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IMPLEMENTATION AND IMPROVEMENT OF AQUARIUM WATER AND INDOOR TREE MEASUREMENT SYSTEM USING BLUETOOTH MESH AND CLOUD

INSTRUCTOR

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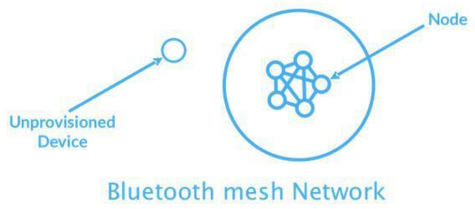
ABSTRACT

The hobby is very popular today, but sometimes we do not know how to take care of them and ensuring them a good habitat leads to loss. So habitat indicators are very important for them.
The topic of designing automatic measuring equipment for the quality of important concentrations in aquarium and ornamental plants. Thence build a measuring system for aquarium, ornamental plants in the building automatically. The system includes measurement and information acquisition nodes, using Bluetooth Mesh to communicate between nodes. And data will be statistics on the website and mobile app for users to manage, track and control the measurement schedule of each button.

INTRODUCTION

- Currently, the periodic water quality testing of ammonia, pH, nitrite, nitrate indexes in aquariums is mainly done by hand, the two main methods are using test solutions or electronic devices. dedicated. As for the use of electronic devices to measure quite accurately, however and need to use human resources with expertise, high cost, not suitable for ordinary consumers with no quality expertise. water source.
- Through the above situations, the team proposed to build a Bluetooth Mesh-based system consisting of nodes measuring the quality of the habitat of the aquarium and indoor plants. These nodes have the function of measuring automatically, scheduling and accurately the environmental parameters related to plants and aquariums.



PROPOSED METHOD

A. Our equipment
Our equipment and your equipment.
- Correct 5ml water text
- Small 5-dimensional solution to investigate the sample.
- Part 5 of us can use it.

B. Measure them only a number
Using modules, data and their design.
C. the tendency to knock down the Bluetooth network button
Our device has a grid Bluetooth button.
- 4 behavior buttons are customer-collected Buttons.
- In-house structure has 1 server node Receiving information from node client.

The primary node server is the node and node, computer,
computer and computer.

RESULT

Mesh works with 5-6 meters distance indoors
A summary of the results after measuring the density of substances for 1 week.

PLANTS				
	01/12 - 08/12	09/12 - 17/12	18/12 - 25/12	26/12 - 31/12
Humidity (%RH)	68.2	68.1	68	70.7
Brightness (Lux)	1234.85	1248.75	1239.1	1208.2
AQUARIUM				
	06-12-2021	13-12-2021	20-12-2021	27-12-2021
pH	7	7.5	7.5	7.5
Amoni	0.5	1.5	1.5	1
Nitrite	0	0	0	0

Comment:

Plant:
- From the experimental results, soil moisture changes according to different module placement, leading to high humidity and low humidity. The current soil moisture is not uniform. Will affect the plant.
- The light obtained at two different timeframes gives different results, at noon the light is often very much, so in the evening, the light changes significantly, especially the influence of the other light.

Aquarium:
- The higher the pH, the more harmful substances produced.
- Ammonium density in the middle 2 weeks increased rapidly due to the sudden large amounts of waste and residual food affecting other organisms (possibly causing death).
- Nitrite density is very small due to conversion to Nitrates.
- Thanks to the aquatic plants, the substances in the water are restored and balanced again.

CONCLUSION

- For the aquarium, although the substances are always available in the water, it is necessary to limit the density of the substances to not harm the fish.
- For bonsai that depends on the type of tree that needs different lighting. Plants grow best when they reach an effective moisture content, typically between 75% and 80% of the plants will be most easily absorbed.
- The overall system completes the results statistics on the web and app. The user notification function is complete with essential function buttons.
- Improve server upgrade to increase system stability and increasing mesh distance.