Project Title: Smart Express

TEAM NO.: 33

NAMES OF THE STUDENTS PARTICIPATED IN THE
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Project Details:

Problem Statement:

The concerned idea is to optimize today's present inefficient system of collecting tickets in public bus transportation, while also handling security and improving the quality of the journey of the user.

Need of Project:

1. During peak hours of traffic, it is difficult for the conductor to physically collect the tickets from each and every passenger.
2. It would prevent the malpractice of a passenger travelling without a ticket.
3. The present system utilizes paper in the form of tickets which is directly creating a burden on natural resources.

Proposed Solution:

1. The proposed solution is a self-automated ticket-collecting system.
2. It would be divided into three parts, each having a unique functionality.
   a. The driver's side of the solution would handle the QR code generation for the journey and keep getting updated at every stop till the journey ends.
   b. The user's side of the solution would enable the user to select a stop of his/her choosing and load money into his wallet using razor pay.
   c. The razor pay integration would handle all the monetary tasks and would ensure that there are smooth and easy transactions.
3. The solution would be integrated with geofencing for a smoother and easier execution, wherein the journey of a user would end if he/she crosses a certain threshold of distance from the bus.

Technology Used:

1. **User Side:**

   ReactJS, Material UI, Leaflet package.

Razor Pay for handling payment-related functions.
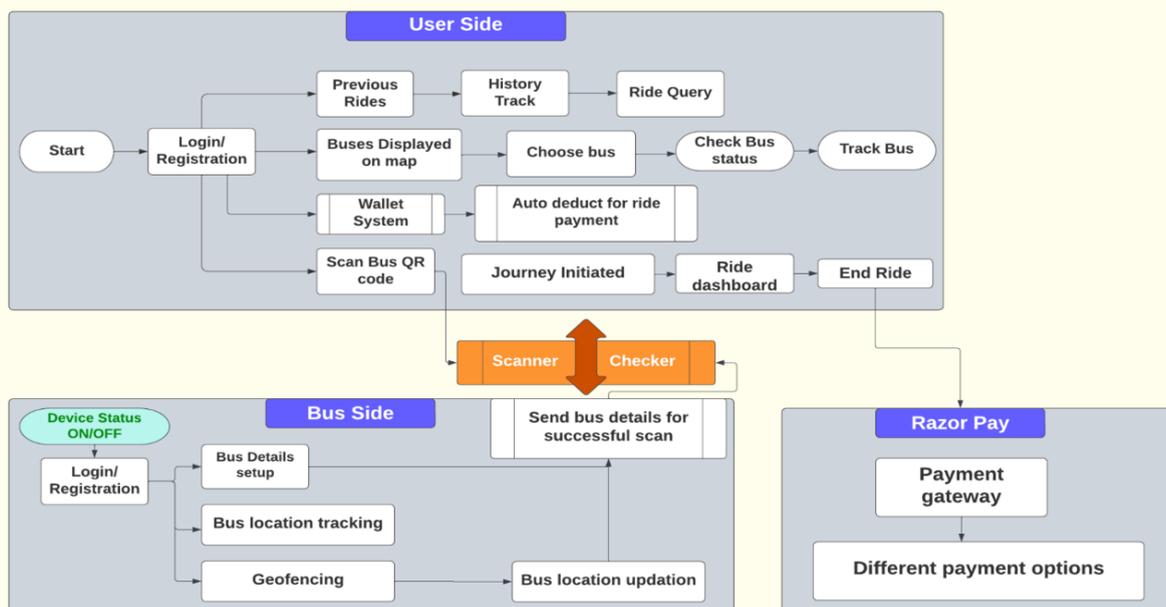
2. Driver Side:

Kotlin, Firebase, Firestore, G-maps package, ML-Kit

ML-kit is used to create an OCR model which extracts the required information from bus passes or government ids(aadhar)

Project Outcomes:

The project would revolutionize modern day bus tracking applications.

Modelling:

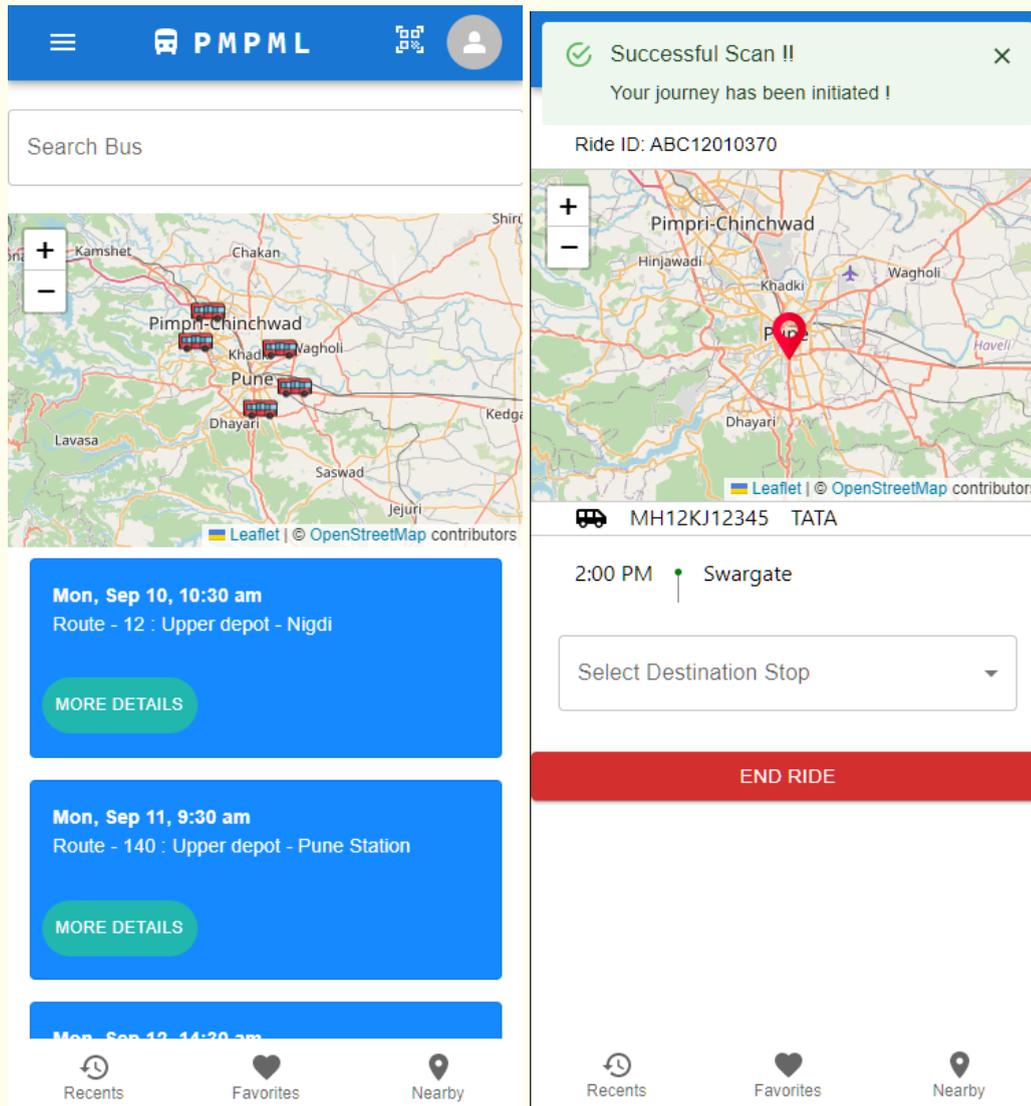1. The proposed solution is divided into two domains, each of which would handle a specific set of tasks.
   a. **User Side:**
      i. The user side of the solution would be used for scanning the QR code present in the bus and starting the journey.
      ii. It would be integrated with RazorPay for handling all transactions.
      iii. It will have login and register functions for users.

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b. **Driver Side:**
   i. The driver's side would be responsible for generating the QR code for each stop, along with getting updated at each stop.
   ii. It would also be responsible for authenticating a user's Aadhar card to generate daily passes if the user wishes so.

Results:

Future scope for project enhancement:

1. We would like to work towards making the application scalable, which could handle enormous amounts of requests at once.
2. We propose to integrate geofencing-based additional features such as alerts for the arrival of selected stops by a commuter.
3. We could also work towards implementing a physical smart card in our application, which would work even if a user's mobile is discharged.