

# ***DESIGN OF AN IOT-BASED WATER TEMPERATURE AND PH MONITORING APPLICATION FOR SHRIMP POND (CASE STUDY: TAMBAK UDANG TAMERAN INDAH)***

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## ***ABSTRACT***

*Vannamei shrimp farming is one of the aquaculture industries with significant economic potential. The success of shrimp cultivation is highly influenced by water quality, particularly temperature and pH levels. Manual monitoring is often ineffective and may cause delays in handling when extreme changes in water parameters occur. Therefore, the aim of this research is to design and develop an Internet of Things (IoT)-based system that can be accessed in real-time through a website and is equipped with automatic notifications via Telegram. The system is designed to monitor the temperature and pH levels of the shrimp pond water. The core of this system is the NodeMCU ESP8266 microcontroller, which is connected to a DS18B20 temperature sensor and a 4502C pH sensor. The data read by the sensors is periodically sent via Wi-Fi to a web server, stored in a MySQL database. Furthermore, the system is equipped with an automatic warning feature that sends a Telegram notification to the farmer if the temperature or pH exceeds normal limits. The design results demonstrate that the system is capable of providing information via Telegram notifications and improving the efficiency of water quality monitoring in shrimp ponds. Thus, this system can assist farmers in maintaining a stable farming environment and increasing harvest productivity.*

**Keywords:** *Internet of Things, NodeMCU, Water Temperature, Water pH, Shrimp Pond, Website, Telegram.*