

Workshop 2 - PCB Design (Schematics)

Friday 4th October

Lecture PCB's (Printed Circuit board)

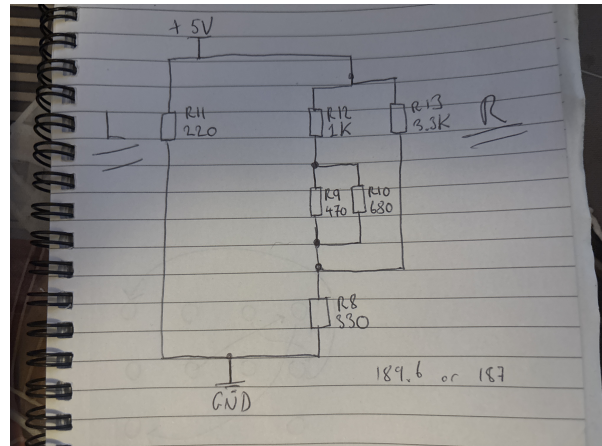
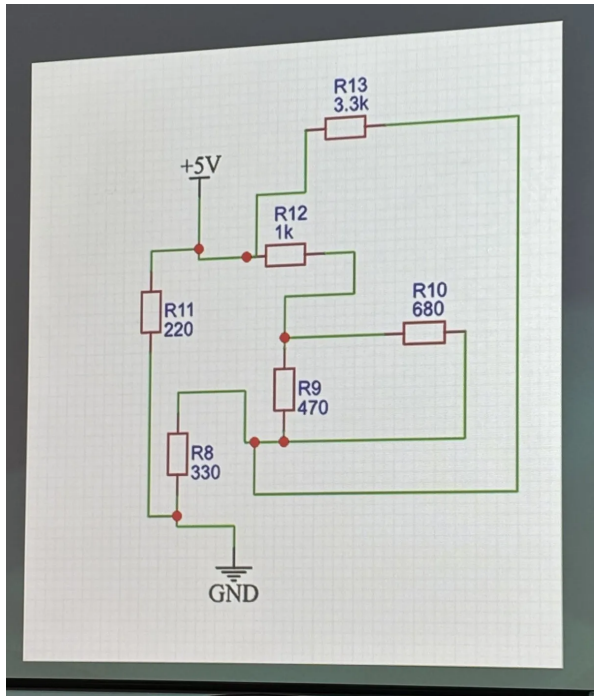
Today we looked into making PCB's and were shown how to design one is EASYeda. Within this we can find the components we need through various searches, of which the User Contributed was very helpful.

We were also shown how to evaluate resistors in series and parallel and were given some homework (see below)


$$\begin{array}{l} \text{Series} \\ R = R_1 + R_2 \end{array} \qquad \begin{array}{l} \text{Parallel} \\ R = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2}} \end{array}$$

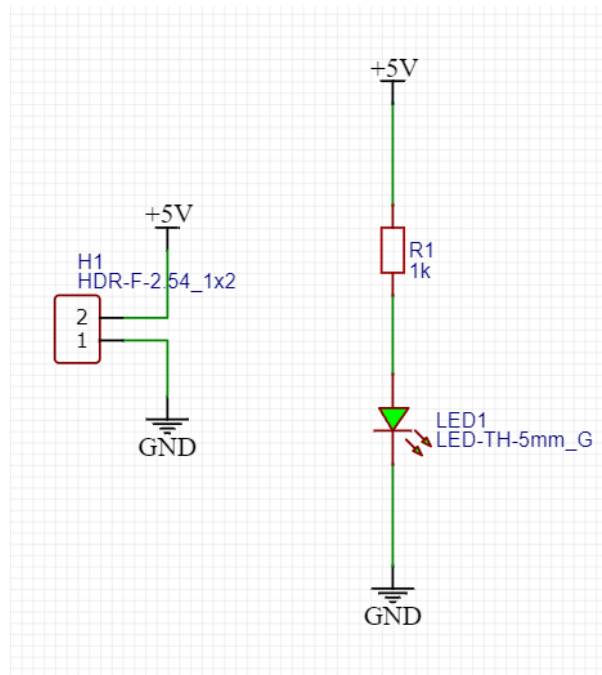
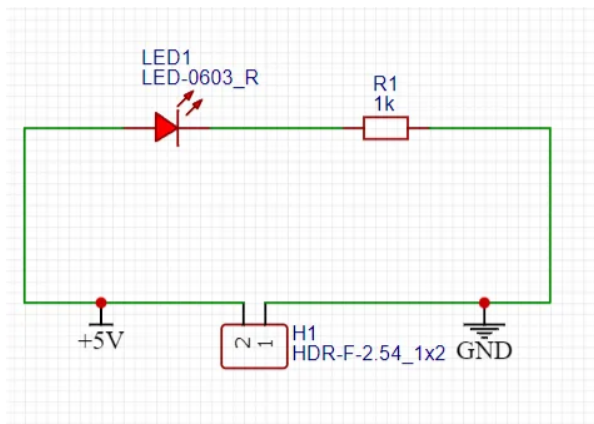
We were also pointed towards the symbol standard of IEC rather than ANSI because IEC is more of a global standard as opposed to ANSI which is just America.

Home Work



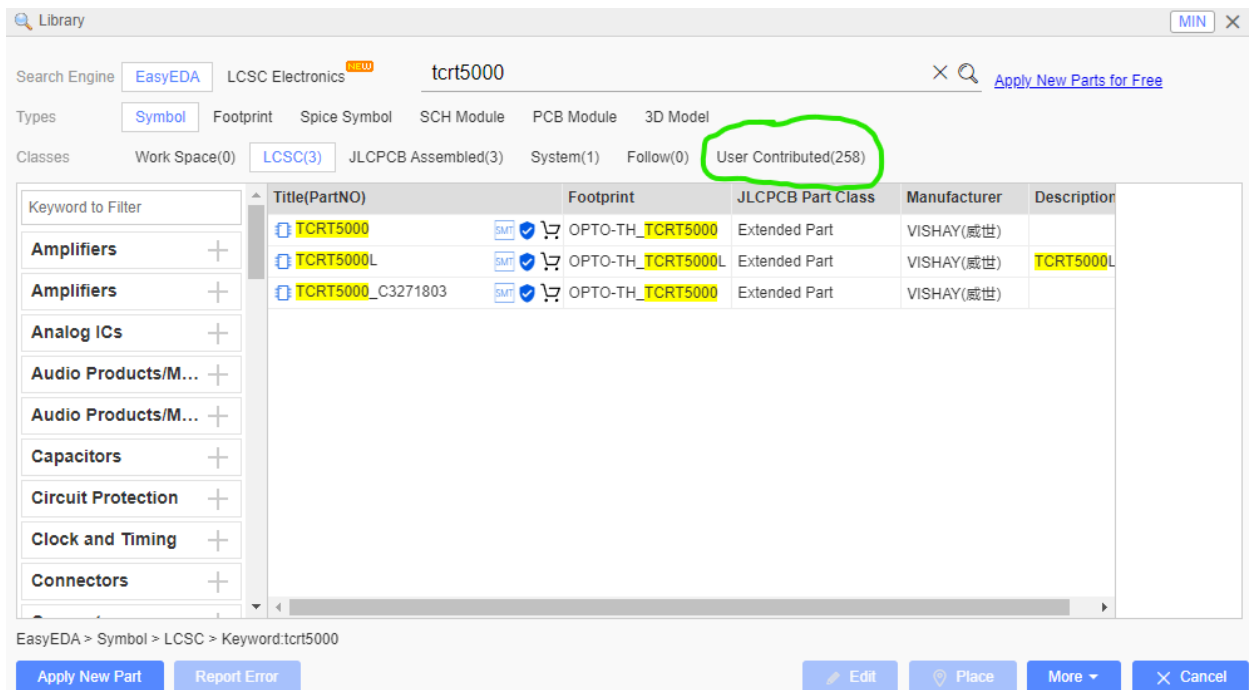
Simplified the homework and came up with 2 slightly different numbers.

189.6 and 187 I believe the latter to be the more correct one

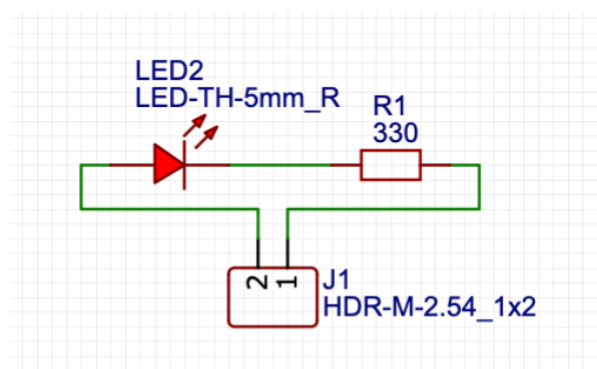


Setup and Layout

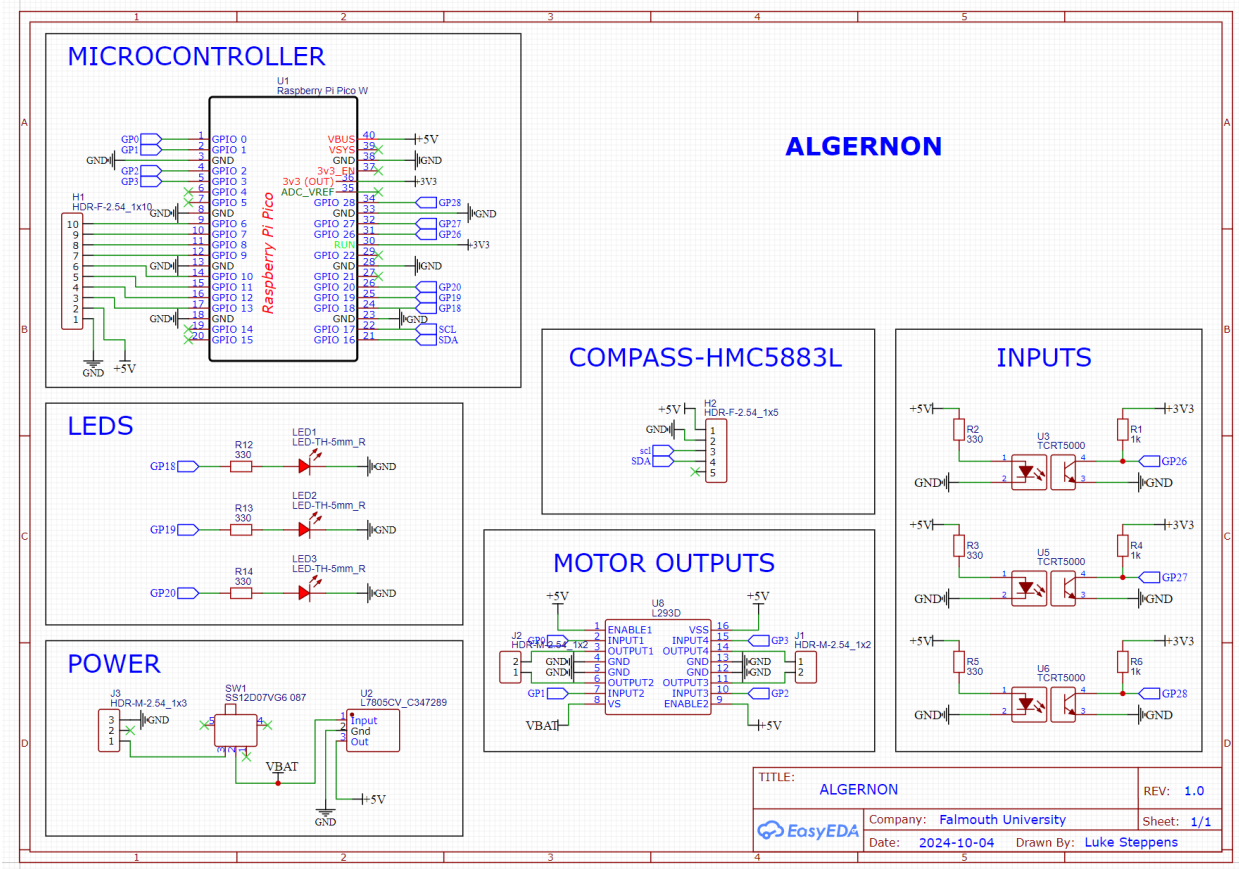
Next we were shown how to install and setup EasyEDA which is a cloud based PCB design tool. From here we were shown how to find the components using libraries within EasyEDA and how to find the user contributed ones.



After being shown how to make a simple 3 component circuit we were charged with adding all the base parts for our micromouse and connecting them all together.



I have decided to add one more component to the list being a compass, I am looking to adding this functionality to help the mouse navigate but always knowing the directions it faces.



I ran into a small issue Of having duplicate generic names on items withing the sheet such as R1 being used multiple times. Must remember to change them along the way, other than that linking each part was relatively painless.

The compass being an extra I had to make sure the SCL and SDA were connected to the correct GPIO pins.

- **SCL (Serial Clock Line):** This pin carries the clock signal, which synchronizes data transfer between the sensor and the microcontroller.

- **SDA (Serial Data Line):** This pin carries the data between the sensor and the microcontroller.

Component and ID's

- Pi Pico - C7203003
- Motor Driver(L293D) - C12340
- Proximity Sensor(TCRT5000) - C2984661
- Switch - C2939728
- Voltage Regulator (L7805) - C347289
- Compass - HMC5883L

[COMP207-W2-WKSP-PCB_DESIGN_SCHEMATIC-1.pdf](#)