

Project: Car Black Box

Abstract:

By considering today's busy life, every one wants to reach the destination as soon as possible by ignoring the rules and regulations. So one solution could be by implementing a Black Box which would log critical activities on the car.

As mentioned above the root cause of the negligence in the driving would be meeting the daily schedule and go off duty, or to earn extra money by illegal trips etc.,. So by implementing the mentioned solution it would be easy to keep track of how the vehicle is being used, handled and control the efficiency of the vehicle.

The proposed solution is to log all the critical events like the gear shifts with current speed, the engine temperature, fuel consumption per trip, trip distance etc.,. The system should allow a password based access to the transport managers to view or download the log to PC if required.

Requirements:

• Default Screen

- When the system is in Operation Mode, it would act like a dash board which would show the current time, speed of vehicle and the latest occurred event.

• Login Screen

- On press of the UP or DOWN (User Keys) keys the system should prompt for password
- The password would be the combination of 4 presses (User Keys).
- Each press should be denoted a "*" symbol
- Every wrong entry would, re prompt for password (Max 3 times for every 15 minutes)
- Incomplete key press (pause of 3 seconds) would lead to Default Screen

• Main Menu

- The main menu should contain 5 option
 - View Log
 - Clear Log
 - Download log
 - Reset time
 - Change password
- The UP / DOWN keys are used to navigate
- A long press of UP Key should enter the selected menu
- A long press of DOWN Key should logout
- Idle screen for more than 5 secs should logout

• View Log

- Should display all the events captured with log index starting from 0, like
“EVENT NUMBER” “EVENT SIGNATURE” “EVENT TIME” “SPEED AT THE EVENT”
- The UP and DOWN key will be used to scroll the entries
- Rollover on reaching the max log entries
- The system should be live (capture events occurred) even while viewing the log
- A long press of UP Key should take you back to main menu
- A long press of DOWN Key should logout

Clear log:

-> clear the logged data in the external eeprom

Download log:

-> Download the logs in PC

Change password:

- > should ask user to Enter password:
- > should ask user to re - enter password:
- > if passwords are matching update the password in EEPROM

• Set Time

- Should show the current time. The Secs field should blink indicating the field to be changed
- The UP key should be used to increment the time. Rollover on reaching max
- The DOWN key will be used to choose the field.
- A long press of UP Key should take you back to main menu

• Event Capture

- Required events have to be captured and stored in the memory
- Every event should have a format as
“EVENT SIGNATURE” “EVENT TIME” “SPEED AT THE EVENT”
- The events should be captured real time, no matter which mode you are in

Prerequisite:

- Embedded C programming
- I2C protocols

Level:

- Medium

Design:

Source:

Sample Output:

References: https://en.wikipedia.org/wiki/Event_data_recorder