

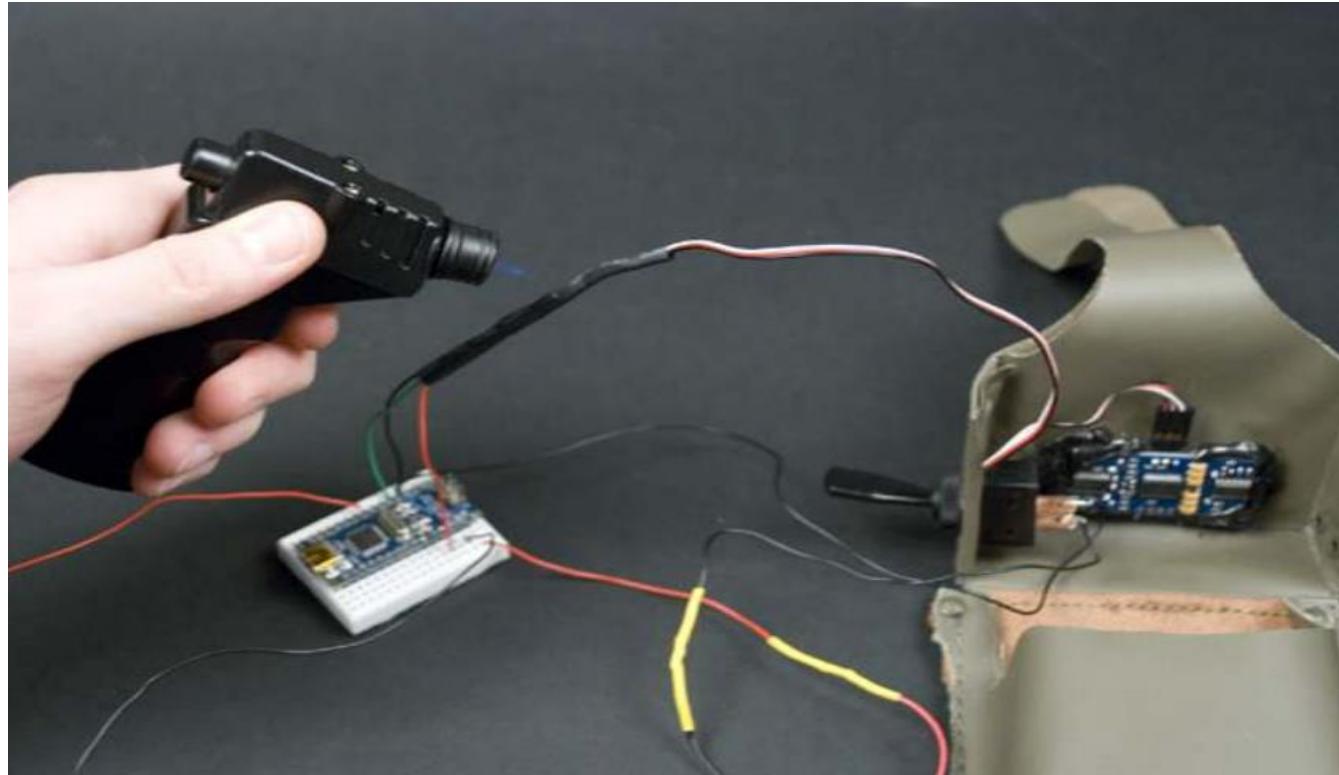
Water Turbidity Sensor

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Overview :

In this project, you will build a Water Turbidity Sensor, a device that measures the clarity of water and displays its condition as clear, cloudy, or dirty. The project uses an Arduino Uno, a turbidity probe, and a 16x2 LCD with I2C for an efficient and straightforward setup. By analyzing the turbidity sensor's data, the device determines water quality based on predefined thresholds. This project not only helps monitor water cleanliness but also provides a foundation for learning how to process sensor data and visualize results effectively.



The Water Turbidity Sensor can be easily customized for various applications by adjusting the turbidity thresholds, integrating additional sensors, or expanding its functionality. For instance, you can replace the turbidity probe with a pH sensor to monitor water acidity or connect the system to a Wi-Fi module to log data online. With minimal modifications, the circuit can also be developed further—for example, by turning it into a comprehensive water quality monitoring system that measures multiple parameters like temperature and dissolved oxygen levels.

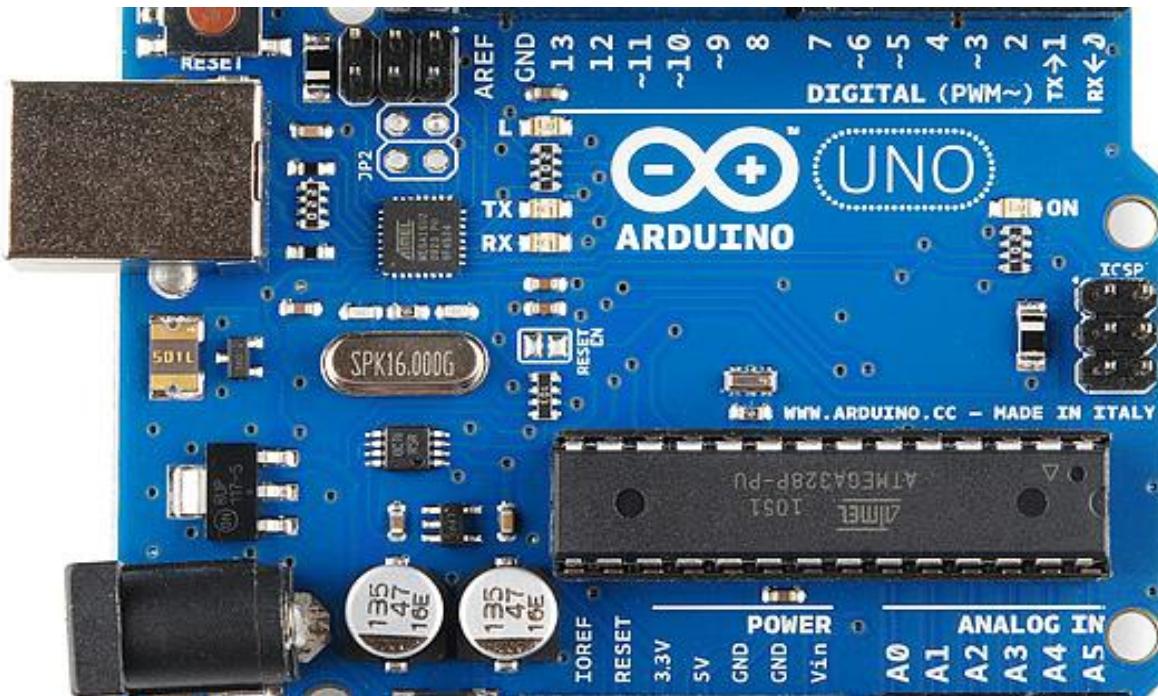
Equipment And Devices Required :-

- Arduino Uno.
- Water turbidity probe.
- 16 x 2 LCD connection (with i2c) .
- Jumper wires.
- Wire strippers.
- 5V battery clip.

Water Turbidity Probe :-

Water turbidity probes are used to measure the clarity of water by detecting the presence and concentration of suspended particles. These sensors play a vital role in various industries, including water treatment plants, aquaculture, and environmental monitoring.

Turbidity probes can provide either a digital output to indicate specific water conditions (e.g., clear, cloudy, or dirty) or an analog output proportional to the turbidity level. They are often integrated into systems to ensure water quality, monitor contamination levels, or trigger alerts for maintenance. Additionally, they are widely used in research and applications that require precise monitoring of water clarity over time.



Arduino Uno :-

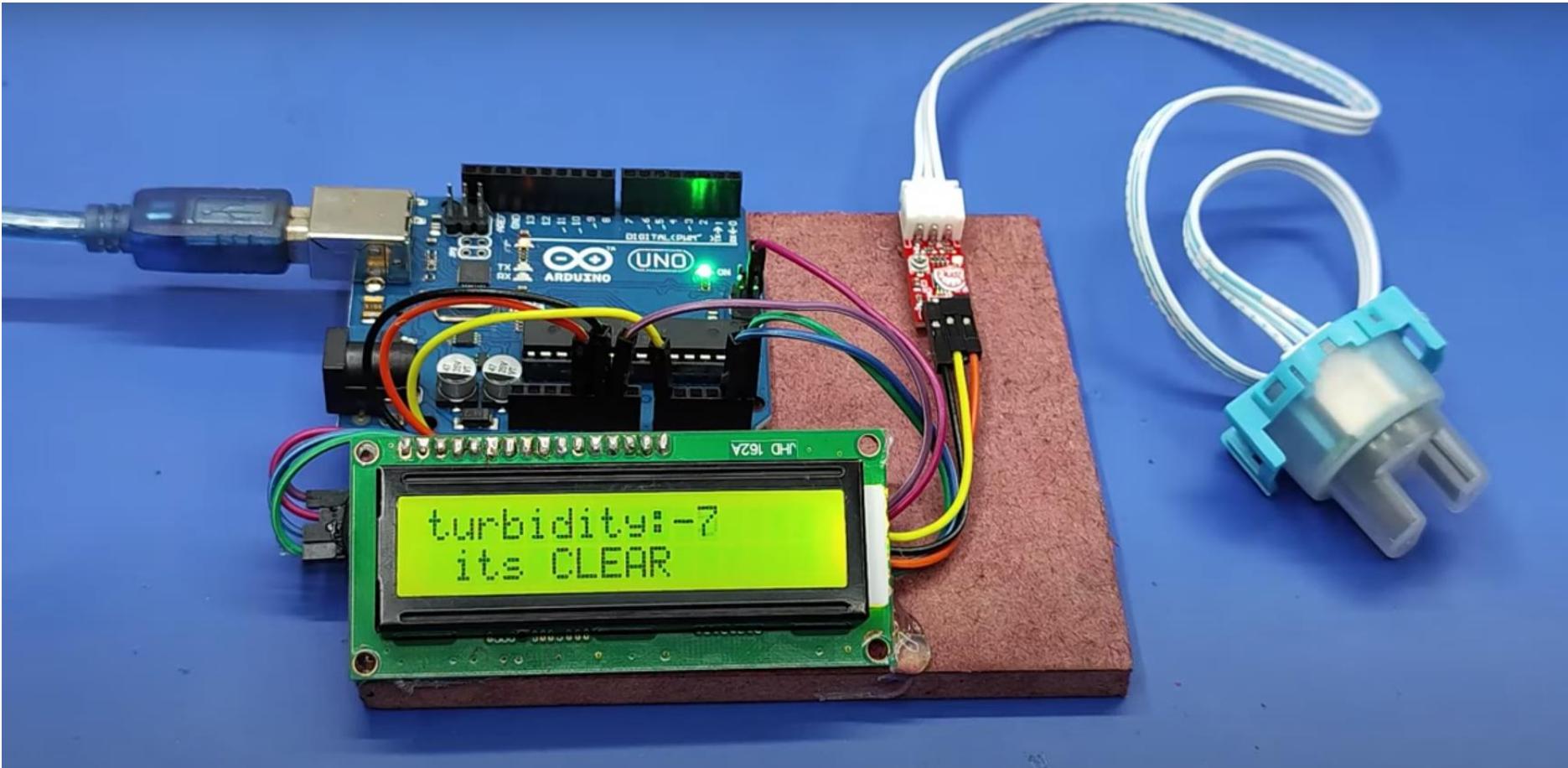
The Arduino Uno is an open-source microcontroller board based on the Microchip ATmega328P microcontroller (MCU), developed by Arduino.cc and first released in 2010. It is one of the most popular and widely used boards in the Arduino family, offering robust features and ease of use for beginners and professionals alike.

The Arduino Uno features 14 digital I/O pins (6 of which can be used as PWM outputs), 6 analog input pins, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header, and a reset button. It can be programmed using the Arduino IDE, available for both online and offline use. The board can be powered via a USB cable or an external power supply ranging from 7 to 12V, making it suitable for a variety of projects, from basic prototyping to advanced applications.

Uses Of The Components

- 1. Arduino Uno:** Acts as the brain of the project, processing data from the turbidity sensor and controlling the LCD display.
- 2. 16x2 LCD with I2C:** Displays the turbidity level and indicates whether the water is clear, cloudy, or dirty. The I2C interface simplifies wiring by reducing the number of required connections.
- 3. Turbidity Probe:** Measures the water's turbidity by detecting the amount of light scattered by suspended particles. It provides data to determine the water's clarity.
- 4. Wires and Connectors:** Establish connections between the Arduino, turbidity sensor, and LCD, ensuring seamless communication between components.
- 5. Power Supply:** Powers the Arduino and other components, enabling the system to function.

Overview Of The Construction:



Estimated Cost Of The Project

- Arduino Uno: Rs.2400
 - 16 X 2 LCD using I2C: Rs.350
 - Turbidity Probe: Rs.1000
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- Total: Rs.3750

Thank You