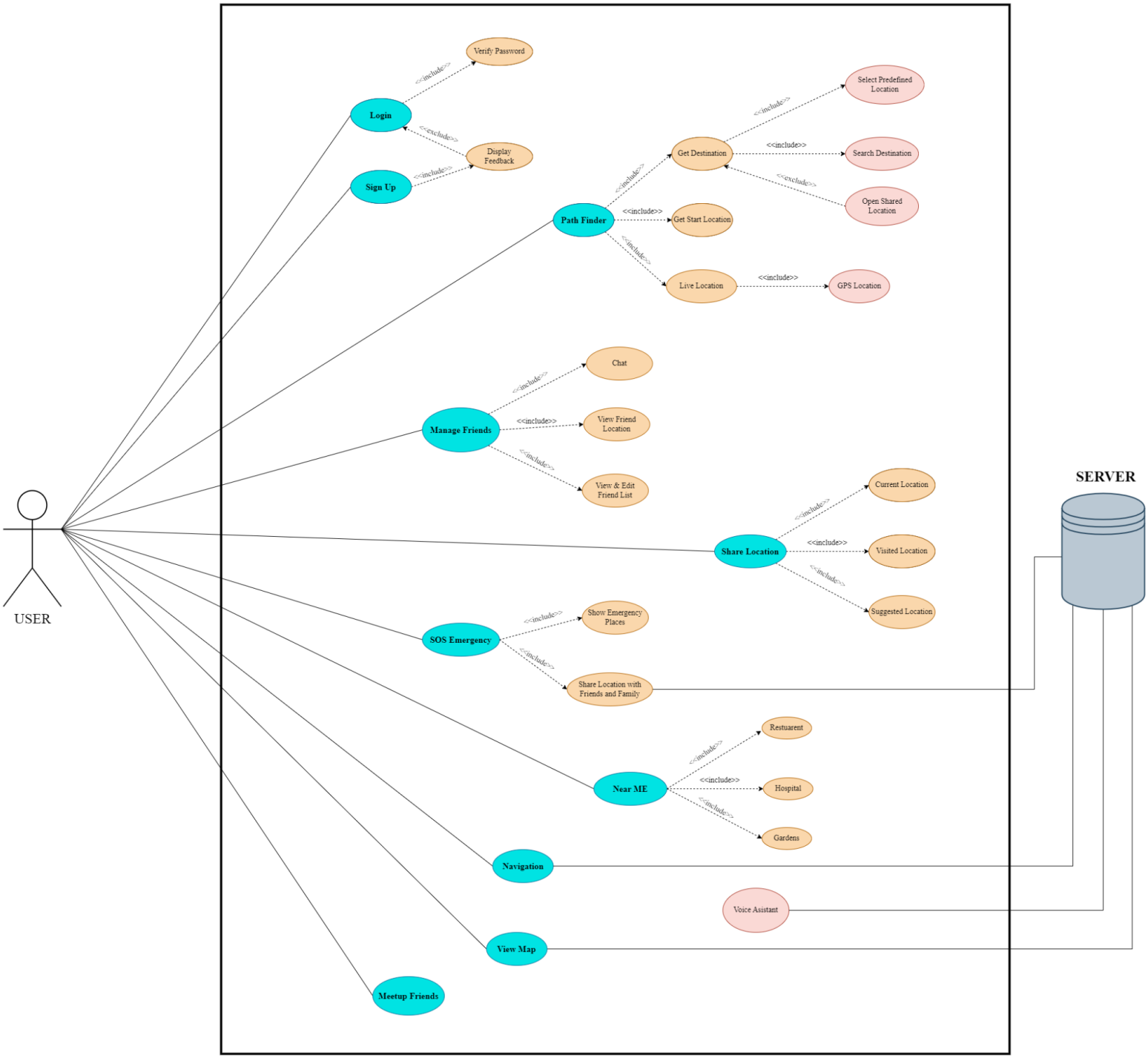
## Project Name: Location Sharing System

## Contents:

# Use Case Diagram:



## Textual Description for each Use Case:

In this use case diagram, the user interacts with the system to perform various actions, such as signing into the system, searching locations in map, sharing their live or static location, receiving location from others, sending and receiving an emergency SOS message and finding the most appropriate location for a meetup. The system is responsible for processing these request and providing the necessary functionality to the users:

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|---|---|
| **Use case** | Log in |
| **Description** | Verify login credentials from the user to access services. |
| **Actors** | User, location sharing system |
| **Precondition** | 1. Users must be connected to the internet.<br>2. Input interface should be available to the user. |
| **Post conditions** | 1. Users should be able to access the services. |
| **Flow** | 1. User enters his credentials.<br>2. The system verifies the credentials with the database.<br>3. The user is allowed to access the system if the credentials are verified. |
| **Alternate flow 1** | In step 3, if the credentials are not verified,<br>1. The system asks the user to re enter credentials.<br>2. System offers an option of “forget password” where users can edit their current password by providing alternate methods of verification. |

| **Use case** | Search location |
|---|---|
| **Description** | The user will be shown a map based interface of his/her nearby locations to browse for different places to visit. |
| **Actors** | User, location sharing system |
| **Precondition** | 1. Users must be connected to the internet. |
| **Post conditions** | 1. Users should be able to access the services.<br>2. Guest users should only be able to access search maps. |
| **Flow** | 1. User locates the search bar.<br>2. Enter the name/coordinates of the place of visit.<br>3. The user is allowed to manipulate the map to explore more options. |

| **Use case** | Manage friend |
|---|---|
| **Description** | The user will be provided with a functionality to chat and add people to his/her friend list. |
| **Actors** | User, location sharing system |
| **Precondition** | 1. Users must be connected to the internet. |
| **Post conditions** | 1. Users should be able to access the services.<br>2. Guest users should only be able to access search maps. |
| **Flow** | 1. User clicks on “Add people” functionality.<br>2. Select people from his/her contact list or by specifying the email address to add them to the user's friend list.<br>3. The recipient will be notified about the new connection.<br>4. The system provides the user with the functionality to text people present in his/her friend list and share their location. |

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| **Use case** | Share live location |
| **Description** | The user will be able to share his/her live location with the selected recipient. |
| **Actors** | User, location sharing system |
| **Precondition** | 1. Users must be connected to the internet.<br>2. Input interface should be available to the user. |
| **Post conditions** | 1. Users should be able to access the services.<br>2. Guest users should only be able to access search maps. |
| **Flow** | 1. User clicks on “share live location” functionality.<br>2. Select the recipient to share the location with, from the user’s edit list.<br>3. Click on the ”share” button. |

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| **Use case** | Emergency SOS message |
| **Description** | It’s a safety feature that allows the user to activate a SOS button that the user can press during an emergency to notify their chosen recipients (friends or family). |
| **Actors** | User, location sharing system, recipients |
| **Precondition** | 1. Users must be connected to the internet. |
| **Post conditions** | 1. A button must be activated on the homescreen of the user’s device. |
| **Flow** | 1. User activates the emergency SOS message feature from the application.<br>2. User selects the recipients from the list of friends to whom he may want to notify. Users can also have a default list, so that he doesn’t have to select the recipients everytime he activates the feature.<br>3. System activates and displays a SOS button on the homescreen of the user’s device.<br>4. If the user presses the button, the system sends an alert notification and the user’s live location to all the recipients. |
| **Alternate flow 1** | 1. Users can also select an expected time he is anticipating to reach his destination. In case the user is unable to reach the destination 1 hour past the anticipated time, the SOS message is automatically sent to the recipients. |

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| **Use case** | Meetup with friends |
| **Description** | A group of users can find a common meeting point that is suitable to all the users in the group. |
| **Actors** | Multiple Users, location sharing system |
| **Precondition** | 1. Users must be connected to the internet.<br>2. All the users must be in a group.<br>3. The location sharing service should be activated by all the users of the group. |
| **Post conditions** | 1. The system should provide a list of places for meeting to all the users. |
| **Flow** | 1. A user from the group selects the option “meetup with friends”.<br>2. The system takes the locations of all the users in the group and provides a list of recreational places that are suitable to all the users. |

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|---|---|
| **Use case** | Nearby me |
| **Description** | The system displays nearby recreational places like restaurants, parks, cinemas, etc. to the user. This also includes the places that are recommended by the user's friends. |
| **Actors** | Multiple Users, location sharing system |
| **Precondition** | 1. Users must be connected to the internet.<br>2. The user’s location sharing feature must be activated. |
| **Post conditions** | 1. The system should provide the locations of the suggested places on the user’s map. |
| **Flow** | 1. User activates the “nearby me” feature in the application.<br>2. The system takes the locations of the user and displays all the nearby recreational places that are recommended by his friends. |

## Non Functional Requirements and their justifications:

**Security:** The location sharing system must have high levels of security so that unauthorized users can't access user location information. This feature is quite crucial for securing user privacy and preventing data leakages.

**Performance:** The system should be efficient enough to handle enormous amounts of location data at the same time. As a result of this multiple users would be able to access and share the location quickly.

**Reliability:** The system should be capable enough to provide guarantee of reliability that users can access and share their location data at any time & also it should be completely secure.The system should be robust to system failures and there should be minimal downtime.

**Scalability:** System should be able to accommodate the growing user base and the enormous location data. This will make sure that the system will be able to accommodate the user base's requirements as it grows.

**Usability:** The system should have an easy and user-friendly interface. As a result of which users won't be facing challenges while using the user interface.

**Compatibility:** The system should be made to operate smoothly with a variety of hardware, software, and operating systems. By doing this, users would be able to access and share their location information from any device or platform of their choice.

**Availability:** Users must always have access to the system, with little to no downtime. Users will always be able to access and share their location information.

**Accessibility:** Any user should be able to access and share the location data regardless of their ability. Even a person having hearing or vision impairments or any other disabilities should be able to utilize the system.