Speedometer

Simulation link:

https://www.tinkercad.com/things/df6VAwiTIB4
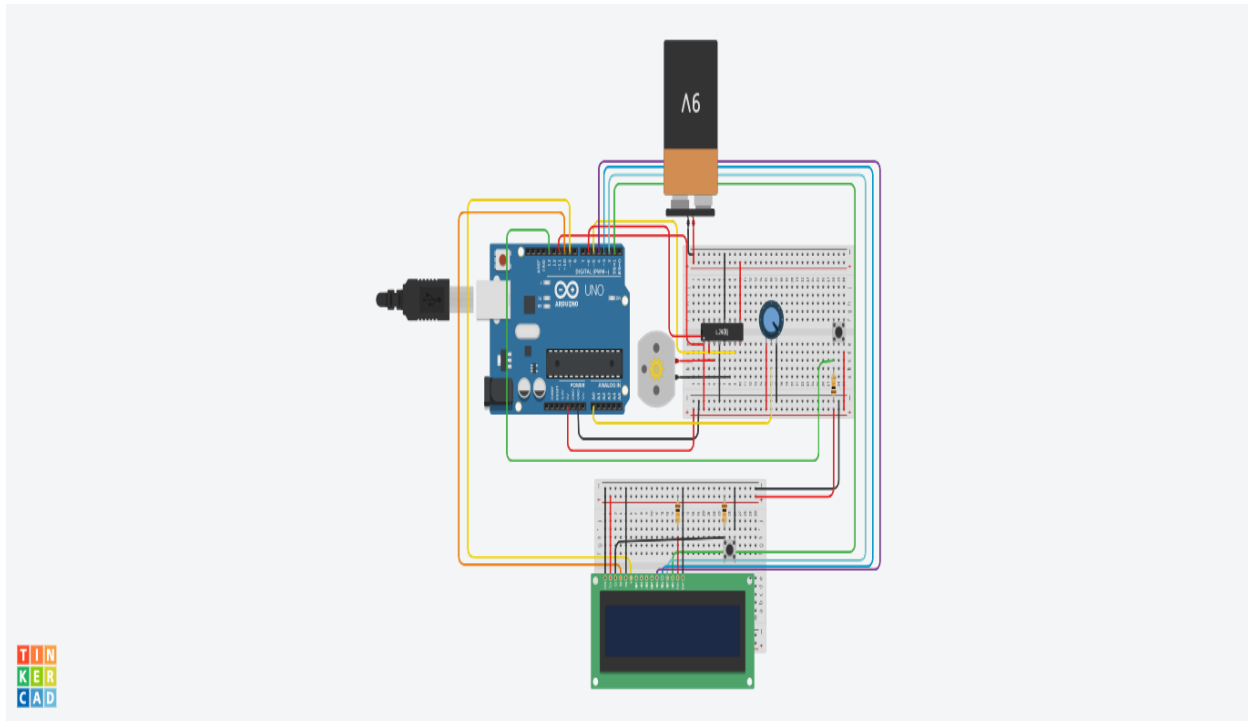
Video link:

https://drive.google.com/file/d/1GfJNThxzi13jMy6Faby_PkqBE1xolyRd/view?usp=sharing

Poster link:

https://drive.google.com/file/d/1871yy7URWeQncf5cZC9m8sNwAsVce_1k/view?usp=sharing

Requirements :

L293D h bridge motor
DC motor
Ardunio R3
Potentiometer 250kohms
Resistors 10kohm *3
LCD
9V battery

Working:

REGULATOR WORKS IN ARDUINO.
A voltage regulator generates a fixed output voltage of a preset magnitude that remains constant regardless of changes to its input voltage or load conditions It compares the output voltage with a precise reference voltage and adjusts the pass device to maintain a constant output voltage
it controls the amount of voltage that is let into the Arduino board
Think of it as a kind of gatekeeper it will turn away an extra voltage that might harm the circuit

A 9 Volt battery give the power supply to the motor with the help of L293D H bridge motor sensor , further H bridge motor sensor help to convert the motor rotating action into data in term of RPM and that data is transferred to the Arduino, connecting input points of Hbridge point to the Arduino .

Arduino help to display the data using the universal connection with LCD panel , as the code passed on to the Arduino start it converts the RPM into Km/Hr and displays it on LCD.As the potentiometer is directly connected to the Arduino using the connection of the wiper point on potentiometer and the Analog point on the Arduino , which helps to vary the speed of the rotation of the motor

CODE:
```
#include <LiquidCrystal.h>
LiquidCrystal lcd(10,9,4,3,2,1);
int c=0;
int speed=0;
int ccon=0,pcon=0;
void setup()
{      lcd.begin(16, 2);
       lcd.print("here we");
       lcd.setCursor(0,1);
```

```arduino
            lcd.print("GO<<<<");
  delay(2000);
  lcd.clear();
   pinMode(11, OUTPUT);
   pinMode(5, OUTPUT);
   pinMode(6, OUTPUT);
   pinMode(A0, INPUT);
   pinMode(13, INPUT);

}


void loop()
{
  speed=map(analogRead(A0),0,1023,0,255);
  ccon=speed;
  if(digitalRead(13)==HIGH)
       {if(c==0)
       {

              analogWrite(11,speed);
         digitalWrite(6,HIGH);
         digitalWrite(5, LOW);
         c=1;
              delay(1000);

     }
    else
       {digitalWrite(11,LOW);
      c=0;
      delay(100);
       }
   }

  if(pcon!=ccon)
        {
    if(c==1)
        analogWrite(11,ccon);
         lcd.clear();
         lcd.print(ccon);
```
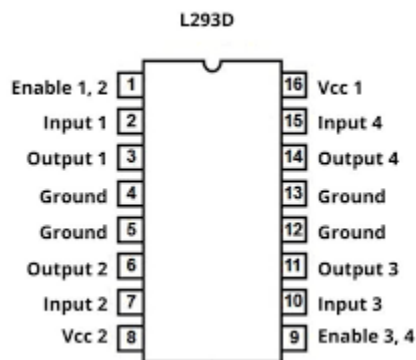
```
    lcd.print(" km/h");
    pcon=ccon;


    }


}
```

Uses of components :

L293D :
An H-bridge is an electronic circuit that switches the polarity of a voltage applied to a load. These circuits are often used in robotics and other applications to allow DC motors to run forwards or backwards.

DC motor:A direct current (**DC**) **motor** is a type of electric machine that converts electrical energy into mechanical energy. **DC motors** take electrical power through direct current, and convert this energy intomechanical rotation.
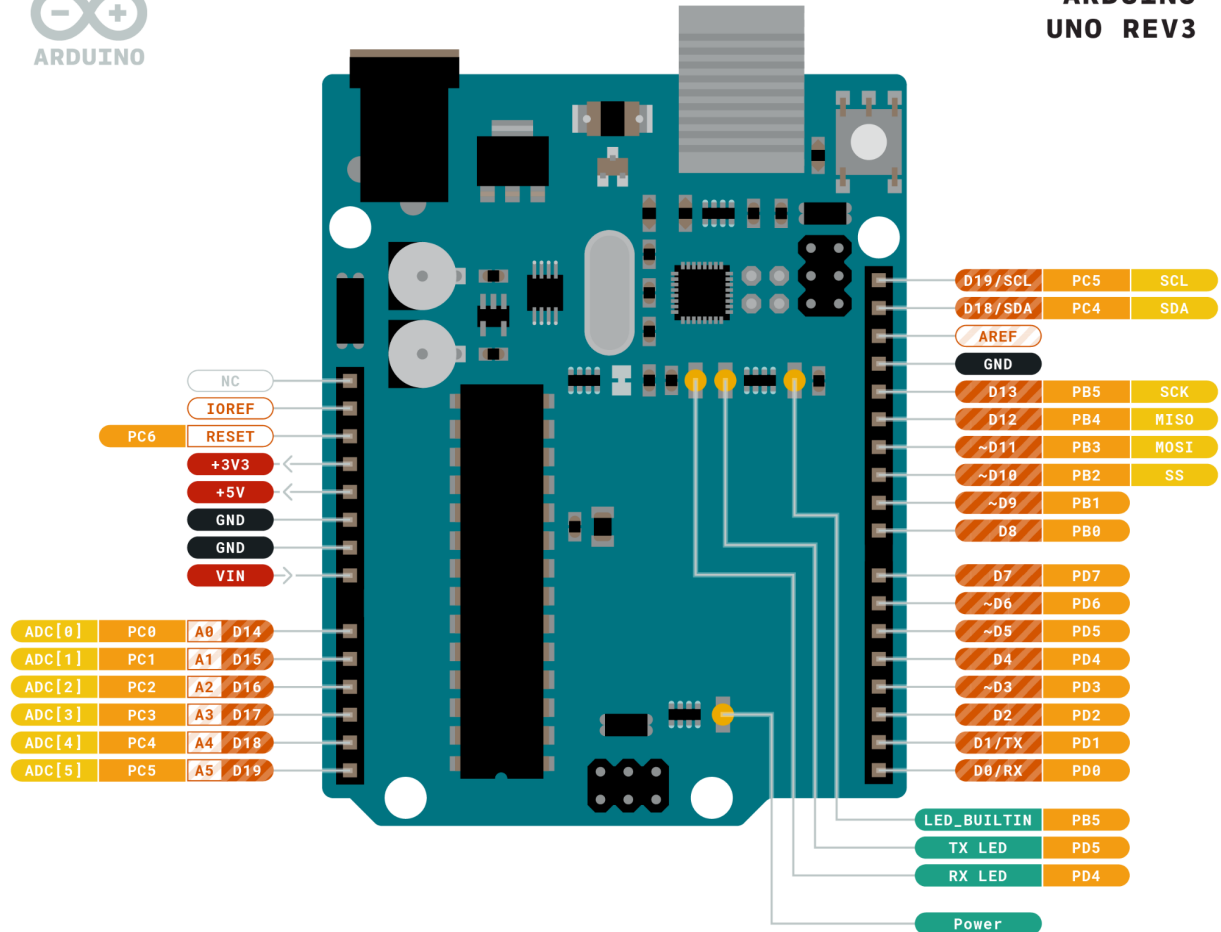

Ardunio UNO R3:

It has 20 digital input/output pins (of which 6 can be used as PWM outputs and 6 can be used as analog inputs). Programs can be loaded on to it from the easy-to-use Arduino computer program.

ARDUINO
UNO REV3

ADC[0]	PC0	A0	D14
ADC[1]	PC1	A1	D15
ADC[2]	PC2	A2	D16
ADC[3]	PC3	A3	D17
ADC[4]	PC4	A4	D18
ADC[5]	PC5	A5	D19

NC
IOREF
PC6 RESET
+3V3
+5V
GND
GND
VIN

D19/SCL PC5 SCL
D18/SDA PC4 SDA
AREF
GND
D13 PB5 SCK
D12 PB4 MISO
~D11 PB3 MOSI
~D10 PB2 SS
~D9 PB1
D8 PB0

D7 PD7
~D6 PD6
~D5 PD5
D4 PD4
~D3 PD3
D2 PD2
D1/TX PD1
D0/RX PD0

LED_BUILTIN PB5
TX LED PD5
RX LED PD4

Power

| Ground		Internal Pin		Digital Pin		Microcontroller's Port
Power		SWD Pin		Analog Pin		
LED		Other Pin		Default		

ARDUINO.CC

Potentiometer 250kohm:

A potentiometer is a three-terminal resistor with a sliding or rotating contact that forms an adjustable voltage divider. If only two terminals are used, one end and the wiper, it acts as a variable resistor or rheostat.


Resistors 10kohm *3:

A **resistor** is a passive two-terminal electrical component that implements electrical resistance as a circuit element. In electronic circuits, **resistors** are **used** to reduce current flow, adjust signal levels, to divide voltages, bias active elements, and terminate transmission lines, among other uses.

10K ohm
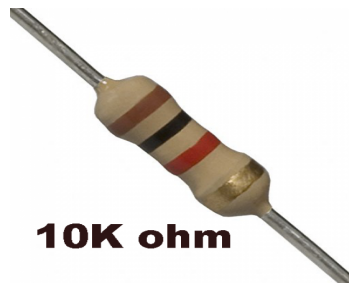
LCD:LCD (Liquid Crystal Display) is a type of flat panel display which uses liquid crystals in its primary form of operation. LEDs have a large and varying set of use cases for consumers and businesses, as they can be commonly found in smartphones, televisions, computer monitors and instrument panels.
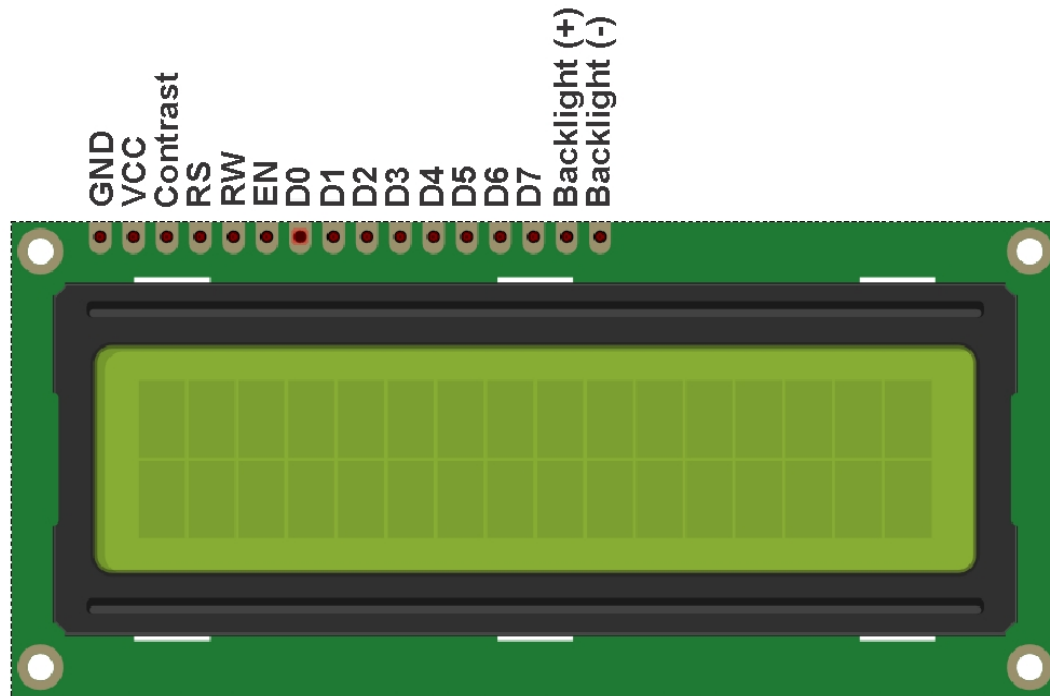
9V Battery :

A **battery** is a device that stores energy and then discharges it by converting chemical energy into electricity. Typical **batteries** most often produce electricity by chemical means through the **use** of one or more electrochemical cells.