

On-Board Diagnostic Monitoring System

System Specifications for the unit 2 (user interface application)

Option 1: Mobile Application



- The s mobile application asks the user for its vehicle id to retrieve and save information for a single vehicle at a time.
- The mobile application connects to the database unit to **read** data and display the following information:
 - Time Stamp
 - Fuel Pump Status (P1230 to P1239)
 - Engine RPM or Speed limit reached (P1270)
 - Seat belt status (B1426 to B1430)
 - ABS status (C1095 to C1103)
- The mobile application **gathers** the following information (from the smartphone) while the vehicle is moving on a **second by second** basis, and **writes** them into database
 - Time
 - X-Coordinate
 - Y-Coordinate
 - Speed
- The following is a list of criteria that should be considered in the requirement list:
 - The mobile app should group the collected data in “trips” and save them in database.
 - Defining the “trips” is left as a design choice for the students, it can be done by detecting the speed of the phone or left to the user to start and end the trip, etc ...
 - The application should save a local copy of all the collected data (from the cellphone) in the cellphone
- Here is a list of “Good to have” capabilities of the mobile app:
 - Record over-speeding incidents in the database and warn the user
 - Issue warnings when an error code was read from the database (the source of the error is OBD II)
 - Search the database for a previous trip and show the trip on the screen (the trip belongs to the driver who is connected to the app)
 - User authentication to access the ODBII info in the database
 - The application can operate in offline mode (no internet access) by displaying the locally saved information

Option 2: Web Application



- The s Web application authenticates the user to give him access to the fleet information. There are two groups of users for the Web app:
 - The drivers can use the application to see the information related to their vehicle
 - The fleet managers can access the information of all the vehicles in a particular fleet
- If the user is a **driver**: The Web application connects to the database unit to **read** the following data fields from database and shows them in a table by specifying the collection timestamp:
 - Time Stamp
 - Fuel Pump Status (P1230 to P1239)
 - Engine RPM or Speed limit reached (P1270)
 - Seat belt status (B1426 to B1430)
 - ABS status (C1095 to C1103)
 - List of their trips with the information entered for each trip (students can assume that the data for each trip is saved by the driver's smartphone app in the database)
 - For each trip, show the path in the map based on the recorded locations
- If the user is a **fleet manager**: The Web application should be able to display the results of at least three out of the following six queries to the user:
 - Total number of trips as a function of time (e.g. each hour of day)
 - List of over speeding incidents for a particular time interval
 - The total area of the map covered by the trips in a particular time interval
 - Display the areas of the map with more than X over speeding incidents
 - Display the total distance travelled by the drivers in a particular time of day (e.g what is the average distance travelled from 12 AM to 6 AM by the fleet drivers in the past 6 month)
- Here is a list of “Good to have” capabilities of the Web app:
 - Secured authentication method for the driver and fleet manager (e.g. encrypted password communication with DB)
 - Group the drivers in multiple fleets and ask the manager to enter fleet id to display information
 - Display warnings whenever an Error code recorded for a particular user in the database
 - Display warning when and over speeding incident with more than 40 kmph was recorded in the database