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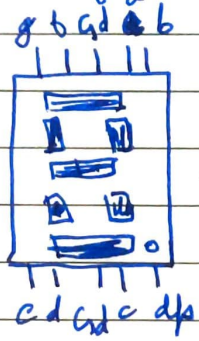
STUDENT REPORT
ON
7 segment display & Ultra sonic sensor.

2 types of 7 segment 1) Cathode (Ground common) 2) Anode (Vcc common)



In anode Gd is Vcc

Cathode

We have to attach resistors on lines a, b, c, d, e, f, g, dp. so that the brightness remains the same.

For Common cathode; To switch on a light pinMode needs to be High

For common anode; pinMode needs to be low.

To operate 1 display we would need 8 pins from the arduino. (7 data wires)

And by using a switch case we can operate the display.

Uses: Display board

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Each case will have their own pinMode settings.

~~But if we want~~

we have more options 1) we can use a 7 segment decoder but we will have to use ~~decoder~~ ~~more~~ 4 number of data wires. CD4543

2) we can use a Shift register (LIFO) 74HC595. we can control multiple 7 segment displays with more registers. Using daisy-chaining.

The data lines used are 1 and 2 are for latch & clock.

Latch is high when bits are stored.

So 1) simple 7 segment → 7+1 pinmodes
dp

2) Decoder → 4 pinModes

3) Shift, → 3 pin modes

Use function shiftOut(dataPin, clockPin, bitOrder, value)
↓
MSBFIRST
LSBFIRST

We can use more register for more displays but data line required are still 3.

value ⇒ {1, 79, 18, 6, 76, 36, 32, 15, 0, 4}
reversed-s 0 1 2 3 4 5 6 7 8 9

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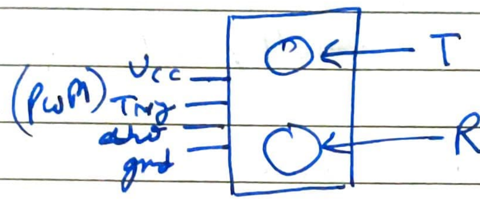
ultrasonic sensor HS SR-04

↓

waves with $f > 20\,kHz$

use library : New Ping (for smoothing)



Trig – sends 5V , 10 μS pulse

↓

will send 8 40kHz pulses

↓ ↙ Timeout

Echo - will be high for 38 mS if no object near.

but if object it can show 500 μS for eg

$$D = \frac{\Delta t}{2} \times c$$

$$D = \frac{500}{2}\,\mu S \times 0.0343\ cm/\mu S$$

$$D = 8.575\ cm$$

for (20°C) dry air.

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use pulse In (echoPin , HIGH); function.

2cm ≤ range ≤ 400 cm others invalid.

accuracy is off by ± 0.5 cm

inaccuracy because of Temp & Humidity.
Pressure

~~c = 331~~

$$c = 331.4 + (0.606 \times T) + (0.0124 \times H)$$

for T&H use DHT22 / DHT11
accuracy .1 1

Use Adafruit AM2315 library.
~~&~~
use Adafruit unified library.

we ~~see~~ need delay & for loop

to get H & T;

~~we can also ... T ... Node board on placement~~

we can also ~~...~~ merge echoPin ~~to~~ & Trig pin.

Uses: To know if bike is parked safely.
: To get the clearance of wheel & body.
: To avoid getting rear-ended. Tail gating