# Functional Requirement

F1 User Registration

- Description: New users create an account by providing basic information.

- Input: Name, e-mail address, password.

- Output: Newly created user account; user can log in.

F2 User Login

- Description: Registered users authenticate with name and password to access the system.

- Input: Valid username and its associated password.

- Output: Access to the system.

F3 Create Origin

- Description: Users can create new origin coordinates and address information.

- Input: Origin details (address, name, etc.).

- Output: New origin stored in the database.

F4 Manage Origin

- Description: Administrators update or delete origins in the system.

- Input: Origin identifier, update data, or delete command.

- Output: Updated or deleted origin in the system.

F5 Create Destination

- Description: Users can create new destination coordinates and address information.

- Input: Destination details (address, name, etc.).

- Output: New destination stored in the database.

F6 Manage Destination

- Description: Administrators update or delete destinations in the system.

- Input: Destination identifier, update data, or delete command.

- Output: Updated or deleted destination in the system.

F7 Plan Route

- Description: Users obtain a list of City-Mapper-recommended routes from an origin to a destination.

- Input: Origin and destination details.

- Output: Recommended routes.

F8 Select Transport Mode

- Description: Users choose a specific transport mode for route planning.

- Input: User selection (public transport, walking, cycling, etc.).

- Output: Stored user choice, used for further analysis.

F9 Distance Query

- Description: Users query straight-line or road distance between origin and destination.

- Input: Origin and destination details.

- Output: Distance in kilometers or miles.

F10 Calculate Travel Time

- Description: Users compute estimated travel time from origin to destination based on selected transport mode.

- Input: Origin, destination, transport mode.

- Output: Estimated travel time.

F11 Set User Preferences

- Description: Users configure preferences for transport modes and routes.

- Input: Preference data (e.g., prefer public transport over cycling).

- Output: Stored user preferences.

F12 Real-Time Traffic Update

- Description: System ingests and reflects real-time traffic conditions in the app.

- Input: External real-time traffic data feed.

- Output: Latest traffic information in the database.

F13 Query Timetable

- Description: Users query timetables for relevant transport modes.

- Input: Query criteria such as transport mode, stop name, date.

- Output: Matching timetable information.

F14 Explore Points of Interest

- Description: Users browse or search points of interest (attractions, restaurants, etc.).

- Input: POI query criteria.

- Output: Search results including POI name, address, and category.

F15 Create & Manage Admin Account

- Description: Create and maintain administrator accounts (update or delete).

- Input: Admin account details, update or delete action.

- Output: Updated or deleted admin account in the system.

F16 Log User Preferences

- Description: System continuously records and updates user preference settings.

- Input: User preference choices.

- Output: Persisted user preference log.

F17 Log Real-Time Traffic Data

- Description: System stores and refreshes real-time traffic data.

- Input: Traffic data source.

- Output: Latest real-time traffic log in the database.