

# **SMART WATER MANAGEMENT**

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## **PHASE 4: Declaration part – 2**

### **Smart Water Management :**

In the development part 2 of a Smart Water Management System, the focus should be on setting sensors and working with IOT devices. Arduino boards are widely used for sensor data acquisition and actuator control.

### **Monitoring the Water Level :**

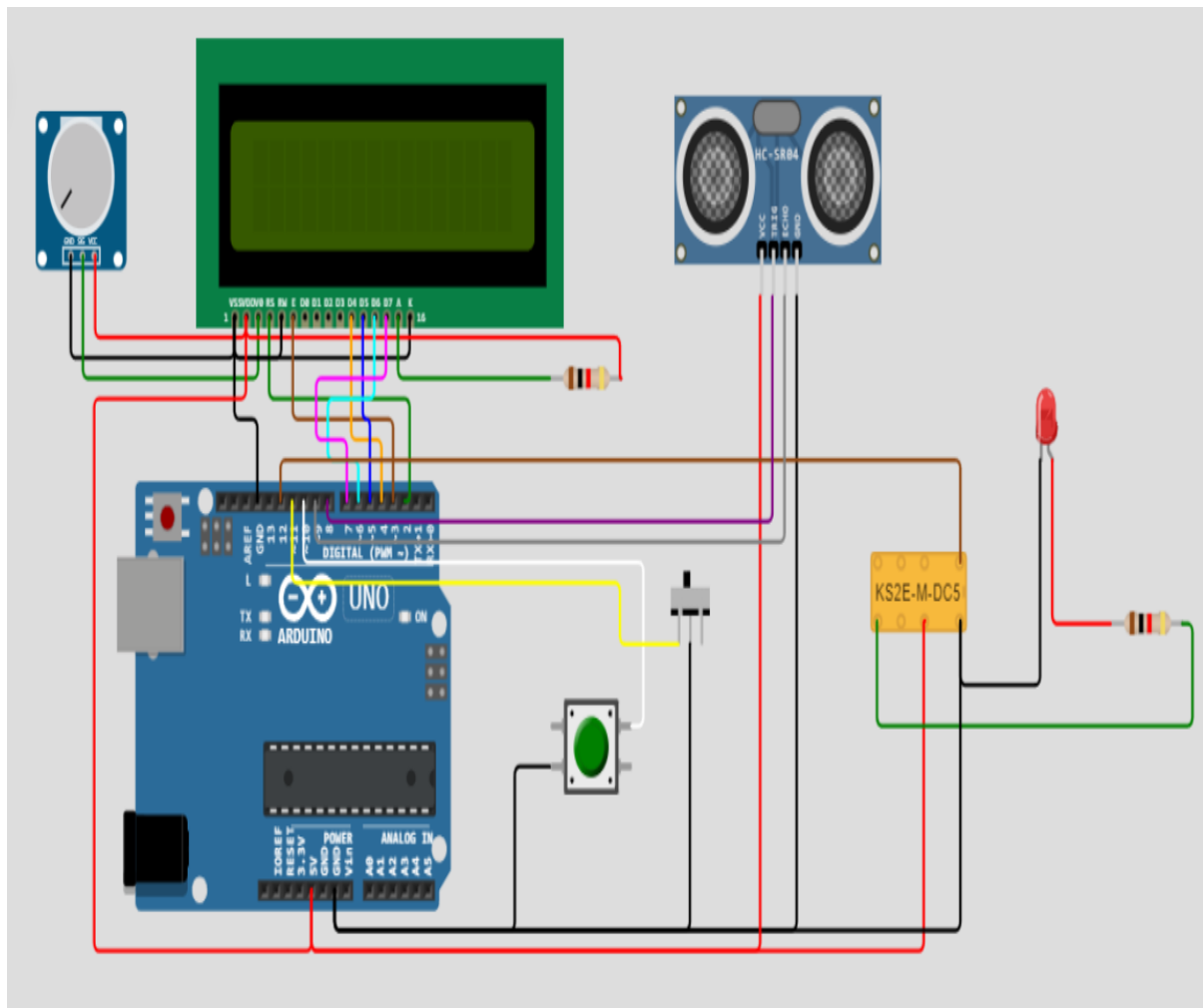
#### **Components :**

1. Arduino UNO
2. Potentiometer
3. Icd 1602
4. hc-sr04 Ultrasonic Distance sensor
5. pushbutton
6. slide-switch

## 7. ks2e-m-dc5 Relay

### Implementation of Water level Monitoring using Wokwi :

#### Connect the components :



#### Code for water level monitoring :

```
#include <EEPROM.h>
#include <LiquidCrystal.h>
LiquidCrystal lcd(2,3,4,5,6,7);
long duration, inches;
int set_val,percentage;
bool state,pump;
void setup()
{
```

```

lcd.begin(16, 2);
lcd.print("WATER LEVEL:");
lcd.setCursor(0, 1);
lcd.print("PUMP:OFF MANUAL");
pinMode(8, OUTPUT);
pinMode(9, INPUT);
pinMode(10, INPUT_PULLUP);
pinMode(11, INPUT_PULLUP);
pinMode(12, OUTPUT);
set_val=EEPROM.read(0);
if(set_val>150)set_val=150;
}
void loop()
{
    digitalWrite(3, LOW);
    delayMicroseconds(2);
    digitalWrite(8, HIGH);
    delayMicroseconds(10);
    digitalWrite(8, LOW);
    duration = pulseIn(9, HIGH);
    inches = microsecondsToInches(duration);
    percentage=(set_val-inches)*100/set_val;
    lcd.setCursor(12, 0);

    if(percentage<0)percentage=0;
    lcd.print(percentage);
    lcd.print("%  ");
    if(percentage<30&digitalRead(11))pump=1;
    if(percentage>99)pump=0;
    digitalWrite(12,!pump);
    lcd.setCursor(5, 1);
    if(pump==1)lcd.print("ON ");
    else if(pump==0) lcd.print("OFF");
    lcd.setCursor(9, 1);
    if(!digitalRead(11))lcd.print("MANUAL");
    else lcd.print("AUTO  ");
}

if(!digitalRead(10)&!state&digitalRead(11))
{
    state=1;
    set_val=inches;
    EEPROM.write(0, set_val);
}
if(!digitalRead(10)&!state&digitalRead(11)){
    state=1;
    pump=!pump;
}

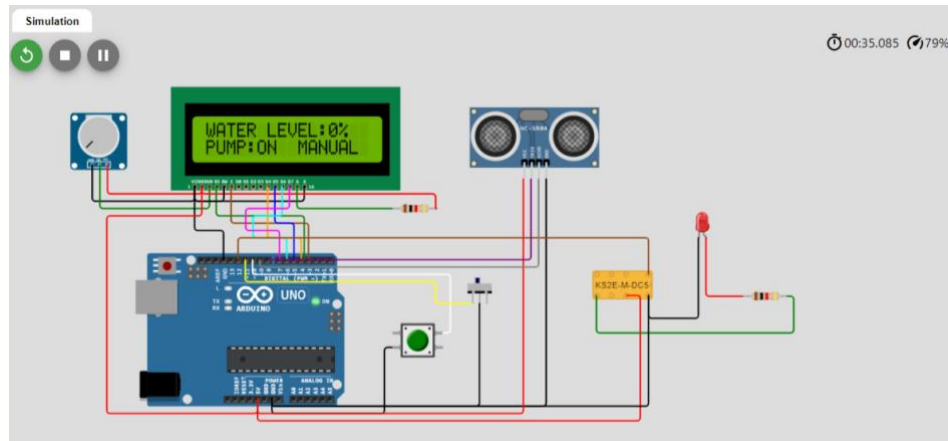
```

```

    if(digitalRead(10))state=0;
    delay(500);
}
long microsecondsToInches(long microseconds)
{
    return microseconds / 74 / 2;
}

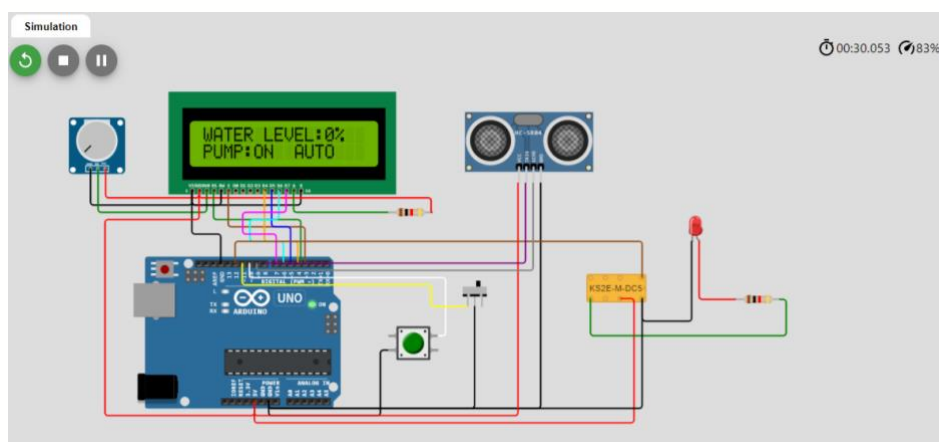
```

## Output of water level monitoring :



If the water level is 100% there is less distance then automatically the pump will off. If the water level is 0% there is high distance then automatically the pump will be on.

Similarly we adjusting the distances the pump will automatically on and off.



## Conclusion :

In the smart water management , water level monitoring the pH value, etc., in this phase I developed the water level monitoring by using Wokwi simulator by using the ultrasonic sensor.