

CHAPTER 1

INTRODUCTION

1.1. Background

Fish are widely used in human life, both for consumption and as ornamental fish. One of the hobbies of the Indonesian people is keeping ornamental fish. Ornamental fish are generally kept in ponds or aquariums. One thing that is very important to note in maintaining ornamental fish in an aquarium is water quality. Dirty water quality can inhibit the growth and development of fish. Factors that cause aquarium water to quickly turn dirty include no water filter or water filter not working optimally, food residue that dissolves in water and makes water conditions change. In addition, the owner does not routinely monitor and change the aquarium water.

From the above problems, a tool is made to monitor the quality of aquarium water for ornamental fish habitats. This system applies the concept of Internet of Things (IoT) and fuzzy algorithms to process data from sensors into definite output. This aquarium water quality monitoring system uses several sensors that will read parameters that are indicators to see water quality, such as temperature, acidity (pH) and turbidity.

This system uses three sensors, namely turbidity, pH, and temperature sensors that will detect the content in the water, then the sensor sends data to be displayed on a 16x2 LCD. The fuzzy algorithm will process data from the sensor. Where the output of fuzzy is the sound of a buzzer, which serves as a reminder that the water is getting dirty and ready to be replaced.

1.2. Problem Formulation

In relation to the background of the problem above, the following problems can be identified:

1. Can the sensor work and read data properly?
2. Can fuzzy logic be implemented in this system?
3. How does Sugeno fuzzy algorithm work on this system?
4. Can this system make it easier for owners to monitor their aquarium?

1.3. Scope

The following are limitations on the aquarium water quality monitoring system.

1. This system cannot display data online, only displays data on the LCD.
2. The buzzer is just a reminder that the water in the aquarium is getting dirty and ready to be replaced.
3. Water changes are still done manually.
4. Using the Sugeno fuzzy algorithm to process the input data and map it to the output.
5. The output produced by the turbidity sensor (Turbidity) is not 100% correct.

1.4. Objective

The aim of this project is to make it easier for the owner to monitor the aquarium water and remind the owner when it's time to change the water. Algorithm fuzzy logic can run on tools that are built. All sensors can work properly and the results displayed are in accordance with the existing data.