Design Document

for

TrackIt

Version 1.1

Prepared by Team 03:
(Based on SRS Version 1.1 prepared by Team 03)

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Course: **CS4096D Software Engineering Laboratory**

Date: **29-03-2022**

Glossary

UML	Unified Modelling Language
ER	Entity Relationship
AMC	Annual Maintenance Contract
QR	Quick Response

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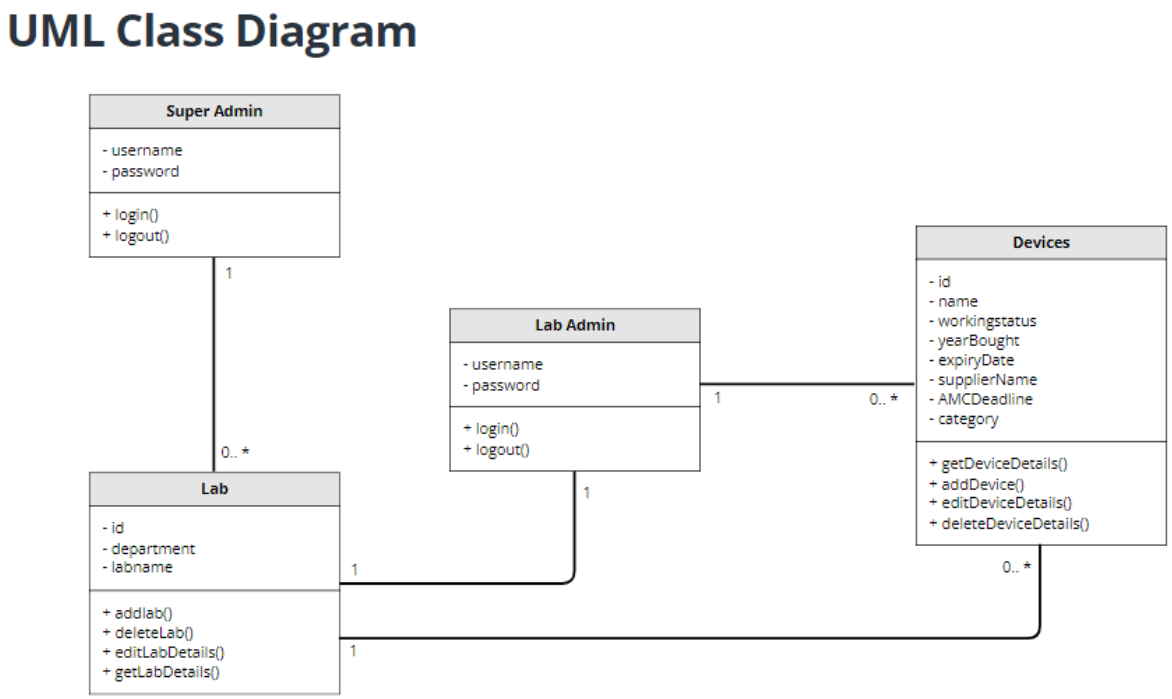
1. Detailed Design through UML diagrams

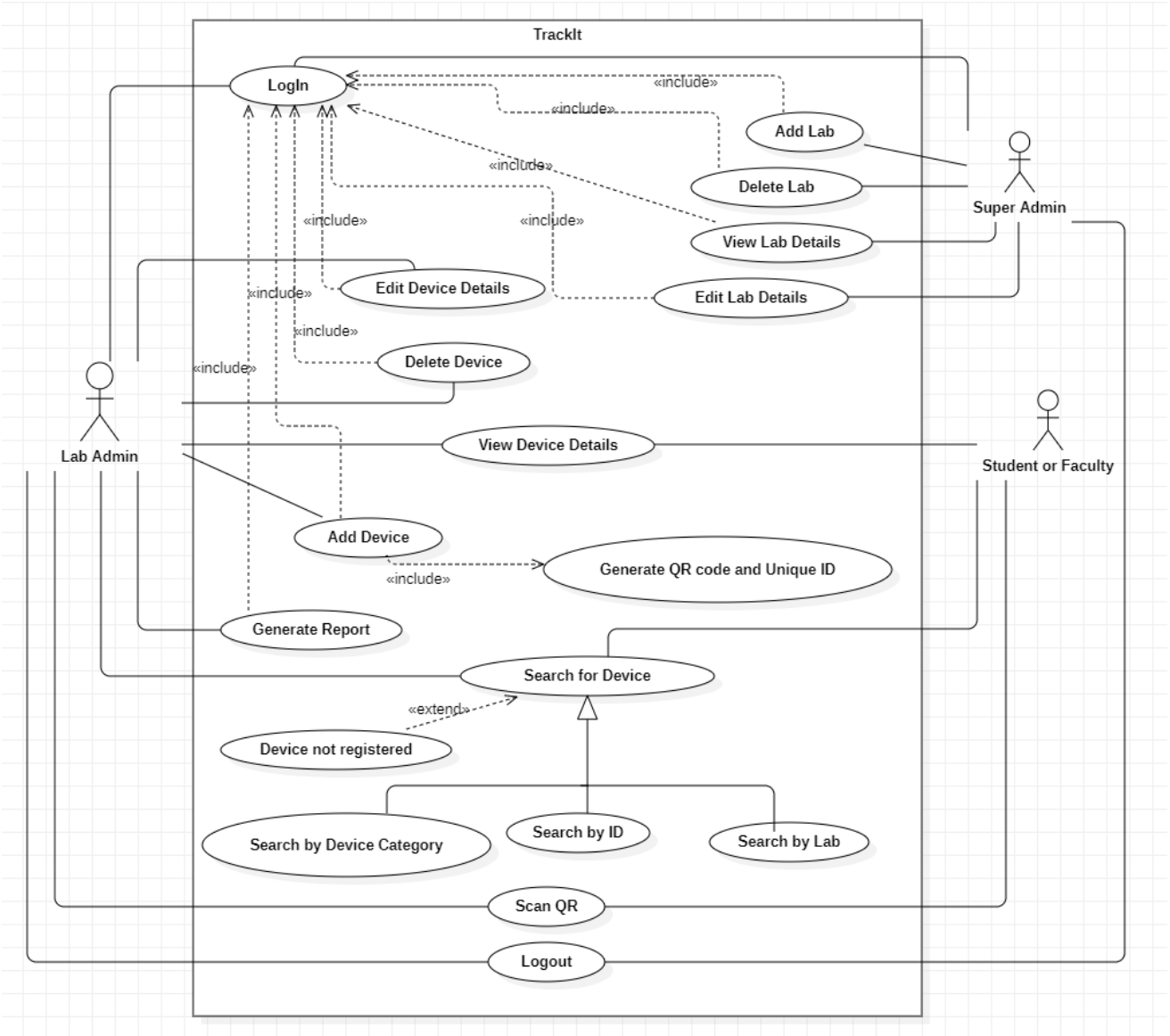
1.1 System model using Class Diagram

Class Diagram in the Unified Modelling Language is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods) and the relationships among classes.



1.2 Responsibilities - Usecase Diagram

Use case diagram graphically depicts the user's possible interactions with the system. It shows the different types of users (actors) and the use cases that the actors perform when they are using the system to solve the customer's problem. The actor is shown as a stick person and the use case is shown as an ellipse. Lines indicate which actors perform which use cases.



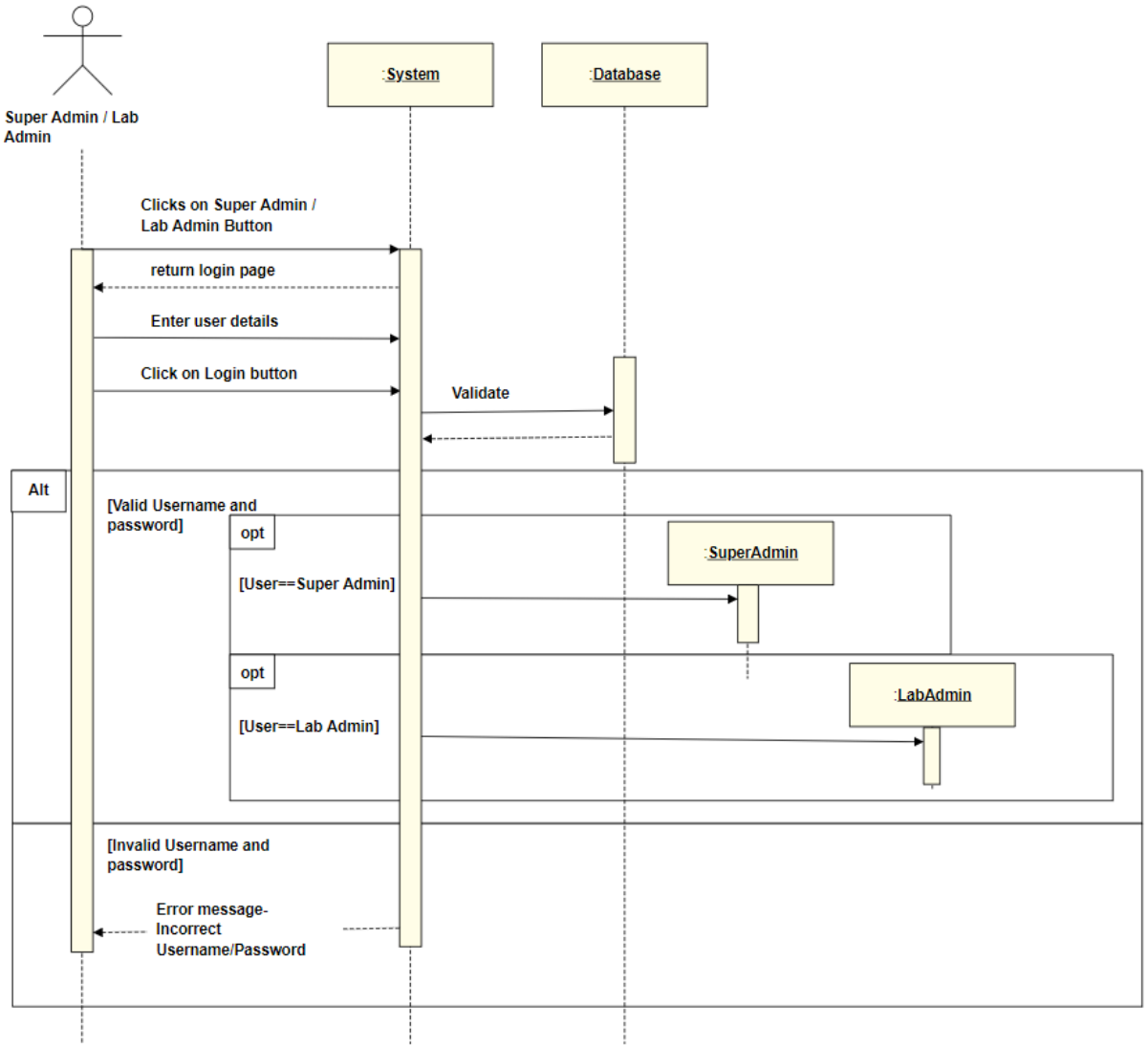
1.3 System Interactions through Sequence Diagrams

Sequence diagrams are interaction diagrams that show the sequence of messages exchanged by the set of objects performing a certain task. A sequence diagram shows, as parallel vertical lines (lifeline), different processes or objects that live simultaneously, and as horizontal arrows, the messages exchanged between them, in the order in which they occur.

1.3.1 User Login

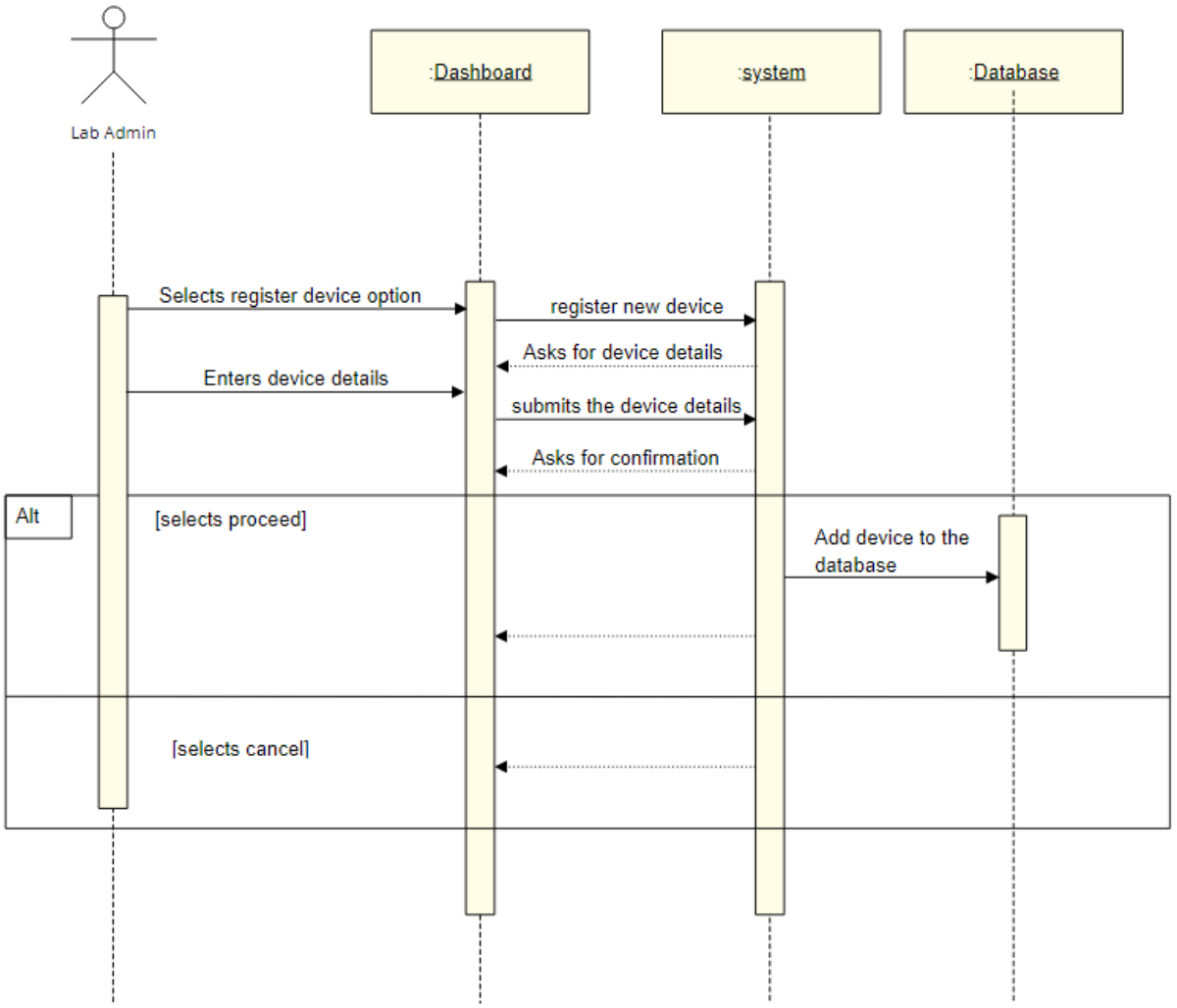
The sequence diagram focuses on the process by which a super admin / lab admin can login to the app with appropriate error messages incase of an anomaly.

Initially the user has to select the user type from the home screen. Then the user enters the login credentials (username & password) in the appropriate fields of the login page and clicks on the login button. Entered details are validated with the data stored in the database. If the entered details are valid, the system re-directs the user to corresponding user-page. Else, an error message is displayed by clearing the data entered in the input fields.



1.3.2 Add device

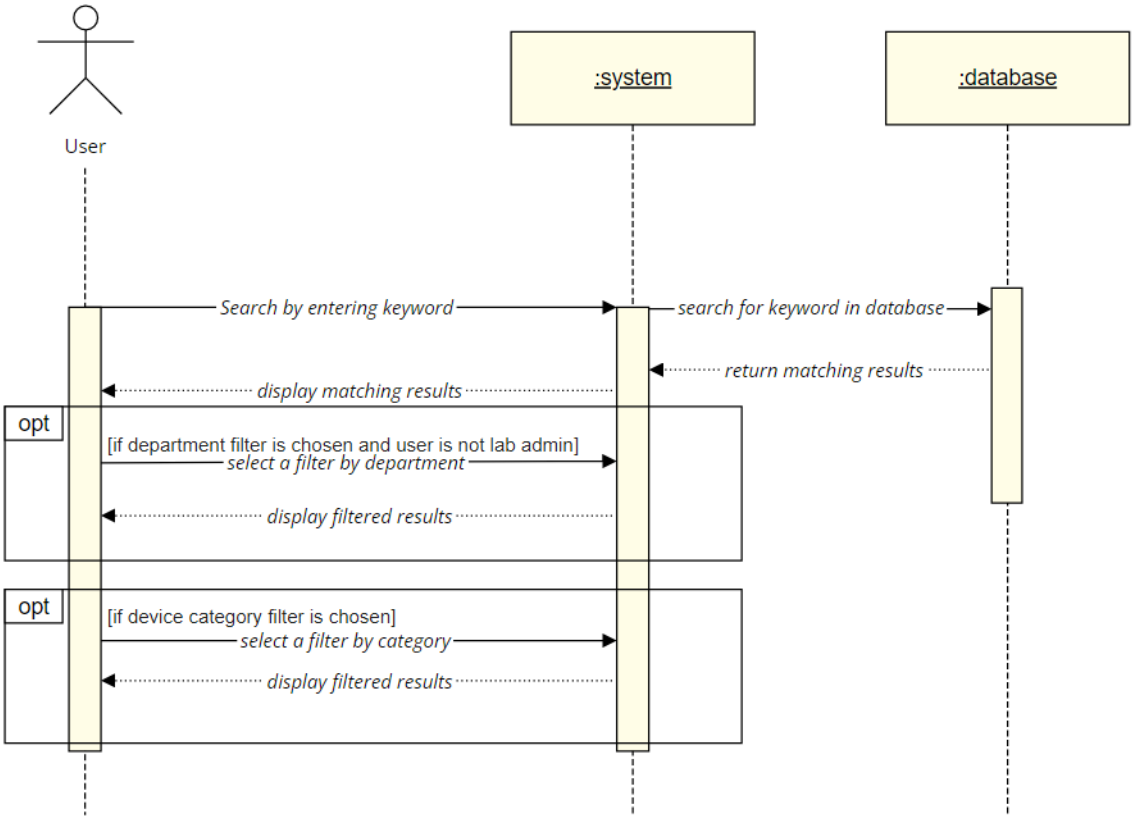
The sequence diagram focuses on the process by which a lab admin can add the devices to a lab he/she corresponds to. The lab administrator needs to fill a form of the device details and should submit it to add the device to the lab.



1.3.3 Search Device

The sequence diagram focuses on the process by which a user can search for devices in the labs.

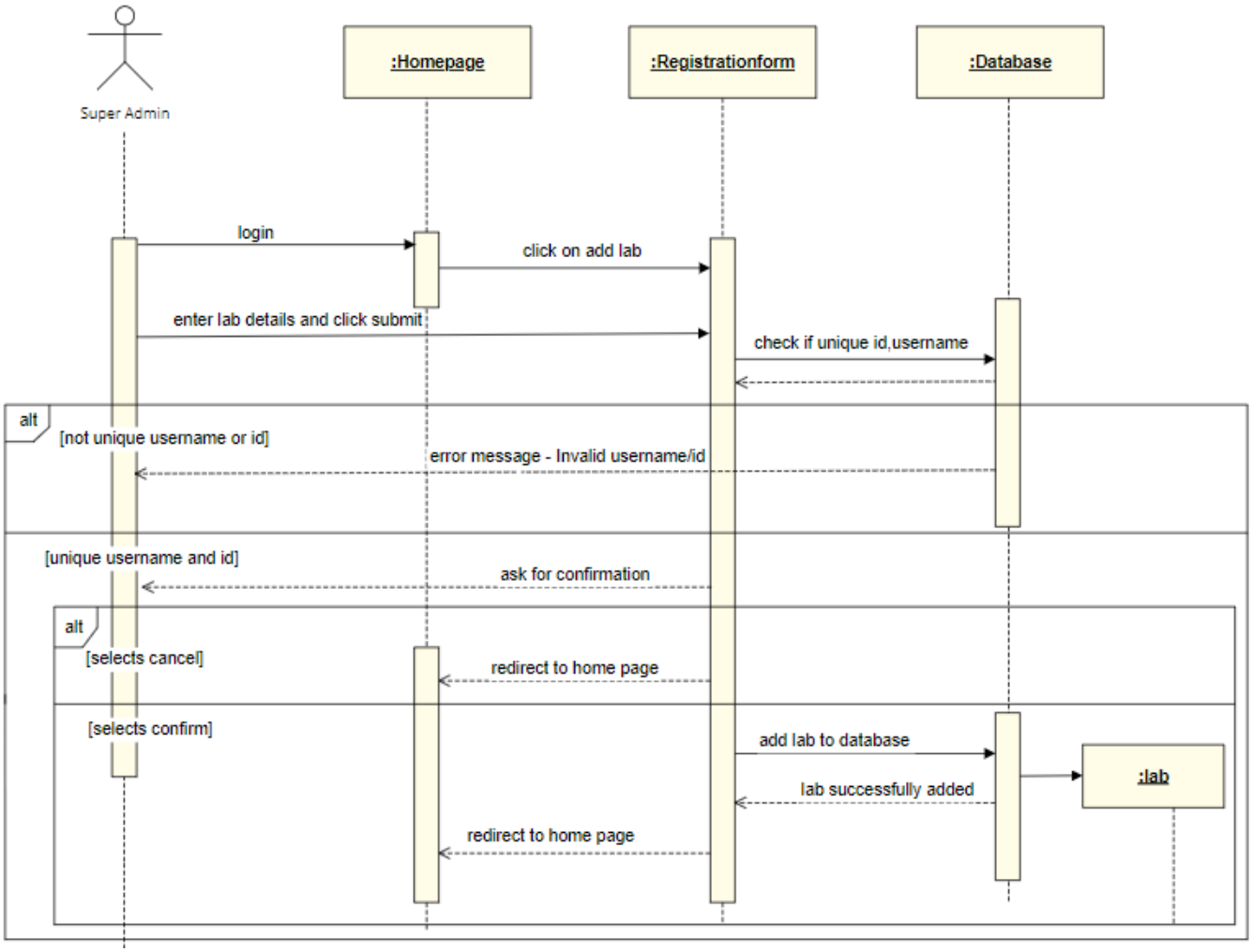
If the user is a lab administrator he/she can enter a keyword and results are displayed belonging to the admin's lab and filters on the device category can be applied to filter the results.If the user is a student/faculty can filter the results based on lab name and device category.



1.3.4 Add Lab

The sequence diagram focuses on the process by which a super admin can add a lab to the system.

The super admin has to login and has to select the add lab option from the dashboard in the homepage. This opens the registration form where the super admin has to fill the details of the lab and click on submit. The database verifies if the id or username is already used. If it is already used, it shows an error message. After giving the unique id and username, the super admin is asked for confirmation. If the super admin clicks on confirm, the lab will be added to the database.

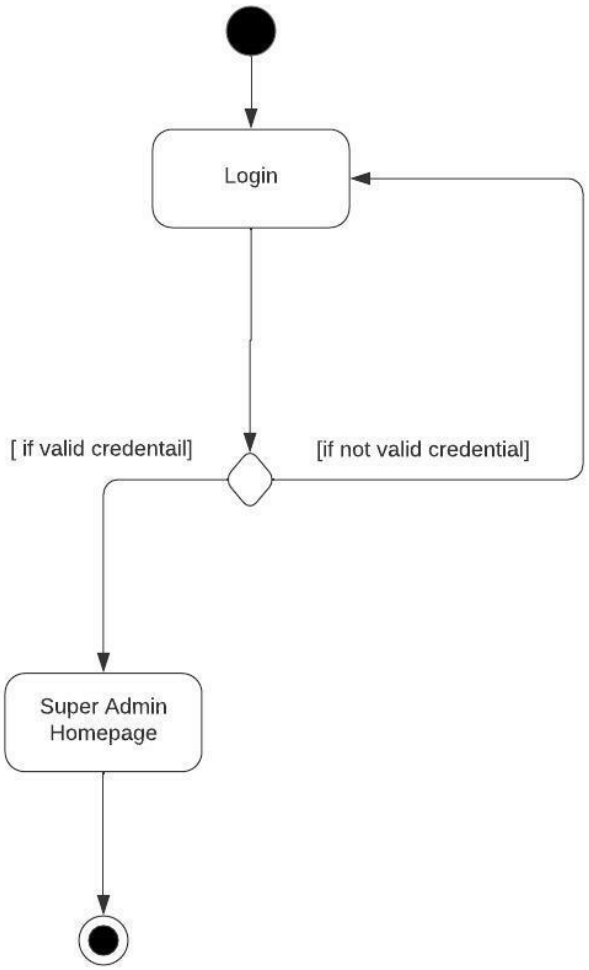


1.4 Control and Data Flows through Activity Diagrams

Activity diagrams graphically represent step-wise activities and actions involved in the workflow within a specific scenario, and helps to understand the flow of work that an object or component performs. Activity diagram uses rounded rectangles to represent a specific system function, arrows to represent flow through the system, decision diamonds to depict a branching decision, and solid horizontal lines to indicate that parallel activities are occurring.

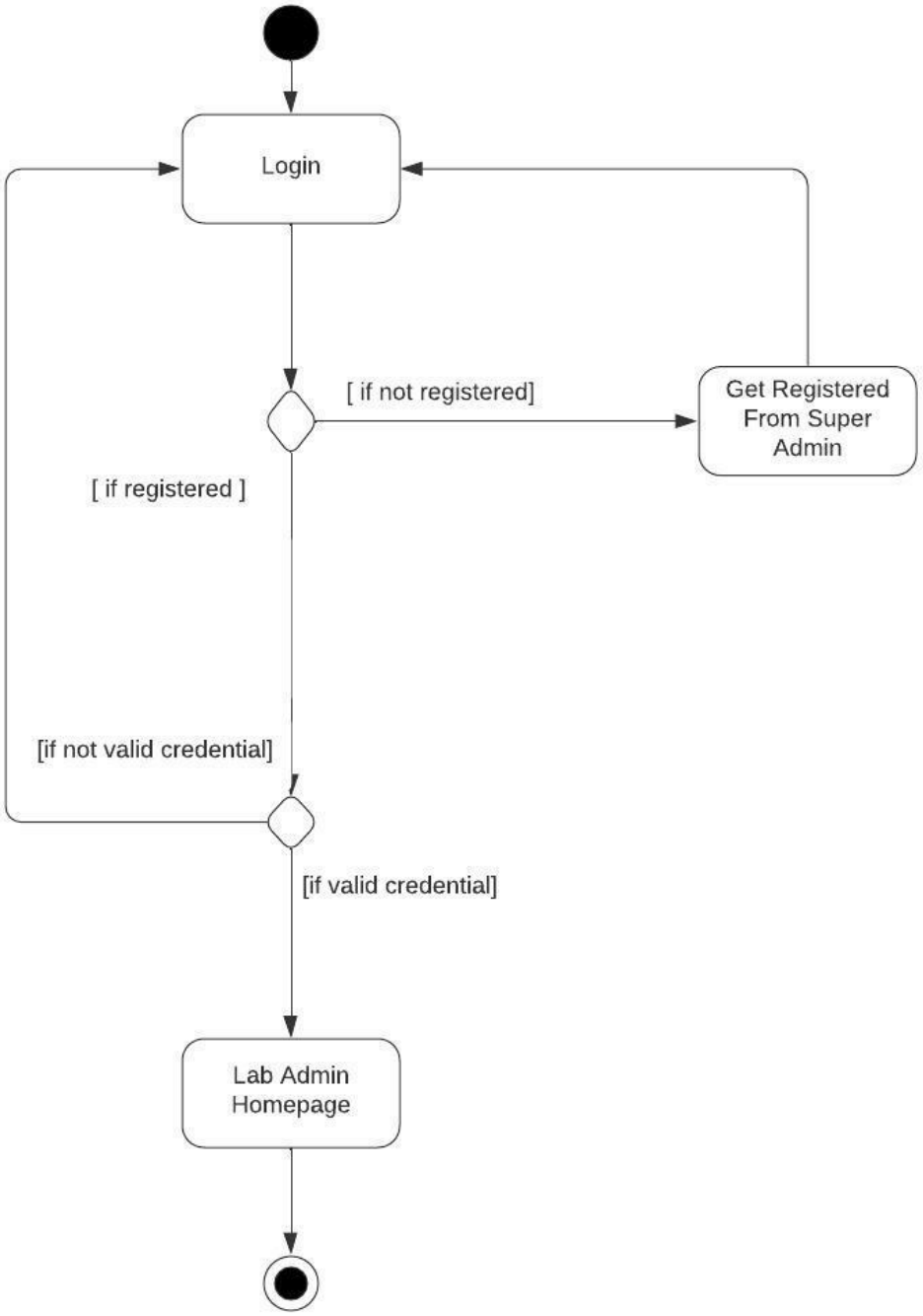
1.4.1 Login

This Activity diagram represents Login Activity for Super Admin



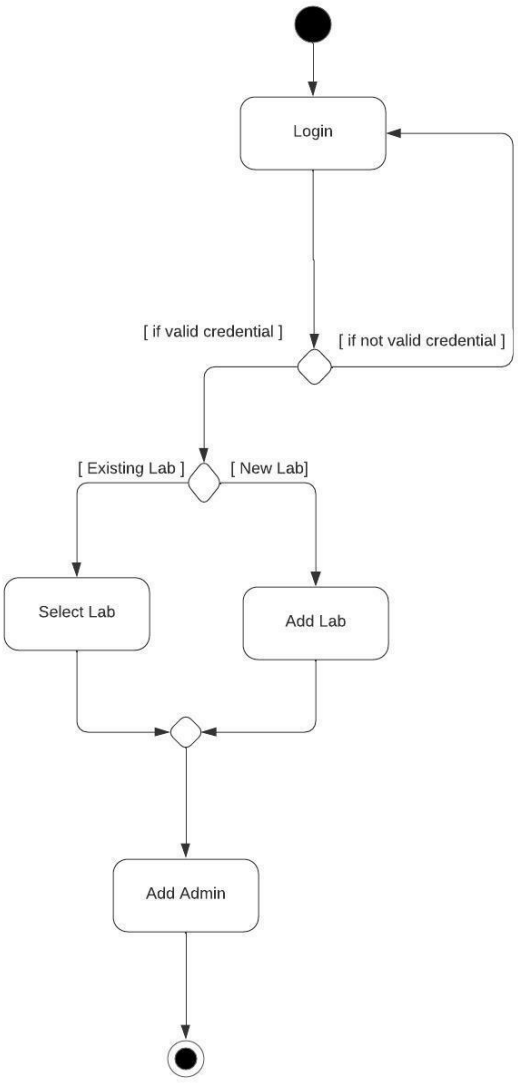
1.4.2 Lab Admin Login

This Activity diagram represents Login Activity for Lab Admin



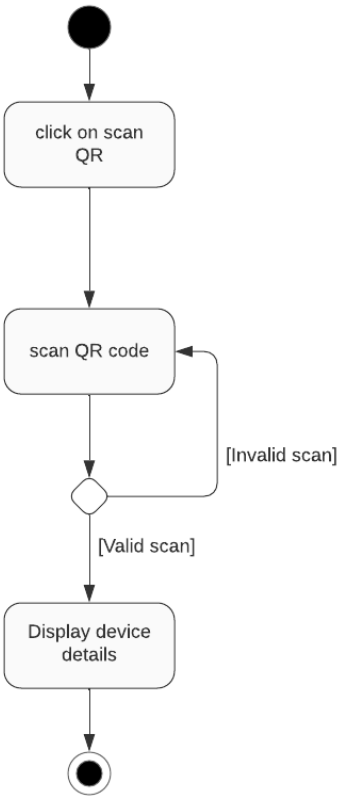
1.4.3 Add Lab

This Activity diagram represents adding lab activity for Super Admin



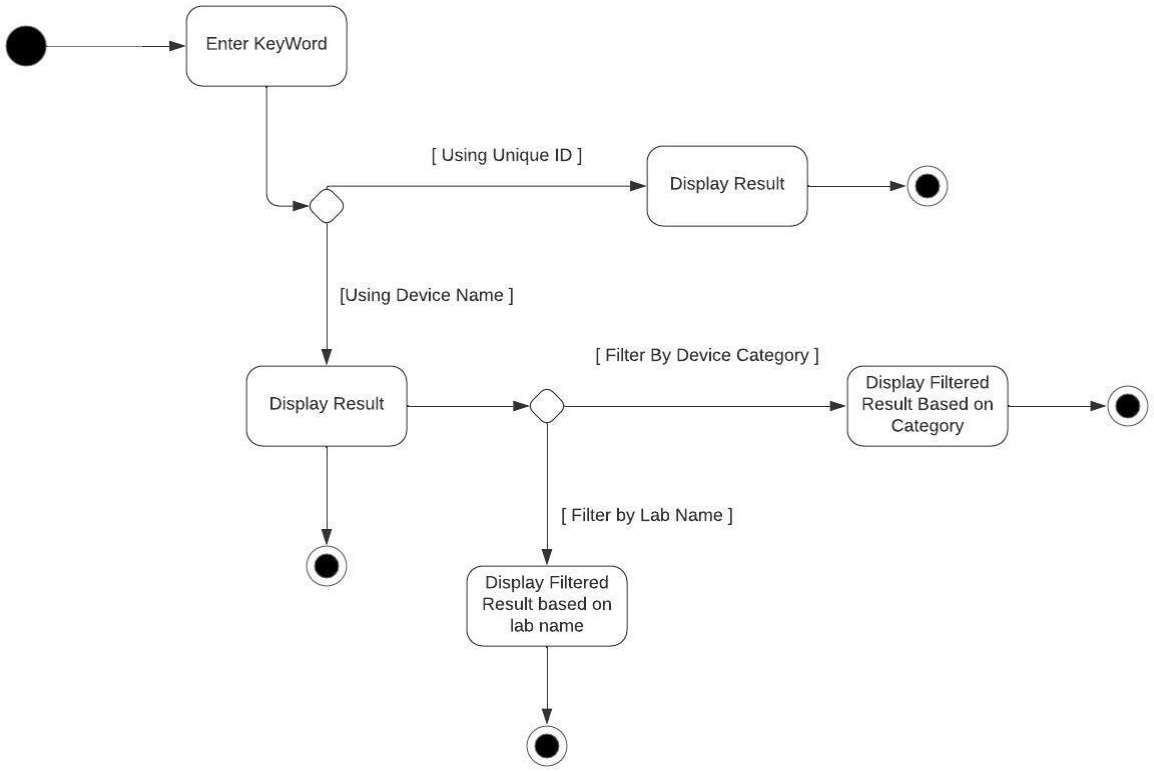
1.4.4 Scan QR code

This Activity diagram represents scanning QR code and getting device details activity for the user.



1.4.5 Search Device

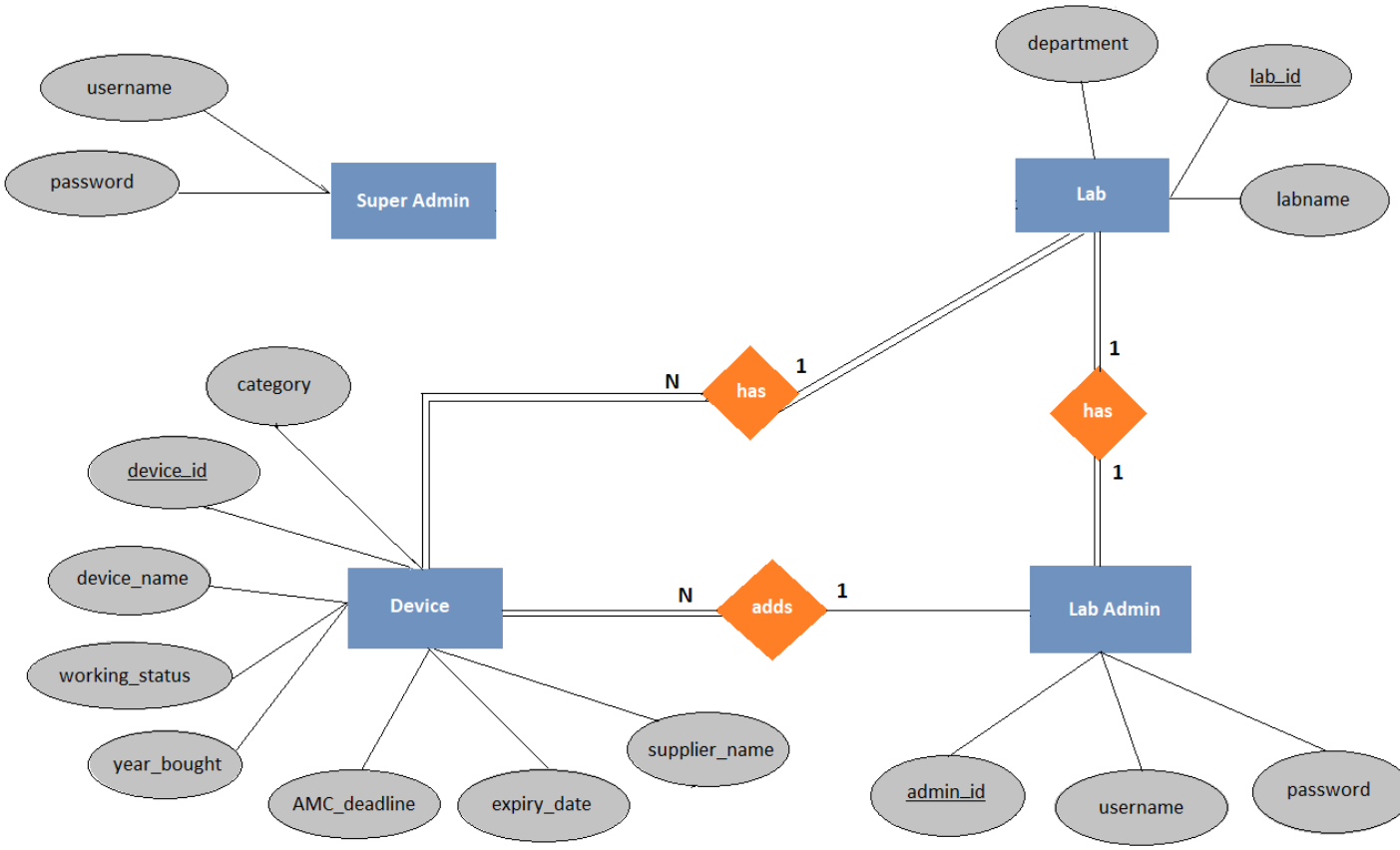
This activity diagram represents the Search the device and getting device details.



2. Database Design

2.1 ER Diagram

ER (Entity-Relationship) model is designed to represent the things that a system needs to remember in order to perform the system functionalities. It graphically represents the data model that defines the information structure which should be implemented in the database. The data objects (entity) are represented by a labelled rectangle and the relationships are indicated with a labelled line connecting objects.



3. Implementation Plans

3.1 Technology Stack

We intend to use the software platform Android Studio and the primary programming language as Dart. The Framework we will be using for this project is Flutter. The main reason is we can run the same app on different platforms like Android and IOS and even in web browsers. Apart from these, we will be using Firebase as the database service tool.

3.2 Work Estimates

Description	**Time Estimate (Hours)**	**Team Members Involved**	**Date of Completion**
Firebase backend	6-8hrs	BATTHALA VINOD KUMAR,SUDDALA VARUN,CHALLA SAKETH	18-03-2022
Home screen and	2hrs	MASINA SAI BHARGAV	19-03-2022

login screen		TEJA,SUDDALA VARUN	
Super admin dashboard	2-3hrs	BATTHALA VINOD KUMAR,MOTURU MANOGNA	21-03-2022
Super admin add Lab and assign lab admin	4hrs	MASINA SAI BHARGAV TEJA,UTTKARSH RAJ	21-03-2022
Super admin delete lab	2hrs	MASINA SAI BHARGAV TEJA,CHALLA SAKETH	22-03-2022
Super admin edit lab details	2-3hrs	CHALLA SAKETH,UTTKARSH RAJ	22-03-2022
Lab admin dashboard	3-4hrs	BATTHALA VINOD KUMAR,MASINA SAI BHARGAV TEJA	23-03-2022
Lab admin add device	1-2hrs	CHALLA SAKETH,SUDDALA VARUN	23-02-2022
Lab admin edit device details	2-3hrs	MOTURU MANOGNA,UTTKARSH RAJ	24-02-2022
Lab admin get report	4hrs	SUDDALA VARUN,MOTURU MANOGNA	25-03-2022
Search feature for Lab admin	4hrs	CHALLA SAKETH,BATTHALA VINOD KUMAR,SUDDALA VARUN	26-03-2022
Dashboard for users other than lab admin	3-4hrs	MOTURU MANOGNA,SUDDALA VARUN	26-03-2022
Search feature for users	4-5hrs	SUDDALA VARUN,CHALLA SAKETH,MASINA SAI BHARGAV TEJA	27-03-2022
Filters	3-4hrs	CHALLA SAKETH,BATTHALA VINOD KUMAR	28-03-2022
Scan QR code feature	1-2hrs	MOTURU MANOGNA,SUDDALA VARUN	28-03-2022
Search implementation with QR input	3hrs	UTTKARSH RAJ,BATTHALA VINOD KUMAR	29-03-2022
Displaying organised search results	3-4hrs	UTTKARSH RAJ,MASINA SAI BHARGAV TEJA	29-03-2022
Page Navigations	4hrs	UTTKARSH RAJ,CHALLA SAKETH	30-03-2022

Safe logout	2hrs	MASINA SAI BHARGAV TEJA,MOTURU MANOGNA	30-03-2022

References

- https://moqups.com/
- https://creately.com/
- https://lucid.co/
- https://uml-diagrams.org/