# Functional Requirement

F1 User Registration

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

- Input: Name, email address, password.

- Output: Newly created user account; user can log into the system.

F2 User Login

- Description: Registered users log into the system by entering name and password for authentication.

- 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 such as address and name.

- Output: New origin stored in the database.

F4 Manage Origin

- Description: Administrators can 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 such as address and name.

- Output: New destination stored in the database.

F6 Manage Destination

- Description: Administrators can 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 can obtain a list of City-Mapper-recommended routes based on origin and destination.

- Input: Origin and destination details.

- Output: Recommended routes provided by the system.

F8 Select Transport Mode

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

- Input: User selection such as public transport, walking, or cycling.

- Output: Stored user choice used for further analysis.

F9 Distance Query

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

- Input: Origin, destination, and transport mode.

- Output: Estimated travel time.

F11 Set User Preferences

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

- Input: User preference information such as preferring public transport over cycling.

- Output: Stored user preferences in the database.

F12 Real-Time Traffic Update

- Description: The system ingests and reflects real-time traffic conditions in the application.

- Input: External real-time traffic data feed.

- Output: Latest traffic information in the database.

F13 Query Timetable

- Description: Users can query timetable information for relevant transport modes.

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

- Output: Matching timetable information.

F14 Explore Points of Interest

- Description: Users can browse or search points of interest such as attractions and restaurants.

- Input: POI query criteria.

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

F15 Create and Manage Admin Account

- Description: Create administrator accounts and manage them via update or delete operations.

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

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

F16 Log User Preferences

- Description: The system continuously records and updates user preference settings.

- Input: User preference choices.

- Output: Persisted user preference log in the database.

F17 Log Real-Time Traffic

- Description: The system stores and refreshes real-time traffic data.

- Input: Traffic data source information.

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