

INDOOR LOCATION TRACKING APP FOR BIT CAMPUS NAVIGATION

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PROJECT ID: 26

SEAT NO: 346

TECHNICAL COMPONENTS:

COMPONENTS	TECH STACK
Backend	Spring boot (java)
Frontend	React
Database	MySQL
API	RESTful API

IMPLEMENTATION TIMELINE:

Phase	Deadline	Status	Notes
Stage 1	04/05/2024	COMPLETED	Planning and Requirement Gathering
Stage 2			Design and UI/UX Prototyping
Stage 3			Database Design and Implementation
Stage4			Backend Implementation
Stage 5			Testing and Implementation

PROJECT DESCRIPTION:

Develop an innovative indoor location tracking app specifically for faculty, staff, parents, and students. This app should provide real-time navigation assistance within buildings, offer event integration, and ensure the safety of all users. The app can accurately track various locations including special labs, classrooms, seminar halls, faculty cabins, and administrative offices within buildings, despite challenges such as signal interference and multi-level structures. Furthermore, the app ensures scalability and reliability to accommodate the dynamic nature of our institution and diverse campus environments.

STACK DESCRIPTION

Here is the stack description of this project

Backend:

- we use spring boot (java) for the backend with RESTful API for user authentication, location tracking, and nearby search places.
- Integrate with Google API for indoor map creation and location tracking.
- Implement security measures to protect user data.

Frontend:

- To create React.js Application for the user interface
- Implement user authentication and location tracking using the RESTful APIs created in the backend.
- Display the indoor map created using Google Maps API and the user's location on it.
- Implement nearby place search using the RESTful APIs created in the backend.

Database:

- The database used in this project is MySQL.
- The data schema includes tables for storing user/admin information, buildings, floors, paths, and events data in the database.

PURPOSE

This project aims to develop an indoor location-tracking app for BIT campus using Spring Boot (Java) stack, React.js, and Google Maps. The app would allow students, faculty, and staff to

track their location within the university campus in real-time, using their mobile devices. This would enable them to navigate the campus more easily, find their way to classrooms, special labs, current events venues and other facilities, and receive alerts based on their location.

SCOPE

The scope of the indoor location tracking app project using Spring Boot (Java) stack is to create a web application that allows users to track their location within a university campus in real-time. The application will use GPS and Wi-Fi signals to track the user's location and display it on an indoor map created using Google Maps. The application will also allow users to search for classrooms, special labs, seminar halls, current event venue and so on.

SYSTEM OVERVIEW

The system will consist of a mobile app for tracking the user's indoor location, a server-side application for receiving and processing location data, and a database for storing the location data. The mobile app will use technologies like Wi-Fi positioning or Bluetooth Low Energy (BLE) beacons to track the user's location indoors and periodically send the location data to the server. The server-side application will be built using Spring Boot and will receive, process, and store the location data in the database (MySQL). The system will ensure that the data is securely transmitted and stored using HTTPS and encryption. The system will be thoroughly tested to ensure that it works as expected.

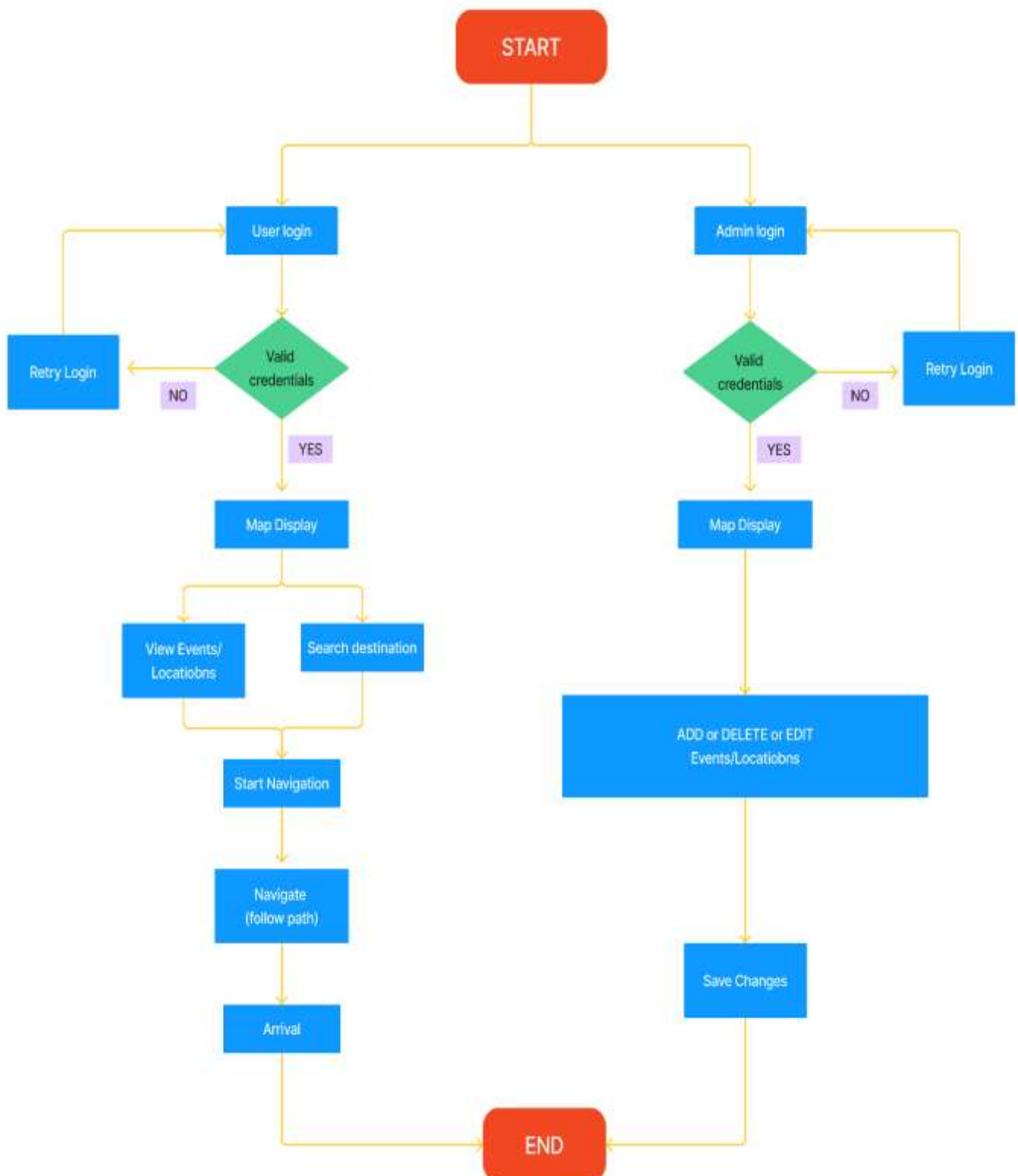
CONSIDERATIONS

- All users possess active Google accounts for authentication.
- Users have regular access to internet-enabled devices.
- The app uses GPS and Wi-Fi signals to determine the user's location

DEPENDENCIES

- Integration with Google OAuth for user authentication.
- Location access of the user
- Stable network connection

FLOWCHART:



ENTITY REPRESENTATION DIAGRAM:

