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IOT BASED SMART MONITORING SYSTEM FOR FISH FARMING

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ABSTRACT --

The purpose of the current method is to create a safe and secure that helps the fish pond owners and aquatic planters in producing high quality fish by maintaining normal water levels in the fish tank. The flow of the low or high water in the fish pond will solve the long-term problem of killing fish in a fish tank. Each water quality can affect the health of animals alone. The flow of water on fish ponds discusses how every day should be monitored. This should ensure quality by handling the PH, membrane, temperature, ammonia etc. It is a symbol of good quality water quality standards and poor water quality pools and how it should be upgraded. It is recommended that a prerequisite to increase production by ensuring sustainable fresh quality, and consequently, priority should be given priority. Therefore, water quality parameters maintain balanced positions, culture is the basis for the health and development of living organisms. It is recommended to monitor and evaluate water quality parameters on a regular basis

KYEWORDS: Fish pond, Microcontroller, pH sensor, IOT.

I. INTRODUCTION

This area reconsider some of the already existing automatic fish feed systems. Most automated fish feeding tools are not easy to control the size of the published food. For an indoor fish feeding system such as water tank , a small device may be appropriate but external pools may need to create a larger system for saving large water. Determines the number of fish stockpiles of fish size of fish size and the

fish of the dense aquarium fish. The method is to monitor and control the fish tank through the Internet. The level of fish and the quantity of food items can be properly monitored. The purpose of this system is to design and develop a fish feed system. The fish owner will be able to personalize the feeding time or to feed their fish immediately without delay. Fish owner can monitor the environment of the tank using the Internet and check the food level. The purpose and definition of this system are listed below according to identification and usage objectives and this system can only dissolve dry food. This method is used online and can monitor the fish tank environment and check the status of the previous meal.

II. REALTED WORKS

Fish are generally not able to feed at fish when they are usually unable to recover when the fish are usually away from home environment [2]. Two reasons, the risk of feeding starvation and fish, leads to poor water quality in fish wells and indoor fish pots. It is therefore important to monitor fish fasting, which is very useful for fish owners. The work is aimed at relieving fish [4] to restore fish at the time of feeding their fish using a fish-fed mode and microcontroller and raspberry bag-based web application. . In this design, fish owner can monitor a fish tank for proper operation of the fish owner [4]. Furthermore, the user can set fish feed tables through the web application. This method also has the ability to record precious food timing, and the user can view them from the user interface [5]. The interface can be accessed via the connected website using raspberry pie. Other functionality on the interface includes a fish feed button automatically, changing or changing the food setting and finally camera function. Connecting the fisherman's Internet connection can use the camera attached to the tanker to verify the wall of the tank. This is to ensure that the user is not going [6].

EXISTING SYSTEM

Fish feeder system using Raspberry Pi

In the existing method we used Internet of thing (IOT) using Raspberry Pi. The people having domestic pet fish are in distress when they aren't in town to feed and take care of their fish. This may lead to overfeeding or starvation of the fish without feed. Currently there are Arduino based systems that could serve the purpose with scheduled feeding of the fish. But the owners will be still in distress for not knowing the condition of the fish from their remote locations. The mechanical part consists of the stepper motor

controlled by the Raspberry Pi B+ via web interface, which can dispense food pellets via appropriate rotations of the container containing the food pellets as per the care-taker's preference. The electrical part consists of a Raspberry Pi B+ module and a pi-camera, which provides web interface and the real-time video data collection of fish. The web interface consists of the user fixed scheduling, feeding data, live streaming of fish, etc. In the manual feeding, the user must feed the fish remotely via the web interface. In short, the module can be used for scheduled feeding of the fish or remotely feed via web interface.

III. PROPOSED SYSTEM

Fish pond maintained using controller.

In this proposed system of microcontroller based fish pond maintained using the sensors. The ultrasonic and PH sensors are fixed in the pond system to monitor the water level and water quality. The ultrasonic sensors are used to sense the object of the fish living the pond, and the pulse to send and receive the echo of the sound in the system of pond system. The PH sensor is used to sense in level of water in a pond system. The microcontroller are used to control in a whole circuit of the system, LCD display are connected to microcontroller with any fault or issues will indicate to display the problem. The method discusses but water flow into fish ponds got to be monitored daily and it quality ensured through the manipulation of parameters like: hydrogen ion concentration, turbidity, temperature, ammonia, etc. It any discusses the indices of fine quality water and therefore the effects of poor water quality in ponds and the way it ought to be improved upon. It proposes that ensuring sustainable good water quality is a precondition for increased productivity and vice-versa and should therefore be given first hand priority Thus, maintaining balanced levels of water quality parameters is prime for each the health and growth of culture organisms.

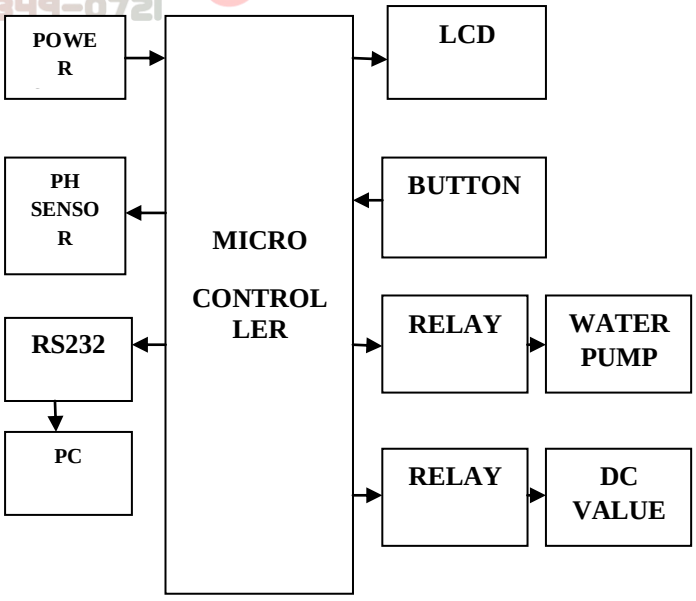


Figure 1 Block diagram of the Proposed system

B. Construction.

- To measure the status of the water, pH sensor, humidity sensor, water level sensor and dissolved oxygen sensor had been used. The pH sensor measures the acidic or basic nature of the water in the pond
- The ultrasonic sensor is find the obstacle in the water tank
- The power supply gives the input supply interface to the microcontroller
- The RS 232 is interface both hardware andsoftware
- The power supply circuit consists of step down transformer which is 230v step down to 12v.In this circuit 4diodes are used to form bridge rectifier which delivers pulsating dc voltage & then fed to condenser filter the output voltage from rectifier is fed to filter.
- The filtered DC voltage is given to regulator to supply 12v constant DC voltage.
- LCD Liquid crystal display are interfacing to microcontroller. This 5V DC is used to supply power to the controller and the LCD. Power supply to the LCD is given from the voltage regulator.
- A transformer is AN electrical regulator designed to mechanically maintain a relentless voltage level.
- In this project, power offer of 5V and 12V area unit needed

C. Hardware Explanation

a) Ph sensor

Figure 2: pH Sensor

A pH meter is a scientific tool measuring hydrogen-ion function in water-based solutions, its acidity or alkalinity. pH meter measures the difference in power between a PHH and one reference voltage, so the pH meter is sometimes referred to as a "metric pH meter". The difference in electric energy is related to the acidity of the solution or the pH. The pH meter is used in various applications ranging from laboratory tests to quality control.

B) Ultrasonic sensor

The ultrasonic sensor is a 4 pin block, whose pin names are Vcc, Trigger, Echo and Ground respectively. This sensor is a

very popular sensor used in many applications, where distance or sensitivity is needed. The block consists of two eyes, such as an ultrasonic transmitter and pre-programmable recipients. The sensor ultrasonic transmitter works with a simple high school formula that passes an ultrasonic wave, and this reflected wave ultrasonic receiver block is observed when the wave travels the air and it senses the reaction when it opposes any substance

Figure 3: Ultrasonic Sensor

C) PIC microcontroller

PIC Microcontroller Pic16f877a is one of the successes control in the method . This controller is very convenient to use, this controller is more easy to index or programming. One of the major advantages is that it can write and erase many times by using flash memory technology. This is the total number of 40 pins and the input and output are 33 pins. PIC16f877a is used in many PIC microcontroller programs. Pic16f877a Digital Electronics Circuit has many applications. Pic16f877a detects its applications in a large number of devicesPIC16F877A Introduction.

Working Principal Of LCD

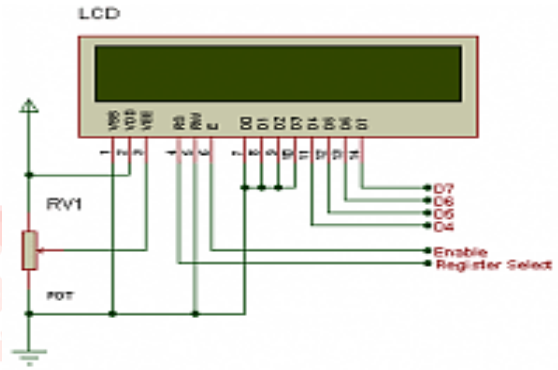


Figure 4 Simulation Diagram of LCD

The principle behind the LCD's is that once associate electrical current is applied to the liquid molecule, the molecule tends to straighten out. This causes the angle of light which is passing through the molecule of the polarized glass and also cause a change in the angle of the top polarizing filter.

As a result a touch lightweight is allowed to pass the polarized glass through a selected space of the alphanumeric display. Thus that exact space can become dark compared to alternative. The alphanumeric display works on the

principle of block lightweight. While constructing the LCD's, a mirrored mirror is organized at the rear. An conductor plane is formed of indium-tin chemical compound that is unbroken on high and a polarized glass with a polarizing film.

Interfacing Lcd With Microcontroller

- Interfacing LCD with microcontroller is very easy task if the proper LCD programming algorithm is known.
- LCD used here has HD44780u dot matrix LCD controller.
- LCD module has 8-bit knowledge interface and management pins.One will send knowledge as 8-bit or in combine of 2 4-bit nibbles.

LCD Initialization

- Steps to initialize the LCD
- Specify function set: Send 38H for 8-bit, double line and 5x7 dot character format.
- Display On-Off control: Send 0FH for display and blink cursor on.
- Entry mode set: Send 06H for cursor in increment position and shift is invisible.
- Clear display: Send 01H to clear display and return cursor to home position
- Next step after initialization is to send data bytes to required display data RAM memory
- location. Firstly set the address location using address set command byte and then send data bytes using
- the DDRAM write command. To address specific location in display data RAM one must have the knowledge of how the address counter is incremented.

16X2 LCD

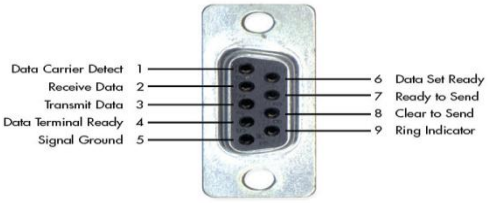
- 16X2 LCD can be used to display 16 characters in 2 rows. It has the ability to display numbers,
- characters and graphics. It has an inbuilt refreshing circuit, thereby relieving the CPU from the task of
- refreshing. LCD discussed has total of 14 pins

RS 232

In this method to communications between computer equipment over telephone lines, RS232 is now widely used for direct connections between data acquisition devices and computer systems. As within the definition of RS232, the

computer is data transmission equipment (DTE). However, several interface product don't seem to be knowledge communications instrumentalty (DCE) .Null electronic equipment cables area unit designed for this situation; instead of having the pin-high in connections of electronic equipment cables, null electronic equipment cables have completely different internal wiring to permit DTE devices to communicate with one another. RS-232 cables area unit unremarkably out there with either four, nine or 25-pin wiring.The 25-pin cable connects each pin; the 9-pin cables don't embody several of the uncommonly used connections; 4-pin cables offer the vacant minimum connections, and have jumpers to provide "handshaking" for those devices that require it. These jumpers connect pins four, 5 and 8, and also pins 6 and 20.The advent of the IBM computer AT has created a brand new wrinkle in RS232 communications.

RS 232 SPECFICATION



RELAY

We know that the majority of the high finish industrial application devices have relays for his or her effective operating.Relays square measure straight forward switches that square measure operated each electrically and automatically. Relays contains associate degree magnet and conjointly a group of contacts.The switching mechanism is carried out with the help of the electromagnet. There also are alternative in operation principles for its operating. But they differ according to their applications. Most of the devices have the applying of relays.

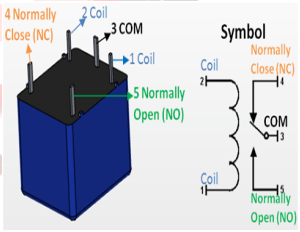


Figure 5 Circuit diagram of Relay

V.CONCLUSION

The microcontroller based self-maintained aquarium using with sensors system employs the use of different technologies in its design, development, and implementation. The system used microcontroller to monitor the process of fish tank in an over-head tank storage

system and has the ability to detect the level of water in a tank, switch on/off the tank using sensors accordingly and display the status on an LCD screen. This method has successfully provided an improvement on existing water level controllers.

FUTURE SCOPE

The scope behind developing the automatic fish feeding system is to reduce the manual fish feeding system which utilizes more work forces. Moreover, there are certain advantages that lead to its development which are the amount of food that will be delivered to the water body that will measure or controlled keeping aquarium clean and fishes healthy.Feeders can feed the fishes even when the owner is away in a convenient way. Based on the capabilities and functionalities, general battery operated fish feeder devices available in the market can only accommodate food like pallets, flakes and powder, so by adding additional container for accommodating natural fish foods like worms, water flees etc makes the device more convenient in a way.

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