

## Topic 42

Car Over Speeding Detection: Calculate speed and activate buzzer and LCD when over speeding

### **Team 13**

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# Task Description

The whole system is defined as follows:

The LDR trigger motion system and also light system, where it sets the maximum speed based on the light intensity readings. Also it turns on the car's headlights (LEDs) when it reads low light intensity readings.

The LDR readings will keep updating, in addition the car's speed and maximum speed will be displayed on LCD screen (gets updated frequently) and when the car exceeds the maximum speed a buzzer will ring.

## Inputs

- Light Intensity Sensor (Analog)
- Motor Revolution Sensor (Digital)

## Outputs

- LED
- LCD
- Buzzer

The whole system work together as a whole so that the LDR trigger both **light** and setting **speed systems** and apply their actions upon the results concurrently and the **optical sensor** keeps calculating current speed and display it and the maximum speed (based on LDR value) on the **LCD** and **buzzer** works when exceeding the maximum speed.

This large system will be decomposed into these subsystems:

1-Maximum speed should be initialized once the power is on and it will keep updated depending on the readings of the light sensor (as the light intensity decreases the threshold for the maximum speed decreases and vice versa.)

-- 1<sup>st</sup> Concurrent TASK

2- The revolution sensor will read the gaps of the motor gear, which are 20 gaps per revolution.

Those readings will be divided /20 (counts per revolution) to know how many revolution occurred, and will be multiplied by the circumference of the wheel to calculate the car's speed -- 2<sup>nd</sup> Concurrent TASK

3-As the car keeps moving, its speed and current maximum speed will be displayed on the LCD and once the speed exceeds the maximum speed the buzzer will ring.

4- The LDR trigger two systems together (light and motion systems).

--Broadcasting

5- The LDR when it ready values less than or equal to 3100, it will turn on the headlights (2 LEDs), and turn it off otherwise.

6- LDR being less than or equal to 3100 decreases the maximum speed to 50% and also turn on the headlights.

Button = 1

Power OFF

Button = 0

# Car System

