Major task – Team 3

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(1) Project Objectives:

The project can be found on this repo:

https://github.com/Ahmed-Zahran-AZ/ASURT-EVER-Major-Task

The project aims to represents a car's dashboard, sensors, and inputs.

(2) Project Features:

This project includes the following features:

- Dashboard for displaying the different status of the car such as car speed, distance from an obstacle (for parking), car lock status, etc…
- A horn represented by a pushbutton and a buzzer to output the horn's sound.
- A limit switch for the car lock represented by a circuit switch.
- An ultrasonic sensor for measuring the distance between the car and obstacles for the purpose of parking.
- A voltage sensor for measuring the battery's voltage.
- A speedometer for measuring the car's speed.

(3) Development:

We achieved this project using two Arduinos, one connected to:

1. Dashboard
2. Light drivers (Headlights and Flasher lights)
3. Limit switch (Car Lock)
4. Car's horn

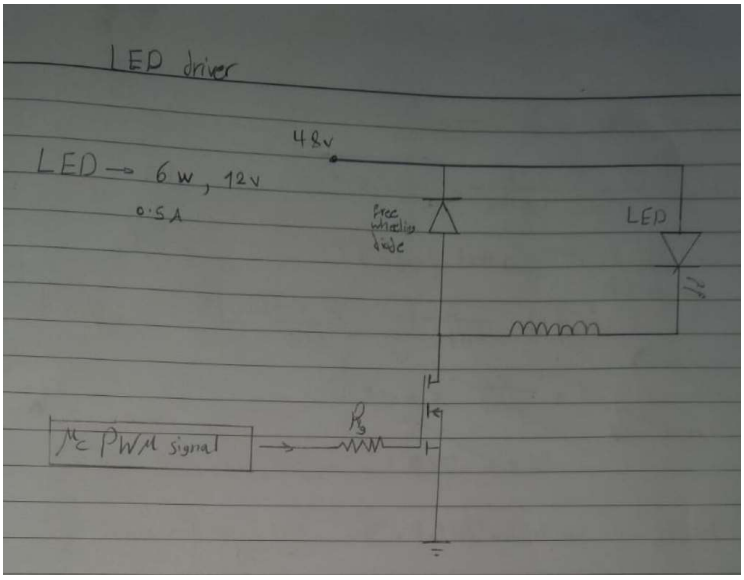
The second is connected to:

1. Battery voltmeter

2. Ultrasonic sensor (for parking)
3. Speedometer

(4) Key Notes:

1. For the dashboard we used ILI9341 by Adafruit due to its robust Arduino library and its support for color and changing display orientation. It also has support for displaying images in .bmp format.
2. For the lights driver, we used a DC converter in order to operate the headlights and the flashing lights:



3. For the communication between the two Arduinos we used the SoftwareSerial.h library to replicate UART

(5) Future Improvements:

1. Utilizing the ILI9341 to the fullest by using images of .bmp format to create a better dashboard instead of just text

2. Using a faster communication protocol