

## ***ABSTRACT***

Smart building is a distributed control system applications that are applied to control devices inside a building, which can work automatically, and adaptive. An institution sometimes have separate buildings with each other. Especially at educational institutions, water reservoir are important and need to be considered by the institution, so that water availability can be maintained, and the residents, or visitors are not experiencing the condition of running out of water while in the shower or toilet. In fact, in several buildings, sometimes we run out of water while we was in the toilet, it can happen because the water contained in the water reservoir has been depleted. Therefore, we need a system in the form of web pages to monitor multiple distributed water reservoir in the building remotely and centrally, so that, it can provide information about the condition of the volume of water in the water reservoir, and can monitor in a rooms.

This thesis is created a water reservoir monitoring system implementation in several buildings from a distance in the form of a prototype using the technology of Wireless Sensor Network (WSN). This system, is use the Arduino Uno microcontroller as a data processor of HCSR04 ultrasonic sensor that is used to read the water level in a place of shelter. Data obtained from the ultrasonic sensors will be sent to the coordinator node. Each point in the water reservoirs monitoring system will form a tree and point to point topology. The water reservoirs monitoring system uses XBee Series 2 transceiver modul. This monitoring system is used several scenarios.

In designing and experiments that have been conducted in this thesis, the result of sending data can be displayed in graph form and a replica images of water reservoirs in a web page and data can be stored in the database. In addition, there is also obtained an average error sensor readings of 2.312%, with the communication distance of XBee S2 is reaches 75 meters in indoor, and a maximum of 91 meters in outdoor on LOS condition.