

## ABSTRACT

Hydroponics is an alternative choice for urban communities who want to grow their own consumable vegetables. It is also a means to channel a hobby to plant but the unavailability of land that can support the hobby. Hydroponics is a planting model that does not require soil as a planting medium and does not need a large area of land. But on the other hand, hydroponics need to get sufficient attention and care by the owner. Due to the nutrients for growing plants given through water directly to be absorbed. As a busy urban community, the time to monitor hydroponics condition is very limited.

In this final project, designed an embedded system that can help hydroponics owners to be able to manage the best nutrition for the plant automatically. With the implementation of Expert System, Mikrocontroller, Sensor and Actuator, the system can determine the appropriate nutrition based on data measured by the sensor. Furthermore, the implementation of Expert System with Forward Chaining Method can determine the appropriate nutrients with plants that are being planted. Then the actuator will execute the commands so that the nutrients will be maintained accordingly. Hydroponics owners will also get information about the nutrient condition in realtime by utilizing the internet of things device. With this system the owners can get result as expected.

The final result of the embedded system is to make nutrient condition automatically according to the type of plant selected by the user. In addition, the conclusion using forward chaining method in this system has 100% accuracy based on forward chaining test result.

Keywords : Hydroponics, Expert System, Forward Chaining, Embedded System, Automation System.