PROJECT PROPOSAL

SEA FISH TANK CONTROL SYSTEM

POJECT -E23

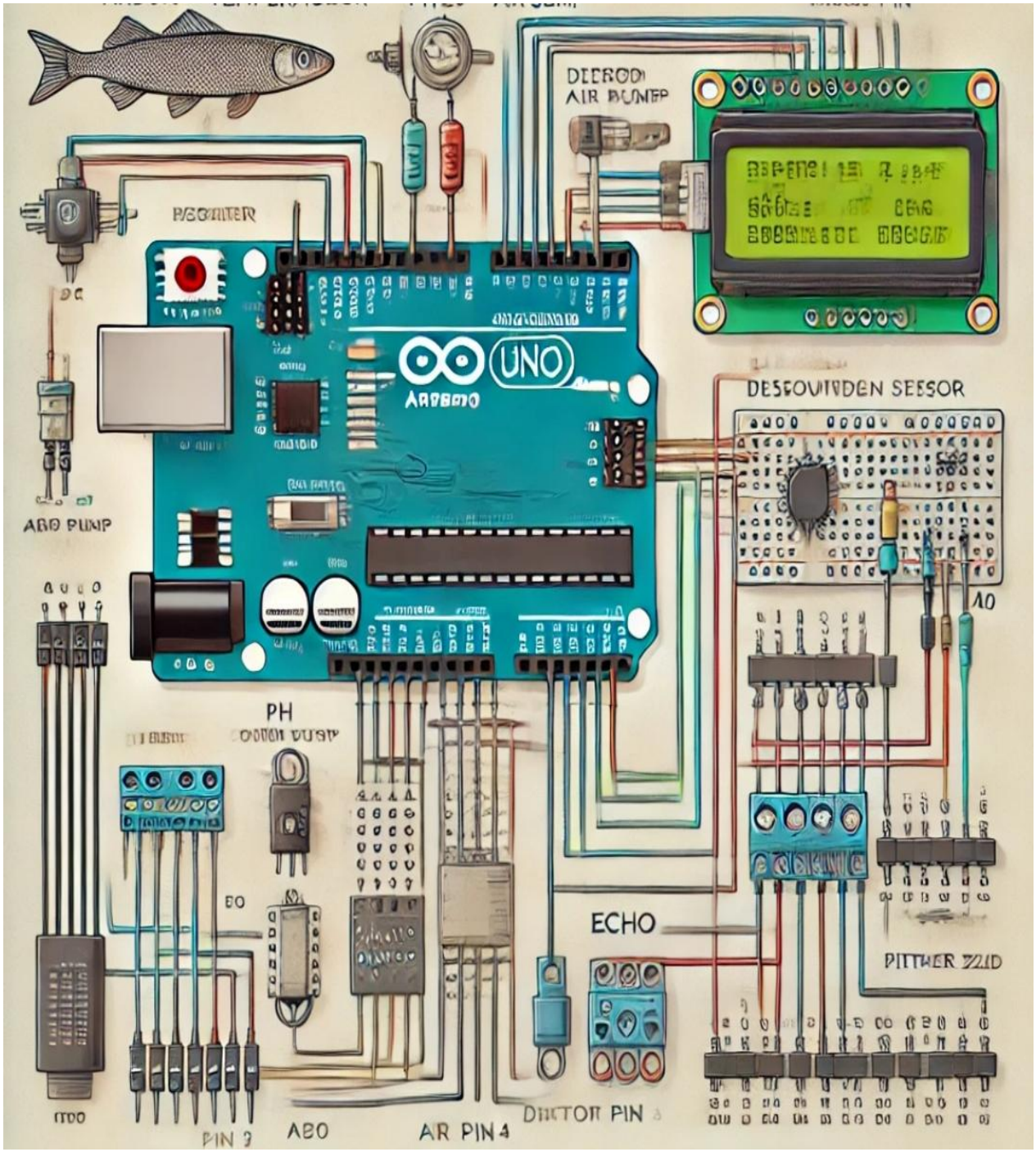
OBJECTIVES

- -Monitor real time critical water quality parameters in sea fish breeding tank using sensors.
- Control water temperature, salinity, aeration, water level and filtration through an automated system.
- Alert via LED lighting and Notifications on Smart mobile phones.
- Enhance fish breeding successfully by maintaining optimal conditions with minimal human intervention.

REQUIRED COMPONENTS

- Arduino Mega board
- DS18B20
- pH sensor
- Dissolved oxygen sensor
- Ultrasonic sensor
- Relay Module
- LED indicators
- Resistors and jumper wires
- WiFi Module – ESP8266 o
- breadboard

CIRCUIT PLANE



ESTIMATED BUDGET

Components	Quantity	Unit price (LKR)	Total Price (LKR)
pH sensor	1	4,600	4,600
Arduino Uno board	1	2,500	2,500
DS18B20 sensor	1	280	280
Ultrasonic sensor	1	250	250
Relay module	5	330	1,650
LED set	1	200	200
Resistors and jumper wires set	1	300	300
WiFi Module	1	800	800
Temperature module	1	900	900
breadboard	1	400	400
Salinity sensor	1	5000	5000
Total (LKR)			16,880

OUTPUT

ARDUINO CODE

```
#include <OneWire.h>
#include <DallasTemperature.h>


#define ONE_WIRE_BUS 2
#define TRIG_PIN 3
#define ECHO_PIN 4
#define PH_SENSOR_PIN A0
#define SALINITY_SENSOR_PIN A1
#define RELAY_PIN 5


OneWire oneWire(ONE_WIRE_BUS);
DallasTemperature sensors(&oneWire);


float temperatureC;
float pHValue;
float salinityValue;
float waterLevel;
long duration;
float distance;

void setup() {
  Serial.begin(9600);
  sensors.begin();

  pinMode(TRIG_PIN, OUTPUT);
  pinMode(ECHO_PIN, INPUT);
  pinMode(RELAY_PIN, OUTPUT);

  Serial.println("Fish Breeding Tank Monitoring System Initialized");
}

void loop() {
  readTemperature();
  readPH();
  readSalinity();
  readWaterLevel();
  controlHeater();
  displayReadings();
  delay(2000);
}
```

```
void readTemperature() {
  sensors.requestTemperatures();
  temperatureC = sensors.getTempCByIndex(0);
}

void readPH() {
  int sensorValue = analogRead(PH_SENSOR_PIN);
  pHValue = map(sensorValue, 0, 1023, 0, 14);
}

void readSalinity() {
  int sensorValue = analogRead(SALINITY_SENSOR_PIN);
  salinityValue = map(sensorValue, 0, 1023, 0, 50);
}

void readWaterLevel() {
  digitalWrite(TRIG_PIN, LOW);
  delayMicroseconds(2);
  digitalWrite(TRIG_PIN, HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIG_PIN, LOW);
  duration = pulseIn(ECHO_PIN, HIGH);
  distance = duration * 0.034 / 2;
  waterLevel = distance;
}

void controlHeater() {
  if (temperatureC < 24.0) {
    digitalWrite(RELAY_PIN, HIGH);
  } else if (temperatureC > 28.0) {
    digitalWrite(RELAY_PIN, LOW);
  }
}

void displayReadings() {
  Serial.print("Temperature: "); Serial.print(temperatureC); Serial.println(" °C");
  Serial.print("pH Value: "); Serial.println(pHValue);
  Serial.print("Salinity: "); Serial.print(salinityValue); Serial.println(" ppt");
  Serial.print("Water Level: "); Serial.print(waterLevel); Serial.println(" cm");
  Serial.println("-----------------------------");
}
```

GROUP MEMBERS

- 2023/E/007
- 2023/E/009
- 2023/E/061
- 2023/E/116
- 2023/E/123
- 2023/E/126
- 2023/E/127
- 2023/E/160
- 2023/E/173
- 2023/E/025
- 2023/E/121