SMART AQUARIUM

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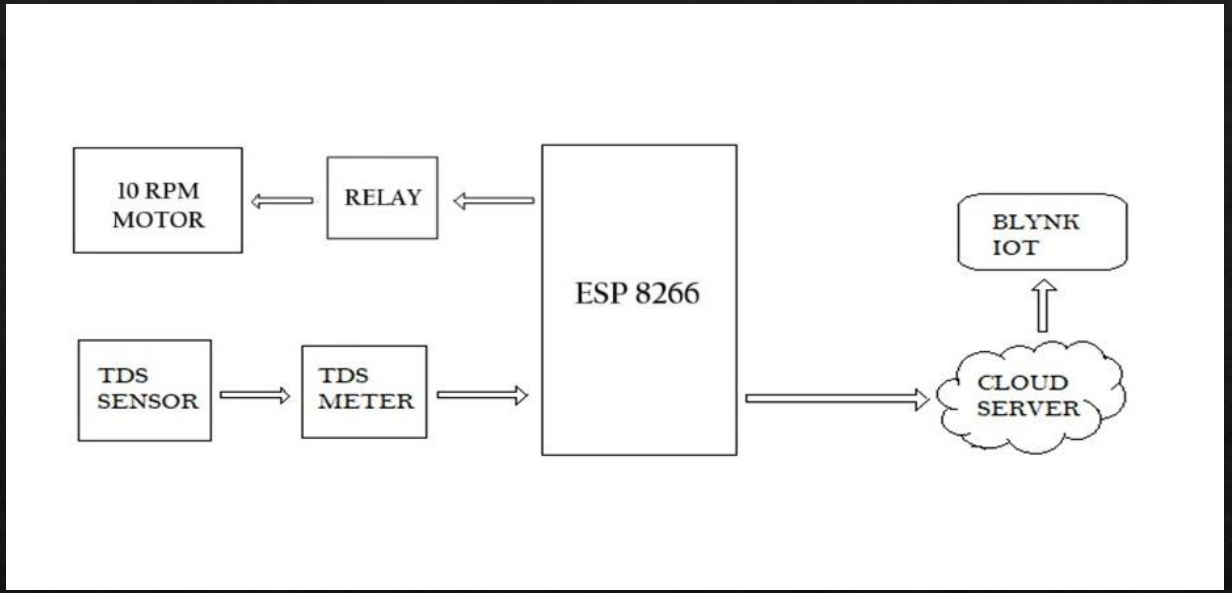
INTRODUCTION

- The project introduces a comprehensive solution poised to transform the landscape of aquarium maintenance amidst the growing trend of home fishkeeping.
- Our system is equipped with real-time sensor to monitor the vital parameter TDS, while also incorporating an intelligent feeding system.
- This innovative approach, integrated within an Internet of Things (IoT) framework, offers remote monitoring capabilities and delivers instant updates via a dedicated mobile application, aiming to streamline maintenance processes and ensure optimal conditions for pet fish.

BLOCK DIAGRAM



The Block diagram for the Smart Aquarium project has ESP8266 microcontroller as the main unit which is responsible for data acquisition, processing, and communication. The Tds sensor provide real-time data on water quality and environmental conditions. Motors receive commands from the ESP8266 microcontroller to perform specific actions based on predefined schedules or user inputs. Through Blynk app users can monitor real-time data, set parameters, schedule feeding times, and adjust other settings as needed.

HARDWARE DESCRIPTION

ESP8266 BOARD	TDS SENSOR	Motor	Relay Circuit
The ESP8266 is widely used for IoT (Internet of Things) projects due to its low cost, built-in Wi-Fi capabilities, and ease of use.	A TDS (Total Dissolved Solids) meter or sensor is a device used to measure the concentration of dissolved solids in a solution. Total dissolved solids refer to any inorganic salts, organic matter, and other substances that are dissolved in water.	A motor of high-torque offers a specialized solution for applications requiring precise, low-speed rotation with substantial torque. The motor used here is of 10 RPM.	A 5V relay is a switch that operates using a 5-volt signal to control the switching.

SOFTWARE DESCRIPTION

Arduino IDE	Blynk App	Proteus Simulation Software
The Arduino IDE (Integrated Development Environment) stands out as a widely embraced software platform tailored for programming ESP8266 boards. Its intuitive interface streamlines the task of coding, compiling, and transferring code onto the ESP8266 microcontroller, making it accessible even to those with limited programming experience.	The Blynk app revolutionizes the development of IoT (Internet of Things) applications by providing a user-friendly platform that eliminates the need for complex coding. Its interface empowers users to customize user interfaces using a variety of widgets, enabling seamless communication with their connected hardware devices.	The Proteus is a software utilized predominantly in electronic design automation. It's favored by electronic design engineers and technicians for crafting schematics and manufacturing printed circuit boards.

WORKING

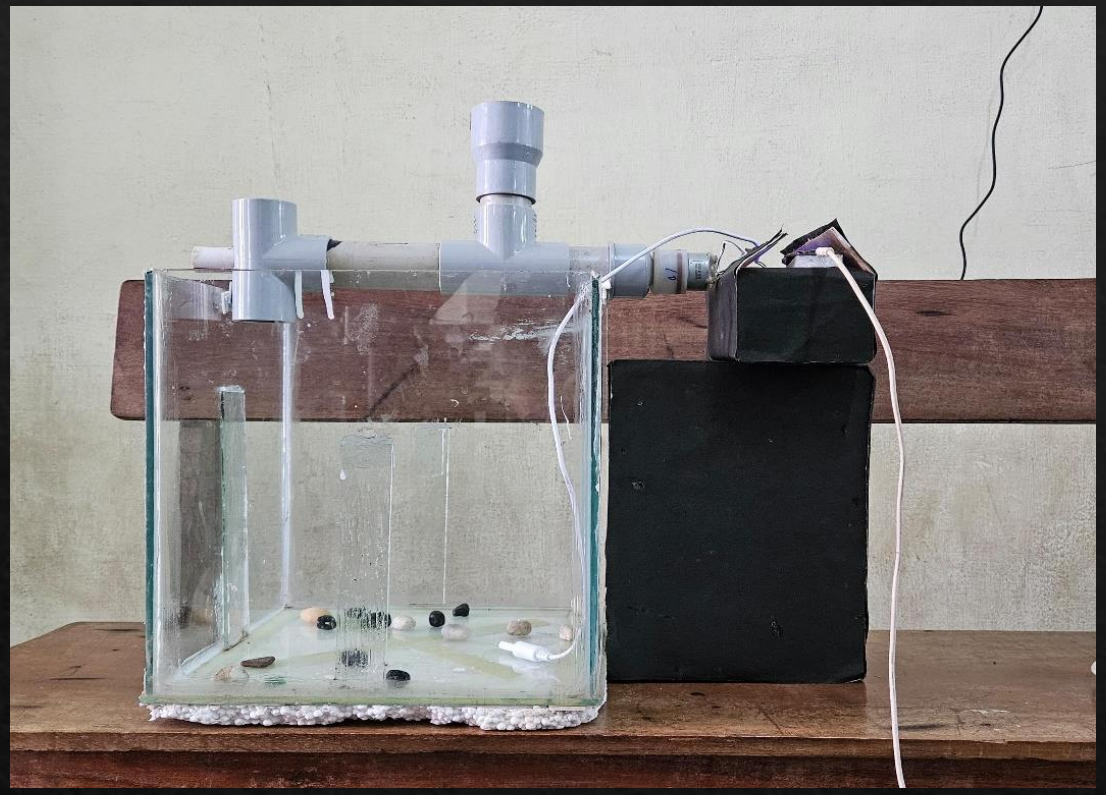
- The Smart Aquarium project operates based on the following sequence of actions:
- The TDS sensor continuously measures the total dissolved solids (TDS) in the aquarium water. The ESP8266 runs a control algorithm programmed to maintain optimal TDS levels in the aquarium water.
- At the scheduled feeding times, the ESP8266 triggers the motor connected to the feeder mechanism. The Motor rotates to dispense the predetermined amount of fish food into the aquarium.
- The system is programmed to send notifications to the user's mobile device in case if there is excessively high or low TDS levels. This allows users to take immediate action of issues and ensure the well being of the aquatic environment.

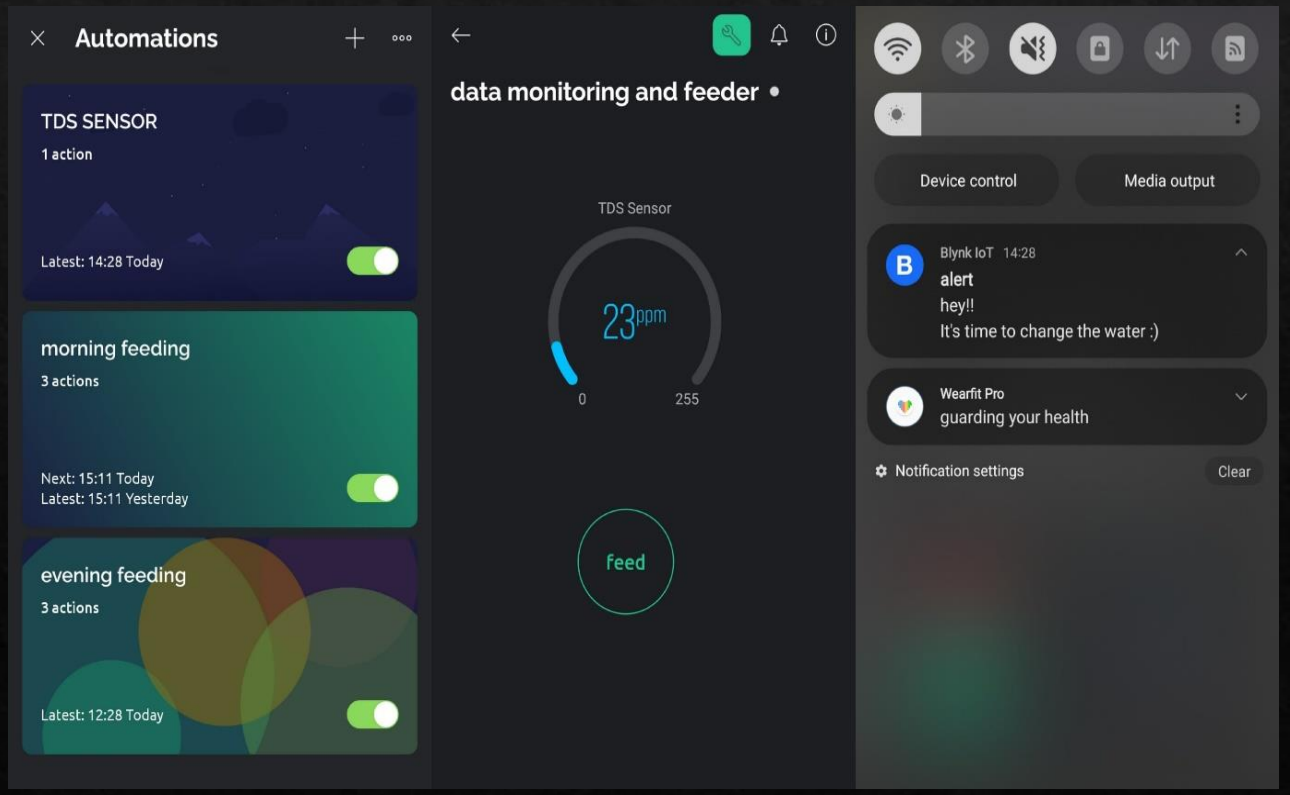
RESULTS

- **Real-time Monitoring and Control**: The system effectively monitors TDS value and feeding schedules, providing users with instant updates and alerts via a mobile application.

- **Automation of Maintenance Tasks**: By automating essential maintenance tasks such as feeding and environmental parameter monitoring, the system streamlines the upkeep of aquariums, minimizing manual effort and promoting consistency in care routines.

- **Enhanced User Experience**: Through seamless integration with IoT technology, the system enhances the overall user experience by offering remote monitoring capabilities and control interfaces. This ensures that aquarium enthusiasts can enjoy their hobby with greater convenience and peace of mind.




Automations
TDS SENSOR
1 action
Latest: 14:28 Today
morning feeding
3 actions
Next: 15:11 Today
Latest: 15:11 Yesterday
evening feeding
3 actions
Latest: 12:28 Today
data monitoring and feeder
TDS Sensor
23ppm
0
255
feed
Device control
Media output
Blynk IoT 14:28
alert
hey!!
It's time to change the water :)
Wearfit Pro
guarding your health
Notification settings
Clear