# Functional Requirement

1.1 Route Planning

Input:

- Origin (latitude/longitude or address)

- Destination (latitude/longitude or address)

- Travel preferences (e.g., fastest route, fewest transfers)

Output:

- Recommended optimal route with details, estimated arrival time, transfer count, etc.

- List of alternative routes with full details

Description:

Calculates and displays the best route between the origin and destination using real-time traffic data and user preferences. Offers multiple route choices, each containing detailed path information, ETA, and transfer counts.

1.2 Real-Time Traffic Update

Input:

- Current location (latitude/longitude)

- Real-time data from traffic API

Output:

- Real-time traffic status including congestion, incidents, etc.

Description:

Fetches and displays up-to-the-minute traffic conditions for the user’s current location and refreshes the UI accordingly.

1.3 Public Transport Timetable

Input:

- Timetable data from public transport API

Output:

- Departure and arrival times for public transport modes

Description:

Retrieves and presents schedules for buses, subways, and other public transit so users can plan departures and avoid missing services.

1.4 Points-of-Interest Search

Input:

- User’s current location (latitude/longitude)

- Search keywords (e.g., restaurants, shops, attractions)

Output:

- Nearby POI list with names, types, distances

Description:

Searches and displays nearby points of interest based on the user’s location and keywords, providing detailed listings of nearby facilities and services.

1.5 Trip Recording

Input:

- User’s location updates (latitude/longitude)

Output:

- Recorded trajectory on map

Description:

Tracks and shows the user’s movement path on the map, allowing review and sharing of historical trips.

1.6 Navigation Guidance

Input:

- Current location (latitude/longitude)

- Destination (latitude/longitude)

Output:

- Real-time navigation with voice prompts and on-screen arrows

Description:

Provides turn-by-turn navigation during travel, combining voice instructions and visual cues to guide the user to the destination.

1.7 User Preference Settings

Input:

- Custom preferences (e.g., avoid highways, avoid toll roads)

Output:

- Personalized route recommendations

Description:

Allows users to set travel preferences; the routing engine adjusts accordingly to deliver suggestions tailored to user needs.

1.8 Multi-Language Support

Input:

- Language selected by user

Output:

- Interface and text switched to chosen language

Description:

Supports multiple languages for the interface and content, letting users pick their preferred language version.

1.9 Community Feedback

Input:

- Feedback submitted by user

Output:

- Confirmation that feedback was received

Description:

Provides a channel for users to report issues or suggest improvements, enabling continuous app enhancement.

1.10 Personal Account Management

Input:

- Registration data (username, password, etc.)

- Login credentials (username, password)

Output:

- Success message for registration/login

- Personal profile management page

Description:

Allows account creation and login, plus profile management features such as password change and phone number linking.

1.11 Route History

Input:

- User’s historical route queries

Output:

- Historical route list including date, origin, destination, and route details

Description:

Logs past route queries so users can review, reuse, or share previously searched routes.

1.12 Travel Cost Estimation

Input:

- Route information (origin, destination, transport mode)

Output:

- Estimated travel cost

Description:

Calculates the expected fare for the chosen route and transport mode, providing a cost breakdown to aid economic decisions.

1.13 Weather Forecast Integration

Input:

- User’s current location (latitude/longitude)

Output:

- Real-time weather and multi-day forecast

Description:

Integrates weather services to deliver current conditions and upcoming forecasts, helping users adjust travel plans according to weather.