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IoT Based Early Flood Monitoring, Detection and Alarming System

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Abstract: *Flooding is one of the major disasters occurring in various parts of the world. The system for real-time monitoring of water conditions: water level; flow; and precipitation level, was developed to be employed in monitoring flood in Nakhon Si Thammarat, a southern province in Thailand. The two main objectives of the developed system are to serve 1) as information channel for flooding between the involved authorities and experts to enhance their responsibilities and collaboration and 2) as a web-based information source for the public, responding to their need for information on water condition and flooding. The developed system is composed of three major components: sensor network, processing/transmission unit, and database/ application server. These real-time data of water condition can be monitored remotely by utilizing wireless sensors network that utilizes the mobile General Packet Radio Service (GPRS) communication in order to transmit measured data to the application server. We implemented a so-called VirtualCOM, a middleware that enables application server to communicate with the remote sensors connected to a GPRS data unit (GDU). With VirtualCOM, a GDU behaves as if it is a cable directly connected the remote sensors to the application server. The application server is a web-based system implemented using PHP and JAVA as the web application and MySQL as its relational database. Users can view real-time water condition as well as the forecasting of the water condition directly from the web via web browser or via WAP. The developed system has demonstrated the applicability of today's sensors in wirelessly monitor real-time water conditions.*

Keywords: Internet of Things, Node MCU ESP 32, Rain Sensor, Ultrasonic Sensor, DHT11.

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