Plant Monitoring System

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The Plant Monitoring System is an IoT-based solution designed to help users monitor environmental conditions[2] critical to plant health, such as temperature, humidity, and soil moisture in real time. The system provides accessible, data-driven insights to help users care for their plants as well as the option to set reminders.

The system consists of three main components:

IoT sensor hardware, that collects environmental data and sends these data to the server, this is achieved using Arduino Uno[1], ESP-based microcontroller (ESP8266[5], WeMos D1[5]), capacitive soil moisture sensor, and DHT11 temperature and humidity sensors.

The backend of the program consists of monolithic .NET application and database, both are hosted on DigitalOcean[4]. It is responsible for handling API requests, reminders, authenticating devices, sorting data, and saving it in the database.

The frontend consists of a Vue.js web application deployed on Vercel[3], providing users with clean dashboards and a user-friendly interface to monitor and interact with data through dynamic charts styled with TailwindCSS, which communicates with the backend via Axios.

References.

[1]Monk, S. (2016). *Programming Arduino: Getting Started with Sketches* (2nd ed.). McGraw-Hill Education.

[2] The Gardening Tips. *Master your plant care with this essential checklist*. https://thegardeningtips.com/plant-care-checklist/

[3] Vercel Documentation. https://vercel.com/docs

[4] DigitalOcean Docs. https://docs.digitalocean.com/

[5] Instructables. *Arduino WeMos D1 WiFi UNO ESP-8266 IoT IDE Compatible*. https://www.instructables.com/Arduino-WeMos-D1-WiFi-UNO-ESP-8266-IoT-IDE-Compati/