International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 08 Issue: 05 | May - 2024 SJIF Rating: 8.448 ISSN: 2582-3930

FISH FARMING MONITORING SYSTEM

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Abstract:

Fish farming, also known as aquaculture, plays a crucial role in meeting the increasing demand for fish products worldwide.
PROBLEM STATEMENT: IoT based fish farming monitoring system ensuring the healthy and nourishing growth of the fishes.
As we all know that the fish farming business is growing day by day in the market so handling the water quality and growth of healthy growing fishes gets very difficult, as everything has to be done manually. So, to minimizes this work and labor our project comes into the picture. As it saves a lot of time it makes work convenient and a lot easier. efficient management of fish farms requires constant monitoring of various parameters such as water quality, temperature, pH levels, and feeding habits of the fish. Our indented audience would be the local fish farmers or people who own larger fisheries so that integration of our project would make us great benefits as they have large scale fish ponds so they may need more than one monitoring system. The emergence of Internet of Things (IoT) technology provides an opportunity to revolutionize fish farming practices by enabling real-time monitoring and control of key parameters. This project aims to develop an IoT-based fish farming monitoring system to enhance operational efficiency, improve fish health, and optimize resource utilization.

Introduction:

Aquaculture, also known as aquafarming, involves the controlled cultivation of aquatic organisms such as fish, crustaceans, mollusks, algae, and other valuable organisms like aquatic plants (such as lotus). There are several types of aquaculture, each adapted to specific environments. Freshwater aquaculture takes place in ponds, tanks, and raceways, while brackish water aquaculture occurs in areas with a mix of freshwater and saltwater. Saltwater aquaculture, also known as Mari culture, is conducted in seawater habitats and lagoons. Despite its benefits, aquaculture can have environmental impacts. Proper management is essential to prevent negative effects on water quality, habitat destruction, and disease transmission. Technological advancements have led to increased fish growth in coastal marine waters and open oceans

The primary purpose of aquaculture is food production. It provides a significant source of seafood and fish products, contributing to global nutrition. Additionally, aquaculture plays a role in ecosystem restoration.

The Fish Farming monitoring system helps fish farmers to detect the levels of pH, Temperature and TDS (Total Dissolved solids). The Temperature is measured in Degree Celsius and the TDS is measured in ppm (parts per million). The different sensors sense the levels and sends it to the cloud through NodeMCU ESp8266 that is the main controller of the system. As the values changes the app shows real time changes of pH, Temperature and TDS. When the Temperature changes and is not in the desired level then a buzzer starts buzzing.

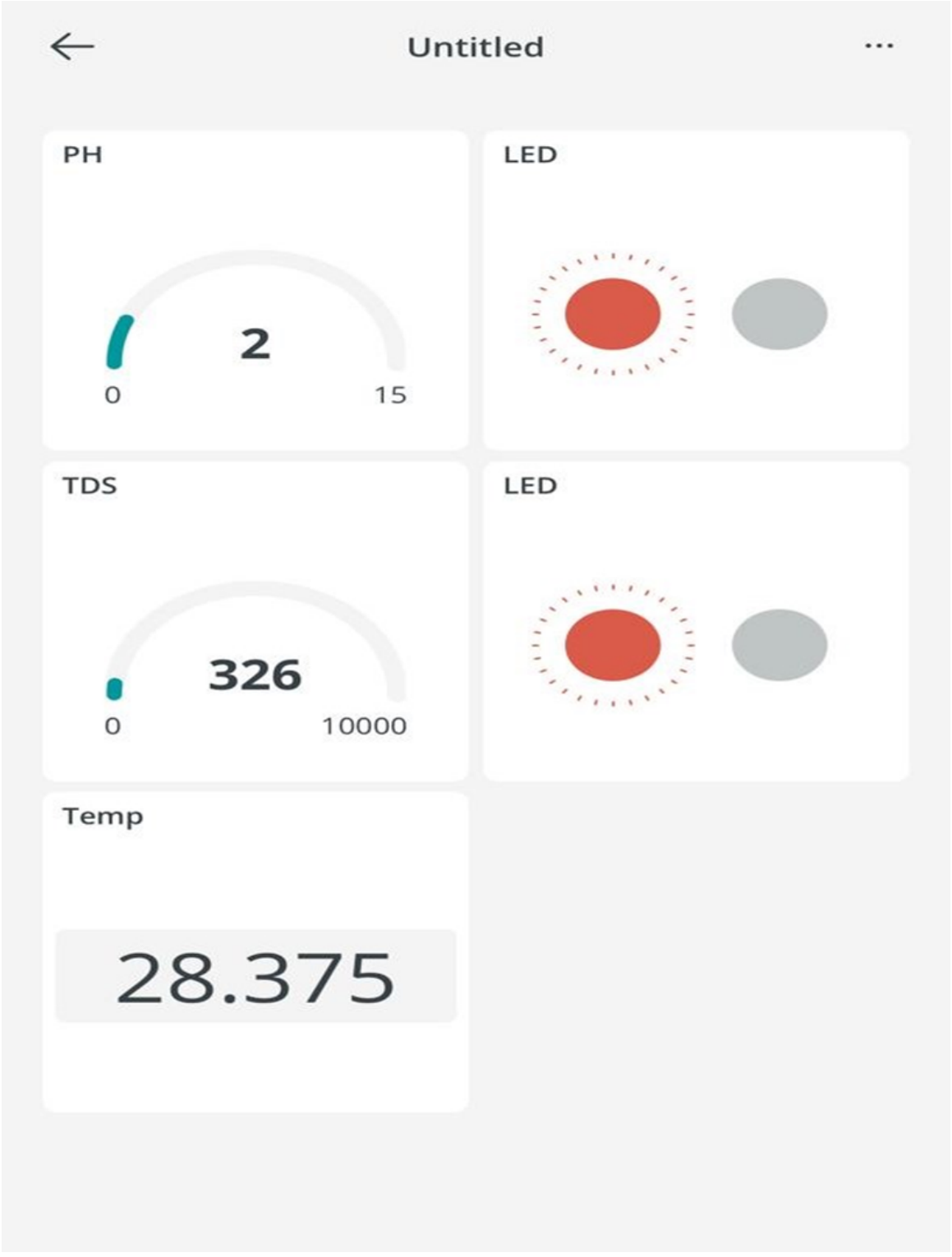
Methods:

1) Temperature Monitoring System:
   The Temperature value is taken from the output of the DS18B20 and then processed through the ESP8266 through which it goes to the cloud and then the value is shown in the Arduino idle interface. The desired temperature range should be 25 - 32ºC.

2) pH Monitoring System:
   The pH sensor is connected to the ADS1115 Microcontroller. The output is taken from the sensor and then into the cloud through which it is showcased in the Arduino idle interface. The pH should be 7 that is neutral.

3) TDS Monitoring System:
   The TDS sensor is connected to the ADS1115 Microcontroller. The output is taken from the sensor and then into the cloud through which the Arduino idle interface shows the value. The TDS should be between 400-500 ppm (parts per million).

RESULTS:



CONCLUSION:

The system also a alerting system as and when the Ph values are not in the desired value a red light will be ON and when it is in the desired value then a green light will be ON in the Arduino IDLE interface. Same goes for the TDS values and when the temperature will not be in the desired range then the buzzer will be ON. Our automated fish health monitoring system is not just a technological marvel; it's a lifeline for aquaculture. By ensuring the well-being of our aquatic companions, we contribute to a healthier planet and a more sustainable future. Let's embrace innovation and propel fish farming into a new era one where fish thrive, farmers prosper, and our tables are graced with nutritious seafood.

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