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PH Parameters of Intelligent Systems from Lobster Cultivation

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Abstract

Freshwater lobster (*Cherax quadricarinatus*) is one of the fisheries commodities that have important economic value. Lobster prices are high in both the domestic and export markets. This lobster has the advantage of sea water lobster which can be cultivated. Although the price of lobster is still quite high, the farmers have not yet received the right profit, and often the farmers have to get a substantial loss, this is because some farmers still use manual tools such as measuring the pH level in the water, temperature and even humidity which will affect the weight of the lobster, the size and even the quality of the lobster. This research was conducted to replace all-manual tools into modern. A system that will automatically lower the pH level in water and will provide a notification in the form of data to Android. This system was built using Arduino Uno which is connected to bluetooth to send data to android, a pH sensor as a measure of pH level in water, a temperature sensor as a gauge of water temperature, a humidity sensor as a humidity gauge, and a pump to stabilize the pH in water.

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Keywords: pH meter, bluetooth, android

1. Introduction

Living in the 2000s that was full of technological knowledge was not easy, in processing or cultivating salt and freshwater fisheries it was not easy. The cause is none other than environmental pollution which affects the water content contained therein. The plant as a production unit cannot be separated from wastewater. Disposal of wastewater will definitely be disposed of in the rivers around the plant. In the case of waste water disposal, of course it must be ensured that the waste water as the remaining operational of the plant must be absolutely ensured that the water content should not contaminate the surrounding environment or society in general. Therefore, every plant that disposes of wastewater is supposed to make a waste water treatment so that the discharged wastewater is completely neutral and does not pollute the surrounding environment. Freshwater lobsters live in a slightly alkaline pH range between 7-9. They are rarely found in waters with pH less than 7. To meet the requirements of the pH level contained in water, especially in lobster cultivation must use the appropriate parameters. Although there are many other requirements for lobster cultivation, here the researcher will try to design one of these needs, namely by designing a pH meter measuring system using microcontroller and Bluetooth technology.

2. Theoretical Foundation

a. Potensial Hidrogen (pH)

Potensial Hidrogen (pH) or acidity level is used to express the level of acidity or base possessed by a substance, solution or object. Normal pH has a temporary value of 7 if the pH value >7 indicates that the substance has alkaline properties while the pH value <7 indicates acidity. pH 0 shows a high degree of acidity, and pH 14 shows the highest degree of alkalinity. Generally the simple indicator used is litmus paper that turns red if the acidity is high and blue if the acidity is low.

b. Application

Android applications in general are a system of operations related to Linux-based mobile devices which in the Android application includes operating systems, applications, and middleware.

c. Methodology

The pH controlling system of lobster is a device that controls pH levels in water and is integrated with a smartphone. The design of this tool is divided into two parts:

A. Hardware design

This tool has several components that each component has a different function; to combine components with other components using solder into a single device. Arduino uno, bluetooth HC05, pH sensor kit module, pump. Arduino Uno is a microcontroller that works to process data from the pH, temperature, humidity sensor and send the data to the smartphone via bluetooth which has been connected to the smartphone first



Image 2 Sensor pH Module Kit



Image 3 the device that already connected

B. Software Design

Using software that has been designed in such a way using Inventor 2 app, the application functions as the recipient of data from Arduino sent via Bluetooth and will display the results that have been measured such as: water pH level, the application will automatically send data periodically.

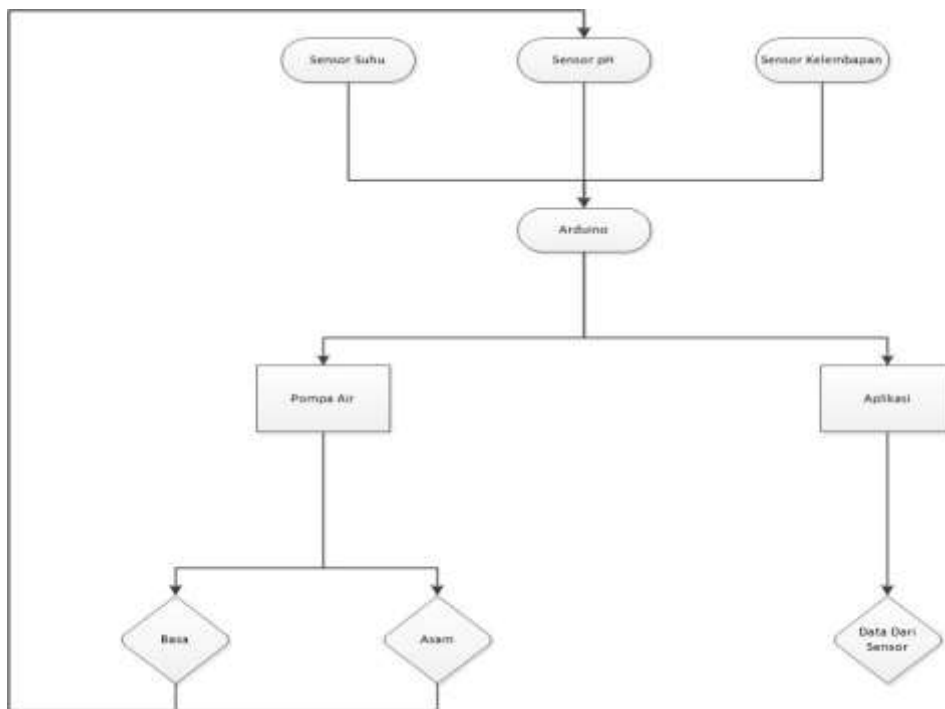


Image 4 App's front screen on Android



Image 5 menu screen on the application

C. Flowchat



Data from the sensor will be processed in Arduino and sent to the application. For applications, data sent by Arduino using Bluetooth and displayed on the application menu, for pumps, Arduino will send data to the pump which has been determined what percentage of acid and base level, the pump will release alkaline if the acid is too high and acid will be released if the base is too high and the pH sensor will detect again if the alkaline and acid levels are normal or not.

3. Conclusion

The pH parameter of Intelligent System of Lobster Cultivation, can run automatically. Data received by Arduino from pH Parameters, temperature and humidity sensors will be received by the Android application and the pump will automatically also stabilize the pH of the pool

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