AHSANULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

Course No: EEE3210

Course Name: Micro-processor Unit Lab

Project Name: Automated Water Pump

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Objective:

Our project will be developed so that the water pump is controlled automatically. The main objective of our project is to avoid the waste of water and electricity. The pump can also check the quality of the water. The pump will incorporate an interactive medium between the end user and the machine and it will prevent the labor of the pumping device and prevent it from getting worse. Our other objective is to control water inadequacy in such reservoirs and to shut down automatically when the water reservoir is filled up and also turn on when the reservoir is nearly empty.

Social Impact:

This water pump has many impacts on our society. The pump is cost-effective. It can save energy and also reduces the wastage of water. It saves time of us of turning on and off the motor. This pump also measures the pH of the water; by that information, we get to know the quality of the water. Last but not least it takes minimal maintenance. So there is no hassle of checking the water level manually.

Required Components:

- **Arduino Uno**
- **16x2 LCD Display**
- **Water Level Sensor**
- **Breadboard**
- **Resistor 1k ohm**
- **Connecting wires**
- **5v Relay Module**
- **Push Button**
- **SPST Switch**
- **Gravity analog pH Sensor**
- **Temperature Sensor**
- **DC Motor**
- **Power Supply**

Working Procedure

The basic components that react to the input are

- Water Level Sensor
- pH Sensor
- 5v Relay
- LED Light

The components that take stimuli from the environment are

- LM35 Temperature Sensor
- Display

Our pump will have the following features

- System can be operated automatically or manually.
- When the water level of reservoir is below 20 percent then the switch will turn on.
- When the water level of reservoir is above 80 percent then the switch will turn off.
- Measuring the pH, temperature and solidity of water.
- Buzzer will inform if the pH level of the water is unusual.
- LCD Display will show every result of this system.

Block Diagram of Project:

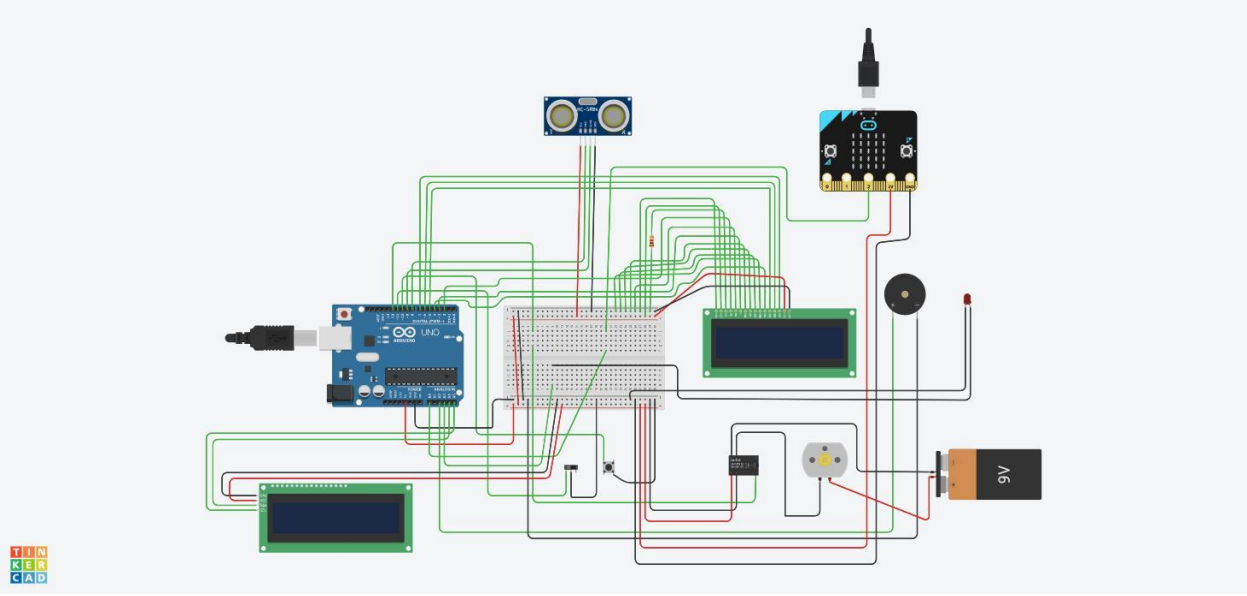

Figure: The block diagram of Automated Water Pump

Challenges of the Project:

1. Our temperature module was not giving the correct value which was a huge problem.
2. The Servo motor was having issues which we were able to solve.
3. Our Arduino mega was burnt during the procedure.
4. Some of the wires we bought were faulty, which also caused us problems in our project.
5. Our IR sensor was not working properly.
6. LM-35 was spoiled. So, we have to get new LM-35.

Conclusion:

Autonomous Vehicles are the future. Many automotive industries are now working a lot to turn their system autonomous completely. To cope with autonomous/smart cars, our project aims to develop one smart car with applicable smart features. This project will help in the future in the area of smart automotive industries in a broader way.