

## ABSTRACT

*A bathtub is a pool of water in the bathroom used for Bath. The user in using the bathtub begins by filling the bathtub to the brim first and then if the user wants to take a bath with warm water, people usually mix cold water with hot water. To do both of these things, it is still done manually, such as users using their hands to estimate the temperature whether it is appropriate or not and users waiting for water to be filled until the volume in the bathtub is filled, thus allowing users to forget that they are filling water which causes wasted water due to the amount of water in the tub. water has exceeded its capacity limit.*

*The purpose of this final project is to design a bathtub based on the Internet of Things (IoT) by utilizing ultrasonic sensors and temperature sensors. In planning, the bathtub is equipped with sensors that can measure the water temperature, water level, and the volume of water used and is equipped with a solenoid valve that can regulate hot and cold water flowing in the bathtub, then the bathtub is equipped with a water heater that can heat the water. The bathtub is also equipped with an IoT system with applications, so users can manage and monitor the bathtub remotely.*

*In the implementation of this final project, the results obtained from the system that has been implemented, namely, the average volume at 7cm water level is 9.45 liters and the average filling time is 03.22 minutes. The application can work well with an very good delay time and data transmission of 5.864 kbps. The monitoring and regulation system of water temperature and water volume can anticipate water wastage when using the bathtub.*

**Keywords:** *Bathtub, Internet of Things, Mobile Application, Water Temperature, Water Level, Water Volume.*