

SMART AQUARIUM SYSTEM

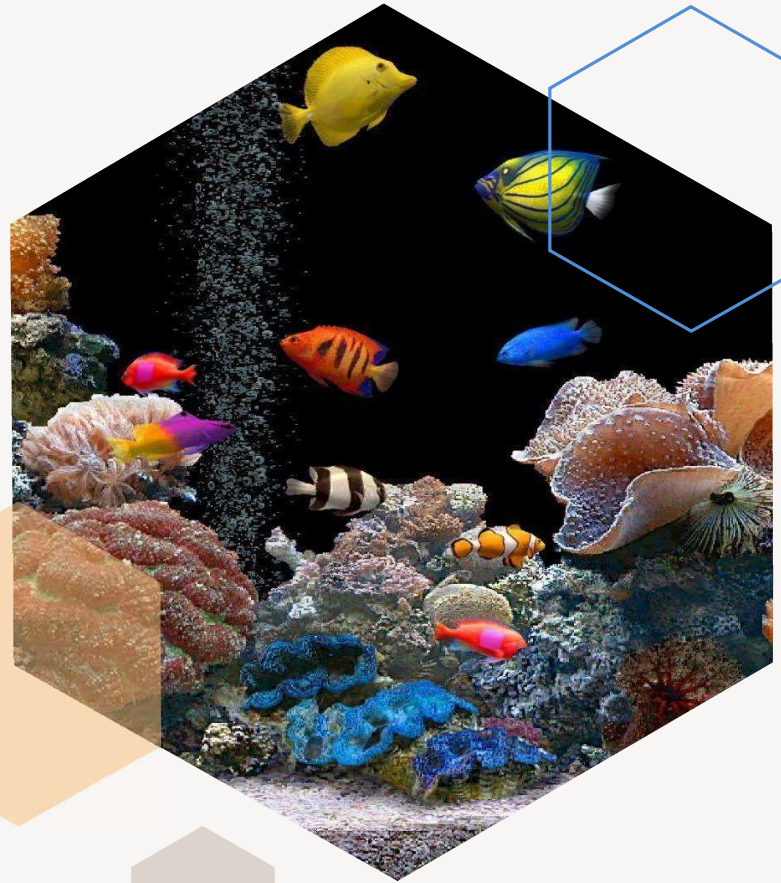
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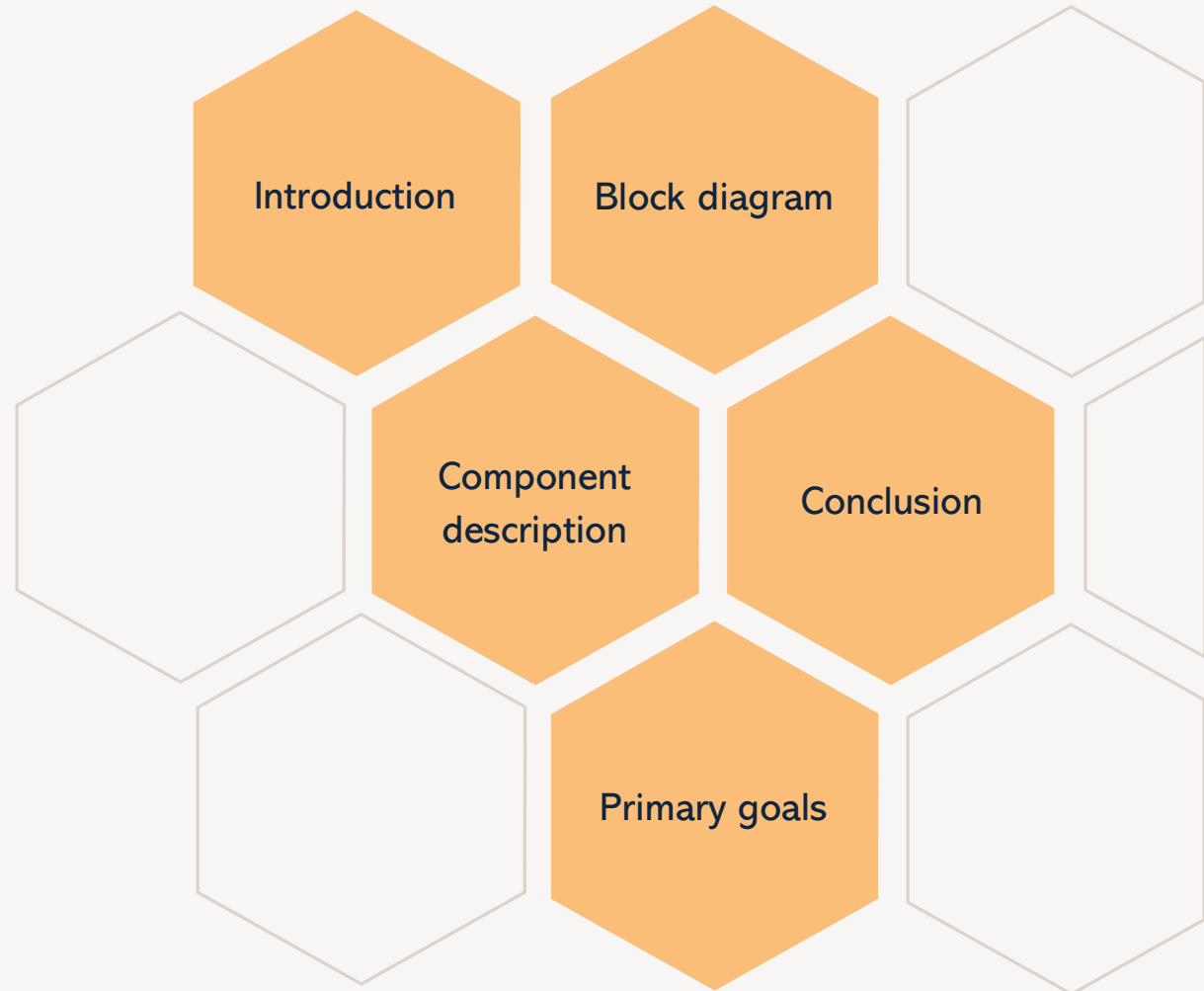
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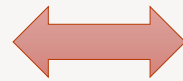
AGENDA



INTRODUCTION

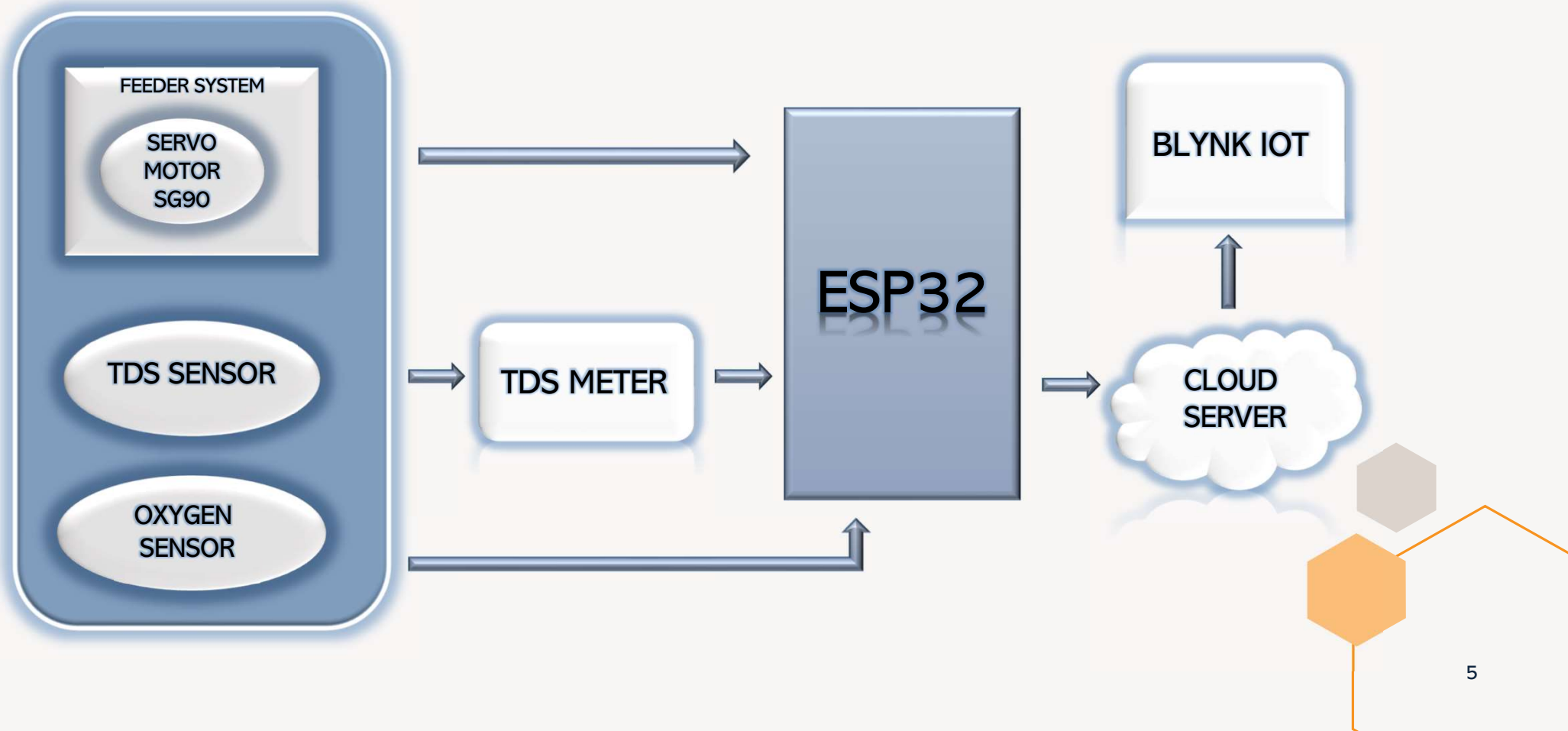
In response to the growing trend of keeping fish as pets at home, this project introduces a comprehensive solution to address common challenges in aquarium maintenance. The proposed system, equipped with real-time sensors, focuses on monitoring temperature and detecting water pH levels. Utilizing an Internet of Things (IoT) framework, the system provides remote monitoring capabilities and delivers instant updates to a user's mobile application. This intelligent aquarium management approach aims to streamline the maintenance process, ensuring optimal conditions for pet fish and reducing manual effort.





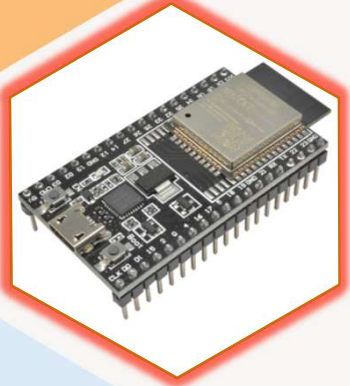
PRIMARY GOALS

BLOCK DIAGRAM



ESP32

The ESP32 is a powerful microcontroller developed by Espressif Systems, renowned for its versatility and robust features. It boasts dual-core processing capabilities, Wi-Fi, Bluetooth connectivity, and a wide range of GPIO pins, making it ideal for IoT projects. With its low power consumption and advanced peripherals such as touch sensors, ADCs, DACs, and UART interfaces, the ESP32 is widely used in applications ranging from home automation and wearables to industrial IoT and smart agriculture. Its affordability and widespread adoption in the maker community have solidified its position as a go-to platform for IoT development.



A decorative graphic on the left side of the slide featuring four hexagons. One is a large orange hexagon, one is a medium blue hexagon, one is a small orange hexagon, and one is a white hexagon with a black outline.

OXYGEN SENSOR

This is a **Gravity Analog Dissolved Oxygen** sensor kit from DfRobot which can be easily interfaced with **ESP32** & any other microcontrollers. The sensor is used to measure the dissolved oxygen in the water so that the water quality can be known. It is widely applied in many water quality applications, such as aquaculture, Fishery, environment monitoring, natural science, and laboratory applications. The average dissolved oxygen value in parts per million for normal growth and spawning of fishes is above 6.

TDS SENSOR

A TDS (Total Dissolved Solids) sensor for aquariums is an essential tool for monitoring water quality. It measures the concentration of dissolved substances in the water, including minerals, salts, and other impurities. By accurately measuring TDS levels, aquarists can assess the overall health of the aquarium environment and make informed decisions about water treatment and maintenance. High TDS levels can indicate potential issues such as overfeeding, inadequate filtration, or water contamination, while low TDS levels may suggest the need for mineral supplementation. Integrating a TDS sensor into an aquarium monitoring system enhances the ability to maintain optimal water conditions, promoting the health and well-being of aquatic life.



A decorative graphic on the left side of the slide consisting of several hexagons. There is a large orange hexagon in the center, a smaller blue hexagon above it to the right, a white hexagon with a black outline to the left, and a small orange hexagon below the large one.

MICRO SERVO MOTOR SG90

The Micro Servo Motor SG90 is a compact and lightweight servo motor with its precise control and small size, it can accurately dispense fish food at specified intervals, ensuring that aquatic pets are fed regularly and in controlled portions. The SG90's compatibility with various microcontroller platforms makes it easy to integrate into automated feeding systems, allowing aquarists to schedule feeding times and adjust portion sizes with ease. By utilizing the SG90 servo motor in an aquarium feeder system, aquarists can streamline the feeding process, maintain a consistent feeding schedule, and ensure the health and well-being of their fish.

CONCLUSION

Smart Aquarium Management System have been successfully proposed and it can be easily implemented for making the life of aquarists more comfortable. It is a userfriendly system which can be accessed remotely using mobile phones. The inclusion of a mobile application allows users to conveniently access real-time updates on the aquarium's status, ensuring efficient management without the need for constant manual intervention.. This system works well and can be implemented on any aquarium. Thus this project not only simplifies aquarium maintenance but also promotes the well-being of the fish by preventing over or underfeeding, demonstrating the potential of technology to enhance pet care in modern households.



THANK YOU

