TECH-AQUARIST

A report submitted in partial fulfillment of the Academic requirements for the award of the degree of

Bachelor of Technology

1. B. Vigneshwar - 22H51A0408
2. J. Vignan - 22H51A0429
3. K. Lasya Priya - 22H51A0432
4. MD. Faisal - 22H51A0442
5. N. Anuhya -22H51A0443

UNDER THE COURSE

SOCIAL INNOVATION IN PRACTICE

CENTRE FOR ENGINEERING EDUCATION RESEARCH

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous)
(NAAC Accredited with 'A^{+}' Grade & NBA Accredited)
(Approved by AICTE, Permanently Affiliated to JNTU Hyderabad)
KANDLAKOYA, MEDCHAL ROAD, HYDERABAD-501401

2023-24

CENTRE FOR ENGINEERING EDUCATION RESEARCH
CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous)
(NAAC Accredited with 'A^{+}' Grade & NBA Accredited)
(Approved by AICTE, Permanently Affiliated to JNTU Hyderabad)
KANDLAKOYA, MEDCHAL ROAD, HYDERABAD-501401

CERTIFICATE

This is to certify that the report entitled **"TECH-AQUARIST"** is a bonafide work done by **B.VIGNESHWAR(22H51A0408),J.VIGNAN(22H51A0429),K.LASYAPRIYA(22H51A0432) MD.FAISAL (22H51A0442), N.ANUHYA (22H51A0443)** of II B.Tech, in partial fulfillment of the requirements for the award of the degree of Bachelor of Technology, submitted to Centre for Engineering Education Research, CMR College of Engineering & Technology, Hyderabad during the Academic Year 2023-24.

(Names of the project coordinators)

1.Mr.B.Bala Krishna, Asst.Professor ,EEE

2.Mr.K.Ravi Naik, Asst. Professor,CSM

3.Mrs.T.Lavanya, Asst.Professor,CSM

(Mr.B.Suresh Ram)

HOD CEER

DECLARATION

We, the students of II B.Tech of Centre for Engineering Education Research , CMR COLLEGE OF ENGINEERING & TECHNOLOGY, Kandlakoya, Hyderabad, hereby declare, that under the supervision of our course coordinators, we have independently carried out the project titled **"TECH AQUARIST"** and submitted the report in partial fulfillment of the requirement for the award of Bachelor of Technology in by the Jawaharlal Nehru Technological University, Hyderabad (JNTUH) during the academic year 2023-2024.

STUDENT NAME	ROLL NUMBER	SIGNATURE
1. B. Vigneshwar	- 22H51A0408	
2. J. Vignan	- 22H51A0429	
3. K. Lasya Priya	- 22H51A0432	
4. MD. Faisal	- 22H51A0442	
5. N. Anuhya	-22H51A0443	

ACKNOWLEDGEMENT

We are obliged and grateful to thank Mr.B.Suresh Ram, Head(CEER), CMRCET, for his cooperation in all respects during the course.

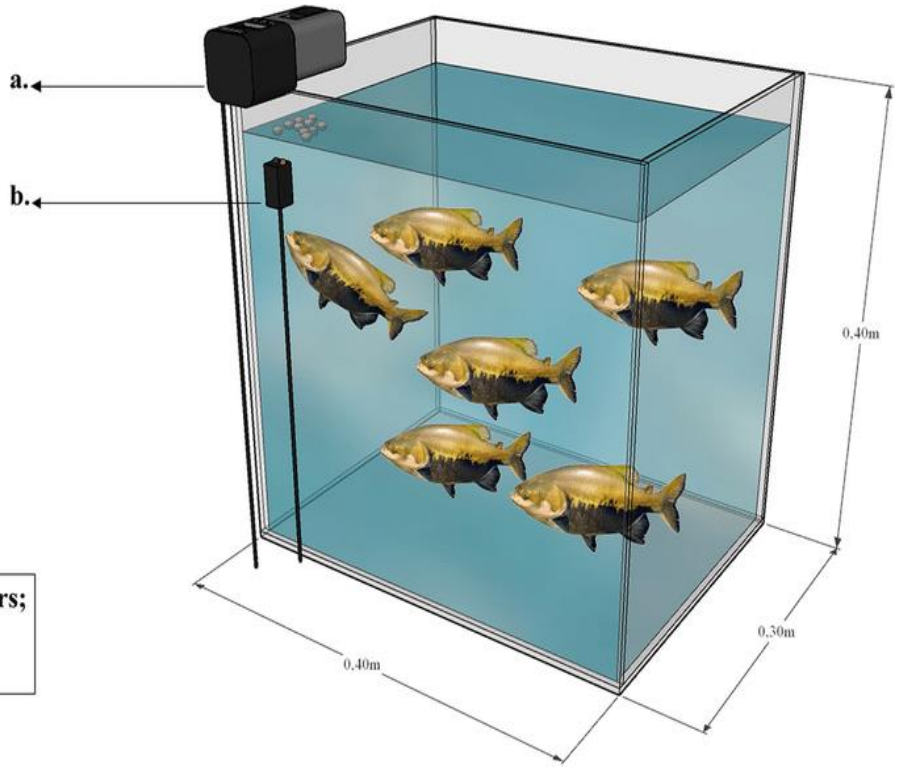
We would like to thank the Principal of CMRCET, Dr.V.A.Narayana, for his support in the course of this project work.

Finally, we thank all our faculty members and Lab Assistants for their valid support.

We own all our success to our beloved parents, whose vision, love and inspiration has made us reach out for these glories.

ABSTRACT

Aquarium filtering and feeding systems are essential components for maintaining a healthy and thriving aquatic environment. Proper filtration helps remove waste, debris, and harmful toxins from the water, while a well-balanced feeding system ensures that aquatic inhabitants receive the necessary nutrients for their growth and well-being. This abstract explores the importance of efficient filtration methods, such as mechanical, biological, and chemical filtration, in maintaining water quality and preventing issues like ammonia buildup and algae growth. Additionally, the role of proper feeding practices, including providing a varied diet and monitoring feeding frequency, is discussed to support the overall health of fish, invertebrates, and plants in the aquarium. Understanding the interplay between filtration and feeding systems is crucial for aquarium hobbyists and professionals to create a sustainable and vibrant aquatic ecosystem.



a. Automatic feeders;

b. Photocell.

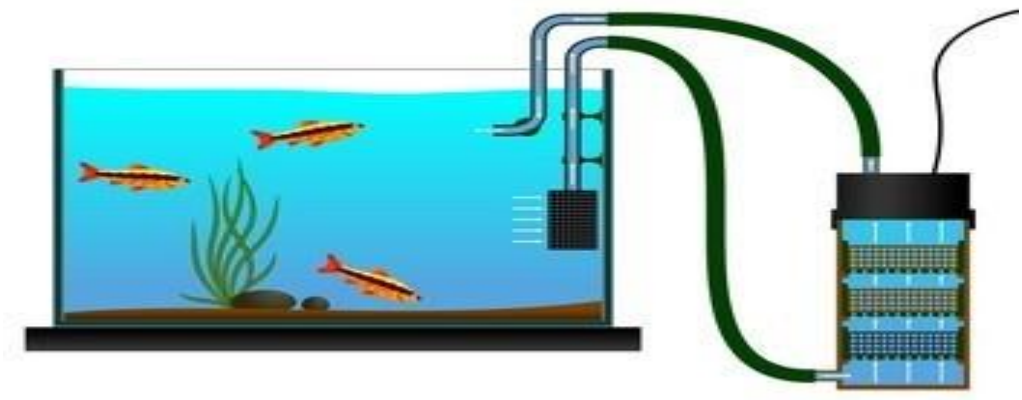
TABLE OF CONTENTS

CHAPTERS		DESCRIPTION	PAGE No
1		Introduction	1
2		Literature Review	2
3		Problem Definition	9
	3.1	Problem Statement	10
	3.2	Objective	10
	3.3	Requirement Analysis	13
4		Methodology	17
	4.1	Conceptual Design	19
	4.2	Block Diagram	20
	4.3	Design Description	23
5		Implementation	26
	5.1	Results and Discussions	26
	5.2	Conclusions	26
6	6.1	Appendix	27
	6.2	References	27
	6.3	Source Code	28
7		Team Details	30

CHAPTER-1

INTRODUCTION

Aquarium filtering and feeding processes are fundamental aspects of maintaining a healthy and balanced aquatic environment in both freshwater and saltwater aquariums. Effective filtration systems play a vital role in removing physical and chemical impurities from the water, creating a clean and safe habitat for fish, plants, and other aquatic inhabitants. Similarly, a well-planned feeding regimen is essential to provide the necessary nutrients for the growth and vitality of the aquarium's residents.



By understanding the principles of aquarium filtering and feeding processes, aquarists can create a thriving ecosystem that mimics natural habitats and provides a sustainable environment for aquatic organisms to flourish. Let's dive deeper into the world of aquarium maintenance and care to discover the key components of successful filtering and feeding systems. The importance of a balanced feeding schedule, proper nutrition, and feeding techniques to meet the nutritional requirements of different species living in the aquarium.

CHAPTER-2

LITERATURE REVIEW

2.1. Existing Solutions:

FOR CLEANING:

1. Gravel Vacuum Cleaners

Function: Remove debris, waste, and uneaten food from the substrate.

Types:

- **Manual Gravel Vacuums:** Operate by creating a siphon; the user manually pumps to start the water flow.
- **Electric Gravel Vacuums:** Use a battery or electric pump to suck debris from the substrate into a collection container or directly out of the tank.

2. Algae Scrapers and Pads

Function: Clean algae off the glass or acrylic surfaces of the aquarium.

Types:

- **Magnetic Algae Scrapers:** Consist of two magnetic pads; one goes inside the tank, and the other on the outside. Moving the external pad cleans the glass without getting your hands wet.
- **Handheld Algae Scrapers:** Manual scrapers with long handles and replaceable blades or pads for scrubbing.

3. Water Change Systems

Function: Facilitate partial water changes, essential for reducing toxins and maintaining water quality.

Types:

- **Python Water Changer:** A popular system that attaches to a faucet, allowing for easy siphoning and refilling.
- **Siphon Tubes:** Basic tubes that use gravity to remove water and debris.

4. Aquarium Glass Cleaners

Function: Remove hard water stains, fingerprints, and smudges from the outside of the aquarium glass.

Types:

- **Aquarium-Safe Cleaners:** Formulated to be non-toxic and safe for use around aquatic environments.
- **Microfiber Cloths:** Non-abrasive cloths that clean glass surfaces without scratching.

5. Automatic Fish Feeders

Function: Ensure consistent feeding and reduce the risk of overfeeding, which can lead to excess waste.

Types:

- **Battery-Powered Feeders:** Dispense a pre-set amount of food at scheduled times.
- **Programmable Feeders:** Allow for customizable feeding schedules and portions.

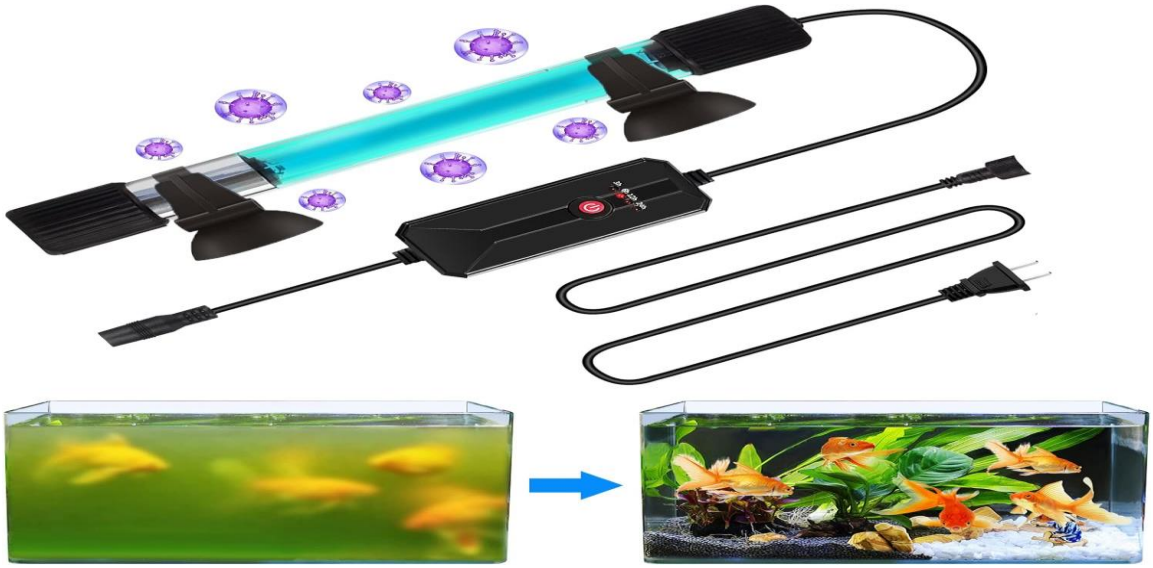
FOR Water Filtration:

UV Sterilizers

Function: Use ultraviolet light to kill free-floating algae, bacteria, and parasites, keeping the water clearer and healthier.

Types:

- **Inline UV Sterilizers:** Installed in the return line of the filtration system.
- **Submersible UV Sterilizers:** Placed directly inside the aquarium or sump.



Nitrate and Phosphate Removers

Function: Chemical filtration media that help reduce nitrate and phosphate levels, which can contribute to algae growth.

Types:

- **Granular Media:** Placed in filter bags or media reactors.
- **Liquid Treatments:** Added directly to the aquarium water to bind and remove nutrients.

Aquarium Vacuum Cleaners:

Function: Small vacuum cleaners designed specifically for cleaning aquarium decor and substrate.

Types:

- **Battery-Operated Vacuums:** Convenient for quick clean-ups.
- **Siphon-Operated Vacuums:** Manual vacuum cleaners using siphon action.

GAPS IN EXISTING SOLUTIONS:

All the existing solutions have many disadvantages. The following are the gaps we found in those existing solutions:

- May not adapt well to varying fish behavior or environmental conditions.
- Cost-effectiveness
- sensor accuracy
- Human involvement for managing
- No Time setting

5. Proposed Solution:

As we have gone with the need statement, we gone through a literature review so that we can know what exactly our prototype must contain, what kind of updates it should have. While going through this process we came across constraints like :

Aquariums can be beautiful, but they also need to be well-maintained. Part of this involves cleaning the tank and adding water changes as required. The most common way to do this is through an aquarium canister filter. Effective fish feeding within aquarium environments is essential for proper health and growth of fishes. With the emergence of technologies including Internet of Things, we have emerged automatic fish feeding within IoT-based .

CHAPTER-3

PROBLEM DEFINITION

3.1 Problem Statement:

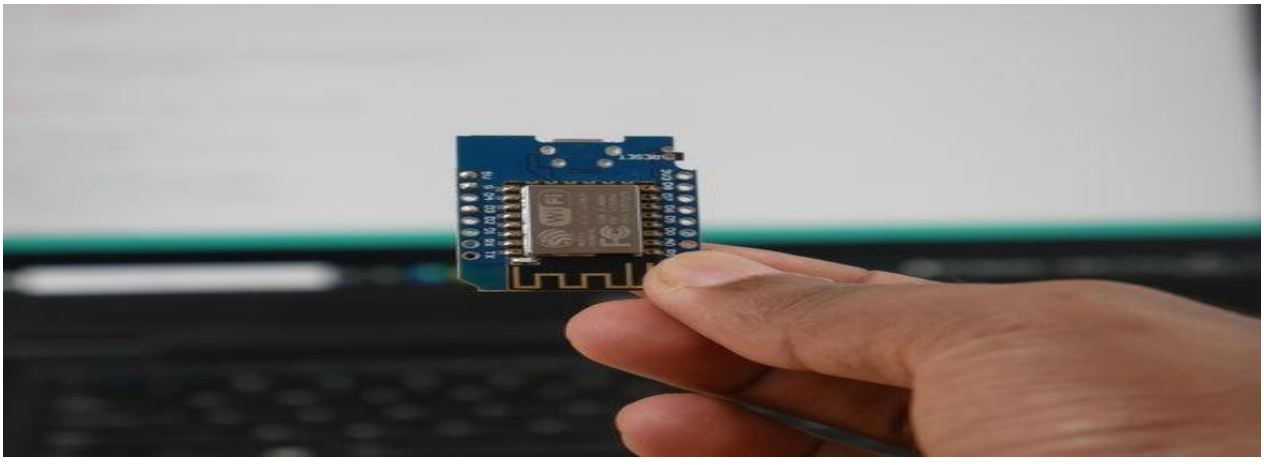
To Maintain Aquarium, One of the most important aspects of keeping your fish healthy is ensuring you have the proper feeding system and right filtration system for their needs. Due to the hectic nature of human life or whenever fish owner is away from home, they find themselves unable to consistently provide proper feeding and filtration for their aquariums. This neglect leads to significant disadvantages, foremost among them being the compromised health and well-being of the fish.

3.2 Objective:

1. Water Quality
2. Biological Filtration
3. Mechanical Filtration
4. Chemical Filtration
5. Feeding System

3.3 Requirement Analysis:

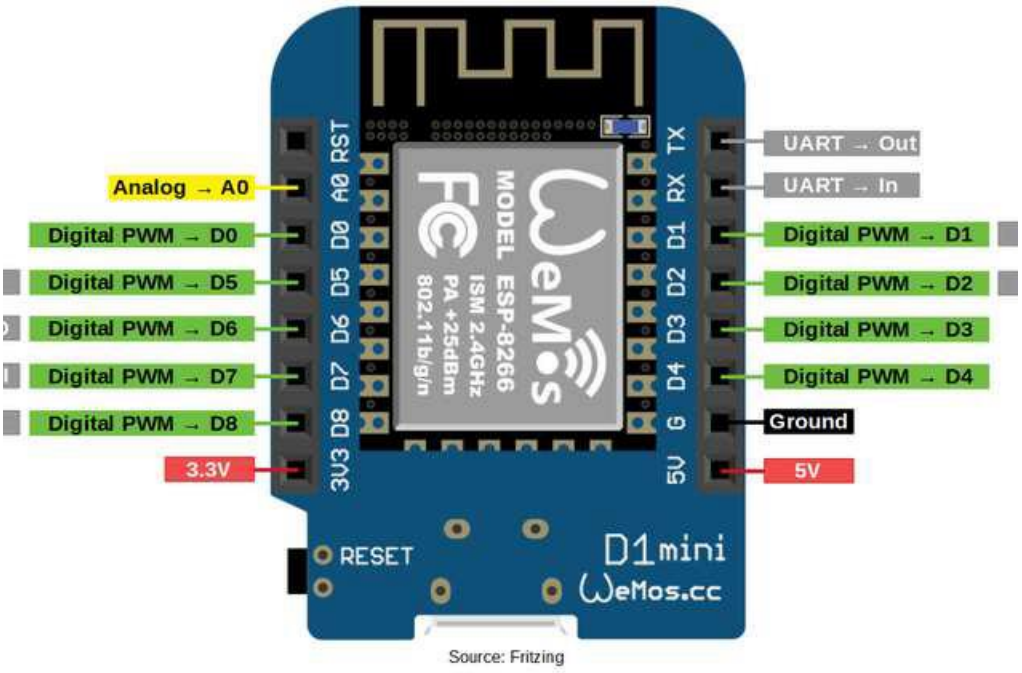
1. ESP8266 NODEMCU:



The NodeMCU (***N***ode ***M***icro***C***ontroller ***U***nit) is an open-source software and hardware development environment built around an inexpensive System-on-a-Chip (SoC) called the ESP8266. The ESP8266, designed and manufactured by Espressif Systems, contains the crucial elements of a computer: CPU, RAM, networking (WiFi), and even a modern operating system and SDK. That makes it an excellent choice for Internet of Things (IoT) projects of all kinds.

The prototyping hardware typically used is a circuit board functioning as a dual in-line package (DIP) which integrates a USB controller with a smaller surface-mounted board containing the MCU and antenna. The choice of the DIP format allows for easy prototyping on breadboards. The design was initially based on the ESP-12 module of the ESP8266, which is a Wi-Fi SoC integrated with a Tensilica Xtensa LX106 core, widely used in IoT application

NodeMCU provides access to the GPIO (General Purpose Input/Output)



Source: Fritzing

There is a wide variety of development boards with the ESP8266 chip. We actually need a board with an optimum size that can be easily reprogrammable and powered from an external source.

2. SERVO MOTOR:

A servo motor is a rotational or translational motor to which power is supplied by a servo amplifier and serves to apply torque or force to a mechanical system, such as an actuator or brake. Servo motors allow for precise control in terms of angular position, acceleration, and velocity. This type of motor is associated with a closed-loop control system. A closed-loop control system considers the current output and alters it to the desired condition. The control action in these systems is based on the output of the motor. It uses a positive feedback system to control the motion and final position of the shaft.

The servo motor consists of two winding stator and rotor windings. The stator winding is wound on the stationary part of the motor, and this winding is also called field winding of the motor. The rotor winding is wound on the rotating part of the motor and this winding is also called the armature winding of the motor. The motor consists of two bearings on the front and backside for the free movement of the shaft. The encoder has the approximate sensor for determining the rotational speed and revolution per minute of the motor. Our Motor Selection Guide will help you identify your requirements.

3. SIPHON PUMP:

A siphon pump is a simple device used to transfer liquids from one container to another using the principles of suction and gravity. It typically consists of a tube or hose that is submerged in the liquid to be transferred, with a pump or suction mechanism to initiate the flow of liquid. Siphon pumps come in various designs and sizes, depending on the specific application.

Siphon pumps are commonly used for various purposes, including:

- Transferring fuel or oil from one container to another

- Draining water from aquariums, pools, or flooded areas

- Emptying clogged sinks or toilets

- Extracting liquids from vehicles or machinery

- DIY projects and home improvement tasks

4. POWER HEAD:

By definition, a powerhead is a small AC-powered centrifugal pump with an inlet and outlet that is designed to move water from one place to the next. As hobbyists, we use this term loosely to also include propeller and gyre-style pumps (wave pumps) as well. There really is an incredible variety of "powerheads" available to aquarists and they have a number of useful applications in and around an aquarium.

An aquarium powerhead is typically used to create flow throughout the tank. For example, a single powerhead could be used at one end of a freshwater aquarium to simulate a laminar river current, or multiple powerheads can be positioned throughout the aquarium to create more turbulent flow.[

A switching or variable-voltage system (also known as a "wavemaker") is commonly used in reef aquaria to more closely simulate the movement of ocean water.[1]

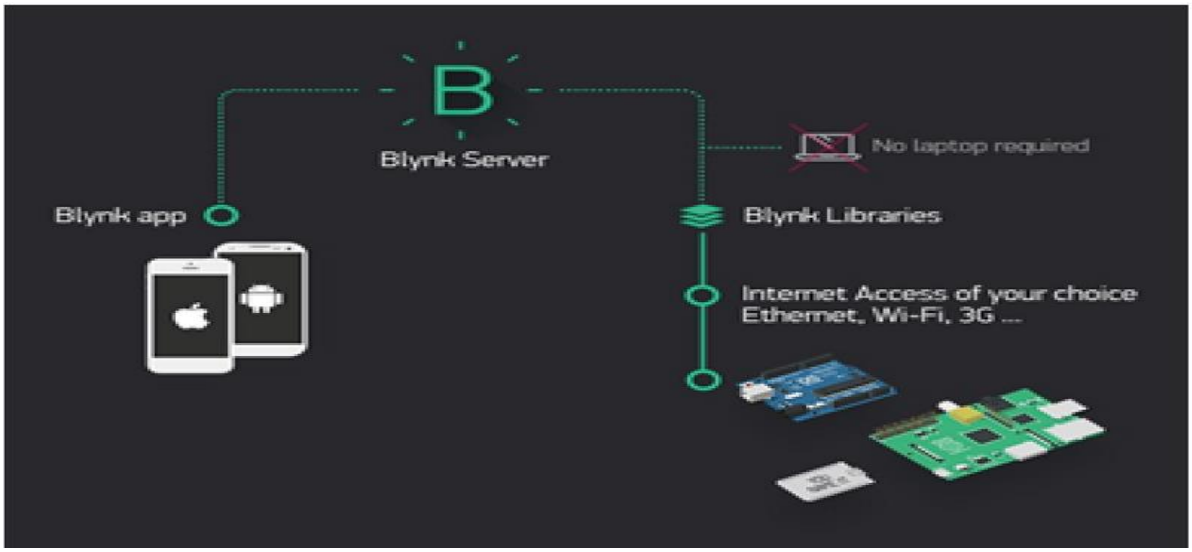
Water circulation is vital to proper biological filtration of most saltwater aquaria (particularly those using the Berlin Method), and is useful in freshwater aquaria for allowing free-swimming fish adequate exercise

5. Micro USB Charging Cable:

The Micro USB cable allows you to connect your NodeMCU to your computer for programming. It also supplies power to the device. The NodeMCU only works with specific cables. Some USB cables are 'charging only', and have only 2 wires inside, meaning they can only provide power and can't transfer data. Cables with 4 wires can transfer data, which is what we need. In addition, you need a cable that can provide enough current to power the NodeMCU.

Micro USB cable allows you to connect your NodeMCU to your computer for programming. It also supplies power to the device. The NodeMCU only works with specific cables. Some USB cables are 'charging only', and have only 2 wires inside, meaning they can only provide power and can't transfer data.

6. BLYNK:



Blynk is an IoT platform for iOS or Android smartphones that is used to control Arduino, Raspberry Pi and NodeMCU via the Internet. This application is used to create a graphical interface or human machine interface (HMI) by compiling and providing the appropriate address on the available widgets.

Blynk is a comprehensive software suite that enables the prototyping, deployment, and remote management of connected electronic devices at any scale.

Whether it's personal IoT projects or commercial connected products in the millions, Blynk empowers users to connect their hardware to the cloud and create iOS, Android, and web applications, analyze real-time and historical data from devices, remotely control them from anywhere, receive important notifications, and much more.

7.BIO BALLS:

Bio balls are small, usually plastic, biodegradable spheres covered in numerous tiny ridges and pores. Their core purpose is to provide a substantial surface area for beneficial bacteria to thrive, facilitating the efficient decomposition of harmful organic matter within the aquarium. This natural process of biomineralization and biosorption, with the help of these microbes, contributes significantly to maintaining a clean and healthy environment for the aquatic residents.

Beneficial bacteria, particularly those involved in the nitrogen cycle, colonize the surface of the bio balls, using the available organic matter to fuel their life processes. These bacteria employ extracellular enzymes to break down complex compounds into simpler substances.

One group of these bacteria, known as **nitrifying bacteria,** process harmful ammonia released by fish and other inhabitants, converting it into nitrites and eventually nitrates, which are less toxic and can be absorbed by plants or removed during water changes. In this way, bio balls are essential for fostering a healthy bacterial community within the aquarium filtration system.

Bio Balls significantly influence the health of your fish by supporting the nitrogen cycle and subsequently removing harmful toxins from the water. They help to maintain steady water quality, offering a safe and healthy habitat for your aquatic friends.

CHAPTER-4

METHODOLOGY

Aquariums can be beautiful, but they also need to be well-maintained. Part of this involves cleaning the tank and adding water changes as required. The most common way to do this is through an aquarium canister filter. Effective fish feeding within aquarium environments is essential for proper health and growth of fishes. With the emergence of technologies including Internet of Things, we have emerged automatic fish feeding within IoT-based .

4.1 CONCEPTUAL DESIGN:

Our design includes very simple mechanism. The design of the prototype is as shown below in the figure

FOR Aquarium:

FOR FEEDER:

4.2 BLOCK DIAGRAM:

FORAQUARIUM:

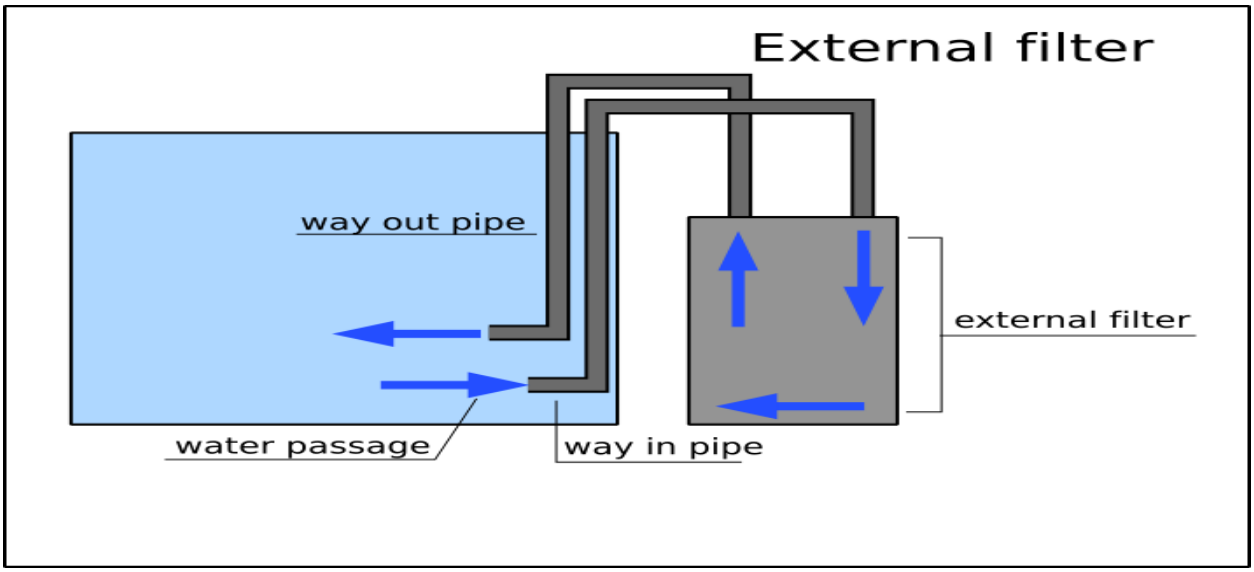


FIG 22: DIAGRAM FOR AQUARIUM

Materials Needed:

1. Water tank/aquarium
2. External filter unit
3. Two sets of pipes (way in pipe and way out pipe)
4. Pump (if not included in the external filter)

Steps:

1. **Install the Way In Pipe:**
   - Place the "way in pipe" inside the water tank/aquarium at the desired location.
   - Ensure the pipe is securely positioned to avoid movement and proper water intake.
2. **Connect the Way In Pipe to the External Filter:**
   - Attach one end of the way in pipe to the intake port of the external filter.
   - Use appropriate connectors or clamps to ensure there are no leaks.
3. **Install the Way Out Pipe:**
   - Place the "way out pipe" inside the water tank/aquarium, ensuring it is positioned to distribute the filtered water back into the tank effectively.
   - Secure the pipe to prevent movement.
4. **Connect the Way Out Pipe to the External Filter:**

- Attach one end of the way out pipe to the outflow port of the external filter.
- Ensure the connection is secure and leak-free.

5. **Set Up the External Filter:**
   - Position the external filter outside the water tank in a stable and accessible location.
   - Make sure the filter is level and secure.
6. **Prime the External Filter (if required):**
   - Depending on the type of filter, you may need to prime it by filling it with water to start the siphoning process.
   - Follow the manufacturer's instructions for priming the filter.
7. **Start the Filter:**
   - Plug in the external filter and turn it on.
   - Ensure water is flowing correctly through the system: from the tank through the way in pipe, into the external filter, and back into the tank through the way out pipe.

FOR FEEDER:

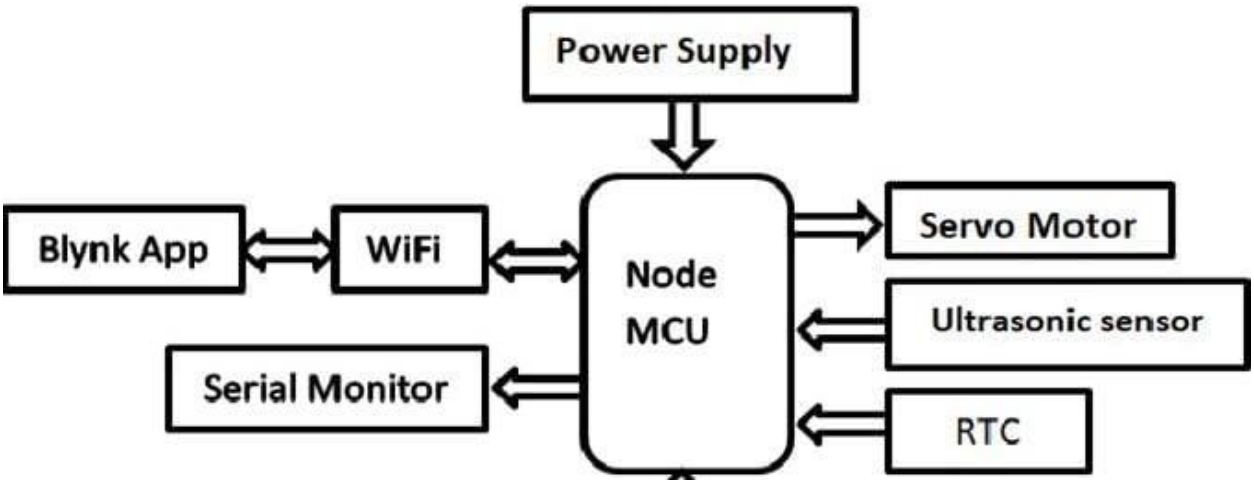


FIG 23: DIAGRAM FOR FEEDER

Materials Needed:

1. **NodeMCU (ESP8266 or ESP32)**
2. **Power Supply**
3. **Servo Motor**
4. **Ultrasonic Sensor**
5. **RTC (Real-Time Clock) module**
6. **Wi-Fi Module (integrated in NodeMCU)**

7. **Blynk App**
8. **Computer for Serial Monitor (via USB connection)**

- **Power Supply:**
    - Connect a reliable power supply to the NodeMCU. This can be done via the USB port or through the Vin and GND pins if using an external power source.
- **Servo Motor:**
    - Connect the servo motor to the NodeMCU. Typically, this involves three connections:
        - **Power (Vcc)** to the 3.3V or 5V pin on the NodeMCU.
        - **Ground (GND)** to a GND pin on the NodeMCU.
        - **Signal (PWM)** to a digital GPIO pin (e.g., D1).
- **Ultrasonic Sensor:**
    - Connect the ultrasonic sensor (such as HC-SR04) to the NodeMCU:
        - **Vcc** to the 3.3V or 5V pin.
        - **GND** to a GND pin.
        - **Trig** to a digital GPIO pin (e.g., D2).
        - **Echo** to another digital GPIO pin (e.g., D3).
- **RTC Module:**
    - Connect the RTC module (such as DS3231) to the NodeMCU:
        - **Vcc** to the 3.3V or 5V pin.
        - **GND** to a GND pin.
        - **SCL** to the SCL pin on the NodeMCU (often D1).
        - **SDA** to the SDA pin on the NodeMCU (often D2).
- **Wi-Fi Module:**
    - The NodeMCU comes with an integrated Wi-Fi module. Ensure your Wi-Fi network credentials are correctly programmed into your NodeMCU script.
- **Blynk App:**
    - Download and install the Blynk app on your smartphone.
    - Create a new project in the Blynk app and obtain the Auth Token.
    - Include the Blynk library in your NodeMCU script and configure it with your Auth Token, SSID, and password for Wi-Fi.
- **Serial Monitor:**

- Connect the NodeMCU to your computer via a USB cable.
- Open the Arduino IDE (or another serial monitor tool) to upload your script and monitor serial outputs for debugging.

Programming the NodeMCU:

- Write or download a suitable script that includes libraries for Blynk, servo motor control, ultrasonic sensor, and RTC.
- Upload the script to the NodeMCU using the Arduino IDE.

Testing and Debugging:

- Once uploaded, open the serial monitor to ensure the NodeMCU is connecting to Wi-Fi and Blynk correctly.
- Test the servo motor, ultrasonic sensor, and RTC functionality individually to ensure proper operation.
- Use the Blynk app to control and monitor the NodeMCU.

4.3 DESIGN DESCRIPTION:

FORAQUARIUM:

DIY Canister Filter typically Works like this:

A DIY canister filter with a sponge and pump works by using the pump to draw water into the canister, where it passes through layers of sponge or other filter media. The sponge acts as a mechanical filter, trapping debris and particles from the water. Beneficial bacteria colonize the sponge, providing biological filtration by breaking down harmful ammonia and nitrites into less toxic nitrates. The filtered water is then returned to the aquarium, creating a cleaner and healthier environment for fish and other aquatic life. Regular maintenance, such as cleaning the sponge and replacing filter media, is essential to keep the filter running efficiently

1) **Gather Materials:** Collect all the necessary materials including a plastic container, a submersible pump, sponges or filter media, tubing, and any additional fittings or accessories.

2) Prepare the Container: Drill holes in the container for the inlet and outlet pipes.

3) **Setup the Pump:** Place the submersible pump inside the aquarium and connect it to the tubing.

4) **Prepare the Sponge/Filter Media:** Cut the sponge or filter media to fit inside the container. Layer the media according to your preference, with coarse sponges at the bottom for mechanical filtration and finer sponges or bio-media on top for biological filtration.

5) **Assemble the Canister Filter:** Place the prepared sponge/filter media inside the container.

6) **Test the Setup:** Fill the container with water and turn on the pump to ensure everything is functioning properly. Check for any leaks or issues with the flow of water

FOR FEEDER:

A fish feeder with an ESP8266 and a servo motor typically works like this:

The ESP8266 microcontroller is programmed to connect to your Wi-Fi network and listen for commands or triggers. You can set up a schedule or trigger remotely via an app or web interface using the ESP8266. When triggered, the ESP8266 sends a signal to the servo motor to rotate a certain angle, releasing the fish food into the tank. The system is powered either by a battery or a power adapter, ensuring continuous operation. Overall, it's a combination of programming, remote control, and mechanical movement to automate the process of feeding fish.

1) **Gather Materials:** Collect all the necessary materials including an ESP8266, servo motor, jumper wires, a power source (such as a battery or USB power supply), a container for the food

2) Setup the ESP8266: Install the Arduino IDE and necessary libraries for programming the ESP8266. Connect the ESP8266 to your computer via USB and upload a basic sketch to ensure it's functioning correctly.

3) **Wire the Servo Motor:** Connect the servo motor to the ESP8266 using jumper wires. Typically, you'll connect the signal wire of the servo to one of the GPIO pins on the ESP8266.

4) **Design the Feeding Mechanism**: Depending on the type of food you're dispensing, design a mechanism that will dispense the appropriate amount of food at the desired intervals.

5) **Write the Code**: Develop the code that will control the servo motor to dispense the food at the specified times.

6) **Test the Feeder:** Power up the system and test the feeder to ensure it dispenses the food correctly according to your programmed parameters.

7) **Assemble the Feeder:** Once everything is working as expected, assemble the components into a compact and secure enclosure. Ensure that the food container is securely attached and that the feeding mechanism operates smoothly.

CHAPTER-5

IMPLEMENTATION

5.1 RESULTS AND DISSCUSSION:

In conclusion, the DIY canister filter utilizing sponge and a pump is an effective and budget-friendly solution for maintaining a clean and healthy aquarium environment. Regular maintenance and monitoring are essential to ensure optimal performance and longevity of the filter system. Overall, this DIY project offers a customizable and accessible option for aquarium enthusiasts seeking reliable filtration solutions.

5.2 CONCLUSION:

The ESP8266-based feeder machine, integrated with blink, offers a seamless and innovative solution for pet feeding needs. Leveraging the ESP8266's capabilities for Wi-Fi connectivity and the blink platform for remote monitoring and control, pet owners can easily schedule and adjust feeding times from anywhere with internet access. With proper setup, testing, and integration with blink, the feeder machine provides an accessible and efficient solution for enhancing pet care and well-being."

6.1. APPENDIX:

https://images.app.goo.gl/mZUEQEtpYcYrAw8E7

https://www.google.com/imgres?imgurl=https%3A%2F%2Fpaintingtheme.com%2Fwp-content%2Fuploads%2F2016%2F08%2Fladder-falling-down-933x1024.jpg&imgrefurl=https%3A%2F%2Fpaintingtheme.com%2Fhow-to-use-any-kind-of-ladder-safely%2F&tbnid=_UKuU76rNv_aRM&vet=1&docid=n2pHaxJsZoCt7M&w=933&h=1024&source=sh%2Fx%2Fim

6.2. REFERENCES:

1) https://aquariumscience.org/index.php/8-3-2-do-it-yourself-canisters/

2) https://www.pinterest.com/craig_dorrell/diy-canister-filters/

3) https://courseware.cutm.ac.in/wp-content/uploads/2020/06/Session-6-2.pdf

4) https://www.amazon.in/gp/bestsellers/pet-supplies/4771356031

5) https://www.researchgate.net/publication/342624403_AUTOMATIC_FISH_FEEDING_AND_MONITORING_SYSTEM_FOR_AQUARIUM_USING_555_TIMERS

CHAPTER-6

SOURCE CODE

```
#define BLYNK_PRINT Serial
#define BLYNK_TEMPLATE_ID "TMPL35S2a0jQP"
#define BLYNK_TEMPLATE_NAME "ServoControl"
#define BLYNK_AUTH_TOKEN "26THcgkObVMEALkXjxd-8kHDD2aq-qCc"
#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>
#include <Servo.h>
Servo servo;
 int lastPosition = 0;
 int onnPos = 1550;  // clockwise direction
 int offPos = 1400;  // counter-clockwise direction
 char auth[] = BLYNK_AUTH_TOKEN;
 char ssid[] = "Your_SSID";
 char pass[] = "Your_Password";
void setup() {
 Serial.begin(115200);
 Blynk.begin(auth, ssid, pass);
 servo.attach(D4);
}
 void loop() {
   Blynk.run();
 }
 BLYNK_WRITE(V0) {
```

```
  int value = param.asInt();
  Serial.println(value);
  if (value == 1 && lastPosition != onnPos) {
    servo.attach(D4);
    servo.writeMicroseconds(onnPos);
    delay(500);
    servo.detach();
    lastPosition = onnPos;
  } else if (value == 0 && lastPosition != offPos) {
    servo.attach(D4);
    servo.writeMicroseconds(offPos);
    delay(500);
    servo.detach();
    lastPosition = offPos;
  }
}
```

TEAM DETAILS

PHOTO	NAME	ROLL NUMBER
	B.Vigneshwar	22H51A0408
	J.Vignan	22H51A0429
	K. Lasya Priya	22H51A0432
	MD.Faisal	22H51A0442
	N.Anuhya	22H51A0443