AUTOMATIC WATER CONTROL PUMP USING ARDUINO

50 EE 6P1 - MICROPROCESSOR AND MICROCONTROLLER LABORATORY

MINI PROJECT REPORT

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BONAFIDE CERTIFICATE

Certified that this project report titled **"AUTOMATIC WATERCONTROLPUMPUSINGARDUINO"** is the bonafide work of **NARENDRAN.S(1912124), PANJUMIN.S(1912125), PRADEEP RAJ.D(1912126) &PRIYADHARSHINI.M (1912127)** who carried out the project under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

SIGNATURE   **SIGNATURE**

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1. ABSTRACT:

In this Arduino based automatic water level 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. You can also check this simple water level indicator circuit for a simpler version of this project.

2. OBJECTIVES:

- The main motive of this project is to save water and electricity.

- This project doesn't require any human to operate as it is fully automatic.

- This project can be connected in real life starter and control a motor.

- The operating current of this circuit is very small and it doesn't waste any power and doesn't produce any heat.

- Though it is automatic, it can be controlled using manual switches as per our convenient

3. INTRODUCTION

The automatic water control pump circuit posted here is used to automate the operation of an electrical water pump based on the level of water in the overhead tank. The automatic water pump controller using arduino circuit can be used as a standalone system and can be interfaced to the existing control panel. In this project we have used very common, efficient and cheap components. It is very simple circuit and useful for all. It is used in home, public forums, industries. Especially, homes withelderly people it is a necessary one to fill the tank for daily purpose. And for daily office workers it is one needful to fill the tank.
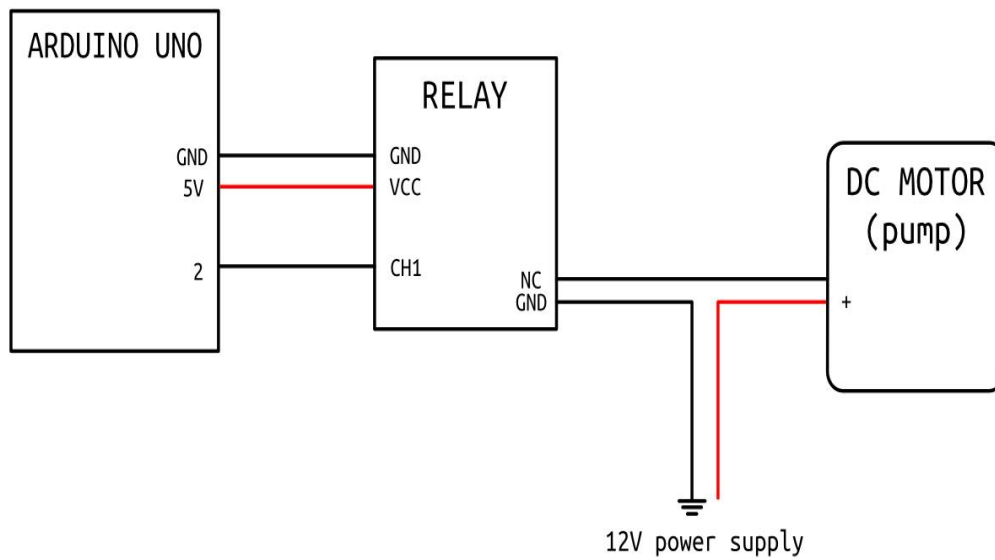
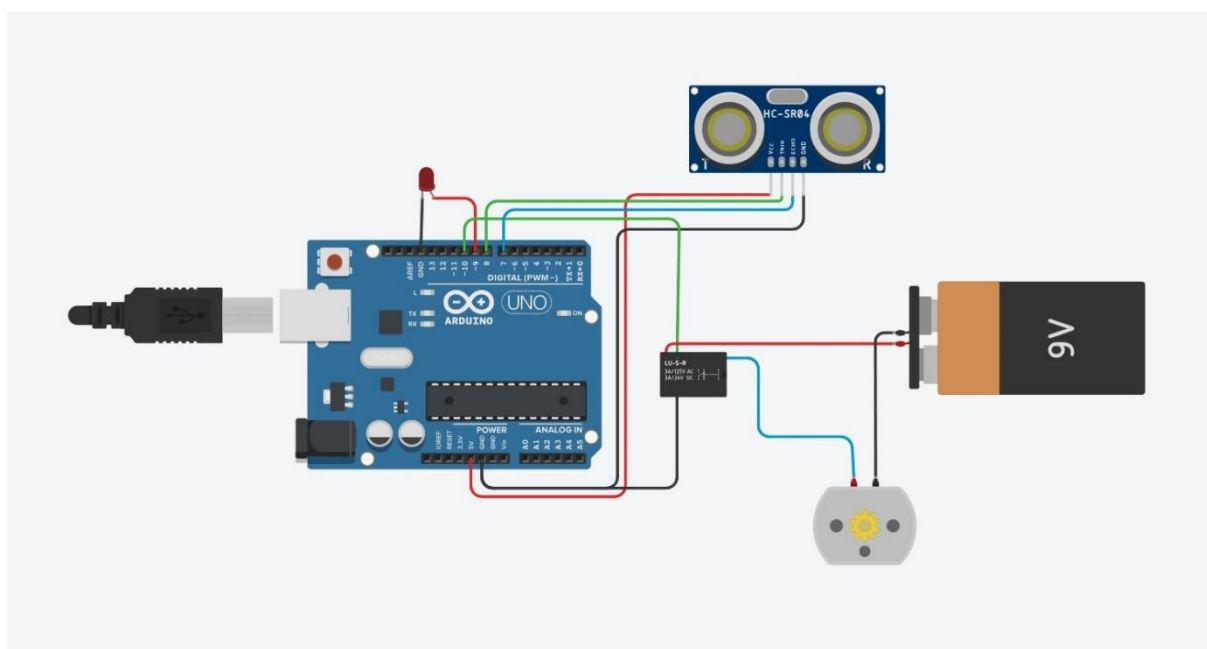# 4. BLOCK DIAGRAM

Fig 4.1

5. CIRCUIT DIAGRAM

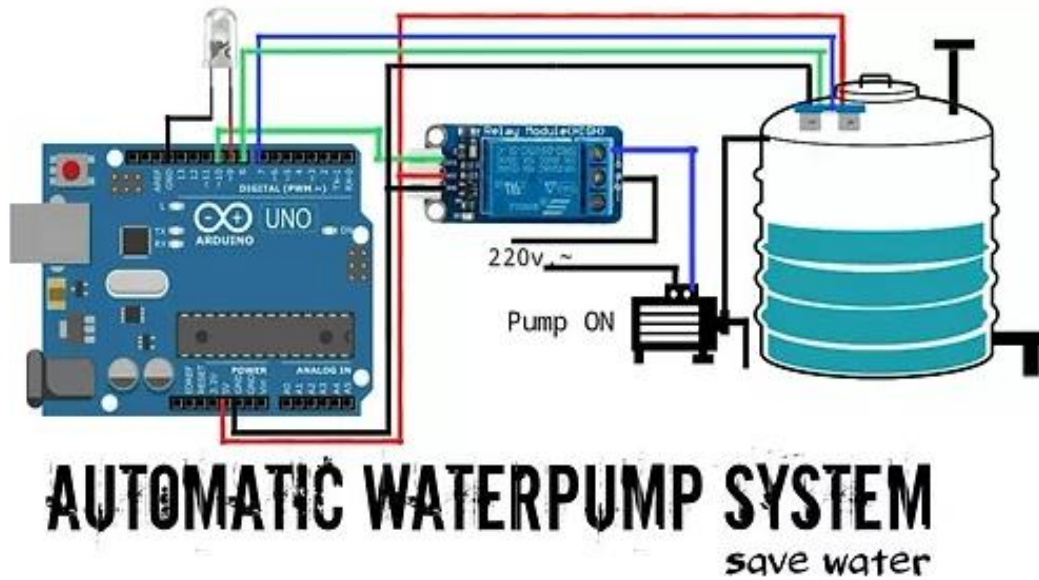**Fig 5.1**

AUTOMATIC WATERPUMP SYSTEM

save water

Fig 5.2

6. HARDWARE IMAGE

Components

1. Arduino Uno
2. Ultrasonic sensor Module
3. Relay 5 Volt
4. Bread board
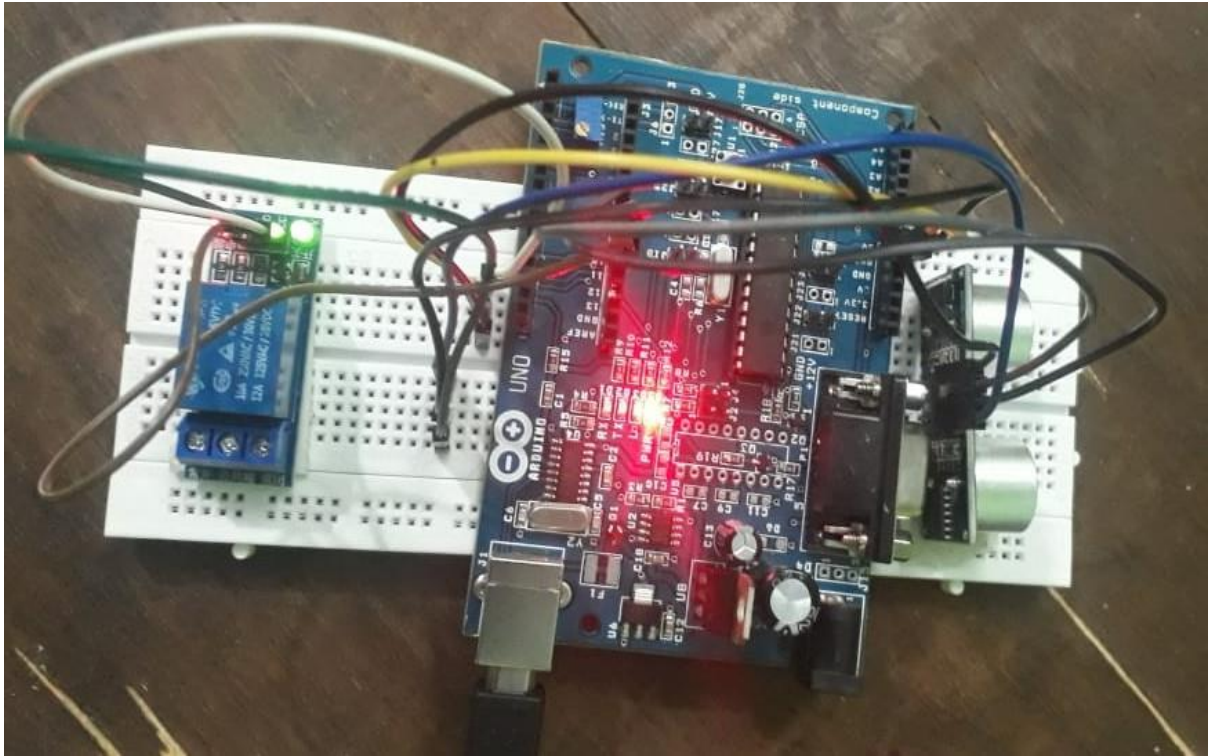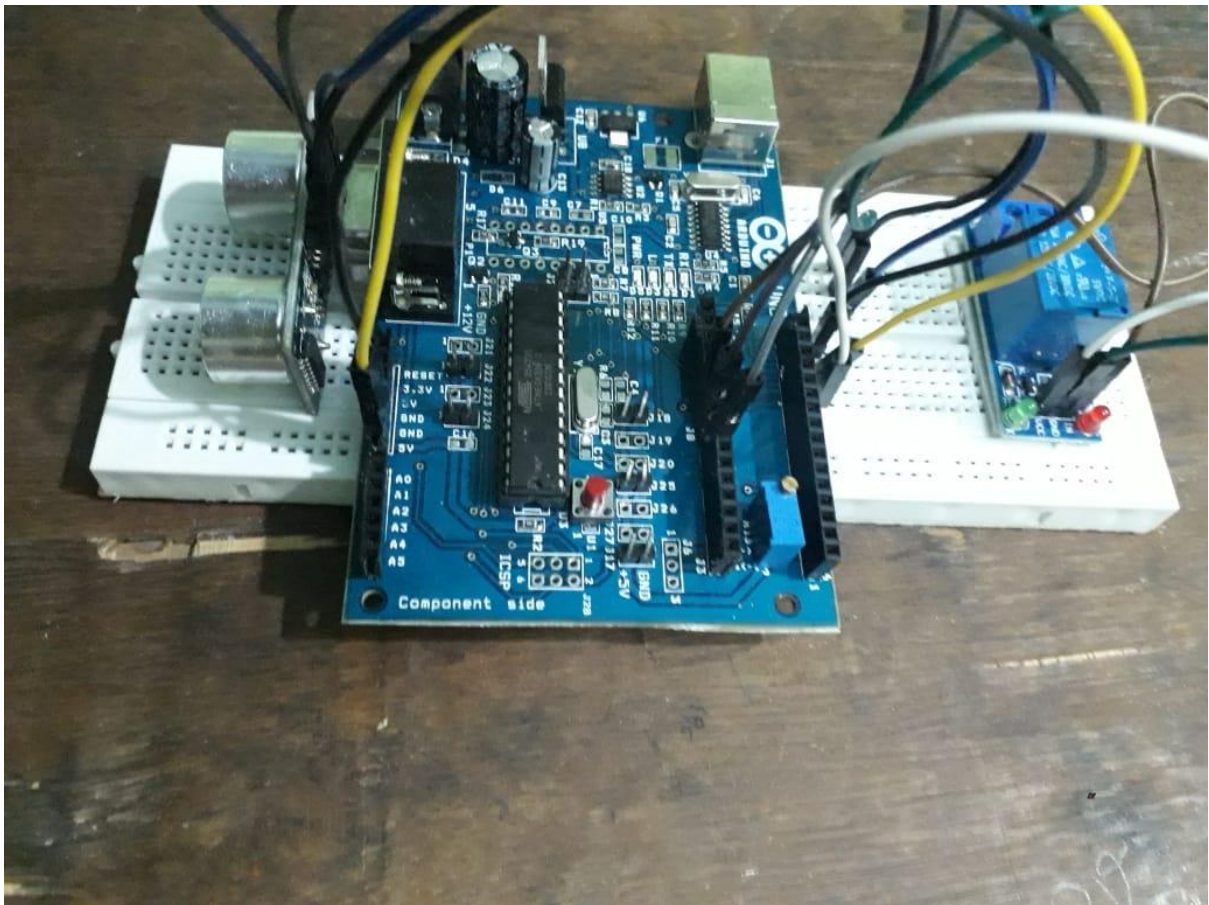5. Connecting wires
6. Led
7. Arduino ide

Fig 6.1

Fig 6.2

7. SOFTWARE OUTPUT

```
// ---------------------------------------------------------------- //
// Arduino Ultrasoninc Sensor HC-SR04
// Re-written by Arbi Abdul Jabbaar
// Using Arduino IDE 1.8.7
// Using HC-SR04 Module
// Tested on 17 September 2019
// ---------------------------------------------------------------- //

#define echoPin 2 // attach pin D2 Arduino to pin Echo of HC-SR04
#define trigPin 3 //attach pin D3 Arduino to pin Trig of HC-SR04

// defines variables
long duration; // variable for the duration of sound wave travel
int distance; // variable for the distance measurement

void setup() {
pinMode(trigPin, OUTPUT); // Sets the trigPin as an OUTPUT
pinMode(echoPin, INPUT); // Sets the echoPin as an INPUT
Serial.begin(9600); // // Serial Communication is starting with 9600 of baudrate speed
Serial.println("Ultrasonic Sensor HC-SR04 Test"); // print some text in Serial Monitor
Serial.println("with Arduino UNO R3");
}
void loop() {
  // Clears the trigPin condition
digitalWrite(trigPin, LOW);
delayMicroseconds(2);
  // Sets the trigPin HIGH (ACTIVE) for 10 microseconds
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
```

```
digitalWrite(trigPin, LOW);

 // Reads the echoPin, returns the sound wave travel time in microseconds

 duration = pulseIn(echoPin, HIGH);

 // Calculating the distance

 distance = duration * 0.034 / 2; // Speed of sound wave divided by 2 (go and back)

 // Displays the distance on the Serial Monitor

Serial.print("Distance: ");

Serial.print(distance);

Serial.println(" cm");

}
```

TRUTH TABLE FOR RELAY OPERATION

The water level in the tank	Relay operation (RL2)	Pump motor operation
Below low level	On	Starts
Above low level and below high level	On	Remains on
Reaches high level	Off	Stops

8. CONCLUSION

- In this busy day to day life to fill water tank is essential one for daily uses.

- In this case, some people may forget to switch on and switch off the motor properly.

- This may leads to wastage of electricity and water

- In order to address the problem,we have to use this submersible pump automatic starter

- Through this starter, motor will turn on when there is insufficient water in tank and turn off automatically when reaches required limit in the tank

9. REFERENCES

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[2] Ria Sood, Manjit Kaur, Hemant Lenka , " Design and Development of Automatic Water Flowmeter", Mohali, India

[3] SanamPudasaini, Anuj Pathak, SukirtiDhakal, Milan Paudel,"Automatic Water Level Controller with Short Messaging Service (SMS) Notification", Kathmandu University, Nepal.