**DESCRIPTION OF THE REQUEST**

We want to develop an information system that acts as an independent entity to ensure interoperability between the toll systems of different highway operators. The system must receive and store vehicle passage data from the toll systems of various operators, calculate financial settlements between operators based on vehicle passages, and also provide data analysis services and access to stakeholders.

**USE CASES ΠΕΡΙΓΡΑΦΙΚΑ**

Login: The user logs into the system via credentials (username, password). If the authentication is successful, the system returns a token for the user's authorization in subsequent calls.

Logout: The user logs out of the system. The token that has been issued is no longer valid, and the system deletes or expires the user's session.

Health Check: Confirms system end-to-end connectivity between user and database. If connection is established the system returns information about the toll Company that connected: number of its toll stations, tags, and passes in the database. Otherwise returns error: “Connection failed”

Reset Stations: Initializes the toll stations data using the tollstations2024.csv file

Reset Passes: Deletes all the passes, as well as entities related to passes like tags, and initializes the administrative account username: admin and password: freepasses4all.

Add Passes: Adds transit data to the database from a CSV file (columns: timestamp, tollID, tagRef, tagHomeID, charge) updating all related columns in the database.

Toll Station passes: The user selects a toll station, and a time period (date\_from and date\_to) and the system returns a detailed list of passes for the specific toll station within the defined time. The list will include things as the Station Operator (what operator owns the station), and the n Passes from that station in that time period with passIndex, pass Id, timestamp of the pass, tag ID, tag Provider, pass type (home or visitor), pass charge.

Pass Analysis: The user selects a (another) operator, and a time period (date\_from and date\_to) and the system returns a detailed list of the transit events that occurred at stations of the stationOpID operator (the one made the request) by tags belonging to the tagOpID operator (the operator selected) within a specific time period. Information includes: stationOpID, tagOpID, requestTimestamp, periodFrom, periodTo, number of Passes and a pass List containing [pass Index, pass ID, station ID, timestamp, tag ID, pass Charge] for each pass.

Passes Cost: The user selects a (another) operator, and a time period (date\_from and date\_to) and the system returns the total number of passes and their cost for a time period. It analyzes the amount owed by the tag operator (tagOpID) (the requested opeartor) to the station operator (tollOpID) (the one who made the request). Information includes: tollOp ID, tagOp ID, request Timestamp, period From, period To, number of Passes, the accumulative passes Cost.

Charges By other operator: The user selects a (another) operator, and a time period (date\_from and date\_to) and the system returns a list of data that includes the number of crossings and the total cost owed by other operators (visiting operators) to the station operator (tollOpID) for a specific period of time. Information will include: tollOpID, request Timestamp, period From, period To, vistingOp List: [visitingOp ID, number of Passes, accumulative passes Cost]

Net Charges with other operators: The user selects a (another) operator, and a time period (date\_from and date\_to) and the system returns a list of data that includes the net total cost owed between the two operators (the one requesting and the one requested) for a specific period of time. Information will include: tollOpID, request Timestamp, period From, period To, tagOp ID, transactionList: [incoming passes total costs, outgoing passes total costs, accumulative Cost]

View Information on Map: It concerns the operation of an interactive map for ordinary users (mainly drivers), who can enter the app without login (as guests) and in the map they can see the country's toll stations as pins on the map and obtain basic information about them (pop up with name, location, operator, charges for car, bike, bus, truck). Guests can also apply a filter, to only view toll stations of one specific company.