Digital car switch panel

**November 2023**

**By**

**Thomas James Hammond**

**Student number 202112533**

**Word count: XXXX**

Table of Contents

[Software 3](#_Toc150273890)

[Requirements needed from the software 3](#_Toc150273891)

[Primary 3](#_Toc150273892)

[Secondary 3](#_Toc150273893)

[User interface 3](#_Toc150273894)

[Requirements of the UI 3](#_Toc150273895)

[UX design 3](#_Toc150273896)

[Design Images 3](#_Toc150273897)

[Priorities of the Software 4](#_Toc150273898)

[Goals 4](#_Toc150273899)

[Holdbacks 4](#_Toc150273900)

[Hardware 5](#_Toc150273901)

[Requirements needed by the hardware 5](#_Toc150273902)

[Display types and choices 5](#_Toc150273903)

[Circuit board choices 5](#_Toc150273904)

[Additional features 5](#_Toc150273905)

[Priorities of the Hardware 5](#_Toc150273906)

[Goals 5](#_Toc150273907)

[Holdbacks 5](#_Toc150273908)

# Software

## Requirements needed from the software

### Primary

* The software needs to be responsive and work in real time to ensure that the display is not lagged behind the real-world events; this is especially important for the gauges within the software as the user needs to see the values in real time.
* The software needs to be able to provide the user with a clear display of buttons and gauges which can be viewed and pressed.
* The buttons on the display should be large enough the user can see and use which moving without needing to look at the display for long periods of time.
* The software should be compatible with the major car groups and not vehicle specific.

### Secondary

* The software should be able to allow the reading of error codes which can then be displayed to the user.
* The gauges and switches can have the backgrounds changed to one of the users choosing.
* The software should start up in a reasonable time to ensure that the user is not waiting long periods of time before being able to use the device/system.
* The software could display a waring for when the car is moving.
* The software could darken when at night so it’s not too bright for the user.

## User interface

### Requirements of the UI

#### Primary

* Should be minimalistic so it is not distracting.
* Should have large buttons.
* Should have large gauge panels.
* Should be useable with minimal user training.
* Should update in real time.

#### Secondary

* Should darken when at dusk/night.
* Should warn the driver not to use when moving.

### UX design

### Design Images

## Priorities of the Software

* Display gauges
* Display switches
* Update in real time

## Goals

The goal of the software would be to provide the user with a display which can display digital gauges which update in real time as the car is moving such as showing the current RPM of the engine. The software should also be able to allow the user to click virtual buttons which can then control various systems in the car such as an AUX fan switch. The system should also be able to be used on multiple vehicles not just one brand which will make it almost universal and gives it the ability to be used by anyone no matter what car they own.

## Holdbacks

The system that is used to communicate data from the car to the device would need to be coded to work for various different vehicles as each system is different and requires different things to access the data.

For the system to adjust between a light and dark mode it would need a light sensor to be implemented on the hardware side.

A gyro meter would need to be present in the hardware to enable a warning when moving but this could be overcome by warning the user on startup not just when they move the vehicle.

# Hardware

## Requirements needed by the hardware

## Display types and choices

## Circuit board choices

## Additional features

## Priorities of the Hardware

## Goals

## Holdbacks