CHAPTER 3
RESEARCH METHODOLOGY

3.1   Preparing the device

The device that needs to be built on this project is Arduino UNO as a microcontroller, Ethernet shield W5100 to link microcontroller to the Internet network, USB cable type A and B DC power jack 5v to 12v and LAN cable used to make Ethernet shield connected to the Internet. Arduino can collect data of air humidity, room temperature, and soil humidity from reader sensors. The sensors used are DHT11 for air moisture, and floor temperature and soil levels are for soil moisture. The web also needs to display the value of air humidity, room temperature, soil humidity and predictions of air humidity, room temperature, and soil humidity. The last one is a jumper cable used to connect Arduino to all sensors and other devices.

3.2   Search for an Iot server

Install XAMPP and create a database using PHPMyadmin for data storage obtained from a DHT11 sensor /air humidity and temperature and Soil Moisture sensor/soil humidity.

3.3   Exam mine and learn how to use the sensor

After preparing the tool for use, the next step is to examine and learn how to use DHT11 sensors DHT11/kelembaban udara dan suhu, sensor Soil moisture/kelembaban tanah, Ethernet shield Arduino UNO And how to transmit the data to the PPMyadmin database First step, connect the Ethernet shield, DHT11/air humidity and temperature, Soil moisture Soil moisture/soil humidity, jumper cables, dan LAN cable to Arduino UNO, Next attempt to transmit sensor data to the phpmyadmin database. After all the devices have been properly inspected and functioning, the next step is to create a program to complete the project.

3.4   Create a program

The writer made a complete program to complete the project. Program building begins with the inclusion of the necessary librarie, deporting variables to connect to the Internet, deporting variables for variations between censorship and arduino, variable declaring for output/input, and create HTML and PHP pages to access sensor data and prediction.

3.5   Building the Project

The steps below show how to build this project:

1. Connecting DHT11 sensors or air humidity and temperature, soil moisture and Ethernet shield to microcontroller Arduino UNO.

2. Place soil streams and DTH11 sensors on two rooms that use air conditioners and that do not use air-conditioners that are already prepared land for data on air humidity, room temperature, and soil humidity.

3. The DHT11 sensor will provide data on air humidity and temperature from the second floor, soil sensors will provide data on soil humidity in both rooms to be sent to the PHPmysql database for new data from air humidity, room temperature, and soil moisture from both rooms. From the data of the last 24 hours of air humidity, room temperature, and soil humidity will be used to predict data of air humidity, room temperature and soil humidity in the next 24 hours on the website that it has created.

4. After all the sensors have worked properly and correctly, Arduino and all sensors connected to Ethernet shield can transmit data on air humidity, room temperature, and soil moisture over the Internet to be stored in d atabases.