Embedded System Project Proposal

"Automated Plant Monitoring System"

UNDER GUIDANCE OF
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Problem statement

- Whenever we go out for vacations with family or friends, we get worried about plants at home because they need water on regular basis. Plants need water to grow and become healthy. So we need something to take care of our plants while we are not available to do so.

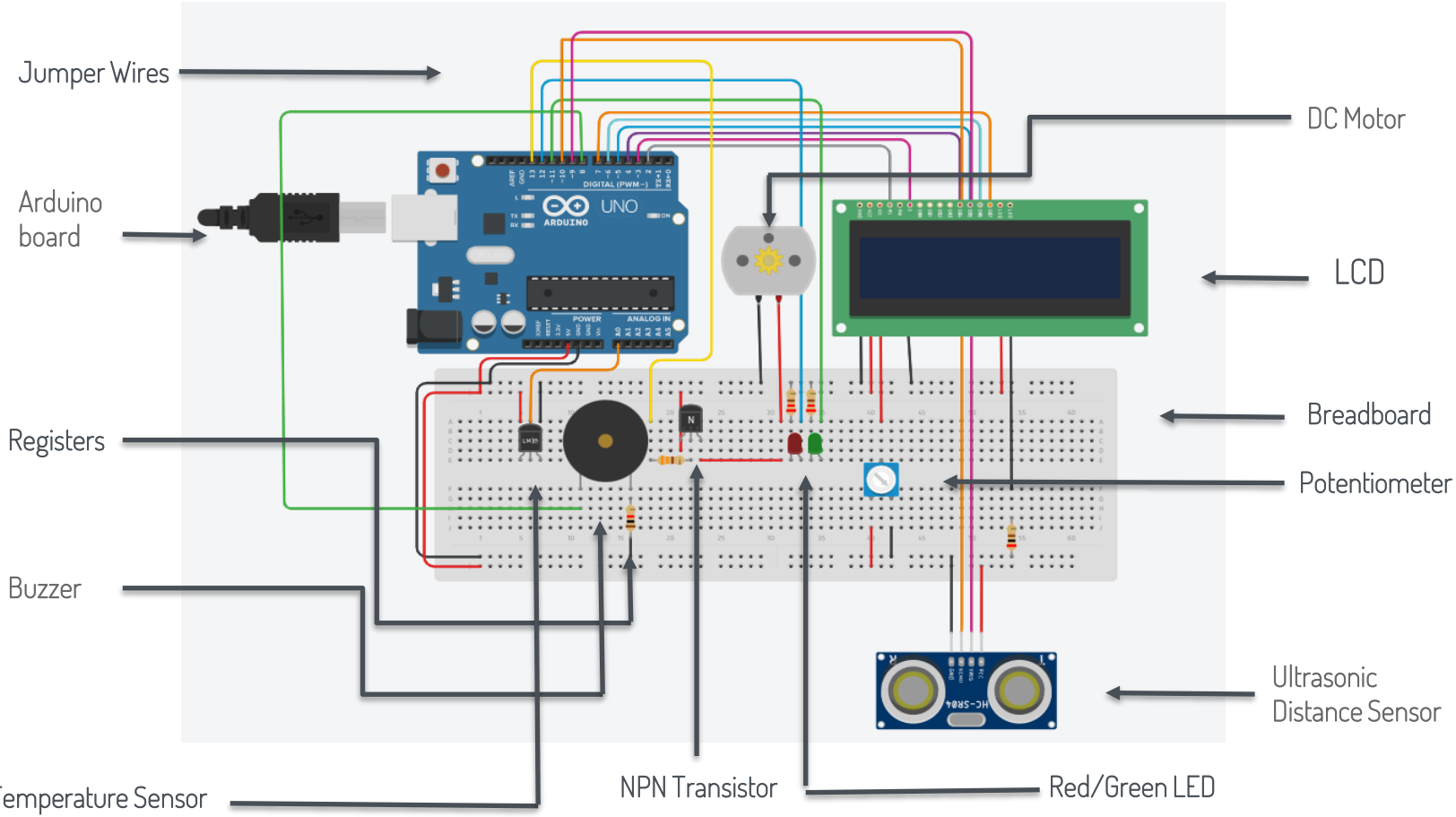
PROJECT PROPOSAL

- The idea of Automatic Plant Monitoring System Using Arduino UNO will help in taking care of our plants without human need.
- In this system, soil moisture sensor senses the moisture level of the soil. According to the soil condition the system automatically provides the water needed.
- It also alarms the system whenever an animal comes near the plant.

COMPONENTS

- Arduino Uno
- DC Motor
- LCD
- Temperature Sensor
- NPN Transistor
- Ultrasonic Distance Sensor
- Potentiometer
- Breadboard
- Registers
- Red/Green LED
- Jumper Wires
- Buzzer

Circuit Diagram



Working

The system continuously check for the soil moisture and if soil gets dry then sensor senses low moisture level and automatically switches on the water pump to supply water to the plant. As plant get sufficient water the sensor senses enough moisture in soil and switches off the water pump immediately. It also senses if anything comes too close to the plant and alarms the system.

CODE

```
#include <LiquidCrystal.h>

const int buzzer = 8;

int echopin = 10;
int trigpin = 9;

int mesafe;
int sure;

const int LM35 = A0;
const int motor = 13;
const int LedRed = 12;
const int LedGreen = 11;


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

void setup() {
  Serial.begin(9600);
  lcd.begin(16, 2);
  lcd.print("Automated Plant");
  lcd.setCursor(0,1);
  lcd.print("Watering System!");
  pinMode(motor, OUTPUT);
  pinMode(LedRed, OUTPUT);
  pinMode(LedGreen, OUTPUT);
  delay(2000);
  lcd.clear();
  lcd.print("Temp= ");
  lcd.setCursor(0,1);
  lcd.print("WaterPump= ");
  pinMode(buzzer, OUTPUT);
  pinMode(trigpin, OUTPUT);
  pinMode(echopin, INPUT);
}

void loop() {

  int value = analogRead(LM35);
  float Temperature = value * 500.0 / 1023.0;
  lcd.setCursor(6,0);
  lcd.print(Temperature);
  lcd.setCursor(11,1);


  if (Temperature > 50){
    digitalWrite(motor, HIGH);
    digitalWrite(LedRed, HIGH);
    digitalWrite(LedGreen, LOW);
    lcd.print("ON ");
  }
  else {
    digitalWrite(motor, LOW);
    digitalWrite(LedRed, LOW);
    digitalWrite(LedGreen, HIGH);
    lcd.print("OFF");
  }

   delay(1000);

```

CODE

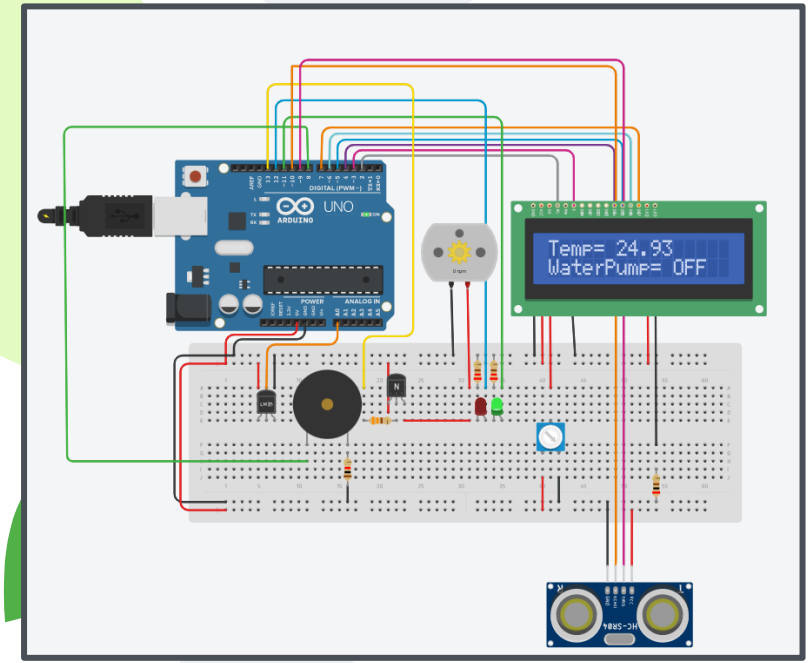
```
 else if(mesafe <= 30)
 {
  digitalWrite(buzzer,HIGH);
  delay(1000);
  digitalWrite(buzzer,LOW);
  delay(1000);
 }
 else
 {
  digitalWrite(buzzer,LOW);
 }
  Serial.print("uzaklik = ");
  Serial.print(mesafe);
  Serial.println("cm");
  delay(500);
}
```

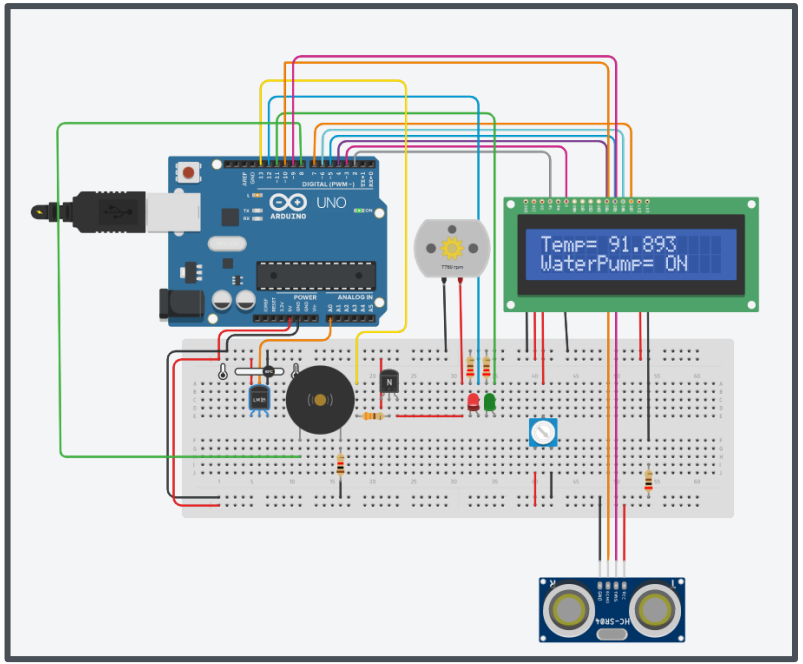
```

  digitalWrite(trigpin,LOW);
delayMicroseconds(2);
digitalWrite(trigpin,HIGH);
delayMicroseconds(10);
digitalWrite(trigpin,LOW);
sure = pulseIn(echopin,HIGH);
mesafe = (sure/2)/29.0;

if(mesafe <= 15)
{
 digitalWrite(buzzer,HIGH);
 delay(250);
 digitalWrite(buzzer,LOW);
 delay(125);
}
else if(mesafe <= 20)
{
 digitalWrite(buzzer,HIGH);
 delay(500);
 digitalWrite(buzzer,LOW);
 delay(250);
}
```

Applications

- Can be used in indoor plantation.
- Can be used in farm having water scarcity.

Outputs





Thank You