GREENHOUSE IOT INTEGRATED ANDROID BASED CLIMATE AUTOMATION AND HYDROPONIC PLANT CONTROL SYSTEM

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ABSTRACT

The hydroponic farming system is an appropriate planting system when the land for farming is starting to decrease as it is now. Hydroponics is an alternative farming system using water. These nutrients will be circulated so that water use in hydroponics is more efficient. In farming, appropriate temperature, humidity and light intensity are needed so that hydroponic plants can grow well. To make it easier to cultivate hydroponic plants, a smart greenhouse is needed. In this research, Smart greenhouse can be run automatically using ESP8266 as a microcontroller module, DHT22 sensor as a temperature, humidity sensor and LDR sensor as a light sensor, and water pH sensor as a water content monitor. Data regarding temperature, humidity and light intensity in a smart greenhouse can be monitored remotely using Android with Firebase as a Realtime database. The role of climate is very important for the growth of hydroponic plants. Therefore, a smart greenhouse is the right solution because it can manipulate the climate with fan actuators to lower the temperature, lights to provide humidity and heating. Testing of fan actuators, lights and sensors in the climate automation system in this smart greenhouse had a success percentage of more than 95%.

Keywords: Hydroponics, Internet of Things, Automation, Greenhouse, Android