

# Water Level Indicator

This venture report has been submitted to the Department of Electrical and Electronic Engineering in fractional satisfaction of the necessities for the level of Bachelor of Science in Electrical and Electronic Engineering.

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**November 2018**

# Letter of Approval

This is to confirm that this venture and proposition entitled "Water Level Indicator" is finished by Redowana Mahabub bearing ID 152-33-2727 under my immediate supervision and this work has been done by her in the research facilities of the Department of Electrical and Electronic Engineering under the Faculty of Engineering of Daffodil International University in halfway satisfaction of the necessities for the level of Bachelor of Science in Electrical and Electronic Engineering. The introduction of the work was hung on November 2018.

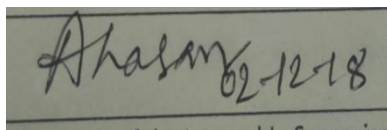
Signature of the candidate

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# ABSTRACT

The water level marker circuit is a straightforward system to recognize and show the dimension of water in the overhead tank and furthermore in alternate holders. These days, every one of the householders/proprietors are putting away the water in overhead tanks by utilizing the siphons. At the point when the water is put away in the tank, it is hard to distinguish the dimension of water and furthermore hard to know when the water tank will fill. Subsequently there is a flood of water in the tank, consequently there is wastage of vitality and water. To determine those kinds of issues we can utilize the water level pointer circuit. It will show the dimension of water in the overhead tank. The expense of the water level alert circuit is low and it can use for the overhead water tanks, swimming pool boilers and so forth. The water level alert circuits are utilized in the manufacturing plants, synthetic plants, and electrical substations and furthermore in other fluid stockpiling frameworks.

# Dedication

I would like to dedicate this project to my parents; Because of them I can complete this project.

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# LIST OF ABBRIVIATION

IC	Integrated Circuit
PCB	Printed Circuit Board
LED	Light Emitting Diode
DC	Direct Current
AC	Alternating Current
PVC	Polyvinyl Chloride
GSM	Global System for Mobile Communication
EMF	Electromotive Force
PWB	Printed Wiring Board
PCA	Printed Circuit Assembly
CT	Current Transformer
PT	Potential Transformer

# CHAPTER 1

## 1.1 INTRODUCTION:

The water level marker is characterized as a framework which gets the data about the water level in repositories or in tanks which is utilized in homes. By utilizing the water level marker we can defeat the flood of water from the tankers. The accompanying circuit is the water level caution circuit by utilizing the Arduino Pro Mini. It delivers an unmistakable sound when the water level achieves its dimension point. The power supply of the circuit is about 5V in this manner the circuit is very helpful to utilize. This circuit depends on the actable multivibrator which is wired around IC1. The working recurrence of the actable multivibrator relies upon the estimations of segments like capacitor C1, resistors R1 and R2 and the obstruction over the tests at An and B. If the water isn't up to the dimension of tests than the open circuit.

The water level marker circuit outline screens the dimension of water in the tank and all the while switches on the water siphon at whatever point the water level goes low in the water tank. The water dimension of the tank is shown by utilizing the 5 LED's and in the event that the water level in the tanker is full, the water siphon is killed totally. The accompanying graph demonstrates the water level pointer circuit outline comprise of 4 tests which are set in the overhead tank and interfaced with the port 2 of the Microcontroller.

The tests are put at the separation of 1/4th, 1/2th, and 3/4th and at full dimension and they are situated with equivalent dispersing one over the other, one with the base positive test. The positive voltage is set at the base of the overhead water tank and full dimension tests are in the overhead tank and the opposite end is associated with the base terminal of the Q4 transistor with the assistance of the R16 resistor.

## **1.2. OBJECTIVES:**

- Existing digital water level indicators study with the alarm system.
- Energy efficient water level index design with alarm system.
- Develop control unit hardware
- Designed system tests and verification.

## **1.3. Methodology:**

Methods for the purpose: Understand existing water level indicators and their limitations will be surveyed in literature.

Methodology for objective2: Control units will be designed according to specifications. The planned control circuit will be simulated using the multitudes and its features will be observed. The design will get the desired features and retouched using the Malta.

Methodology for objective3: The final design of the control circuit will be fabricated after selecting the suitable material.

Methodology for objective4: Behavior of fabric control circuit will be observed. The new design features of control circuits will be tested against existing system performance. Conclusions will be drawn based on the validation research.

# CHAPTER 2

## ANALYSIS OF THE SYSTEM COMPONENT

This section includes all the virtual items that are tested by the item and at this point. After serious research on all the negotiation techniques and parts, to meet the requirements of the ideal discussion framework and to select the appropriate techniques and categories to meet the main goals of the enterprise, electrical circuits are implemented. Circuit is the greatest yield of this yield with such minimal framework requirements. Flood water tank is a common problem which drains water drainage. After the tank is full, there are countless answers to naturally stop the flow of water. As it may be, do you prefer electronic answers for this because the gadgets are energetic? So here's a straightforward and helpful DIY that will guide you to create a circuit that will detect the water level and issue a warning after water tank gets full or preset levels. Whatever the point tank fills up, we get an alarm on certain dimensions. Here we have created 4 levels (low, medium, high and full), we can take precautions for more dimensions. We added 3 LEDs to show the magnitude (A, B, C), and the full dimension (D) of a magnifier (D). When the tanks are full, we get a lovely word from Buzzer.

Basically the unit is composed of different sensors going on as a switch. Just give me a chance to make clear. What happened is that when you start your water siphon, the water starts stopping your underground water supply from your underground store or from your channel to your water tank. The tank has a large amount of sensors (properly 7 sensors), water tank. Just think of them as a switch, a circuit will be attached as made by the sensor. I will be clear in the less subtleties of my trainer. So, the tank starts filling and when the water level of the tank starts to rise, the sensor that starts in the tank starts with the water level of the tank. Finally, when it lean towards its best sensor, there will be a visual exhibit, as well as a sound from the unit that the tank is filled with tank and one can be alerted that the tank is filled up and the water pump contains water from the tank as well as the electricity bill Turn off the flow.

## 2.2. Equipment Used:

**Table 2.1: Equipment's used in the Circuit.**

No	Equipment	Quantity
1	Arduino Mini	1
2	LCD Display	1
3	Sonar Sensor	1
4	Adapter 5V	1
5	Buzzer	1
6	Variable Resistor	1
8	Varo Board	1
9	Connector	10
10	DC Connector	1
14	Cork Shit	2.0 feet
15	Glue Stick	2
16	Wires	2 Gage
18	Soldering Iron	1

## 2.3. Equipment's Description:

### 2.3.1. Adapter:

An (electrical) connector or connector is a gadget that changes over characteristics of one electrical gadget or framework to those of a generally contradictory gadget or framework. Some alter power or flag properties, while others simply adjust the physical type of one electrical connector to another.



Fig. 2.1: Adapter

An AC connector, likewise called a "control solid shape" or "recharge", is a little power supply that changes family unit electric flow from mains voltage ( either 120 or 230 volts AC) to low voltage appropriate for purchaser hardware. Likewise alluded to as a power supply or power connector, an AC connector connects to a standard electrical outlet and changes over the AC electrical flow from the

divider outlet to the particulars required by the electrical gadget that is connected. The AC connector is a crate joined to the power line, either toward the finish of the rope where the gadget connects to the divider outlet or amidst the power string. Huge amounts of gadgets around your home depend on AC connectors for their capacity supply. Workstations, mobile phones, cordless telephones, advanced photograph outlines, minimized circle players, computer game frameworks and that just names a couple. Innovation still can't seem to lead us to a period when AC connectors will wind up all inclusive to every single electronic gadget.

### **2.3.1. a. How an AC Adaptor Works:**

To put it plainly, an AC Adaptor changes over the electric flows gotten by the electrical outlet into a regularly lower substituting flow that an electronic gadget can utilize. Inside the AC connector are two wire windings that fold over a solitary iron center. The first of the windings gets the 120-volt substituting flow conveyed to the electrical outlet, and makes an electric field in the iron center. The second wire winding transforms the recently made electric field into a littler rotating electric flow. The proportion of the subsequent rotating current is needy upon the quantity of curls in the second wire twisting in connection to the number in the main winding. On the off chance that the second winding is half of the principal winding, the exchanging current will gauge half of what it did when it entered the AC connector. In this way, if there were 100 loops on the principal winding, the second winding will have just 50 curls.

### **2.3.2. Vero Board:**

A brand of Vero Board Strip Board, a pre-made circuit board component of copper strips on a safety board. An exclusive name for commonly used hardware prototyping boards, structured with the standard (rectangular) framework of 0.1 inches (2.54 mm), which is going on one side of the crosswire distance in one direction in the broad parallel segment of C-opper cladding. Board. This is generally the first item known as Vero Board, which is the British company VERRO Technologies Limited and Canadian Agency Pixel Print Lee. Its a trademark in the UK, using the board, breaks are usually made in tracks, strips split between different electric hubs, almost spacers. With consideration, separating the parts of the two sticks, there is a possibility of breaks between the openings to consider separating only one position, for example, twin line headers for IDCs.



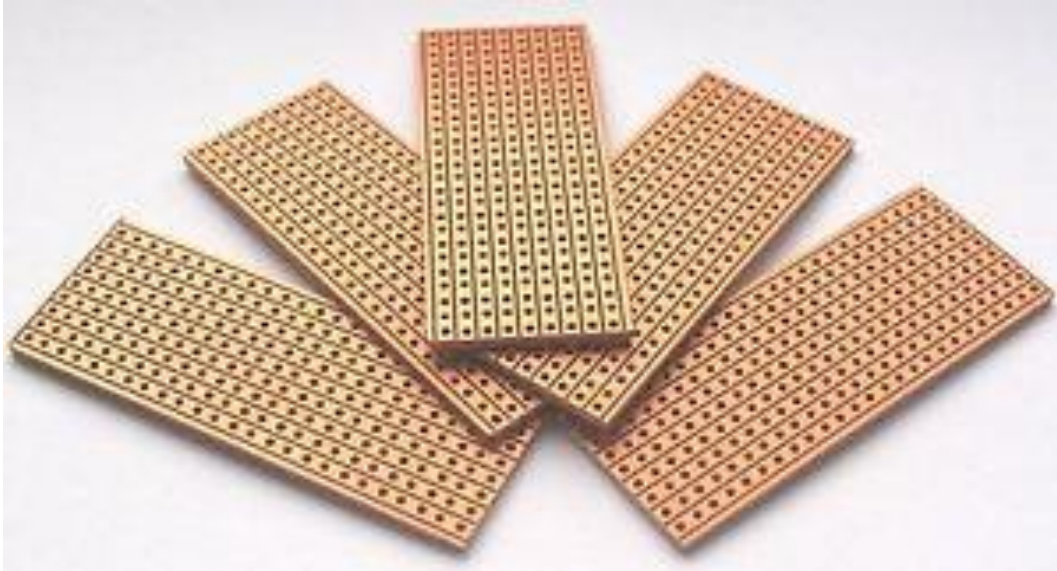


Fig. 2.2: Vero Board

### **2.3.3. Buzzer:**

A signal is a gadget that makes a bloating or blaring chlamer. There are a few types; The most essential is a piezoelectric signal, which is the dimension of piezoelectric material dimensions with two terminals. To run this type of bell, any type of oscillator (or growing something like microcontroller) is needed - if you apply a DC voltage, you will only get a tick. They are used in spots where you need something that can be heard, but can not be less aware of high-lip sound transmission, such as microwave, smoke alarms and electronic toys. They could be cruel and using crystalline control specifically. They are extra slim, so they can be used in level articles like "Singing" songs welcomed.



Fig. 2.3: Buzzer

### **2.3.4 LCD Display:**

16 × 2 lcd is hence named because; It has 16 columns and 2 rows. There are many combinations like 8 × 1, 8 × 2, 10 × 2, 16 × 1, etc. But the most used 16 \* 2 LCD; So we are using it here.

The above mentioned LCD display will have 16 PINs and the programming process will remain the same and so your choice will be left. Below Pinter and pin description of 16x2 LCD

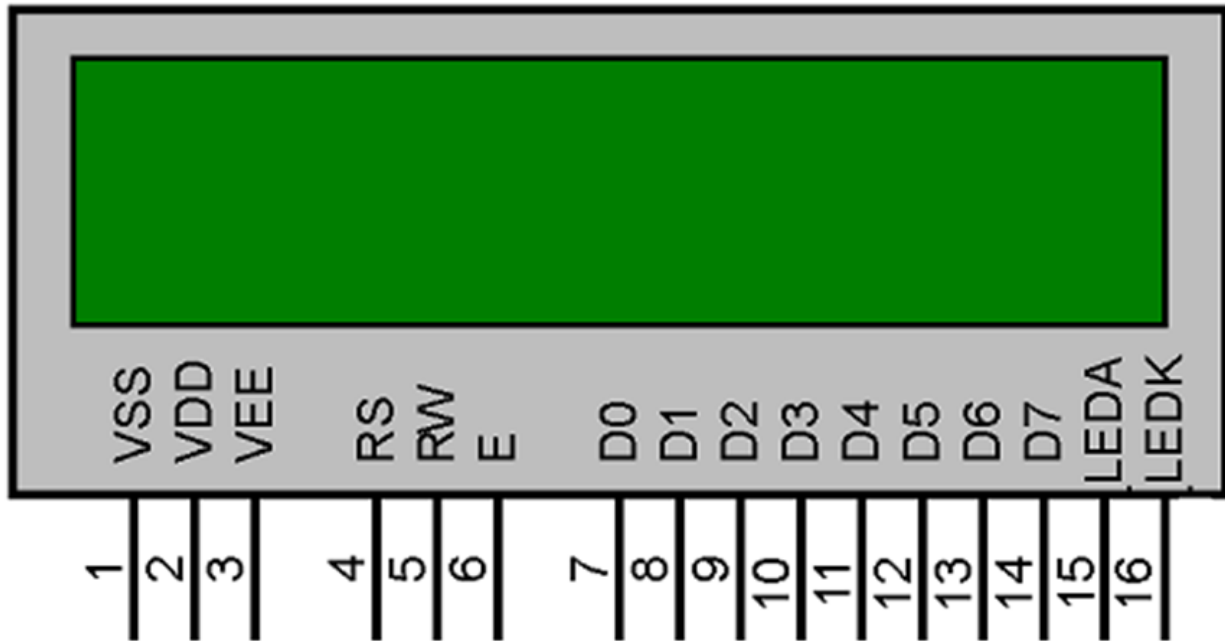


Fig. 2.4: LCD Display

### 2.3.5.Sonar Sensor:

An ultrasonic sensor is a gadget that gauges the separation of a protest using sound waves. It is a clear repeat sent a sound wave and that is different from the tuning back ricochet behind that sound wave. During the time of the creation of the sound wave and the back of the sound wave, it is possible to calculate the separation between leaking time, gold sensors and protests.

As it goes through the wind at 344 m / s (1129 ft / second), you can remove the ideal scope for sound waves and it is 344 meters (or 1129 ft) to determine the sum of the sound wave circular trip separation. Round-trip refers to the sound wave separating the separation of the question more than once before it is separated by the sensor; It included 'trip' from the gold sensor in protest and included from the ultrasonic sensor (after 'ricocheted off sound wave protest)' trip. The question exploded separation, essentially removal of round trip equal parts.

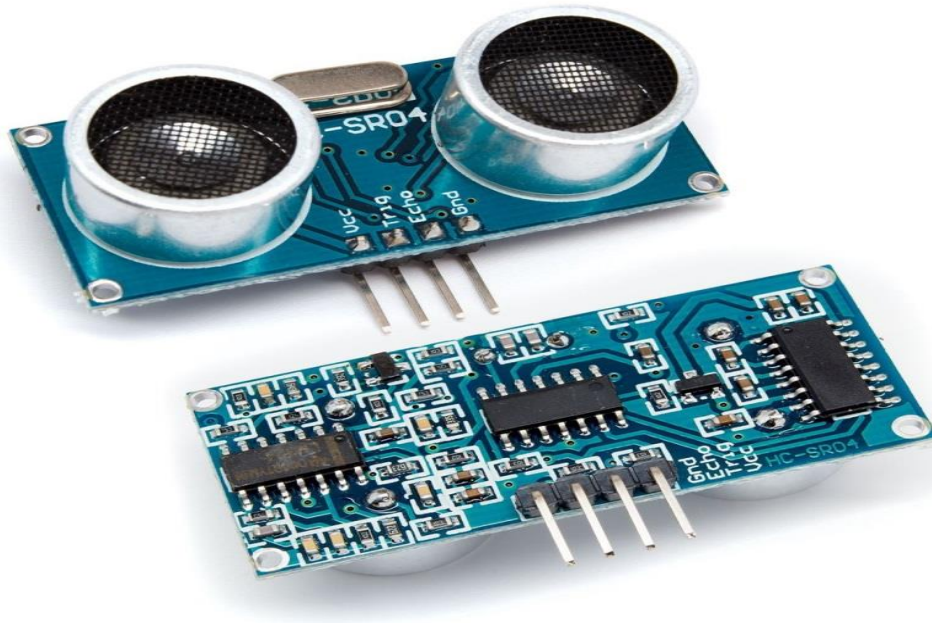


Fig.2.5: Sonar Sensor

### **Advantages of Sonar Sensor:**

- It is the main framework used to discover and recognize protests in the water viably. It is additionally used to decide profundity of water.
- It is utilized for different water based exercises. This is because of the way that sound waves utilized by SONAR don't lessen much in the ocean water contrast with radar waves and light waves.
- It is extremely exact framework.
- It isn't excessively costly.
- They have more prominent precision than numerous different techniques at estimating thickness and separation to a parallel surface

- Their high recurrence, affectability, and infiltrating power make it simple to identify outside or profound items
- It is anything but difficult to utilize and not hazardous amid activity to adjacent articles, individuals or gear
- They can without much of a stretch interface with microcontrollers or any kind of controller
- Not influenced by shading or straightforwardness of articles
- Can be utilized in dim situations
- Not exceptionally influenced by residue, soil, or high-dampness situations

### **2.3.6 Hot Glue Gun:**

Hot soften cement (HMA), otherwise called craft glue, is a type of thermoplastic cement that is normally sold as strong round and hollow sticks of different distances across intended to be connected utilizing a heated glue firearm.



Fig. 2.6: Hot Glue Gun

### **2.3.7 Variable Resistor:**

Limiting flow of an electric circuit without turning off a resistor flow. By changing a variable resistant barrier strip allows more commands on current flow. At the point when increasing the barriers between a variable resistant, measuring the current measurements allowed in circuit flow. Two essential parts make the factor resistant. Resistant components are known as main components and components. The second part, which is called wiping or brush, is used to interrupt and is often controlled by a handle or a sliding switch.



Fig. 2.7: Variable Resistor

### **2.3.8 Arduino Pro Mini**

This microcontroller is based on ATMEGA 328. There are 20 pin (0-19) of which 6 analog inputs that can be used as a general purpose pin, frequency 16MHz ceramic resonator, a USB connection, a power jack and a reset button. It contains everything needed to support a microcontroller.

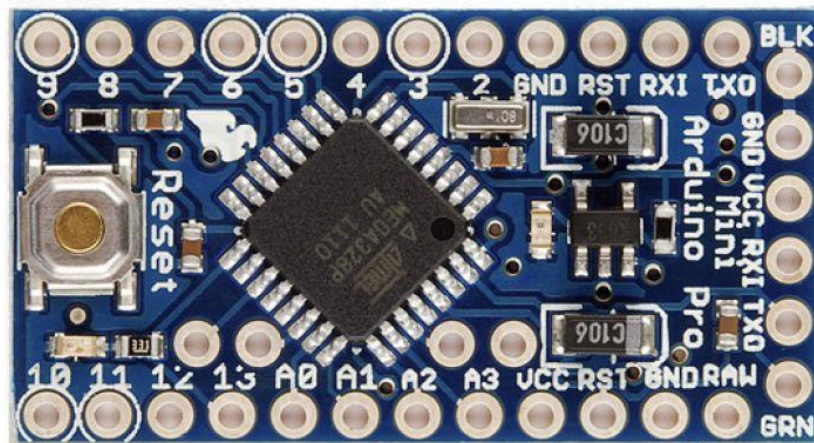


Figure 2.8 Arduino Pro Mini

Overview on Arduino Pro Mini

Microcontroller ATmega 328

Clock speed 16MHz

Analog input pin 6

Digital Input Output Pin 14 (Provided 6 Pin PW Voltage)

Input Voltage 6-20V

Operating voltage 5V single word instructions: branches without all

branches guide program: Flash Memory: 14.3 KB (8192 words)

### 2.3.8. a. Microcontroller

A microcontroller is a lone chip in a single convenient circuit, which is a small scale PC that has a processor focus, memory, and programmable data / yield peripheral. Mainly, microcontrollers are usually used for compressed items and compresses, for example, car engine control systems, implantable recovery devices, remote control, office machines, mechanical assembly, control gadgets, toys and other familiar structures. Available in various word lengths such as a



microcontroller microchips (4 Bb, 8 Bb, 16 bbC, 32 bbc, 64 bbc and 128 pieces of microcontroller are open today). Here we use the Atmega328 microcontroller.

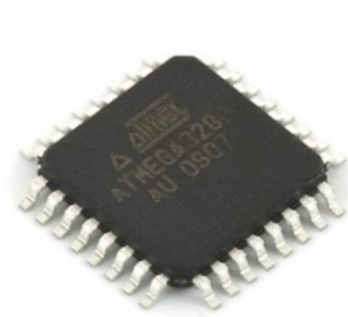


Fig. 2.9 Atmega328Microcontroller

In this article, we will go on attega88 chip pinout. Atmega328 is a widely standard microcontroller chip made by Atmel. It is an 8-bit microcontroller that has 32K flickr memory, 1K of EEPROM and 2K inside SRAM. Atmega328 is one of the microcontroller chips that is used with common Arduino Duemilanove sheets. The Arduino Duemilanove board runs with 1 microcontroller chips, Atmega168 or Atmega328. This 2, Atmega328 refresh, more chip made Atmega168 does not have the slightest degree, of which 16 is Flash program memory and 512 bytes inside the SRM, Atmeg 328 A32 explosion program memory and 2 of internal SRAM. Atmega328 has 28 pins. It has 14 powered I / O pins, out of which 6 can be used as PWM yield and 6 basic information pins. These I / O pins talk to 20 pins



- 131 Powerful Instructions 131 Powerful Instructions – Most Single Most Single-clock Cycle Execution clock Cycle Execution
- 32 x 8 General Purpose Working Registers
- Fully Static Operation
- Up to 16 MIPS Throughput at 16 MHz
- On-chip 2-cycle Multiplier
- High Endurance Non-volatile Memory segments
  - 16K Bytes of In-System Self-programmable Flash program memory
  - 512 Bytes EEPROM

### **2.3.10. PVC Wires:**

In this article, we will go over the pinout of the Atmega328 chip. The Atmega328 is a to a great degree standard microcontroller chip made by Atmel. It is a 8-bit microcontroller that has 32K of glint memory, 1K of EEPROM, and 2K of inside SRAM. The Atmega328 is one of the microcontroller chips that are used with the pervasive Arduino Duemilanove sheets. The Arduino Duemilanove board goes with either 1 of 2 microcontroller chips, the Atmega168 or the Atmega328. Of these 2, the Atmega328 is the refreshed, further created chip. Not in any way like the Atmega168 which has 16K of gleam program memory and 512 bytes of inside SRAM, the Atmega328 has 32K of burst program memory and 2K of Internal SRAM. The Atmega328 has 28 pins. It has 14 propelled I/O pins, of which 6 can be used as PWM yields and 6 basic data pins. These I/O pins speak to 20 of the pins



Fig. 2.11: PVC Wires

### **2.3.11. Connector:**

A connector is an electro-mechanical gadget for joining electrical circuits as an interface utilizing a mechanical gathering. Connectors comprise of fittings (male-finished) and jacks (female-finished). The association might be brief, concerning versatile hardware, require a device for get together and expulsion, or fill in as a changeless electrical joint between two wires or gadgets. A connector can be utilized to adequately unite unique connectors

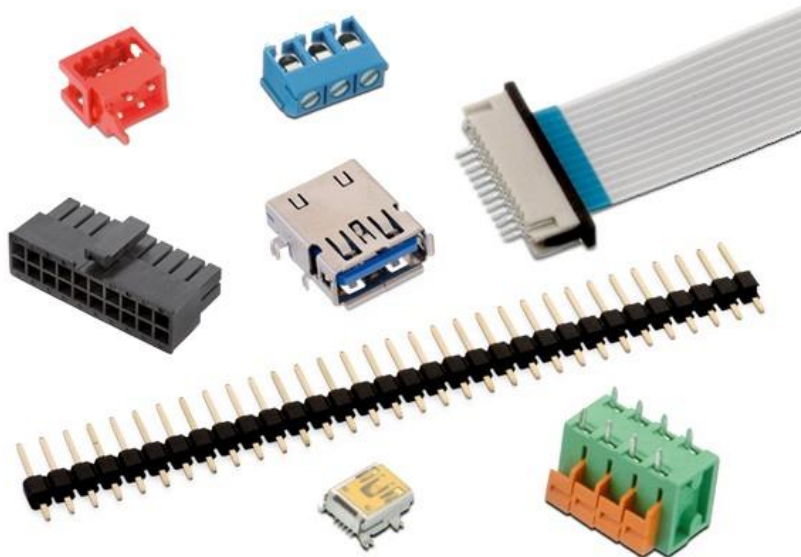


Fig. 2.12: Connector

### 2.3.12. DC CONNECTOR:

To provide a DC connector (or DC plug, for a common type connector), an electrical connector has many other types of DC connectors, which are not interchangeable, directly compared to domestic AC power plugs and sockets in direct power (DC) power supply. The DC connectors' level and layout may be selected to prevent accidental interconnection of incompatible sources and loads. Types vary from small coaxial connectors, which are used for portable electronic devices for AC adapter, connectors used for automotive accessories, and battery packs on portable devices.



Fig. 2.13: DC Connector

### 2.3.13. Soldering Iron:

An iron iron is used to bind a hand device. It supplies the warmth of the welding fluid with the goal that it can stream into two working pieces joint. A patching iron is a warm metal tip and a safe handle is carried out. The warmth is often electrically resistant (resistant to an electric line or battery link), resistant to warming material. Blanked ions can be heated by heating the gas left in a small tank, instead of regular hair, a reactionary heating is used. Generally less commonly used basic irons than the past have a huge copper bit on the handle, warm in the fire. Regular use of fixed irons is used regularly to get together working, limited and limited construction of hardware.



Fig. 2.14: Soldering Iron

# CHAPTER 3

## HARDWARE DEVELOPMENT

This chapter will be explaining about the construction of three main sections of this project.

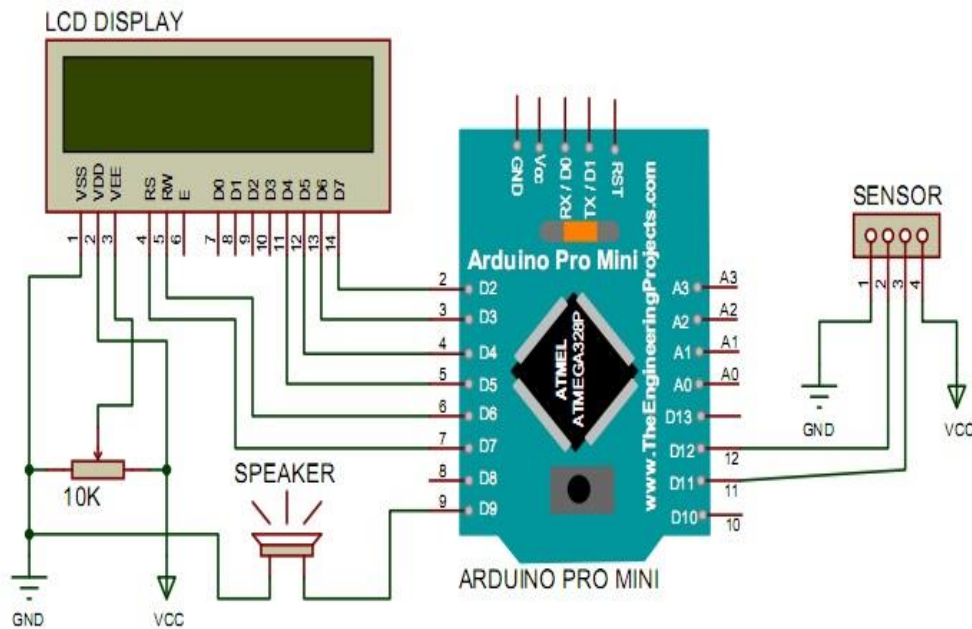
- Power supply unit: Explain the construction of a regulated power supply.
- The water level indicator unit: Explain the construction of a water level indicator system.
- Motor circuit or control unit: Take the water level sensor signal as input, compare it, and thus control the pump condition.

### 3.2 Power supply:

A power supply is an electric gadget which measures an electrical load's electrical power. The essential power of a power supply is to change the electric current from the right voltage, flow, and return from a source to control the load. So, some of the specified time as the supply of electrical energy converter. Some power supplies are independent bits of gears, others control with the load machines they control. The last supply power supply available at workstations and customer gadgets. Various capacities of supply control limit the flow drawn by the load to safe levels, to stop the flow of electrical fault, control the molding to maintain electronic signals, or control the voltage from contributes to the achievement of the load, control factor remedies, and eliminate laziness so that it short-circuits to control the formula. Driving may continue in case of a load failure.

### 3.3. Circuit and Representation of a Regulated power supply:

Regulated power supply is an electronic circuit that is designed to provide a constant dc voltage of predetermined value across load terminals irrespective of ac mains fluctuations or load variations.



## Water Level Indicator Display and Alarm

Fig.3.1: Circuit Diagram.

As shown in this diagram, two basic components of a given power supply are a simple power supply and a voltage management gadget. The power supply yield is given as a contribution to the voltage management gadget that yields the last yield. Power Supply Voltage Yield Information AC voltage or yield stack current is available in a variety of different types of steady.

Below is a circular outline of a managed power supply circuit that uses a transistor system controller as a guide gadget. The information is provided by AC Transmission (230 voltas arms)



voltage, a transformer. Yield will be fitted for a ventured-down air conditioner yield for ideal DC yield. This air conditioning voltage is then given to a scuffle rectifier providing a full wave-corrected yield. It is given a pie-channel circuit to create a DC voltage. Some of the yield of the channel may have air conditioning voltage and swells. This extra sifted use of a controller circuit, which will result in a steady DC voltage. This indicated DC voltage is then given to a voltage divider, which provides various DC voltage needed for various electronic circuits.

### 3.4. Block Diagram:

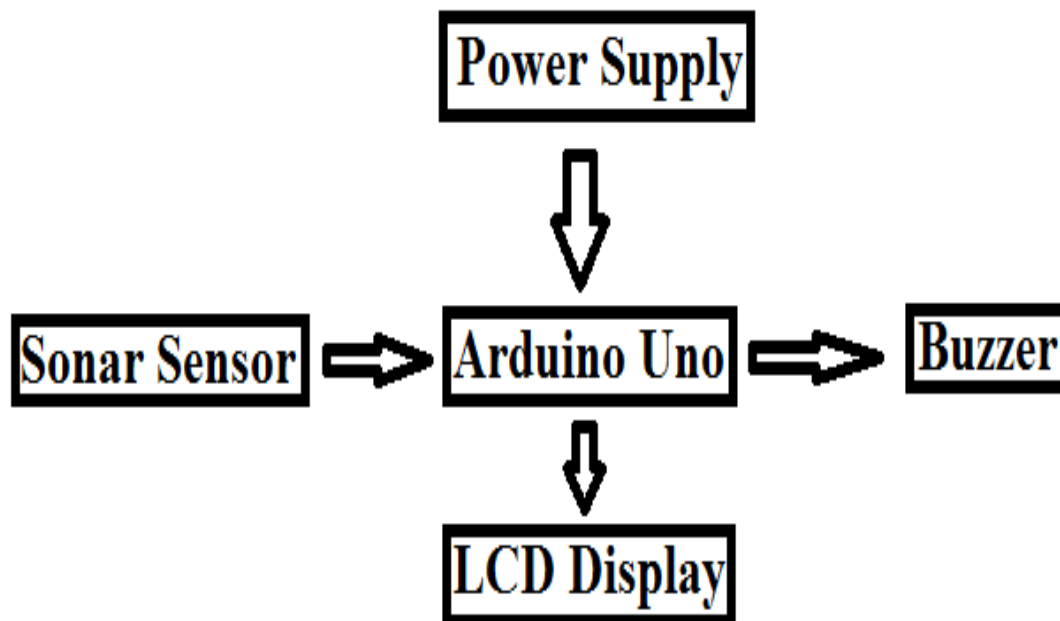


Fig. 3.2: Block Diagram of Microcontroller Based water level.

With the appearance in the innovation, different kinds of exact sensors have been as of now detailed in the writing. Be that as it may, these structures require adjustment in their plan ideas to meet the present innovation prerequisites. Dams are counterfeit boundary which have high potential danger of inevitable crumple making calamitous outcomes nature and particularly to people. Dam water level is commonly estimated physically, which includes manual estimation blunders. Manual estimation is additionally not powerful because of different issues, for

example, troubles in achieving the estimation site, human mistake, low goals of the estimating instrument, and so on.

In the perspective of above, numerous programmed water level estimation frameworks utilizing mechanical sensors, for example, resistive [1, 2], capacitive [2] or attractive sensor [3], have been as of now announced in writing. In any case, these sensors need to do coordinate contact with water that makes their life expectancy shorter because of substance and physical limitations, for example, erosion, weight submerged, etc. Sensors like resistive and attractive sensors can gauge just the water level at a few while capacitive sensor can quantify the water level at all focuses. Be that as it may, capacitive sensor is influenced by water piece and can influence the estimation result. From the above exchange it very well may be reasoned that a successful and profoundly exact plan of sensor is required that is fit for getting by in the unfavorable water level estimation condition.

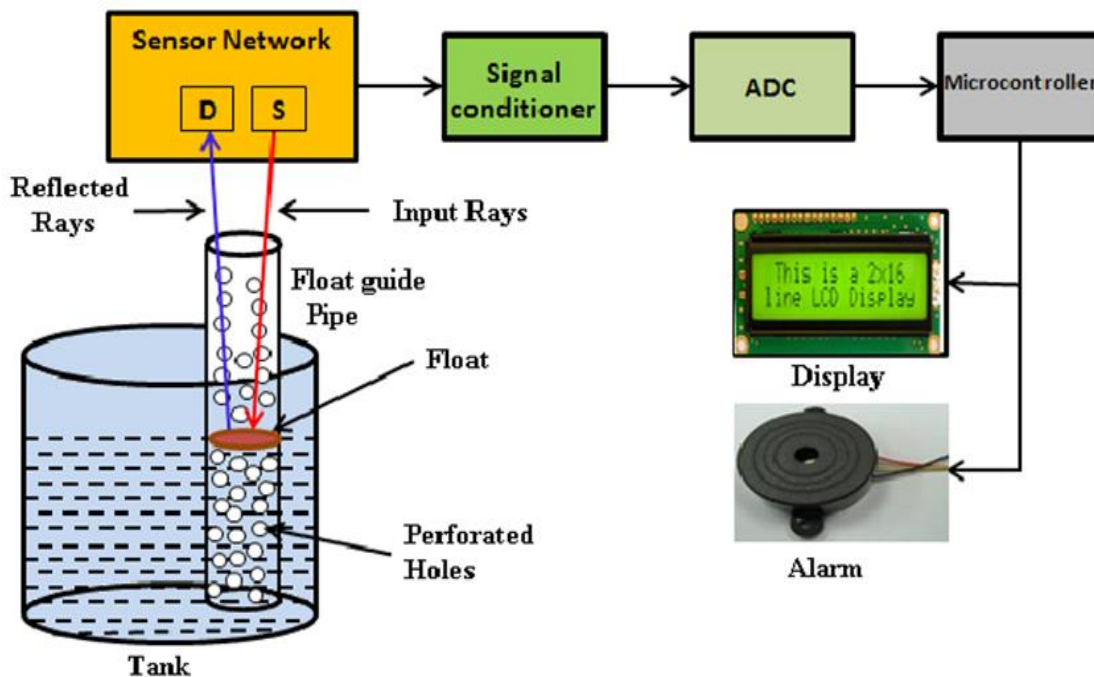


Fig. 3.3: Block diagram representation of the proposed water level sensor design.

### 3.5. Complete Hardware Setup:

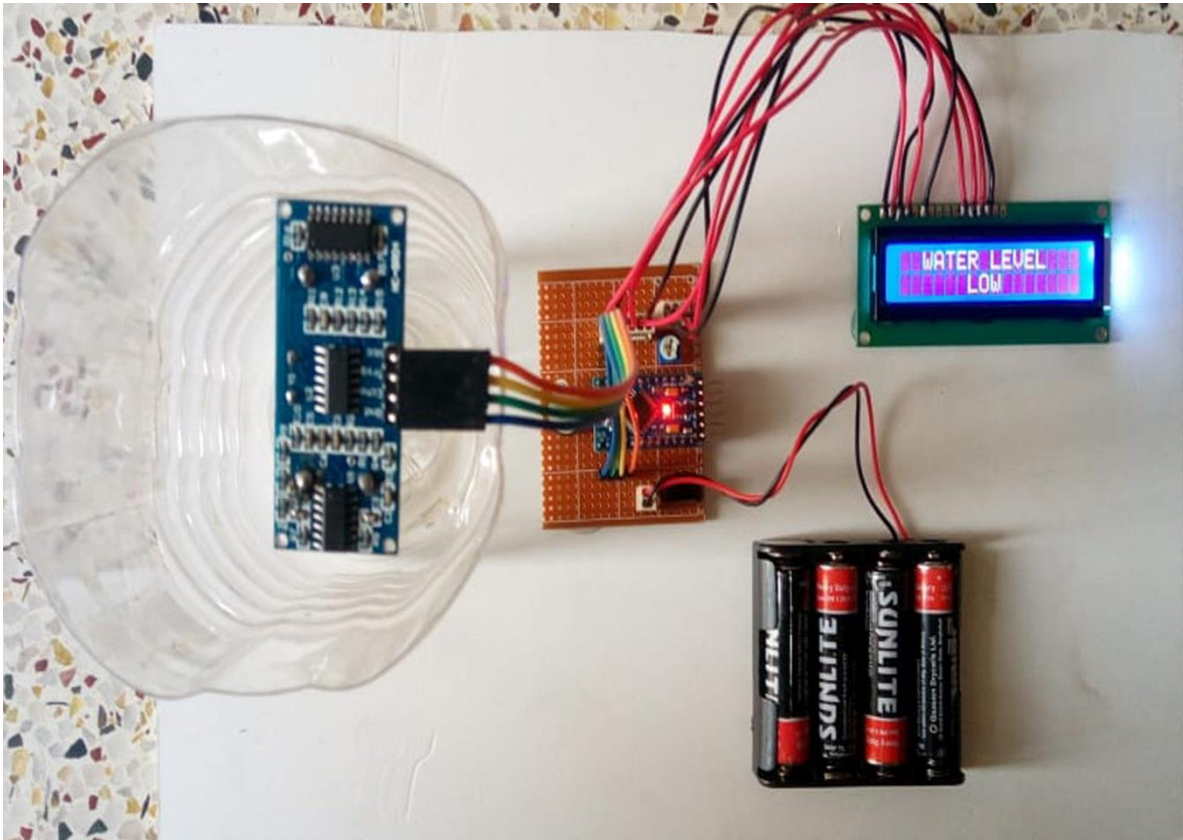


Fig. 3.4:Water level sensor design.

### 3.6 Summary:

A graphical representation of an electric circuit of a circuit image (electrical image, initial image, electronically designed). A painting circuit images use common images of elements, when a schematic diagram shows circuits components and interactions using appropriate symbolic presentations. In the schematic diagram, the interconnection presentation is not related to the physical system of the device.

# CHAPTER 4

## RESULTS AND DISCUSSIONS

Circuit tank shows the water level and when the water level goes below the default level the engine is turned on. When the tank is full, the circuit eventually closes the engine. Water level and other necessary information is shown in a  $16 \times 2$  LCD show. Circuit water screen dimensions in the tank tank (source tank) alike. If the level inside the tank is low, then the engine will not be exchanged and it will pour a dry running engine. If the noise level is low or if there is any fault with the sensors, then any light noise is produced.




In this Adriano based automatic water level indicator and controller project, we are going to measure the level of water using ultrasonic sensors. The ultrasonic distance measurement is based on the basic principal ECHO. When the wind waves are sent to the environment, they come back as an inch after hitting an obstacle. So we only have to count both the words on their travels, which means the time of the outgoing time and the return from the source after hitting an obstacle. And after calculating some of the distance we can get that result. This concept is used in our water controller project, where the water motor pump is automatically introduced when the tank level is reduced. You can test this simple water level index circuit for a simple version of this project.

### **4.2. Result:**

The goal of the project was to find a solution to reduce the side effect of the water level indicator, and to save power. The first thing in this project is to prepare the input and output of the system to control the water level indicator. The extended model was created according to the circuit diagram and the result was expected. The idea to use microcontrollers to control this water level indicator. This is shown below the true table.

- The NOT output signal was then passed through a BJT to amplify it and make it strong enough to activate the relay.
- The pump was started through the relay and water was provided to the OHT.

**TABLE 3.1: TRUTH TABLE OF WATER LEVEL CONTROLLER**

Water Level	Input Signal A	Input Signal B	NAND Output	SSS timer output	NOT gate output	Pump State
	1	1	0	0	1	1
	1	0	1	0	1	1
	0	0	1	1	0	0
	1	0	1	1	0	0
	1	1	0	0	1	1

**Fig 4.1** Lower tank truth table

### 4.3. The Advantages of Water Level Controller:

A water level controller is an instrument that operates water level in different ways in water tanks, pumps and swimming pools. The basic function of a water level controller is to control water flow and optimize the system performance. There are four main advantages on this device.

#### **Saves Power**

Using a water level controller saves power. Because the water levels are automatically controlled, which limits the amount of electricity. As a result, less water and electricity were used to control the supply of water. In an era where energy conservation is very important, using one of these devices is very useful.

## **Saves Money**

As the maintenance of a water level controller power, it also saves money as well. Basically, water control is optimized through these devices, which mean waste of electricity and the wasted water is kept to the lowest. That time saves a large amount of money.

## **Works Automatically**

Another big advantage is that these devices can do their own work. Thanks to the timer switch, there is no need to run them. This means that the disadvantages associated with some observations such as reservoirs are reduced and the water levels should be where.

## **Maximizes Water**

In addition, the use of water can be maximized by the water level regulator. Often, the water pump uses more in the middle of the day. A water level controller is helpful because it automatically provides less water in the middle of the day and at night. As a result, the water always remains in its proper stages.

#### 4.4. Cost Sheet:

Table 4.1: Cost Sheet

No	Equipment	Quantity	Price
1	Arduino Mini	1	350
2	LCD Display	1	250
3	Sonar Sensor	1	150
4	Adapter 5V	1	120
5	Buzzer	1	15
6	Variable Resistor	1	15
8	Varo Board	1	30
9	Connector	10	75
10	DC Connector	1	10
14	Cork Shit	2.0 feet	300
15	Glue Stick	2	60
16	Wires	2 Gage	30
18	Soldering Iron	1	200
19	Water Bottle	1	100

#### 4.5. Summary:

The customary controller in market for the most part utilize capacitive sensor and microcontrollers .These expansion the expense and also the multifaceted nature of the frameworks .We have built up a fairly easier however proficient model of a water level controller.

# CHAPTER 5

## CONCLUSION

### 5.1. Summary of the project work:

- This system is very useful in rural and urban areas.
- It helps in the effective use of water sources.
- If used in large scale, it can make a big contribution to water conservation for us and future generations.

On this day, when every drop of edible oil is reduced to the whole of the world, then every drop is worth. Water level controller is a simple but effective way to prevent waste dissipation. Its simplicity in design and low-cost components makes it a standard piece technology for the general public.

### 5.2. Limitation of the Project:

It is huge to realize that in this structure we utilized metallic contacts as sensor which is winds up corroded in the presents of water and makes the sensors less touchy. So we have to clean the sensors after certain era.

### 5.3. Future Scope:

The Future scope of the setup is to incorporate a more reliable sensing material than that of the present one used. Along with that, a metal which is not susceptible to corrosion by rust can be connected as a sensor then a more efficient and reliable performance can be achieved.



## **Program :**

```
#include <LiquidCrystal.h>

LiquidCrystal lcd(7, 6, 5, 4, 3, 2);

int trigPin = 11; //Sonar Sensor - Trig Pin
int echoPin = 12; //Sonar Sensor - Echo Pin

long duration, inches, centimeters;

void setup(){

pinMode(trigPin, OUTPUT);

pinMode(9, OUTPUT);

pinMode(13, OUTPUT);

pinMode(echoPin, INPUT);

lcd.begin(16, 2);

}

void loop(){

digitalWrite(trigPin, LOW);

digitalWrite(trigPin, HIGH);

digitalWrite(trigPin, LOW);

pinMode(echoPin, INPUT);

duration = pulseIn(echoPin, HIGH);
```

```
Serial.print(inches);

Serial.println();

delay(150);

if(centimeters < 4) {

    digitalWrite (9,HIGH);

    lcd.print(" WATER LEVEL ");

    lcd.print("  HIGH  ");

else if(centimeters<=7, centimeters>4)

    digitalWrite (9,LOW);

    lcd.print(" WATER LEVEL ");

    lcd.print("  MEDIUM  ");

else if(centimeters<=10, centimeters>7)

    digitalWrite (9,LOW);

    lcd.print(" WATER LEVEL ");

    lcd.print("  LOW  ");

}
```

## References:

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