# Laser Sensor on the Cloud

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# Background

AWS DeepRacer

- 3D racing simulator and global racing league held every year
- 1/18 scale racing car runs on reinforcement learning
- Aim is to clear a lap with th
- Uses ai

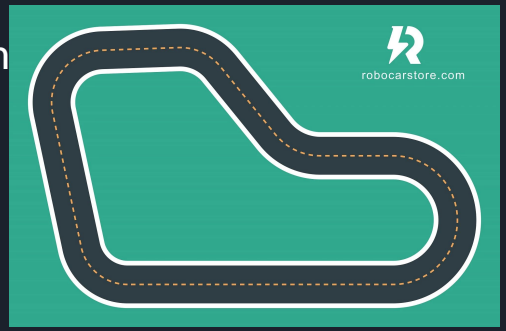



Fig 1: deep racer track

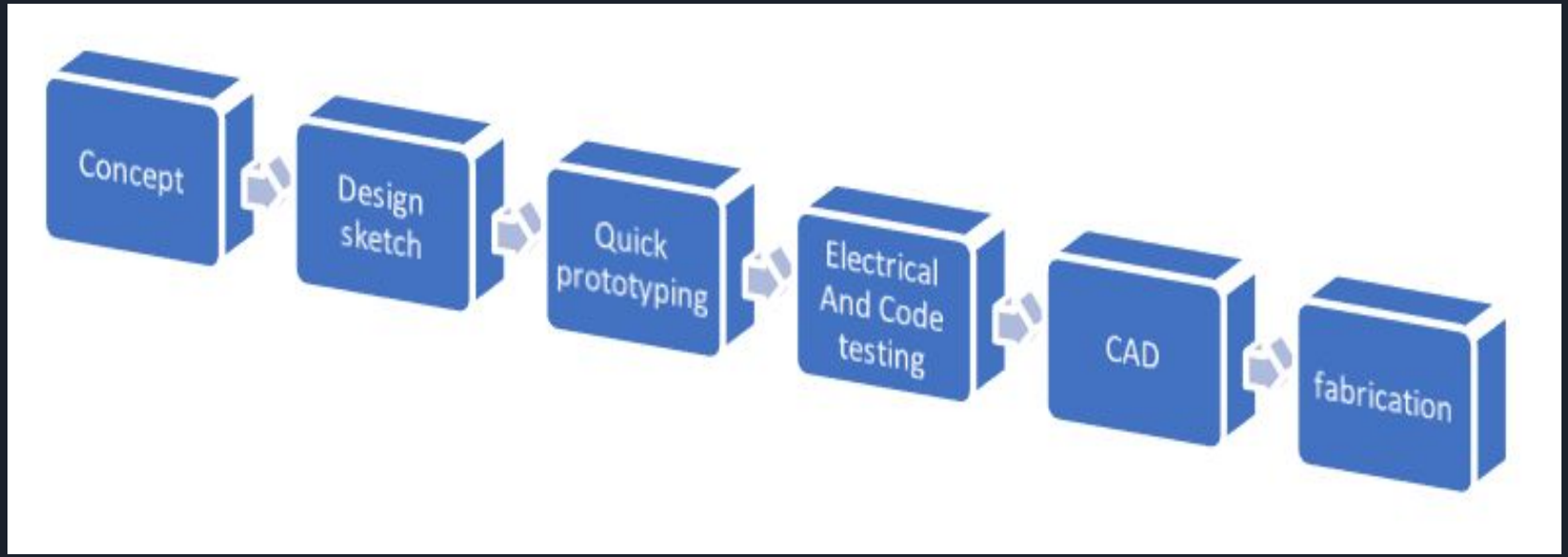
# Problem

- The races are timed by people
- Timings are usually less than 15 seconds
- Human error might greatly affect timing results and placement
- Thus, need to minimise human error

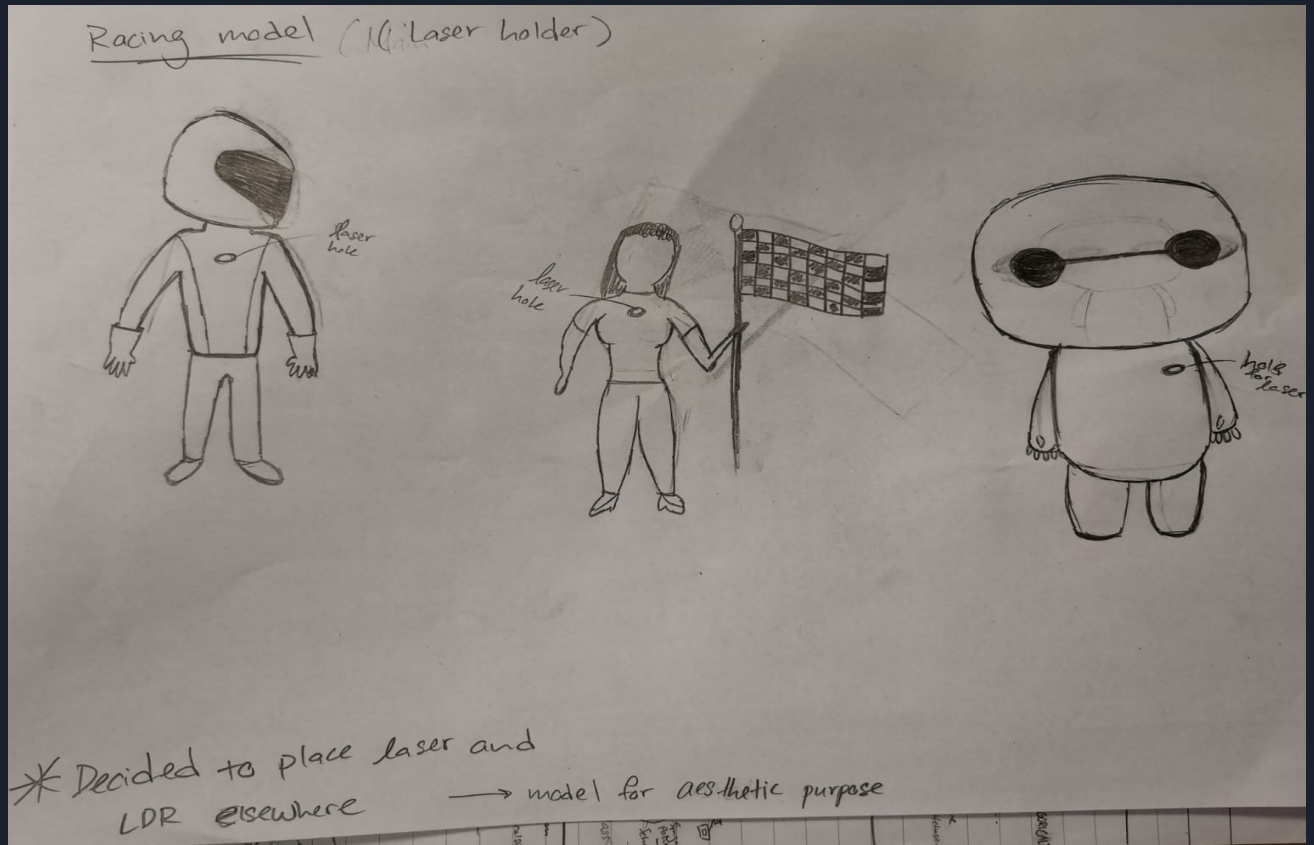
# Solution

- Design a product to take down accurate time in seconds and milliseconds
- Then send results to AWS cloud server for judging purposes
- This will make judging more accurate and fair

# Design Process



# Concept Design



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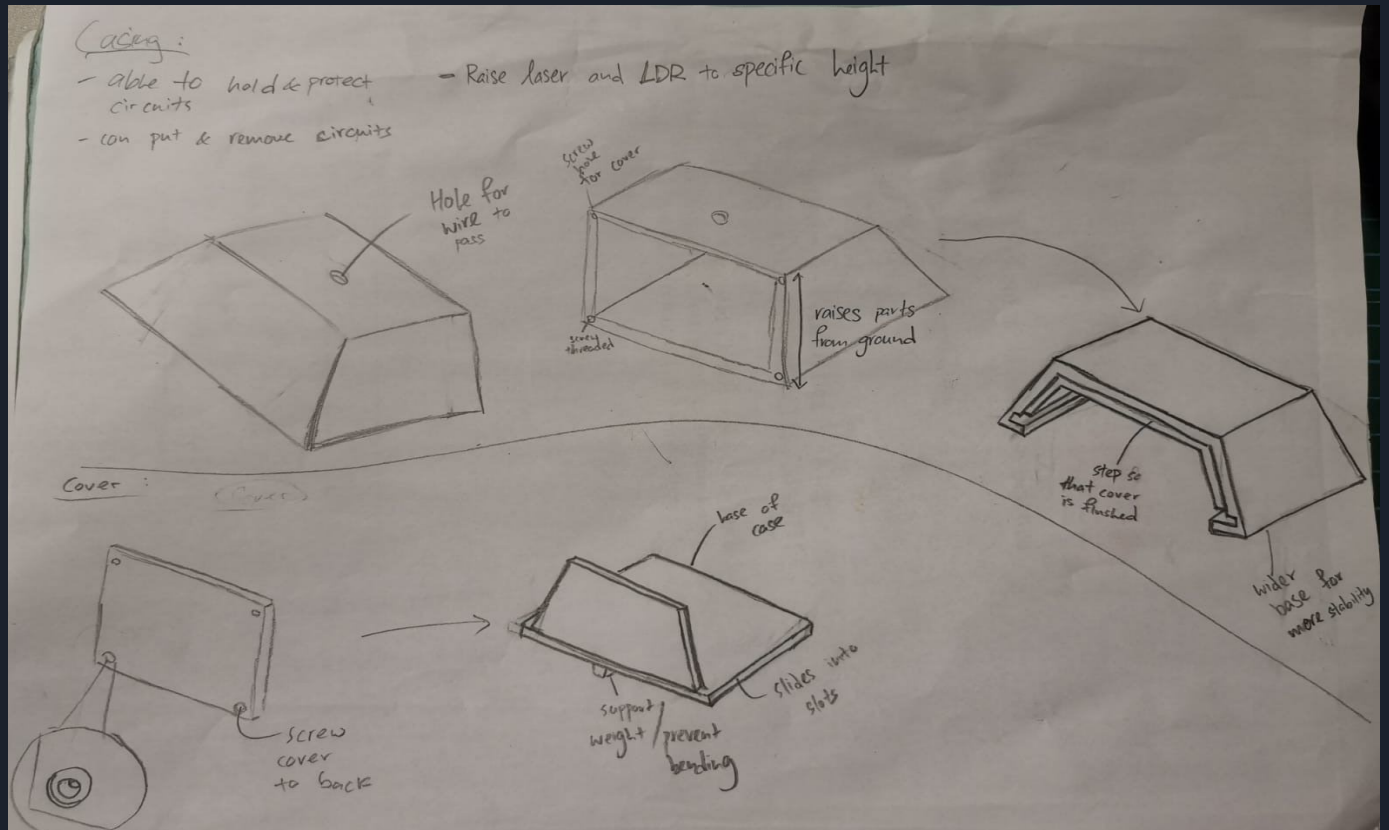

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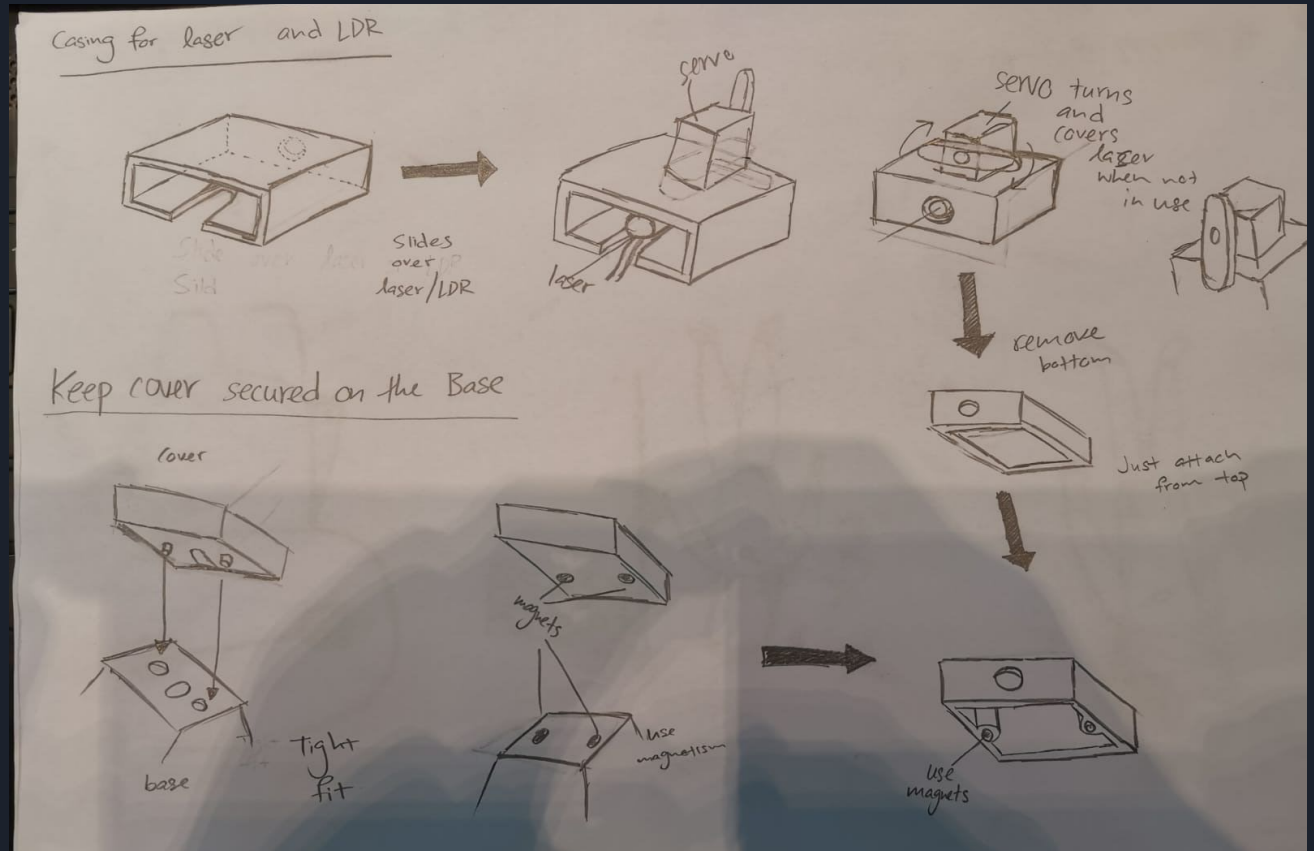


# Quick Prototyping

Problems

- Laser is too high up for the deerp racer car
- Servo vibrated too much so the laser was not steady
- Serial monitor only had drastic change in values only once

# Quick Prototyping

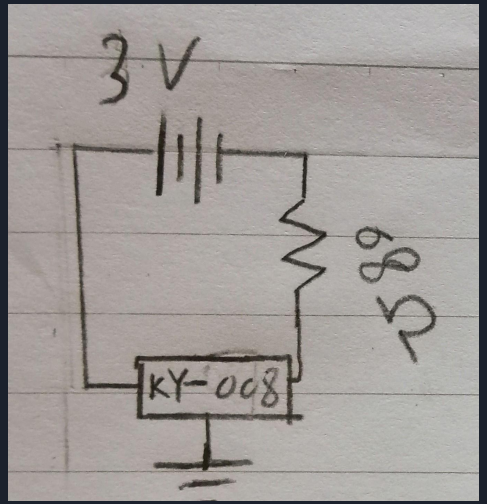
Lessons learnt

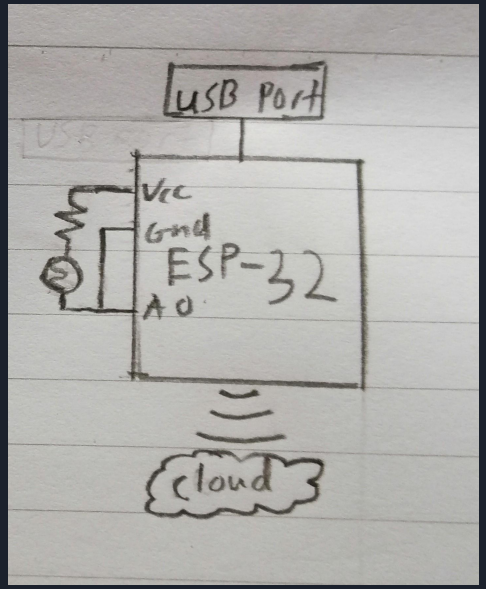
- Measure the appliance before you make something for it
- Don’t add unnecessary things to your design
- Don’t assume your products are working the same way

# Hardware Used

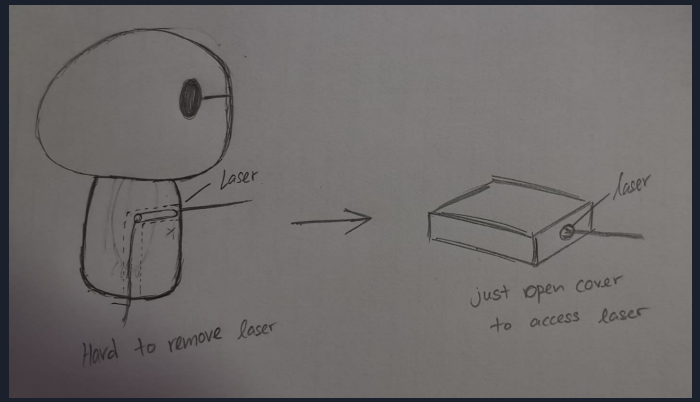
- 1 ESP-32(Microcontroller with wifi capabilities)
- 1 KY-008(laser pointer)
- LDR
- Resistors: 68 Ohms and 10K Ohms
- 3V power supply

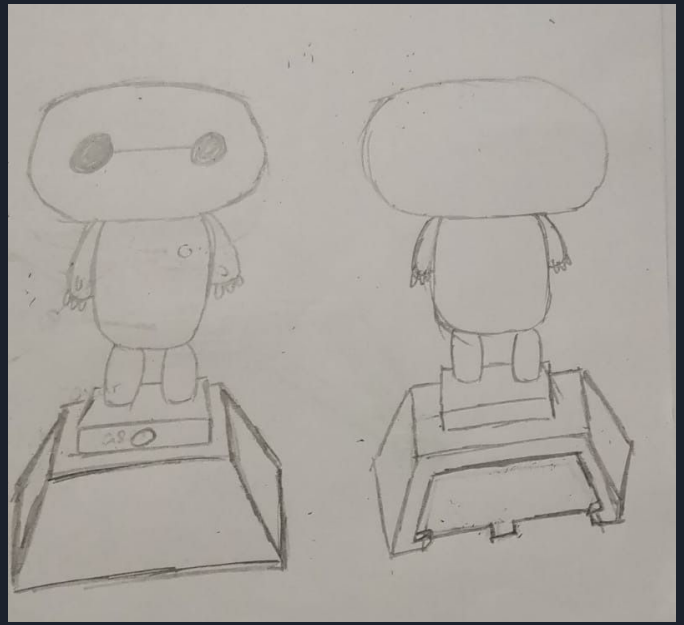
# Final Design - Electrical design



# Final Design - Design



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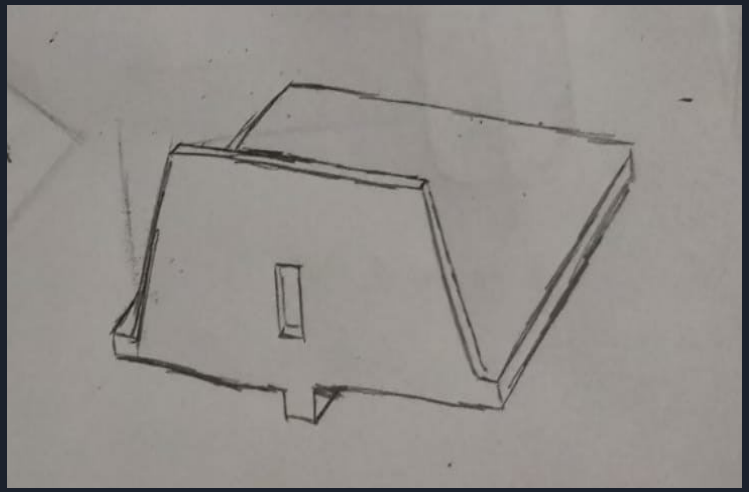
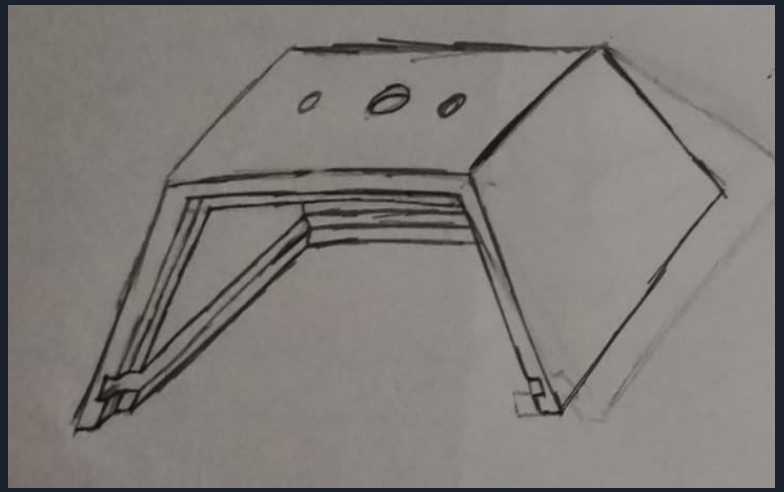
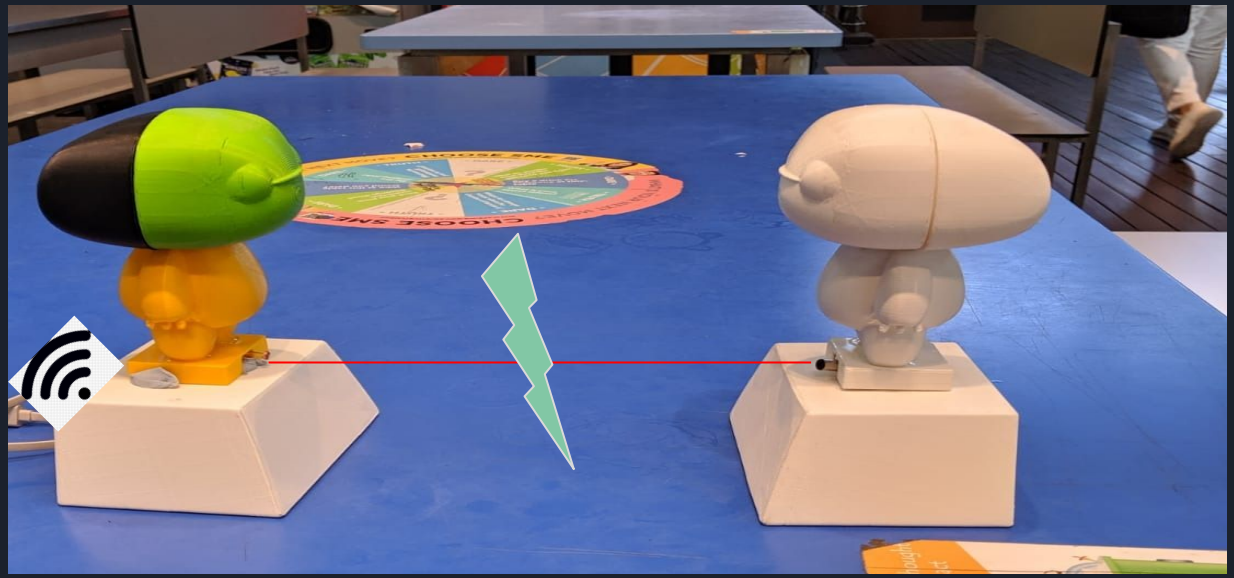




# How the prototype works

When the laser is tripped the counter starts when it is tripped again the counter stops.Once the time is record it send it to the cloud via Mqtt(a short messaging protocol) to be processed



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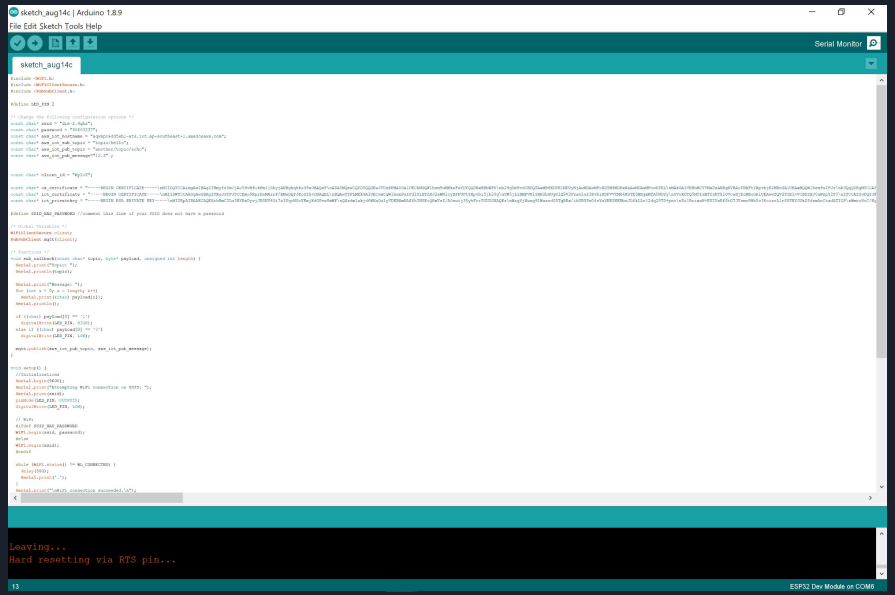
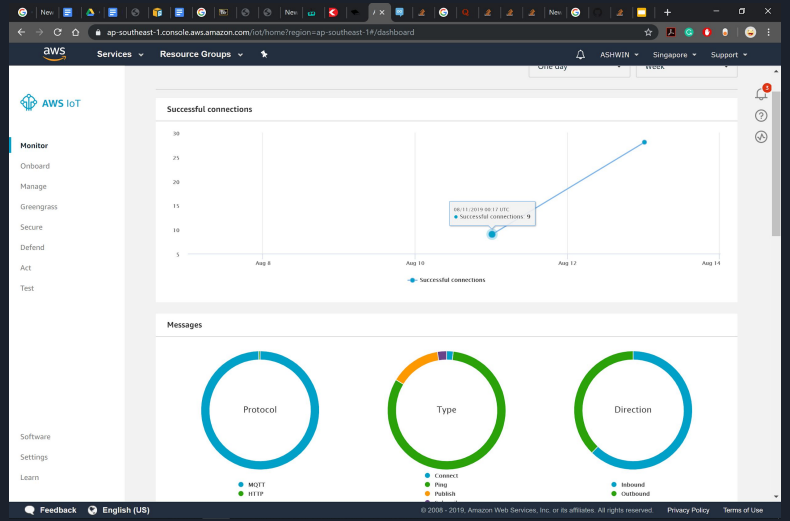


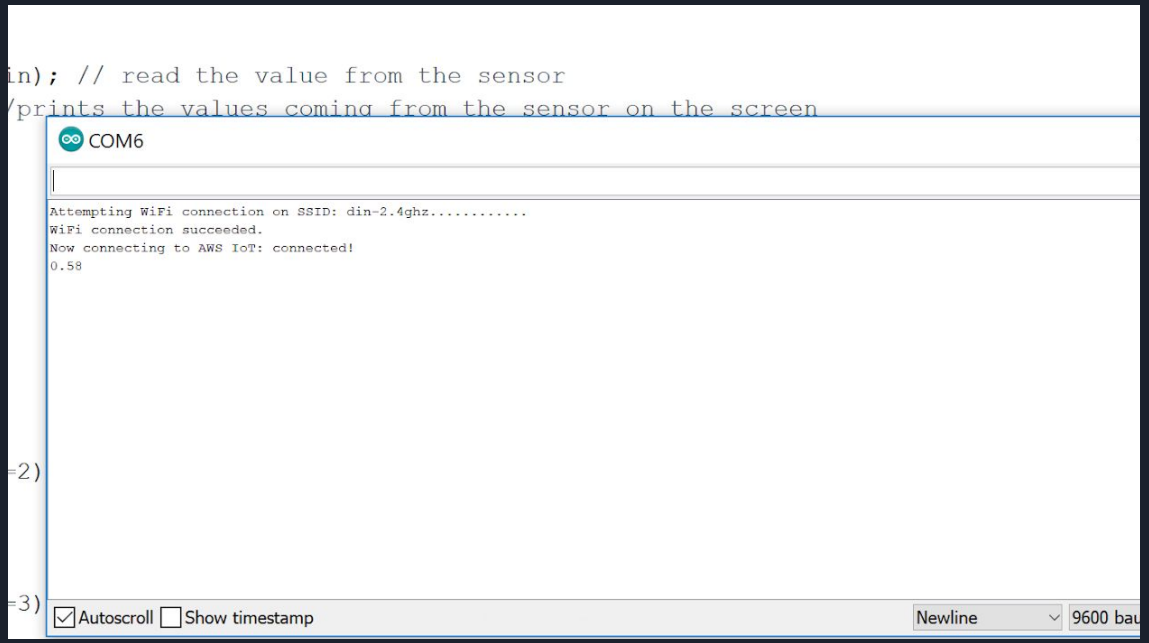



# Examples and Applications

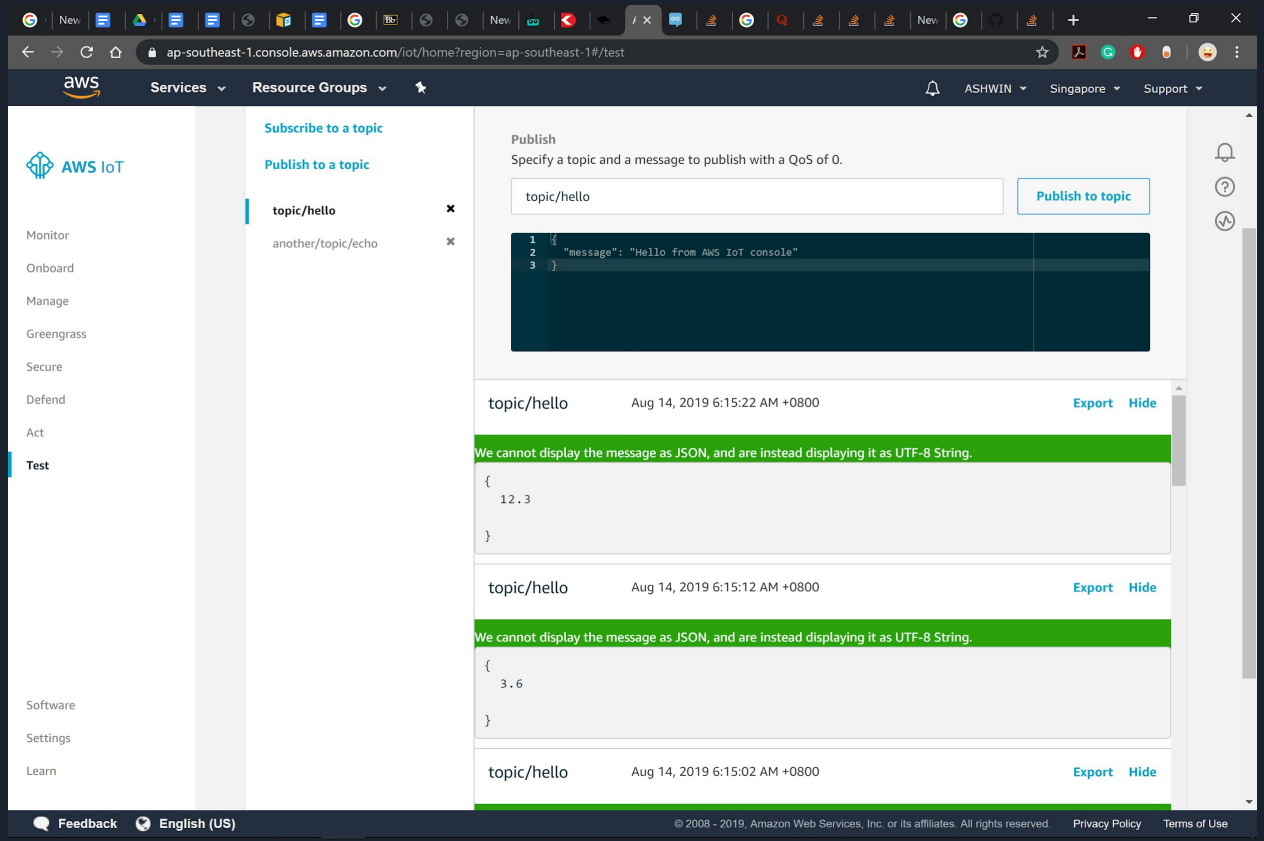
- Alarm system
- Accurate speed analysis
- Sense car skipping red light

# Prototype Showing

# How serial output look  looks like on IDE



# How mqtt subscribe look on aws console



# Improvements

- The laser should have a mechanism to aim
- The base should have rubber for friction to prevent the product to move if a car hits
- The design could be improved to become modular for other purposes
- Code can be further improved

# Q&A

# Thank You