
IUT Transport Management System

Project Proposal

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September 29, 2024

1. Project Overview

The IUT Transport Management System is a web-based platform to simplify the vehicle requisition, subscription, and one-time ticketing processes for faculty and staff members of IUT. It's main purpose is to improve transparency, provide better access to transport facilities, and automate administrative work associated with faculty and staff transportation.

The system has three major parts:

- A requisition system for faculty and staff members to request vehicles for valid reasons.
- A subscription system for regular, daily travel on predefined routes between the university and faculty and staff residence.
- A one-time ticket system that allows non-subscribers to book available seats on regular routes when seats become available.

The system will provide notifications to the relevant parties at each stage of the approval and assignment processes to ensure a hassle free system.

2. Motivation Behind the Project

Currently, faculty and staff members have to follow a paper based system for transport requests, which involves manual approvals, phone calls, messages and lots of paperwork. This manual process can lead to delays, miscommunication, mismanagement and increase administrative burden on staff. Moreover, there is no easy way to track the availability of vehicles or monitor the progress of requisitions.

The motivation behind this project is:

- To automate the entire vehicle requisition and approval process.
- To provide a real-time view of vehicle availability.
- To digitize the subscription service for regular routes by giving a structured platform for communication and processing data, reducing the hassles.
- To provide a better solution for one-time ticketing system for non-subscribers.
- To reduces paperwork and improve communication between stakeholders.

3. Key Features

This project will have following key features:

- **Requisition System:** Faculty and staff members can request vehicles by providing the purpose, time, destination, and number of passengers. The requests will follow a structured approval process.
- **Subscription System:** Faculty and staff members can request subscription to regular routes, and can easily cancel or book their daily trips.

- **One-Time Ticket System:** Available seats on regular routes can be booked by non-subscribers on a one-time basis.
- **Notifications and Tracking:** Automatic notifications will be sent to relevant parties (requesters, approvers, drivers) throughout the approval and requisition processes. Faculty and staff members will be able to track the status of their requests.
- **Administrative Control:** Admins will have full control over the system. They will be able to add/remove routes, users, vehicles, and generate reports on usage, finances, and vehicle health.
- **Geolocation Tracking:** Regular users will be able to track the current location and route of the vehicle.
- **Driver side features:** Drivers will be able to see their passengers current location, get notifications on trip infos, and request to update their status for leave.
- **Future Enhancements:** Generating monthly summaries and rating system for drivers.

3.1 Requisition System

The requisition system allows faculty and staff members to request vehicles for specific purposes such as meetings, events, or academic duties. The requisition form has the following fields:

- Name and designation of the requester.
- Date and time when the vehicle is required.
- Places to visit and purpose of the trip.
- Number of passengers traveling.
- Contact number for the person in charge.

The request is then processed through a three-tier approval system:

1. Head of Department/Center: The head approves or rejects the request.
2. Transport Committee Chairman: Reviews the current availability of vehicles with help of transport officer and makes the decision.
3. Vice Chancellor: Gives out the final approval.

Once approved, the transport officer assigns a driver and a vehicle for the request.

3.2 Subscription System

The subscription system gives facility to the faculty and staff members to subscribe to daily transport routes that connect the university with common residential areas. The subscription process comprise of:

- A request to join a route with valid reasons.

- Approval from the transport committee following the same requisition request approval process.
- Monthly charges based on the subscriber's designation:
- In daily travel subscribers can cancel their trips. They can also re book their trip.

So, subscribers are able to see their daily status and can update their availability for any particular day.

3.3 One-Time Ticket System

The one-time ticket system is designed for faculty and staff members who are not subscribed to a regular route but wish to travel on a particular day when a seat is available. The process comprises of:

- Viewing available seats in real-time on route and time.
- Requesting a seat by joining the queue for available tickets.
- Automatic deduction of the travel fare from the faculty member's e-wallet once a seat is confirmed.
- The requester, driver, and transport officer gets a notification when a seat is confirmed or canceled.

Efficient use of available vehicle capacity and avoiding miscommunication in this regard are the main goals for this section.

3.4 Future Extensions

- Monthly Summaries: The system will generate summaries detailing passenger statistics, financial data, and vehicle usage for administrative review.
- Rating Drivers: Faculty members and staff can get rate drivers after trip. They can even complain for certain issues.

4. Stakeholder Analysis

This section will elaborately discuss about who our stakeholders are and what functionalities they will use.

4.1 Faculty and staff Members

- Use the Requisition System to request vehicles for certain purposes.
- Subscribers use the Subscription System for daily travel.
- Non-subscribers use the One-Time Ticket System to book available seats for occasional one-time trips.
- Use Track vehicles in real-time to know the current location of their assigned transport.
- Receive notifications and track status of their requests.

4.2 Head of Department/Center

- Approve or reject vehicle requisition requests from faculty and members.
- May monitor vehicle tracking.

4.3 Transport Committee Chairman

- Review vehicle availability and decide on requisition approvals.
- Decide the Subscription System approvals.
- Monitor vehicle tracking.
- May manage routes and assign vehicles.

4.4 Vice Chancellor

- Provide final approval for vehicle requisition requests.
- Monitor vehicle tracking.

4.5 Transport Officer

- Assign drivers and vehicles.
- Monitor vehicle tracking.
- Update vehicle and driver status.

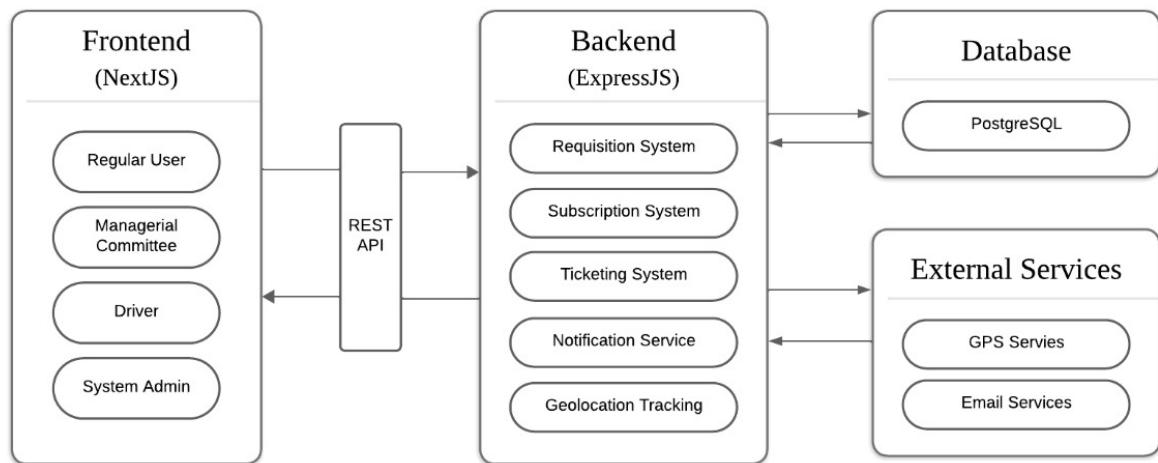
4.6 Drivers

- Receive trip details through notifications after vehicle assignment.
- Track passenger locations via geolocation.
- Request for status update for leave.

4.7 Admins

- Have administrative control over routes, users, vehicles, and report generation.

5. Architecture Diagram

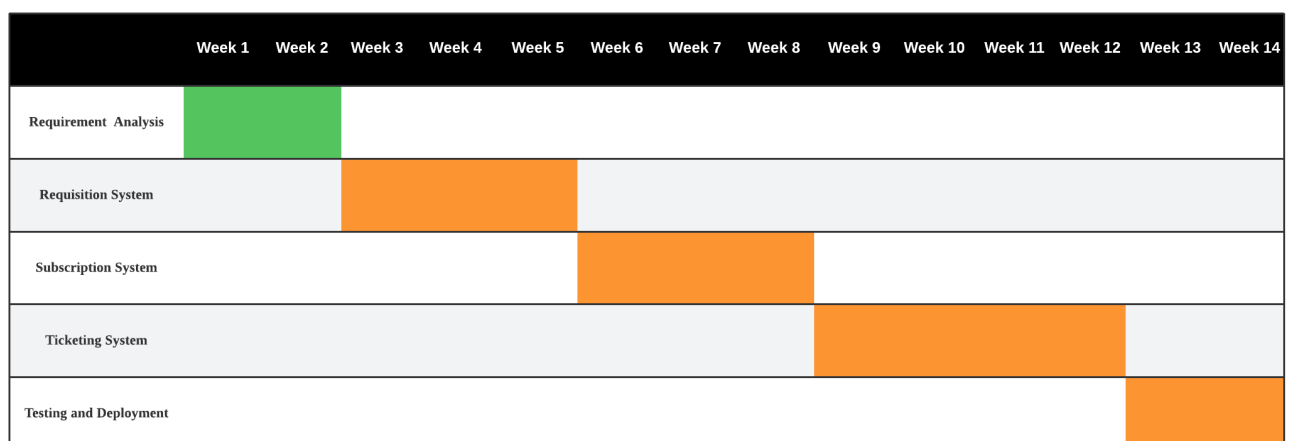


6. Tools and Technology

This project will be built using:

- **Backend:** The server side will be handled by node.js along with some javascript framework like express.js
- **Frontend:** Next.js will be used to develop the UI.
- **Database:** We will use relational database Postgresql for datasecurity and robustness.
- **Other Tools:** For notifications, we might integrate email services and for real-time vehicle tracking, GPS-based services might be used.

7. Timeline of the Project

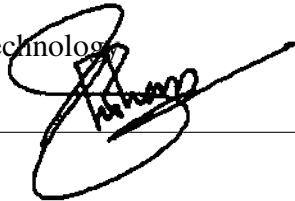


8. Conclusion

The main goal for making this project is to get a view on real life scenario on administration and make it more seamless and pain-free. This project will help us to solve real life problems using our available skills and learning new skills.

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