

# Project Submission Document

---

Course: Enterprise Application Development

Semester: Spring 2025

Instructor: Khalid Hussain

Submission Date: July 02, 2025

## Project Title

IBA Transport Tracker

### Team Member

Name	Roll Number	Contribution
Kashish Kumari	023-22-0292	Full Stack Developer

## Project Description

IBA Transport Tracker – Overview

Purpose:

A MERN-based web application for Sukkur IBA University to provide real-time bus tracking with seasonal schedules (summer, regular, exam) and role-based views for students, faculty, and admin.

Target Users:

IBA students, faculty, and transport admins.

### Key Features:

- **User Authentication:** Admin login with JWT and role protection.
- **Route Management:** Add/view bus routes and shift schedules by season.
- **Bus Tracking:** Update current bus locations in real time via admin.

- **Seasonal Timetables:** Summer, Regular, Exam-based shift time switching.
- **Admin Dashboard:** Update routes, manage shifts, track bus status.
- **Student/Faculty View:** Filter by route and shift with live updates.

## Technology Stack

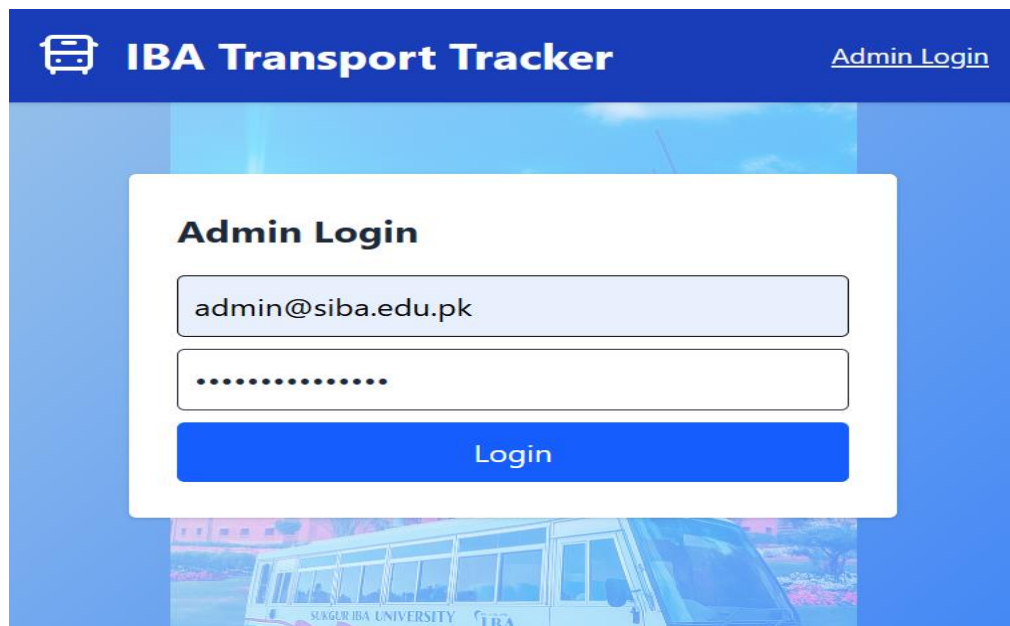
- **Frontend:** ReactJS with Tailwind CSS (Vite)
- **Backend:** Node.js, Express.js
- **Database:** MongoDB (local)
- **Authentication:** JWT (Token-based)
- **Real-time:** Socket.IO (for live bus location updates)
- **Version Control:** Git & GitHub

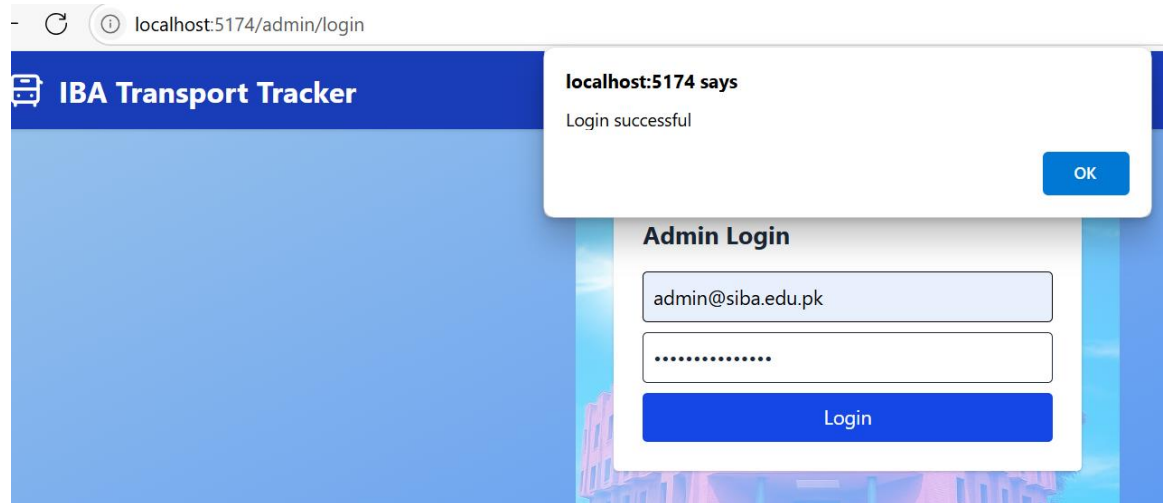
## GitHub Repository

<https://github.com/Kashishk7-10/Siba-Transport-Tracker>

## Screenshots

1. Admin login





## 2. Admin Dashboard

**IBA Transport Tracker** Admin Login

**Admin Dashboard**

**Add New Route**

Route Name

Stop Name Arrival Departure

+ Add Stop Submit Route

**Update Bus Location**

Bus Label (e.g. A) Latitude Longitude

Update Location

Logout

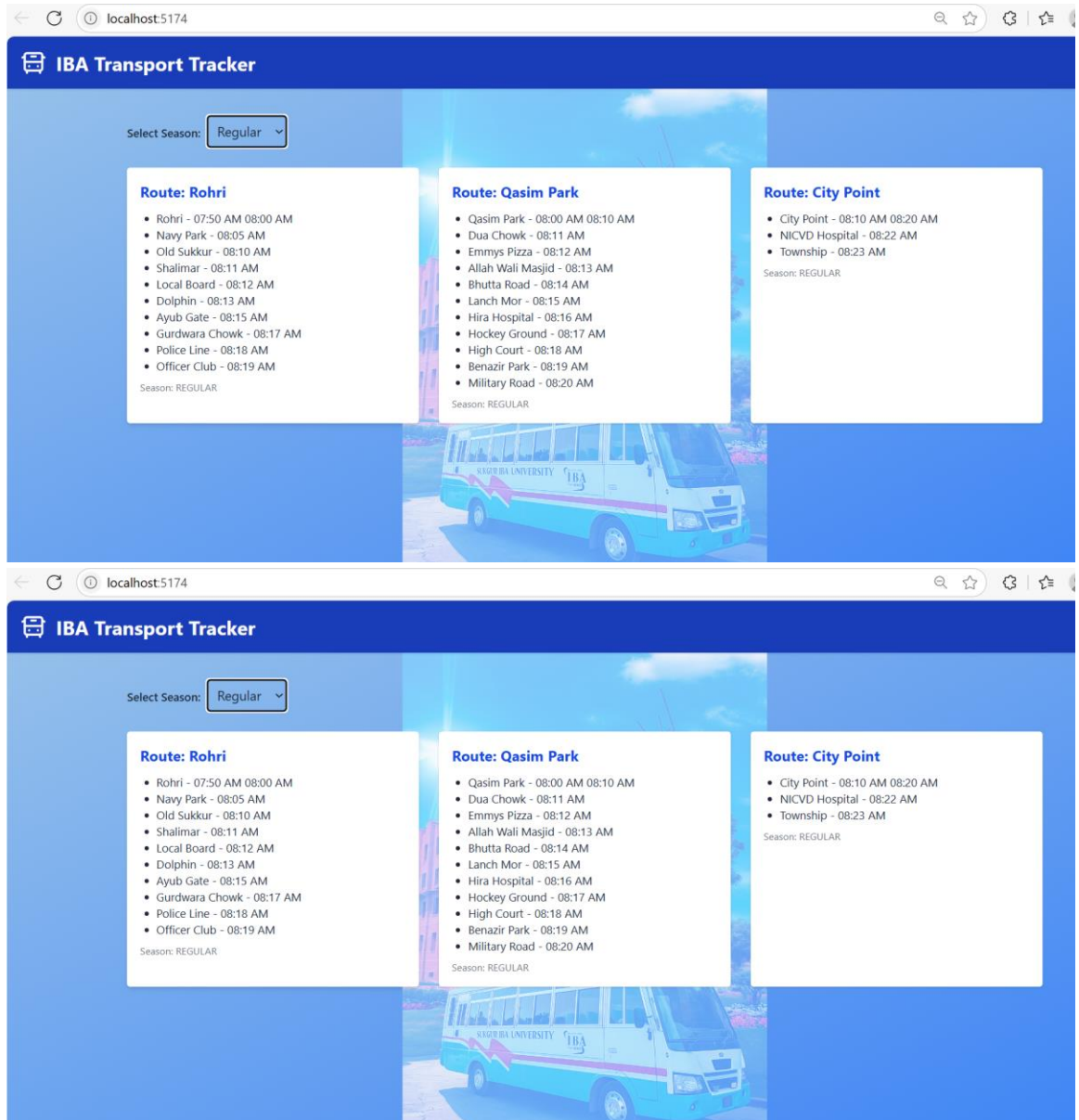


## Admin Dashboard

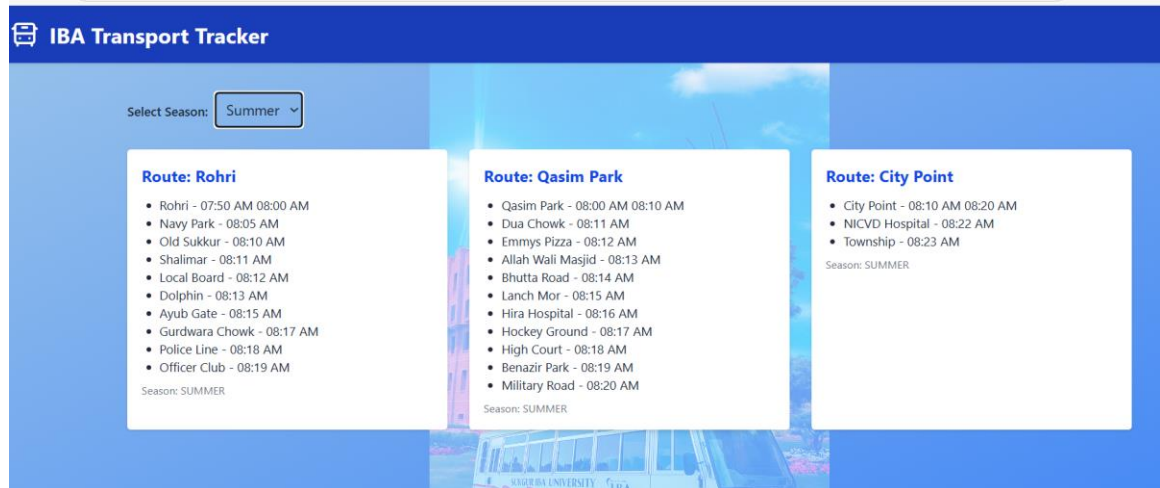
### Add New Route

### Update Bus Location

### 3. Route Filter View



#### 4. Select season



## Project Documentation

- **README File:** Link is given above of repository pasting it below here again for ease.

<https://github.com/Kashishk7-10/SIBA-Transport-Tracker/blob/main/README.md>

## Installation Instructions

### 1. Clone the project:

```
git clone https://github.com/Kashishk7-10/SIBA-Transport-Tracker.git
```

### 2. Backend Setup:

```
cd backend  
npm install  
node server.js
```

.env file:

PORT=5000

MONGO\_URI=your\_mongodb\_url

JWT\_SECRET=your\_secret\_key

### 3. Frontend Setup:

```
cd frontend  
npm install  
npm run dev
```

Frontend .env:

VITE\_API\_BASE\_URL=http://localhost:5000/api

## Reflections

### Challenges Faced:

- **MongoDB Not Starting:** Faced access issues when starting MongoDB locally; resolved by running CMD as Administrator.
- **Port Conflict (5000):** Backend failed due to port already in use. Fixed using `npx kill-port 5000`.
- **Wrong Axios Import:** Frontend couldn't locate `axiosConfig` due to incorrect import path; corrected the relative path.
- **CORS Error:** Frontend was blocked due to missing CORS headers; resolved by configuring CORS in the Express backend.
- **Login Persistence Issue:** Admin session was lost on refresh. Added token verification using `useEffect` and a `/verify` API.
- **Socket.IO Integration:** Real-time location updates were tricky; learned event handling to track bus location live.

### What I Learned:

I worked solo and learned how to structure a MERN project, debug real-time updates, and manage secure routes.

- MERN stack app architecture
- Real-time updates with Socket.IO
- JWT-based secure route handling
- Handling CORS, environment variables, and service issues

### Suggestions for Future Improvements:

- Add real GPS integration
- Notifications when bus reaches stop

- Add faculty route suggestions
- Deploy with MongoDB Atlas + Render