IoT BASED AQUA MONITORING SYSTEM

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Abstract: Aquariums are these days found mostly in many houses. Rearing them without the presence of a person will be difficult. If a person is present physically at an aquarium then they can taking care of them. Fishes have to be feed from time to time. If we miss to feed them for more than 1 day there is a risk that will die. Feeding fishes even when we are away from workplace or home is the main objective of our project.In addition to these Automatic water filling and automatic light on / off are also added to the project. This is achieved by the trending technology IoT. Using sensors and microcontrollers the data is collected. Threshold values are set and related operations and tasks are performed.

Keywords: Ultrasonic sensor, Servo Motor, Arduino, IOT

1. Introduction

The Internet of things (IoT) is the network of devices, vehicles, and home appliances that contain electronic's, software and connectivity which allows these things to connect, interact and exchange data. It is emerged from divergence of wireless technology. It is new revolution of internet. To develop remote monitoring system for monitoring and taking care on fish tank's. That involves in feeding, watering and regulating the light around the Aquarium The most important features of IoT include artificial intelligence, connectivity, sensors, active engagement, and smalldevice use Block Diagram Description

The Sensors listed are used to collect date from different sources to perform certain operations collectively Fig 2.1. Parallel operations are performed to reduce the time delay. This enables generation of automated system as for the requirement. Threshold values are set and related functioning is carried out by the sensors that are sintegrated with the microcontroller.
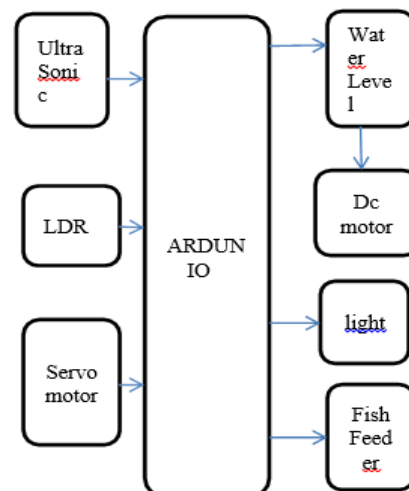

Fig: Block Diagram
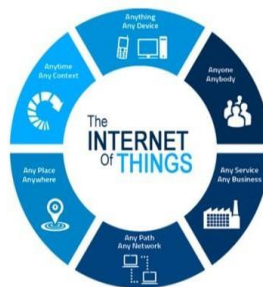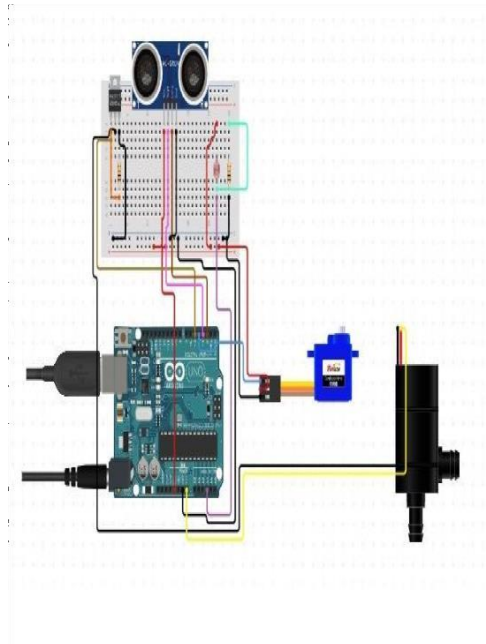
2. SCHEMATIC DIAGRAM

Fig 2.2: Schematic diagram of aquamonitoring system

3. Existing System

In Existing system, people Have to checks their aquarium daily. And feed the fishes and change the water in the aquarium regularly to prevent the fungus. To make aquarium clean and ensure that the light in that aquarium was in sufficient bright or not

4. Proposed System

The prime goal is to develop a reliable Aqua monitoring system so that automation of aquarium parameters or operations can be done while executing our normal daily life activities. We propose an innovative system in which our system puts forward an automatic aquarium monitoring system that uses sensors to track the water level of aquarium.

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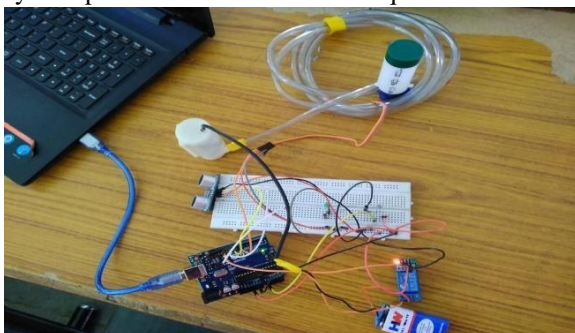
5. Working

Ultrasonic Sensor: The sensor is used to detect the level of the dust in the dustbin. It uses a sound transmitter and receiver. An ultrasonic sensorcreates a ultrasonic pulse called ping and listen for the reflection of pulse. The sound pulse is created electronically using a sonar projector consisting of signal generator, power amplifier and electroacoustic transducer array. A beam former is

Ultrasonic are so widely used, they can be reliably implemented in grain bin sensing applications, water level sensing,

drone applications and sensing cars at your local drive-through restaurant or bank. Ultrasonic rangefinders are commonly used as devices to detect a collision.

The HC-SR04 ultrasonic sensor uses sonar to determine distance to an object. It offers excellent non-contact range detection with high accuracy and stable readings in an easy-to-use package Fig 4.6. From 2cm to 400 cm or 1" to 13 feet. It operation is not affected by sunlight or black material like Sharp rangefinders are (although acoustically soft materials like cloth can be difficult to detect). It comes complete with ultrasonic transmitter and receiver module.

Specifications (HC_SR04):usually employed to concentrate the acoustic power into the beam

Fig:Ultrasonic Sensor

Arduino UNO: The mega 2560 is a microcontroller board based on the ATmega2560. It consists of 54 digital input and output pins in which 15 can be used as PWM output,16 analog input,4UARTs which is a hardware serial port,16 MHz crystal oscillator, a USB connection. It also has reset button power jack and ICSP header. It has the sensor to detect the temperature and humidity and axis digital accelerometer. The board contains battery shield and connector cables. In this coding is embedded in the kit. The coding contains information used to determine the temperature then HTML code is used for display the outpu
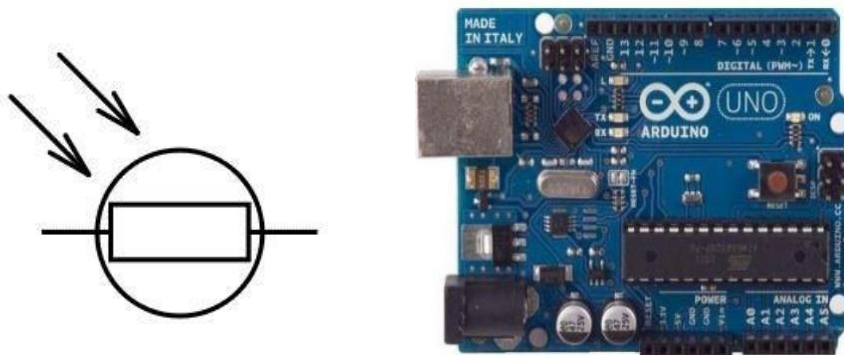
LED: A **Light Dependent Resistor** (LDR) or a photo resistor is a device whose resistivity is a function of the incident electromagnetic radiation. Hence, they are light sensitive devices. They are also called as photo conductors, photo conductive cells or simply photocells.falling on it.
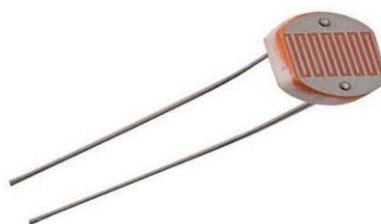
Servo Motor: A **servo motor** is an electrical device which can push or rotate an object with great precision. If you want to rotate and object at some specific angles or distance, then you use servo motor. It is just made up of simple

motor which run through **servo mechanism**. If motor is used is DC powered then it is called DC servo motor, and if it is AC powered motor then it is called AC servo motor. We can get a very high torque servo motor in a small and light weight packages. Doe to these features they are being used in many applications like toy car, RC helicopters and planes, Robotics, Machine etc.
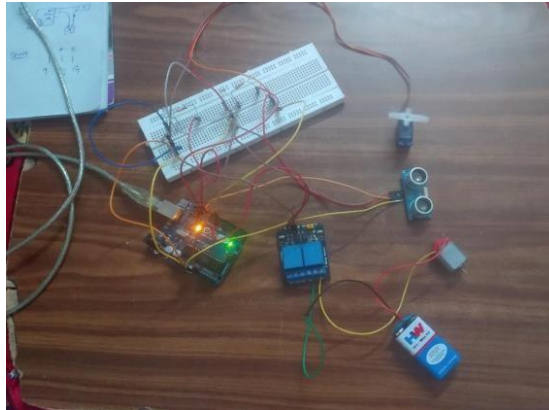
Results

Fig : LDR Display

Fig 4.3: Servo Motor

LDR: A **Light Dependent Resistor** (LDR) or a photo resistor is a device whose resistivity is a function of the incident electromagnetic radiation. Hence, they are light sensitive devices. They are also called as photo conductors, photo conductive cells or simply photocells. They are made up of semiconductor materials having high resistance. There are many different symbols used to indicate a LDR, one of the most commonly used symbol is shown in the figure below. The arrow indicates light
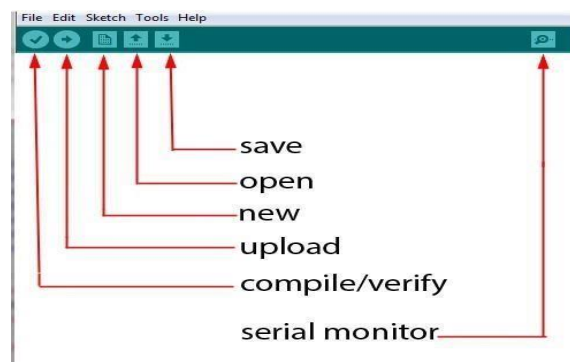
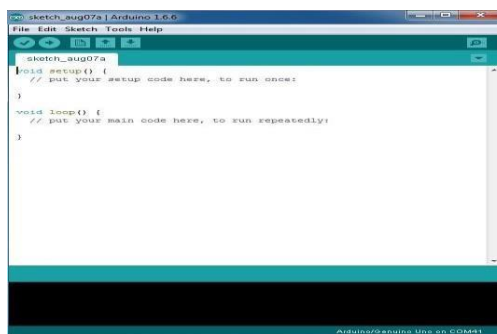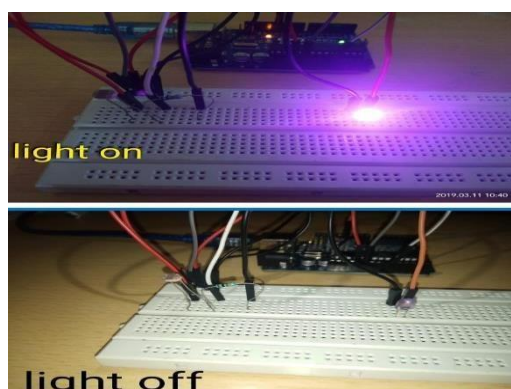**Procedure of Execution**

Fig: Procedure of source code

Ardunio

Fig: Opening Ardunio System
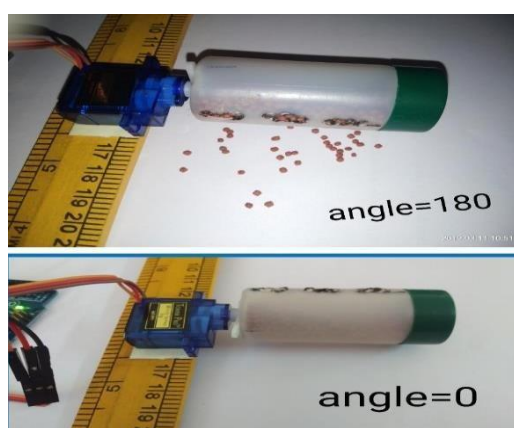
Result of LED

Fish Feeder Result

Fig: Result of Fish Feede

Controlling of Servo Motor
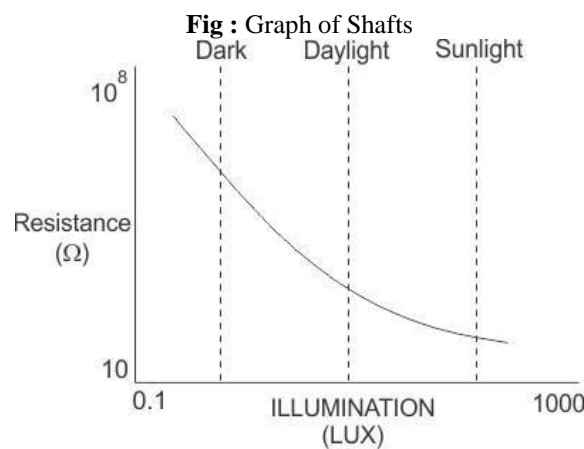

Fig : Graph of Shafts

Fig 7.5: Graph Showing Workingof LDR

6. Conclusion

The main objective of the experiment was successfully achieved. All the individual modules like Automatic Fish feeding module, Water Filling module, and automatic light on/off module gave out the intended results. The designed system modules can further be optimized and produced to a final single circuit. With the development of the integrated circuit industry, Micro Electro Mechanical Systems (MEMs) and microcontrollers have become affordable; have increased processing speeds, miniaturized and power efficient.

This has led to increased development of embedded systems that the household people or employees are adopting. These embedded systems have also been adopted in the Smartphone technology in these days. And with increased internet penetration in most developing countries through mobile phones, and with use of Internet of things (IOT) will become adopted at a faster rate. The Aqua monitoring system utilizes these concepts to come up with a system for better quality of fish rearing for people in society analysis knowledge was used during design and fabrication of the individual modules.

RECOMMENDATIONS ON FUTUREWORK:

a)Ph-Level Managing b)Temperature maintenance.

c) Creating basic level application tomonitor remotely.

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