CHAPTER V
CONCLUSION

5.1 Conclusion

The tests and research that have been conducted by the author with the title "Design and Fabrication of a Vertical Farming Embedded with IoT System" can be concluded :

1. The system can be implemented per the system the author has designed. The system that has been created can run according to the desired conditions or instructions.
2. Automatic control on the UV lamp has run according to the reading of the light intensity sensor results, where the UV lamp will turn off if the sensor gets a light intensity of 4000 lux and will turn off if it is below 4000 lux.
3. The results of the error value on the Arduino sensor with the meter sensor show that the pH of the water is 0.63 pH, the TDS of water is 27.75 ppm, the water temperature is 1.04 °C, and the light intensity is 23.38 lux.
4. Sensor data collection in the test used two plants as a comparison, namely the bok choy plant and water spinach plant and was carried out indoors and outdoors
5. Comparison of the average value of the bok choy plant and water spinach plant conducted indoors is; The water temperature sensor in the bok choy plant is 29.74 °C and in the water spinach plant 29.14 °C. The water TDS sensor at the bok choy plant is 68.39 ppm and at the water spinach plant, at 76.67 ppm. The pH sensor of the water on the bok choy is 7.46, and the pH of the spinach water is 7.39. And the light intensity sensor on Bok Choy is 556.16 lux, and on water spinach, 562.85 lux.
6. As for comparing the average value of the bok choy plant and water spinach plant carried out outdoors, The water temperature sensor in the bok choy plant is 28.85 °C, and in the water spinach plant is 28.30 °C. The water TDS sensor at the bok choy plant is 94 ppm, and at the water spinach plant is 95.61 ppm. The pH sensor of the water on bok choy is 7.14, and the pH of

spinach water is 7.02. and the light intensity sensor on bok choy is 2549.27 lux and on water spinach 5928.73 lux.

7. Monitoring on the Telegram and Tapo applications runs as expected so that users can monitor agriculture from smartphones.
8. This prototype can be developed and applied to the community as a solution for agriculture and, simultaneously, for those who do not have large enough land.

5.2 Recommendations

The author received advice from several parties regarding the creation of this system. Among them are the following:

1. Using a separate power supply and connection, the system will continue to work if you experience a power failure.
2. Using a plastic UV greenhouse as a vertical farming roof, if placed outdoors, protects the microcontroller components so they are not exposed to water during rainy conditions.
3. Add a drain pump and an intake pump to guarantee the water quality in the fish pond. Which is connected to a TDS sensor to calculate water ppm and an ultrasonic sensor to calculate water level.
4. Add a pH up and pH down medicine pump to lower and raise the pH automatically so that the pH in the pool water is stable.
5. Search for information on the weather when taking data outdoors.