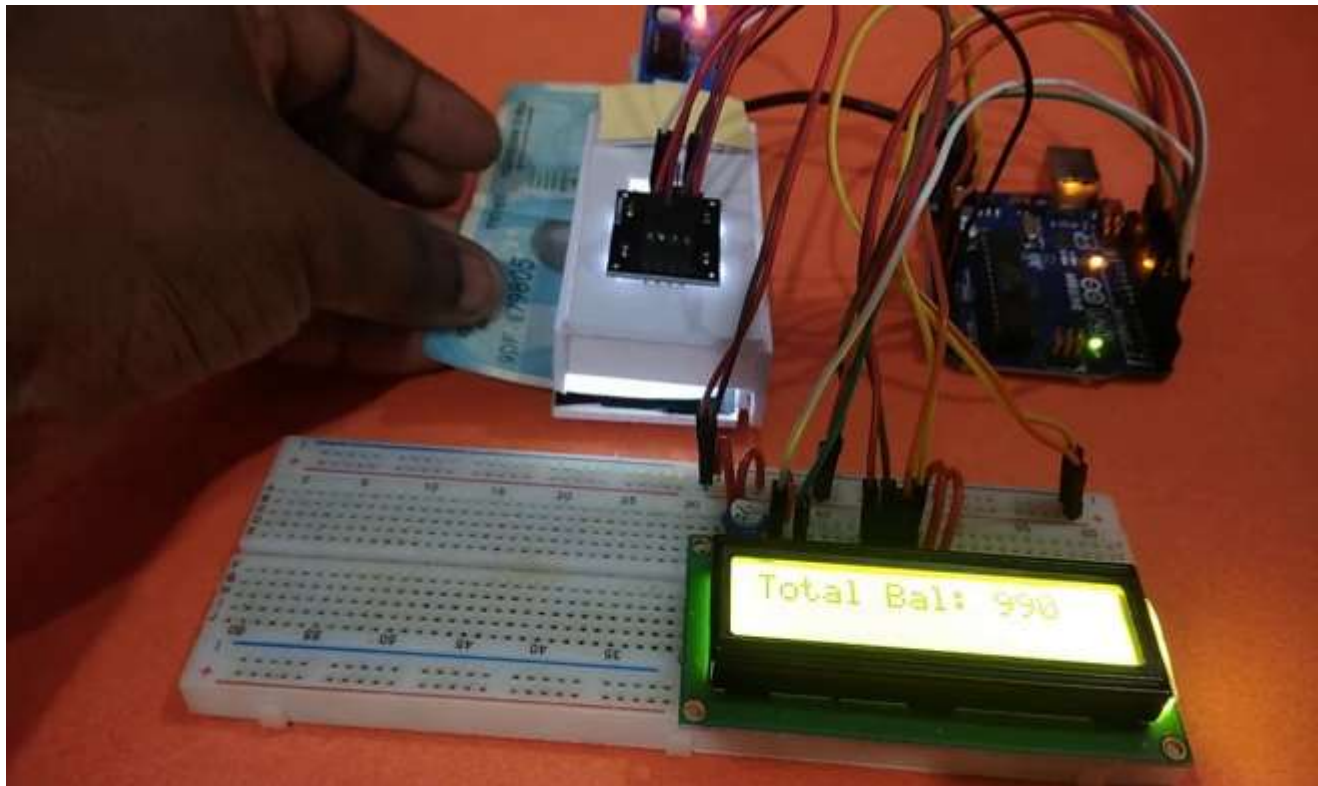


# Currency Counter



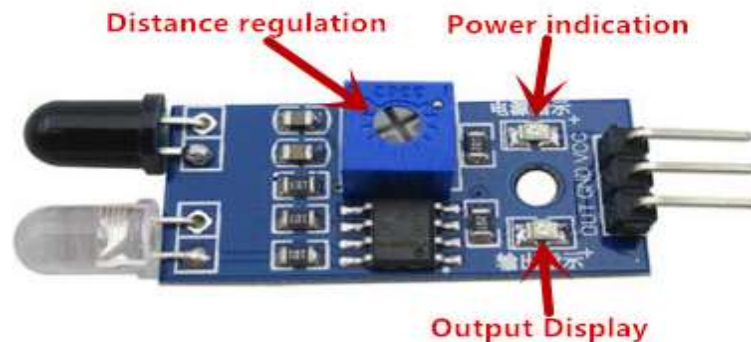
# TCS230 TCS3200 Color Sensor

- The TCS230 senses color light with the help of an 8 x 8 array of photodiodes.
- The color sensor detects the color of the surface, usually in the RGB scale. Color is the result of interaction between a light source, an object and an observer.
- In case of reflected light, light falling on an object will be reflected or absorbed depending on surface characteristics, such as reflectance and transmittance.



# Analog IR Sensor

- An IR sensor is an electronic instrument that scans IR signals in specific frequency ranges defined by standards and converts them to electric signals on its output pin (typically called signal pin).
- An Infrared light emitting diode (IR LED) is a special purpose LED emitting infrared rays ranging from 700 nm to 1 mm wavelength.



# LCD (Liquid Crystal Display)

Liquid crystal displays (LCDs) are a commonly used to display data in devices such as calculators, microwave ovens, and many other electronic devices.

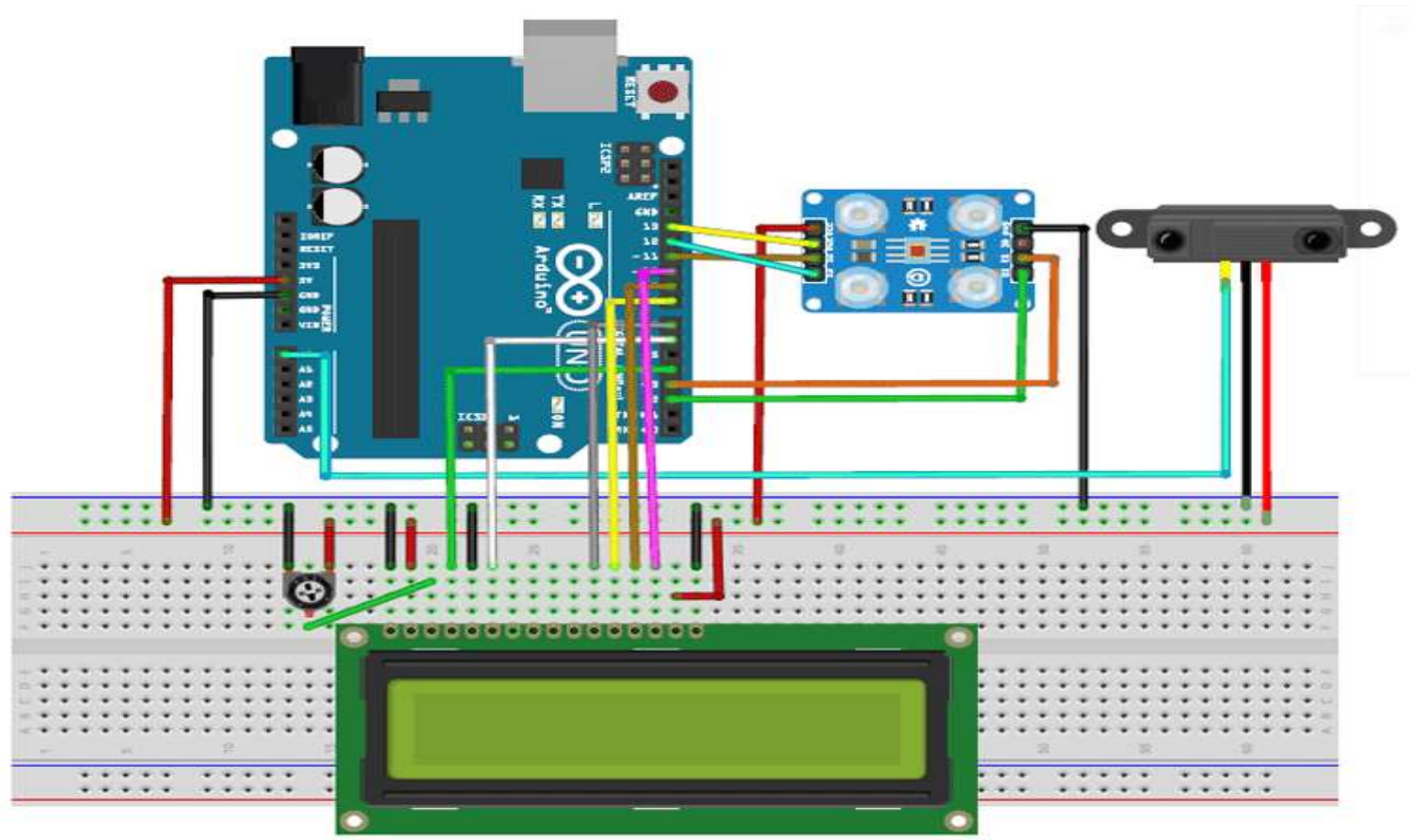
Now, we will learn how to use a 16x2 LCD with Arduino UNO. As shown in the table below, eight of the pins are data lines (pins 7-14), two are for power and ground (pins 1 and 16), three are used to control the operation of LCD (pins 4-6), and one is used to adjust the LCD screen brightness (pin 3). The remaining two pins (15 and 16) power the backlight.



# Components Required

- Arduino UNO
- TCS230 TCS3200 Color Sensor
- IR Sensor
- LCD Display
- Potentiometer
- Breadboard
- Jumper Wires

# Connection Diagram



# Connections of Color Sensor & IR sensor

- Connect **S0** pin of color sensor with pin **4** of Arduino .
- Connect **S1** pin of color sensor with pin **5** of Arduino .
- Connect **OUT** pin of color sensor with pin **13** of Arduino .
- Connect **S2** pin of color sensor with pin **6** of Arduino .
- Connect **S3** pin of color sensor with pin **7** of Arduino .
- Connect **GND** pin of color sensor with **GND** of Arduino .
- Connect **Vcc** pin of color sensor with **+5V** of Arduino .
- Connect **A0** pin of IR sensor with **A0** pin of Arduino.
- Connect **GND** pin of IR sensor with **GND** pin of Arduino.
- Connect **Vcc** pin of IR sensor with **+5V** pin of Arduino.

## Connections for LCD :

- PIN1 or Vss to ground
- PIN2 or Vdd or Vcc to +5V power
- PIN3 or Vee to potentiometer (gives maximum contrast best for a beginner)
- PIN4 or RS (Register Selection) to 12 pin of Arduino
- PIN5 or RW (Read/Write) to ground
- PIN6 or E (Enable) to 11 pin of Arduino
- PIN11 or D4 to 10 pin of Arduino
- PIN12 or D5 to 9 pin of Arduino
- PIN13 or D6 to 3 pin of Arduino
- PIN14 or D7 to 2 pin of Arduino
- PIN15 or A to +5V of Arduino
- PIN16 or K to GND of Arduino



**Project Link :** <https://youtu.be/l7aTEWpnAnw>