**SMART WATERLEVEL MONITOR USING ARDUINO**

**A PROJECT REPORT**

**Submitted by**

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**SMART WATER LEVEL MONITOR USING ARDUINO**

**ABSTRACT:**

The project is designed to give a display of water level in a tank and control a pump motor as required. In this Arduino based automatic water level indicator and controller project we are going to measure the water level by using ultrasonic sensors. Basic principal of ultrasonic distance measurement is based on ECHO. When sound waves are transmitted in environment then they return back to the origin as ECHO after striking on any obstacle. So we have to only calculate its traveling time of both sounds means outgoing time and returning time to origin after striking on any obstacle. And after some calculation we can get a result that is the distance. This concept is used in our water controller project where the water motor pump is automatically turned on when water level in the tank becomes low.

**INTRODUCTION:**

In accordance with the current scenario, a lot of water is wasted every day from residential areas, offices and hospitals. Water is essential in various ways and such a huge amount of water wastage can lead to its scarcity in future. Nowadays everybody has overhead tank at their homes. Our Objective is used to measure and display the level of water in a container and avoid overflow of water. The idea can be implicitly used to ascertain and control the level of water in overhead tanks and prevent wastage. In this Arduino based automatic water level indicator and controller project the water level is being measured by using ultrasonic sensors .

**OBJECTVES:**

* To build a cheap and user friendly Water Level Monitor Kit
* To automate the process.
* And notify when the water level is empty and full by Buzzer and 16\*2 LCD Display.

**COMPONENTS USED:**

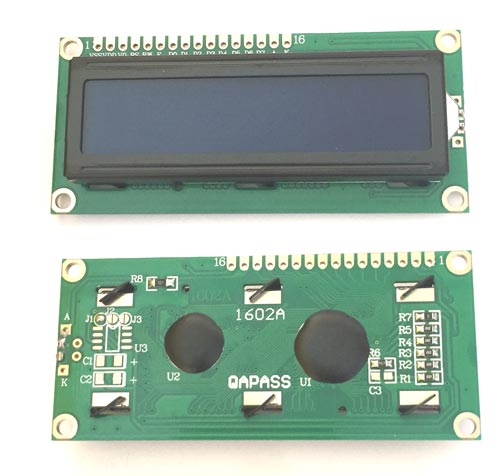
**ARDUINO**

Arduino/Genuino Uno is a microcontroller board based on the ATmega328P (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. "Uno" means one in Italian and was chosen to mark the release of Arduino Software (IDE) 1.0. The Uno board and version 1.0 of Arduino Software (IDE) were the reference versions of Arduino, now evolved to newer releases. The Uno board is the first in a series of USB Arduino boards, and the reference model for the Arduino platform; for an extensive list of current, past or outdated boards see the Arduino index of boards.

**ULTRA SONIC SENSOR**

****Ultrasonic sensor HC-SR04 is used to measure distance in range of 2cm-400cm with accuracy of 3mm. The sensor module consists of ultrasonic transmitter, receiver and the control circuit. The Sensor emits an ultrasound at 40 kilohertz, which travels through the air, and if there is an object or obstacle on its path, It will bounce back to the module.

**16x2 LCD Module**

LCD modules are very commonly used in most embedded projects, the reason being its cheap price, availability and programmer friendly. Most of us would have come across these displays in our day to day life, either at PCO’s or calculators. The appearance and the pinouts have already been visualized above now let us get a bit technical.16×2 LCD is named so because; it has 16 Columns and 2 Rows.

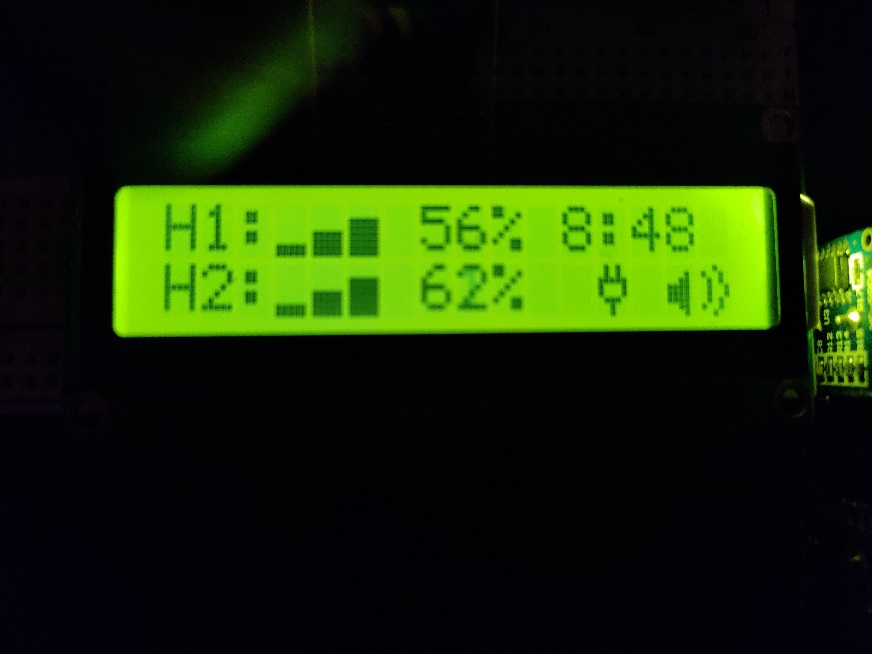
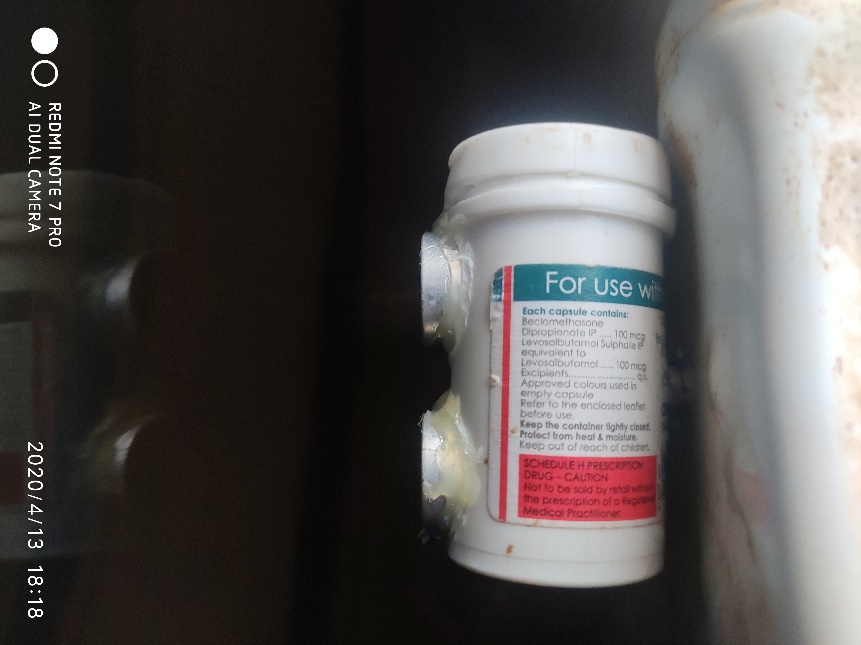
**Buzzer**

A buzzer is a small yet efficient component to add sound features to our project/system. It is very small and compact 2-pin structure hence can be easily used on breadboard, Perf Board and even on PCBs which makes this a widely used component in most electronic applications.

**WORKING:**

Arduino is the brain of this project. It will take input from the sensors and control all other units according to the value received. The 16x2 LCD display will display the Water Level in percentage as well as in Bar Diagram, it will also show the Pump status. This section will also notify us whenever the water tank is empty .The Ultrasonic Sensor is used to measure the water level present on the overhead water tank. The Internal Relay plush Water Pump. Arduino will control the Water pump using the Internal relay. The relay present on the circuit can be used to start any kind of 1 HP single phase Water pump without starters and the Buzzer, this is used to notify when the water tank is empty.

**OUTPUT :**



**REFERENCE:**

1. <https://www.youtube.com/redirect?q=http%3A%2F%2Fwww.robotsthenextspeciesonearth.com%2Fp%2Fblog-page_14.html&v=08dcoXZEtqs&event=video_description&redir_token=htZQmCU6oIHRmzFuNBujH3QS6I18MTU4NzczMTE1N0AxNTg3NjQ0NzU3>
2. <https://www.arduino.cc/reference/en>