WORKFLOW DOCUMENT

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Project ID	26
Problem Statement	Indoor Location Tracking App for BIT Campus Navigation

Problem Statement:

The campus of Bannari Amman Institute of Technology is made up of numerous classrooms and blocks. The classroom names are always changing. It is difficult for parents, teachers, and students to locate and navigate to the desired site. Departments often host events that make it difficult for visitors and other college students to locate the classrooms and blocks. The task at hand involves creating an application that can precisely track an individual on campus and assist them in locating a specific spot.

1. Introduction

1.1 Overview

The indoor location tracking app is designed to provide real-time navigation assistance within buildings, event integration, and ensure the

safety of faculty, staff, parents, and students. This document outlines the requirements and specifications for the development of the app.

1.2 Purpose

The purpose of this document is to define the functional and non-functional requirements of the indoor location tracking app, serving as a guide for the development team throughout the project lifecycle.

1.3 Scope

The scope of the app includes:

- Real-time navigation within buildings.
- Integration with events happening in the institution.
- Ensuring the safety of users.
- Accurate tracking of various locations within buildings, despite signal interference and multi-level structures.

2. General Description

2.1 Product Perspective

The indoor location tracking app will interact with users through a user-friendly interface, utilizing backend services for data processing and storage. It will be integrated with existing systems to fetch event data and ensure seamless functionality.

2.2 Product Functions

The app will provide the following key functions:

- Real-time navigation assistance.
- Event integration.
- Safety assurance.
- Location tracking.

2.3 User Characteristics

The primary users of the app include faculty, staff, parents, and students of the institution. Users are expected to have basic knowledge of using mobile applications and navigating through buildings.

3. Specific Requirements

3.1 Functional Requirements

- Real-time Navigation Feature: The app should provide real-time navigation assistance to users within buildings. Inputs such as the user's current location and destination location will be processed to calculate the shortest path using indoor positioning data. Turn-by-turn directions will be displayed on the user interface.

- Event Integration Feature: The app should integrate with the institution's event management system to display upcoming events. It

will fetch and display relevant event information on the app interface based on data received from the event management system.

- Safety Assurance Feature:The app should ensure the safety of users by providing emergency assistance and notifications. It will process emergency signals or user-initiated distress calls, alert appropriate authorities, and provide the user's location information for emergency response

- Location Tracking Feature: The app should accurately track various locations within buildings. User's location data from GPS or indoor positioning system will be processed to update the user's location in real-time on the app interface, displaying the user's current location on the indoor map.

3.2 Non-Functional Requirements

Performance Requirements

- Scalability: The app should be capable of handling a concurrent user load of at least 1000 users without significant performance degradation.

Scalability Requirements

- Expected User Base Growth: The app should accommodate a growth of 20% in user base annually to support the institution's evolving user population.

- System Capacity: The backend infrastructure should be scalable to handle increased load as the user base grows.

Reliability Requirements

- Availability: The app should be available 24/7 with a downtime of less than 1% to ensure continuous accessibility for users.

- Fault Tolerance: The app should be able to gracefully handle server failures without data loss or service interruption to maintain user trust and reliability.

These specific requirements outline the functionalities and performance expectations of the indoor location tracking app, ensuring that it meets the needs of users and operates effectively in various scenarios.

TECH STACK:

Python Stack:

Frontend	HTML, CSS, JS
Backend	PYTHON, DJANGO
Database	MYSQL

FLOWCHART:

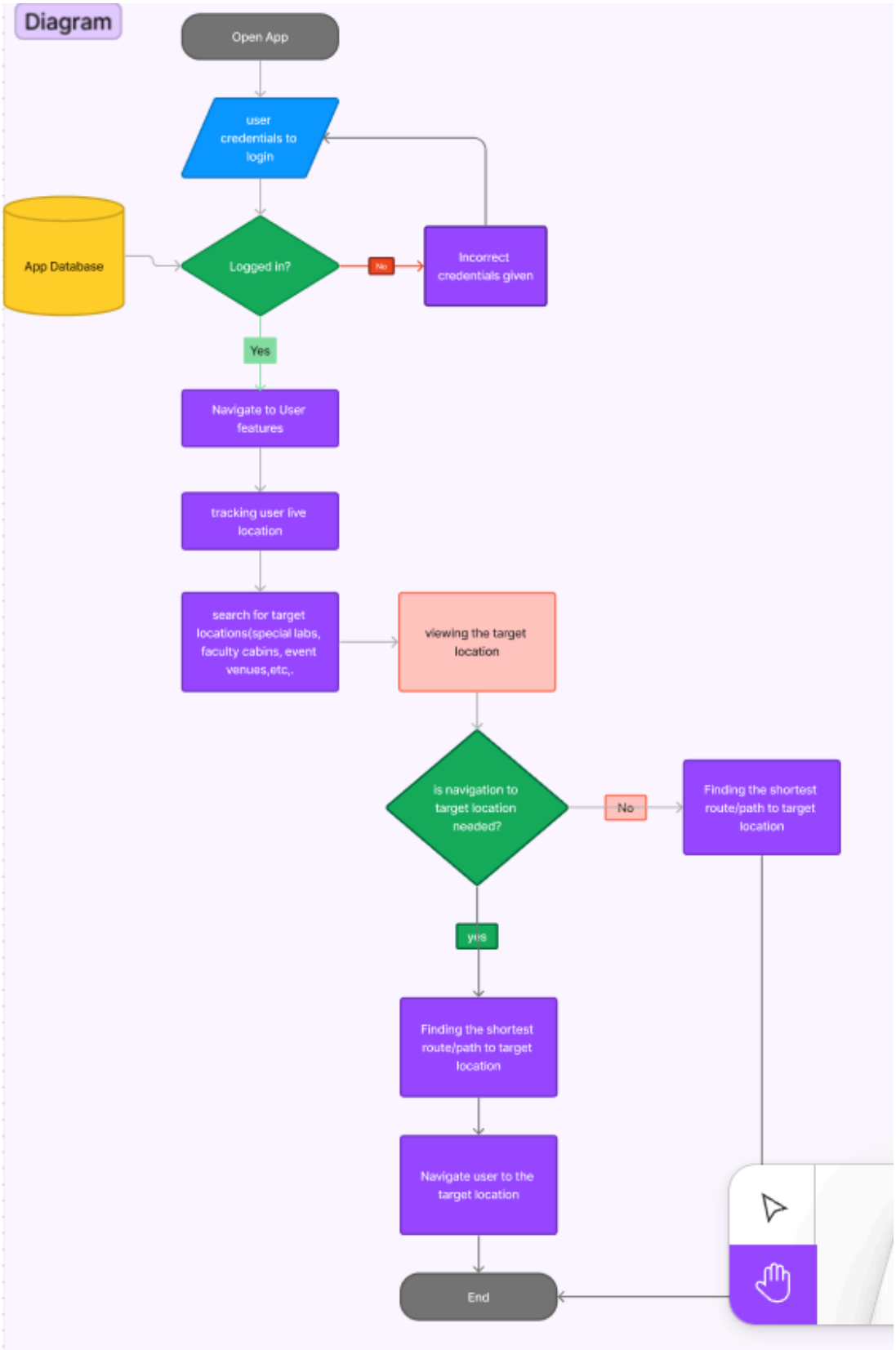
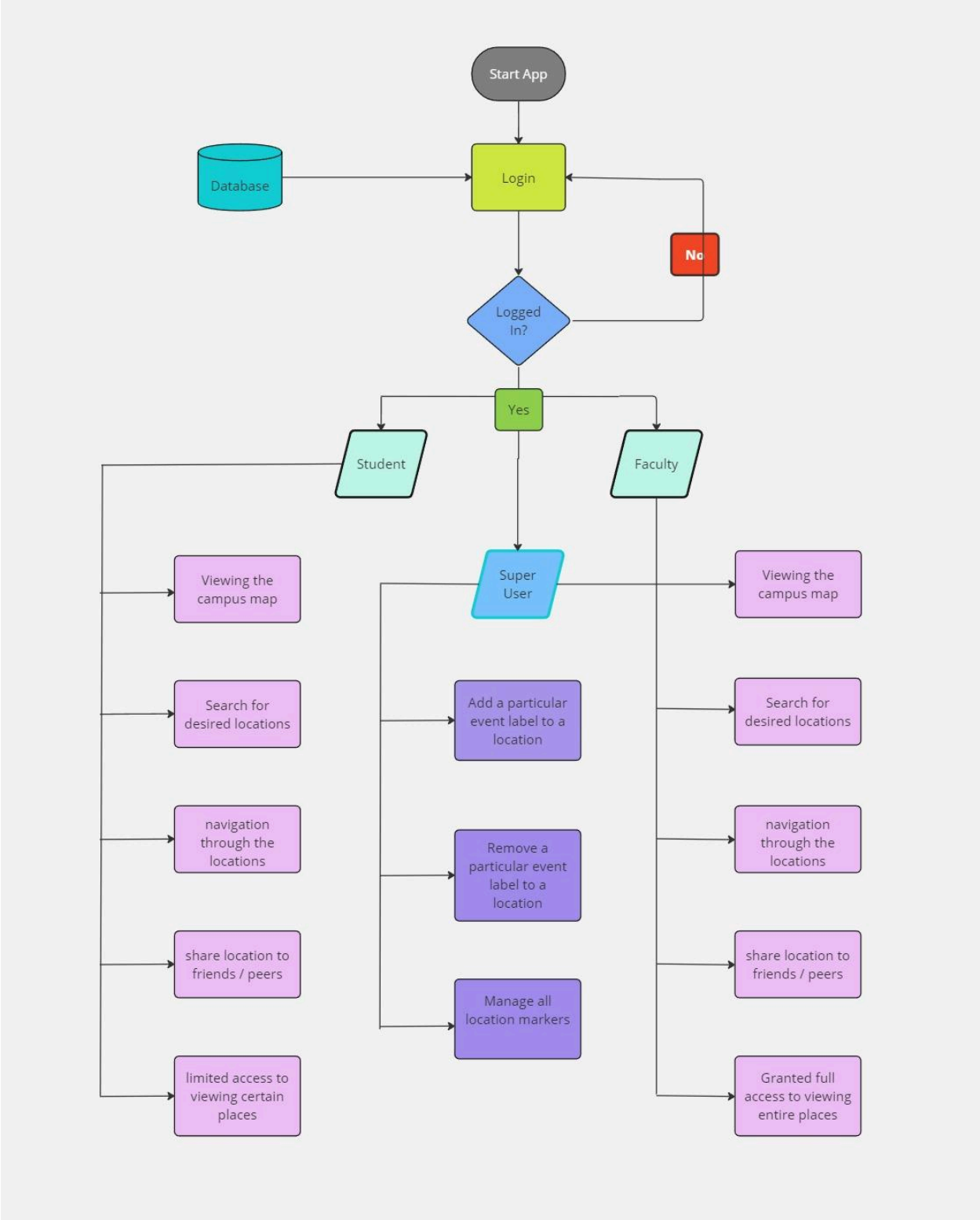
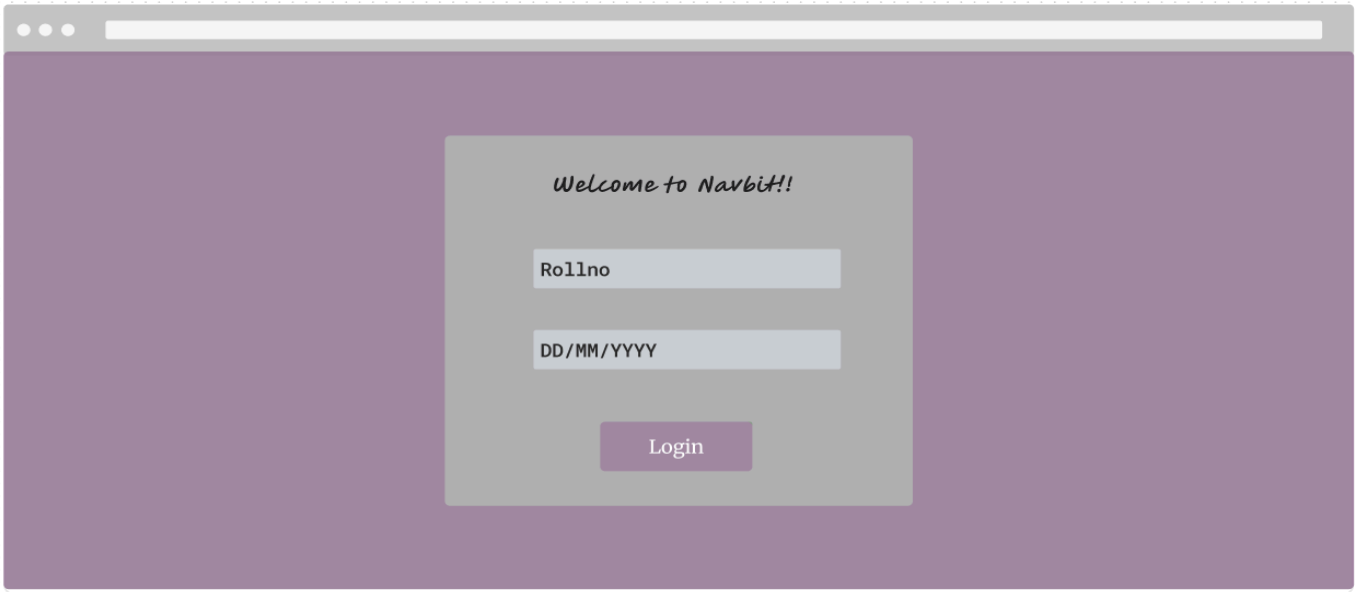


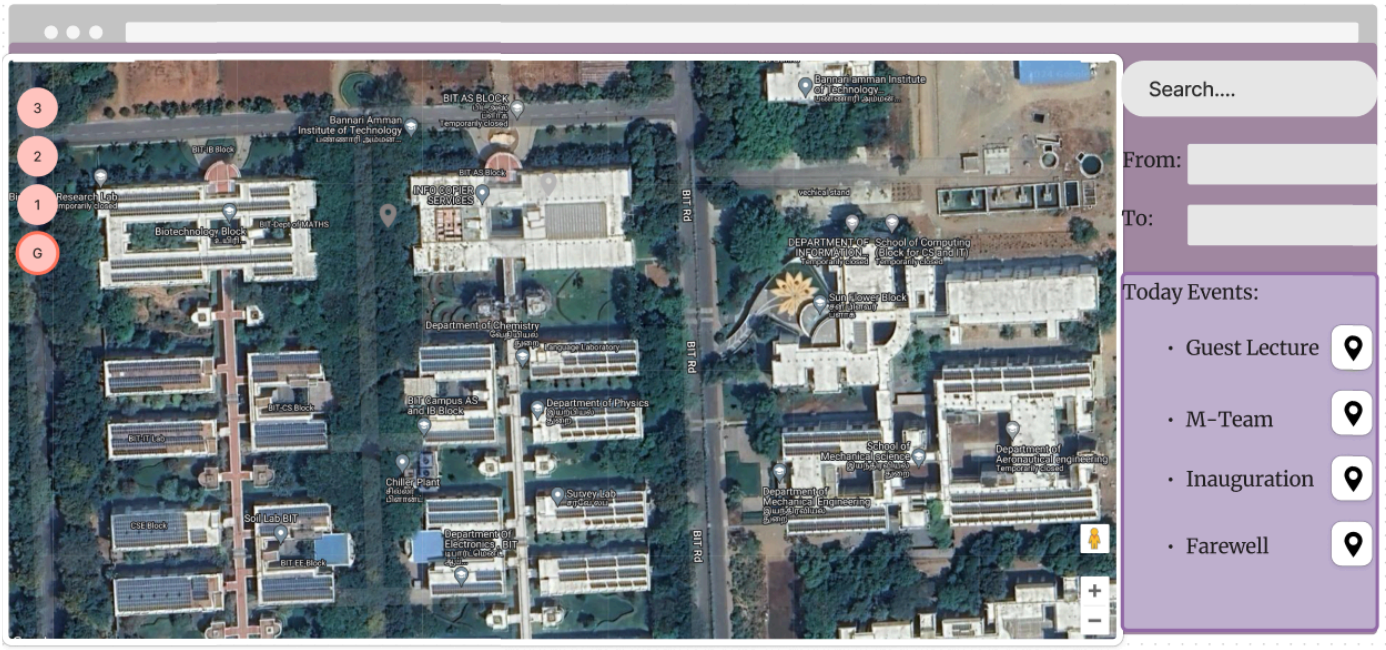
Diagram
Open App
user credentials to login
App Database
Logged in?
No
Incorrect credentials given
Yes
Navigate to User features
tracking user live location
search for target locations(special labs, faculty cabins, event venues,etc,.
viewing the target location
is navigation to target location needed?
No
Finding the shortest route/path to target location
yes
Finding the shortest route/path to target location
Navigate user to the target location
End

WORKFLOW:


Start App
Database
Login
No
Logged In?
Yes
Student
Faculty
Super User
Viewing the campus map
Search for desired locations
navigation through the locations
share location to friends / peers
limited access to viewing certain places
Add a particular event label to a location
Remove a particular event label to a location
Manage all location markers
Viewing the campus map
Search for desired locations
navigation through the locations
share location to friends / peers
Granted full access to viewing entire places

PROTOTYPE:


Welcome to Navbit!!
Rollno
DD/MM/YYYY
Login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2
1
G
Search....
From:
To:
Today Events:
Guest Lecture
M-Team
Inauguration
Farewell
BIT AS BLOCK
Bannari Amman Institute of Technology
INFO COPIER SERVICES
Biotechnology Block
Department of Chemistry
Language Laboratory
BIT Campus AS and IB Block
Department of Physics
Chiller Plant
Soil Lab BIT
CSE Block
BIT CS Block
BIT Rd
Sun Flower Block
School of Computing (Block for CS and IT)
School of Mechanical Science
Department of Mechanical Engineering
Department of Aeronautical Engineering