Lapcounter with Raspberry pi

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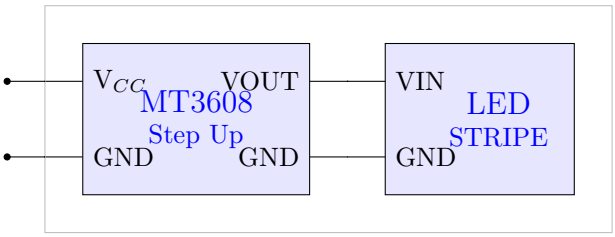
1 Hardware

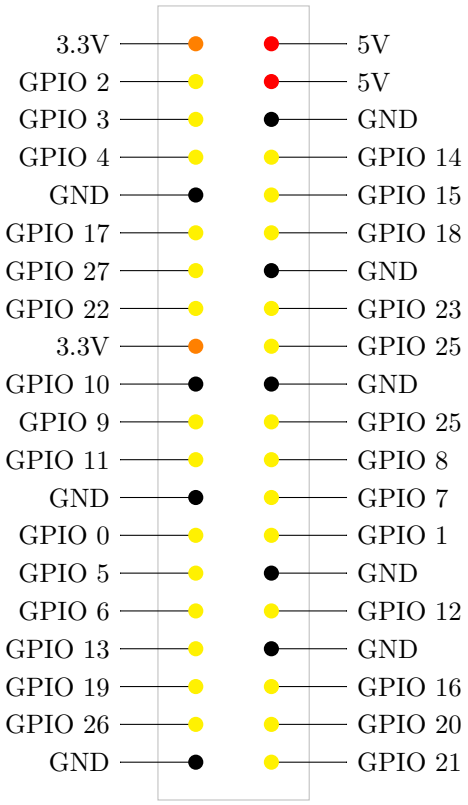
We used the raspberry pi 3 together with the official display. Other configurations were not tested but will work most propably without much configuration. Of course there are many different ways to detect if a car is driving through the start-line. We used a led which collects light which comes from above. Using the slot itself with a light barrier was promising but turned out to be not reliable.

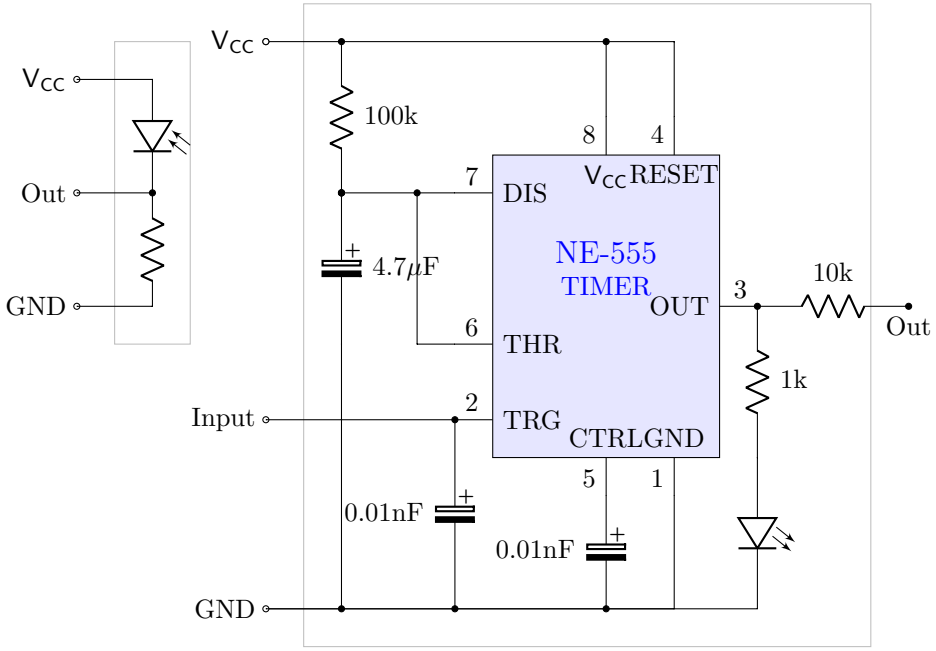
1.1 Components

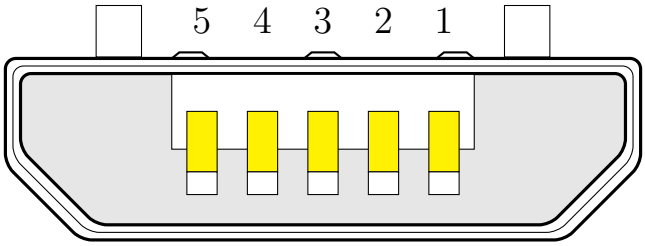
Item	Amount	Price
Raspberry Pi	1	
7” Touchscreen Display	1	
NE555	slots	
Resistor 100k	slots	
Resistor 470Ω	slots	
Led	slots	
Phototransistor	slots	
Green led	1	
Bluetooth keyboard	(1)	

1.2 Wiring Diagram









Micro USB Male connector

2 Software

2.1 Compiling

The program uses Allegro to show the results. In theory it should be possible to use it on any machine, which supports linux and opengl, I tested it on a x86 platform and on the raspberry pi. If not already done you have to install the following packages:

2.2 Fast Race

2.3 Tournee Planer

The program contains a simple algorithm to calculate plans for tournees. You can adjust the numbers of players, slots, races and equaly hard slots. Keep in mind, that mathematically not all combinations of input can work.

2.4 Settings

2.5 Network access

Connecting to the server will return you a Html-document containing the most important data.