HUMIDHARMONY GARDEN

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TECHNOLOGIES/TOOLS

Raspberry Pi & Sense Hat
Humidifier
Water Level Monitor
Laptop
Switch

Packet Tracer
ThingSpeak
Visual Studio Code
Python (Raspberry Pi)
HTML (Web interface)

PROJECT DESCRIPTION

The **HumidHarmony Garden** is an integrated system that monitors indoor air humidity, soil moisture levels, and alerts the homeowner to optimize plant care and maintain a healthy indoor environment for both plants and people.
Key functions:

1. Monitors soil moisture of indoor plants and alerts the homeowner via text if levels fall outside 41% to 80%.
2. Records indoor air humidity levels. If levels are below 30%, the homeowner is notified via text for further action. If levels exceed 50%, the system automatically switches on the home's dehumidifier until levels fall between range.

SYSTEM PROCEDURE & SCENARIO

A client keeps a variety of indoor herbs and plants in their kitchen, the only south-facing room in their house. However, living in an older, damp home has made it difficult for their plants to thrive due to persistently high humidity levels.
The HumidHarmony Garden addresses this issue by monitoring and maintaining both air and soil conditions:

Every hour, the Raspberry Pi measures air humidity via its Sense Hat and records data from a water level monitor installed in the plant's soil.
If soil moisture levels fall outside of 41% to 80%:

- **Low levels:** The Raspberry Pi triggers a text alert to the client via ThingSpeak, notifying them to water their plant.
- **High Levels:** The Raspberry Pi triggers a text alert to the client via ThingSpeak, notifying them to move the plant and/or drain its soil.

If air humidity levels are outside of 30% to 50%:

- **Low Levels:** The Raspberry Pi triggers a text alert via ThingSpeak, notifying the homeowner that the air humidity is low in the house.
- **High Levels:** A relay switch activates the dehumidifier. The dehumidifier turns off once humidity levels fall between 30% and 50%. After turning off, the Raspberry Pi records the air humidity.

Soil moisture and air humidity levels are recorded in ThingSpeak and available for the homeowner to view via a HTML web interface.

PROJECT REPOSITORY

https://github.com/rhiannahmaher/humidHarmonyGarden.git