System Requirements

1) Problem Description

Many employees face challenges with daily commuting, leading to increased transportation costs, environmental impact, and logistical inefficiencies.The **carpooling application** aims to optimize **workplace commuting** by matching employees with **shared routes** and schedules. By integrating with **Microsoft Teams**, the system ensures **real-time coordination**, **automatic schedule adjustments**, and **seamless communication**. The solution **reduces transportation costs**, **lowers carbon emissions**, and enhances workplace **connectivity** while maintaining user **privacy** and **security**.

2) Main Actors and Roles

This **carpooling application** involves **multiple actors** who interact with the system to coordinate daily commutes **efficiently**. Each actor will have a **specific role** such as setting preferences and managing rides so that everything goes smoothly.

I) Employee (Driver/Passenger)

1. Employees use the application to register.
2. Employees use the application to set commute preferences.
3. Employees use the application to participate in carpools as drivers or passengers.
4. Drivers use the application to specify available seats.
5. Passengers use the application to request rides based on their schedules and routes.

II) System (Automated Matchmaking & Notifications)

1. The system processes user data to match employees based on location.
2. The system processes user data to match employees based on schedule.
3. The system processes user data to match employees based on compatibility.
4. The system processes user data to match employees based on preferences.
5. It sends notifications for ride confirmations or cancellations.
6. It sends notifications for real-time updates on ride status.

III) Administrator (HR/IT/Admins)

1. Administrators manage user access.
2. Administrators ensure compliance with company policies.
3. Administrators oversee system functionality.
4. Administrators generate reports on app usage.
5. Administrators monitor carbon footprint reductions.
6. Administrators resolve any user-reported issues.

3) Main Usage Scenarios

- **Employee Registers and Sets Preferences**

  Description:

  1. A new user registers.

2. The user sets commute preferences.
3. The user indicates driver/passenger status.

Exceptions:

1. Incorrect input.
2. Missing permissions to sync with Microsoft Teams.

- **Automated Carpool Matching**

  Description:

  1. The system matches employees based on location.
  2. The system matches employees based on schedule.
  3. The system matches employees based on preferences.

  Exceptions:

  1. Conflict in schedules.
  2. Driver unavailability.

- **Joining and Managing a Carpool**

  Description:

  1. Employees accept or decline carpool invitations.
  2. Employees modify schedules if needed.

  Exceptions:

  1. Conflict in schedules
  2. Driver unavailability.

- **Live Notifications and Ride Updates**

  Description:

  1. Users receive reminders from the driver.
  2. Users receive "On my way" alerts from the driver
  3. Users receive ETA updates from the driver

  Exceptions:

  1. Notification failure
  2. System downtime

- **Administrator Monitoring and Reports**

  Description:

  1. Admins track overall carpool usage.
  2. Admins generate reports.
  3. Admins manage settings.

  Exceptions:

  1. Data privacy concerns.
  2. System errors.

ChatGPT was used only for generating a brief summary of the Carpooling App project, then we took the principal ideas and transformed them into our bullet points.