Continuing Education Program
Center for Computing and Information Technology
Fakultas Teknik Universitas Indonesia

PROJECT

"IOT ROOF AUTOMATIC RAIN DETECTOR"

Group 3

Names : Siti Rayhannah (2020010094)

Virgi Febrian Hermawan (2020010102)

Faculty : Listyo Edi Prabowo, S.T

Semester : 4

Quarter : 2

Class : 4ISA2

CONTINUING EDUCATION PROGRAM CENTER FOR COMPUTING AND INFORMATION TECHNOLOGY,
FACULTY OF ENGINEERING, UNIVERSITY OF INDONESIA
2021

PROJECT ON

IoT Roof Atomatic Rain Detector

Developed by

1. Siti Rayhannah (2020010094)
2. Virgi Febrian Hermawan (2020010102)

SMART FARMING SYSTEM

Batch Code : 4ISA2

Start Date : July 11, 2022

End Date : August 3, 2022

Name of Faculty : Listyo Edi Prabowo, S.T

Names of Developer :

1. Siti Rayhannah (2020010094)
2. Virgi Febrian Hermawan (2020010102)

Date of Submission: August 3, 2022

CERTIFICATE

This is to certify that this report titled IoT Roof Automatic Rain Detector done by, Siti Rayhannah and Virgi Febrian Hermawan in partial fulfillment of their course requirement at NIIT.

Coordinator:

Listyo Edi Prabowo, S.T

ACKNOWLEDGEMENT

Praise God Almighty, for the presence of plenty of mercy and his grace, so that we can complete this project with the title "IoT Roof Automatic Rain Detector". Without His mercy we would not be able to complete this project in time. Eventhough there are many obstacles that we face on making this project, but finally we can finish this project.

Author would like to thanks to Mr. Listyo Edi Prabowo, S.T as Lecturer who has given useful suggestion which are help author in writing this paper. Hopefully what we have made can be useful in the future.

The writer realized that this paper far from perfection, then the writer will be very unfettered the chest and was encouraged, if colleagues and the guide's agreeing lecturer gave the suggestion & criticism for this paper perfection.

SYSTEM ANALYSIS

System Summary :

The increasingly advanced era requires that the technology in the building must be developed as well as support the effectiveness of every human being interested in it.

Every human being is required to be creative in its development. including in this case we create a product named IoT Automatic Rain Detector. This product can be used in various buildings, for example in the clothesline area in your home, cafe, and other areas where you need this system. This system itself is a weather detector, especially rain. the sensor will read the light intensity, temperature, humidity, and rain forecast. when it rains, users don't have to bother to pack things so they don't get rained on, because this tool will automatically cover the roof of the building.

This tool is a new breakthrough for those who feel the need. The sensors used to run this tool are rain sensors, LDR, and DHT11. as well as the accuator used there are LEDs and SG90 servo motors. we use firebase for the database, MIT App Inventor for the android application and visual studio code for making the web application.

ABOUT SYSTEM

System Process:

The development of technology in buildings in each country is one of the characteristics of the country's progress. Indonesia still needs a lot of ideas, input and power to make the technology in existing buildings more developed. So the purpose of making this IoT tool is as a new innovation to facilitate and streamline every human work related to building problems.

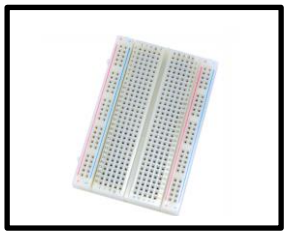
Nowadays people are busy with their own business, so people will need this tool to make work faster and more effective. people who have this tool will be lucky because when the owner of the house is traveling out or sleeping at home and suddenly it rains. Then the roof in the clothesline area will close by itself and homeowners don't have to worry about getting their clothes wet. This rain detector can also be used in other functions, such as swimming pool covers, cafe roofs, rofftops and others..

In this system, the rain sensor will read the weather if the weather is rain then the servo will move as a roof mover to cover the clothesline that is being dried. and if the weather is not raining then the roof will automatically open again. then the light sensor will read the intensity of the existing light, when the light reads dark then the led light will turn on and when the light is felt bright then the led light will turn off. Likewise with the temperature sensor or DHT11 which will read the temperature and humidity in the area where this tool is installed. All commands will be executed through the nodemcu ESP8266 and the data will be read on the web and android application that has been created.

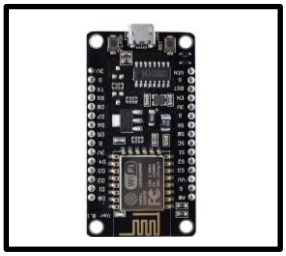
COMPONENT

System Process:

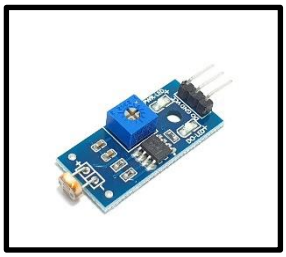
In this platform, there are 9 components :



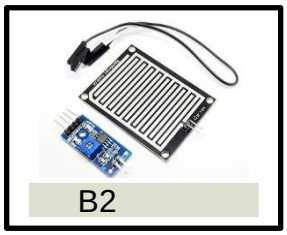
1. Breadboard : Board that serves to design a simple electronic circuit. The breadboard will be prototyped or tested without having to solder.



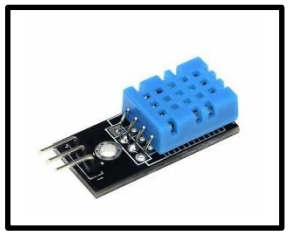
2. NodeMCU ESP 8266 : Open source IoT and platform development kit that uses the Lua programming language to assist in making IoT product prototypes or can use sketch with the Arduino IDE.



3. Light Sensor : LDR (Light Dependent Resistor) is one type of resistor that can experience changes in resistance when experiencing changes in light reception. The light sensor module works to produce an output that detects the value of light intensity.



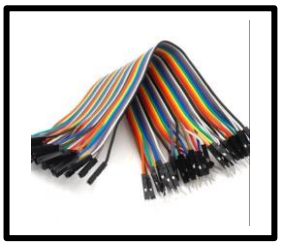
4. Rain Sensor : The rain sensor is a type of sensor that functions to detect the occurrence of rain or not, which can be used in all kinds of applications in everyday life.



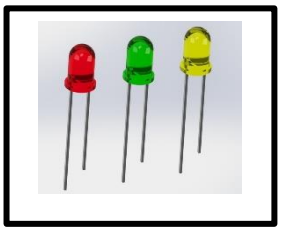
5. DHT11 : is a sensor module that functions to sense temperature and humidity objects that have an analog voltage output that can be further processed using a microcontroller.

COMPONENT

6. Servo Motor SG90 : Tower Pro SG90 servo motor is a small servo motor that is widely used for various hobbies, such as remote control hobbies, robotics, etc. Application: For those of you who want to make robots or experiment with small servos, this servo motor is perfect for you.



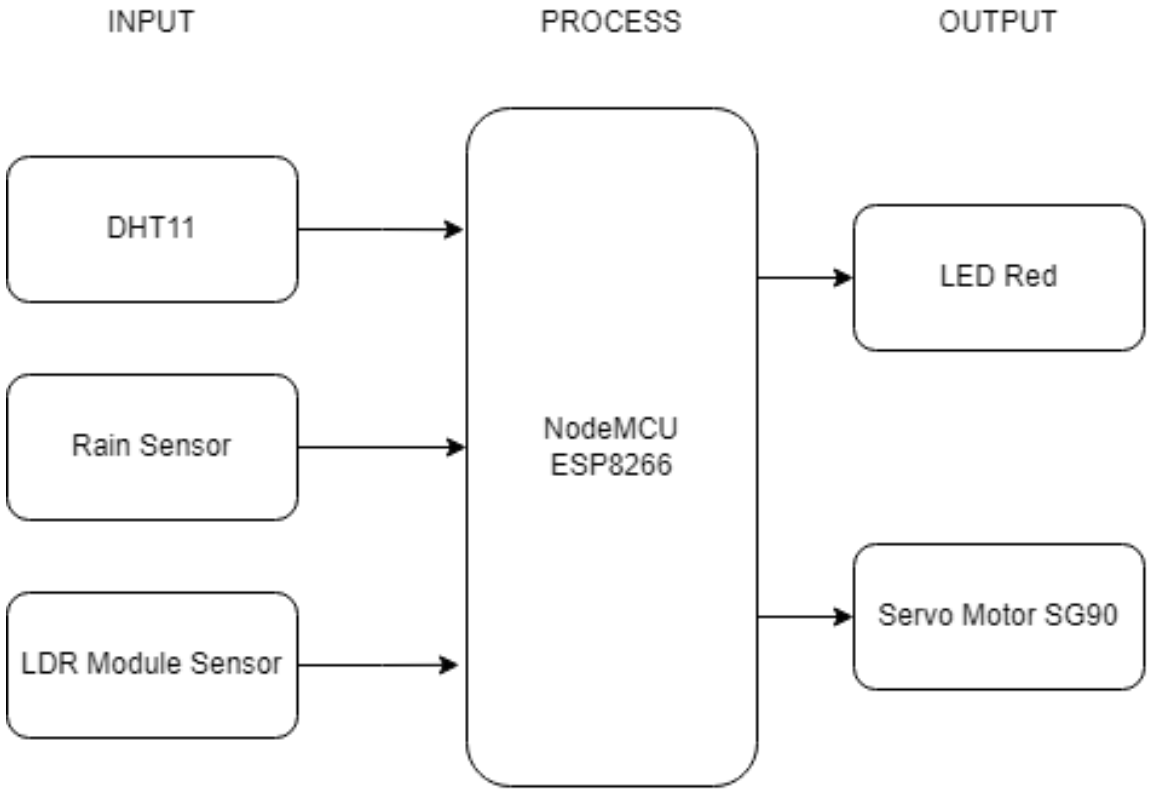
7. Jumper Cables : Cable that is used as a liaison between the components used in making prototypes of the device and serves to connect the two components involving the microcontroller without requiring soldering.



8. LED : LED stands for Light Emitting Diode, which is one of many types of semiconductor devices that emit light when an electric current passes through it. In addition to lighting, LEDs are also part of the 7 segments in digital clocks and timers and are used in remote controls.

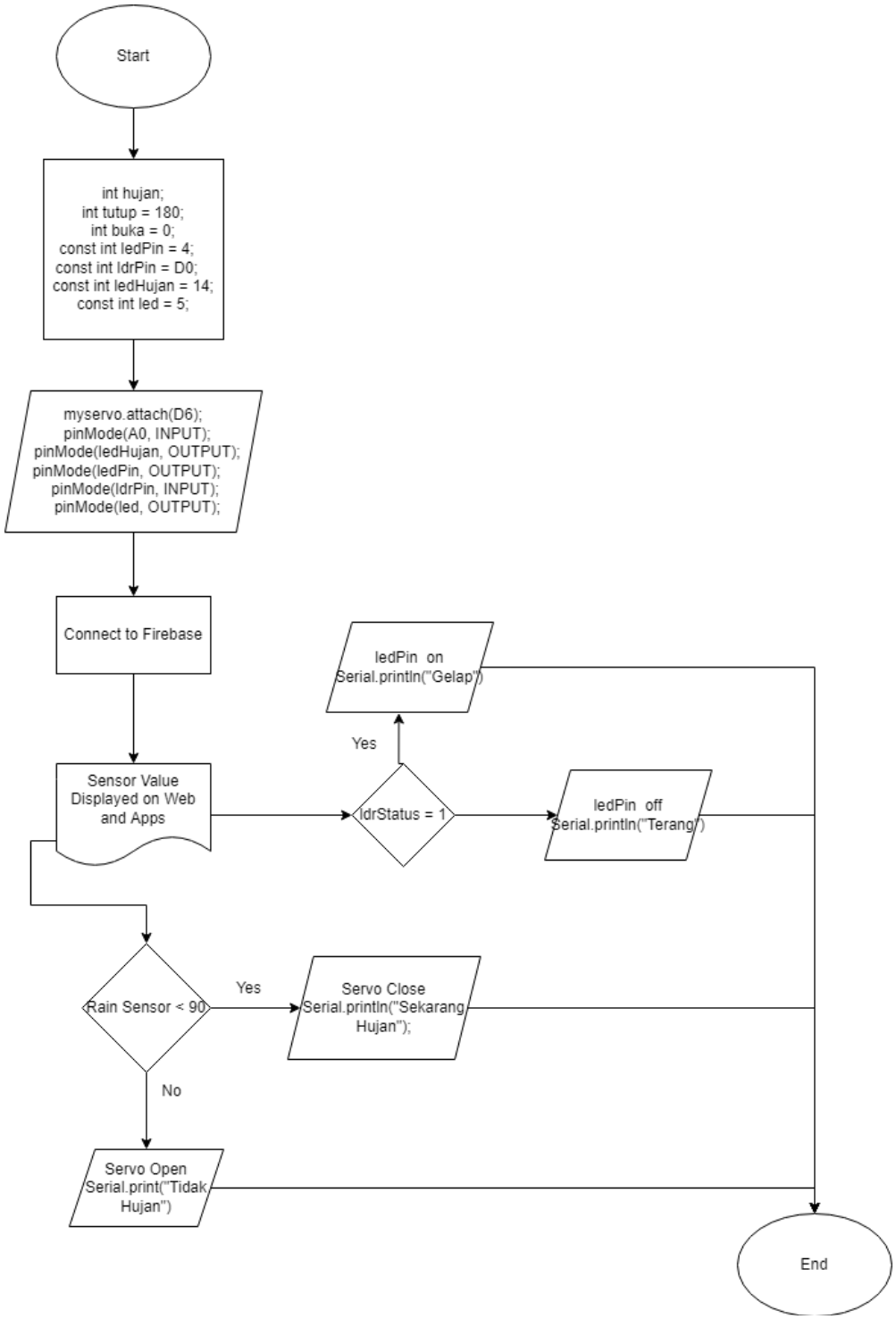
SYSTEM BLOCK DIAGRAM

System Process:



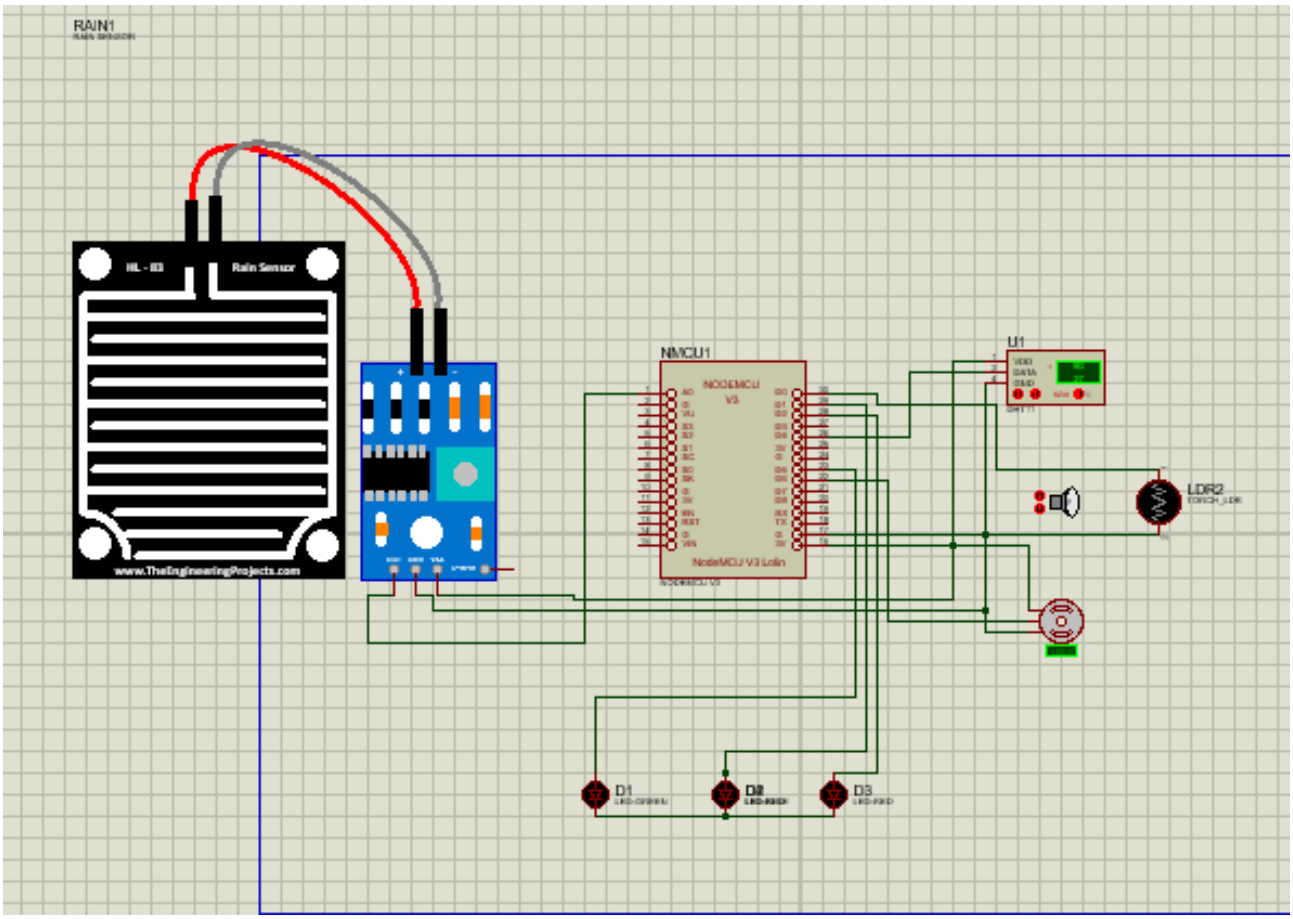
FLOWCHART

System Process:



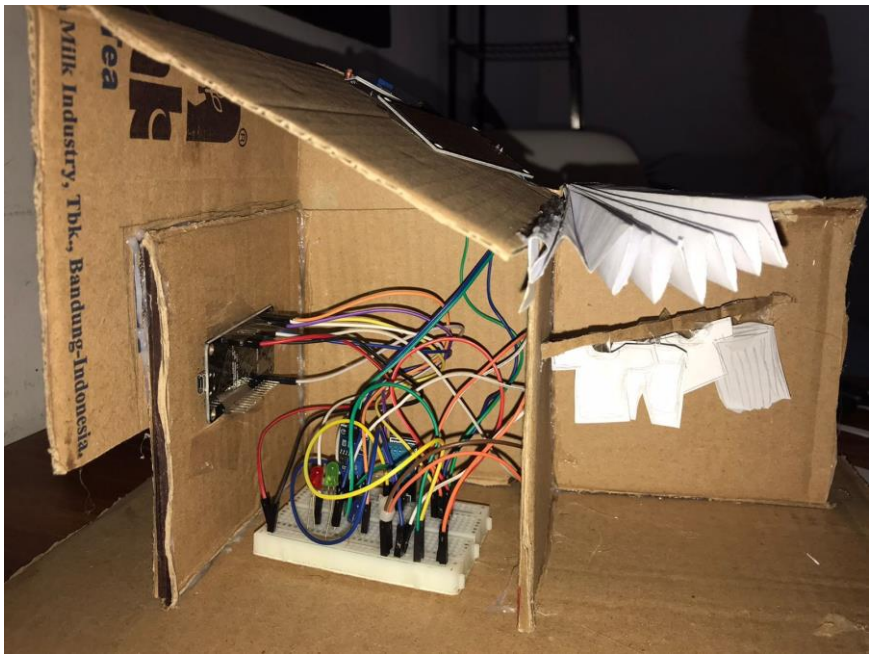
SCHEMATIC

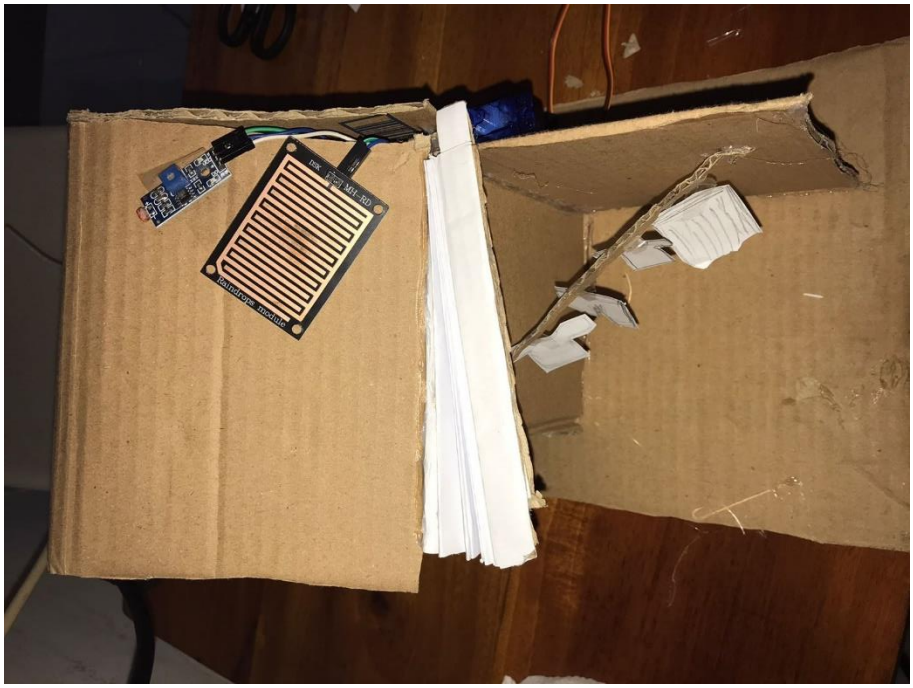
System Process:



SYSTEM IOT

System Process:

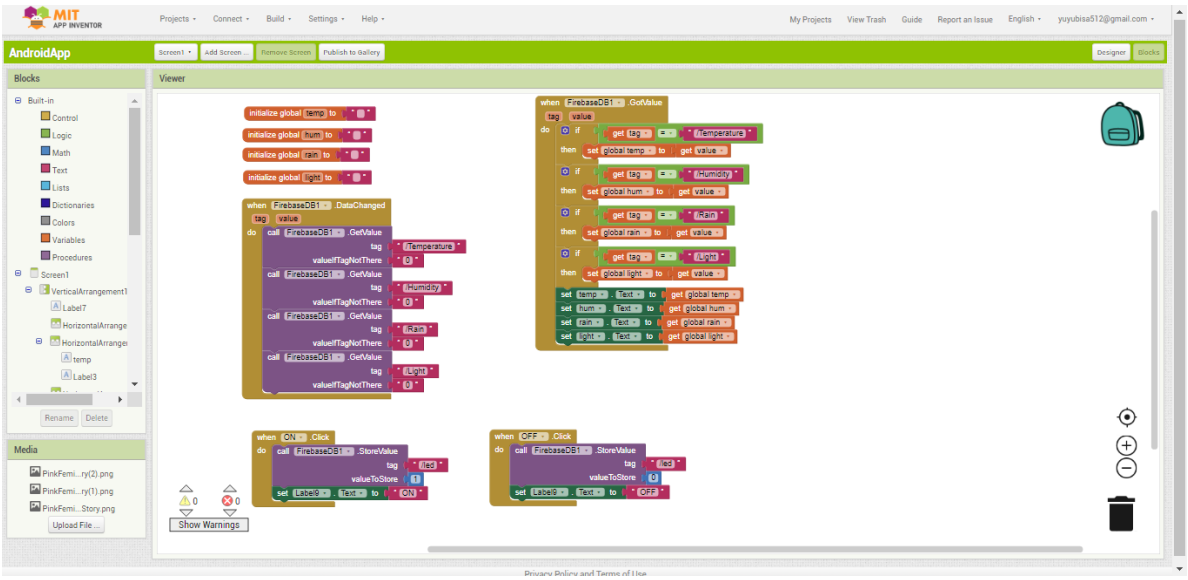




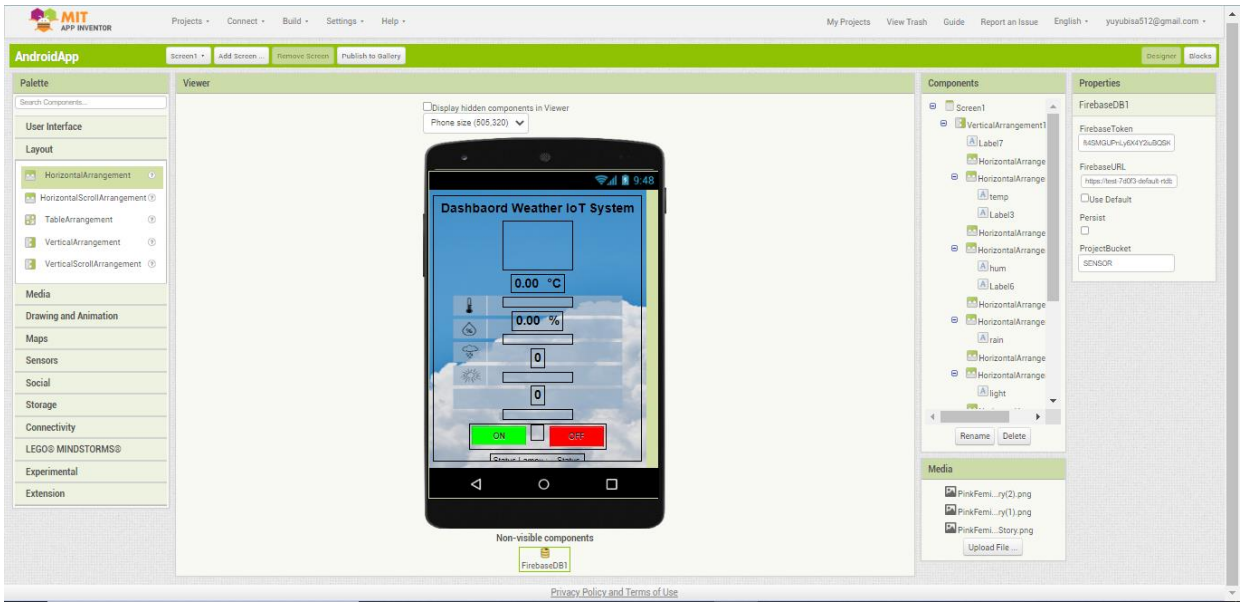
MIT APP INVENTOR

System Process:

Block Code :

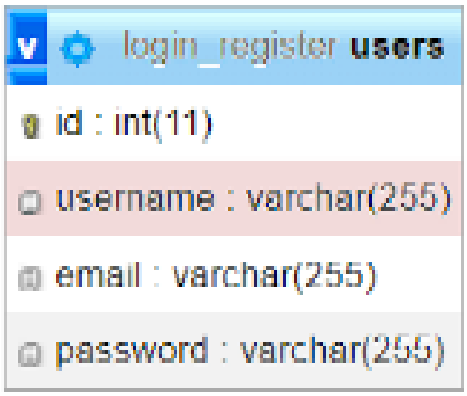


Design :



DATABASE DESIGN WEB

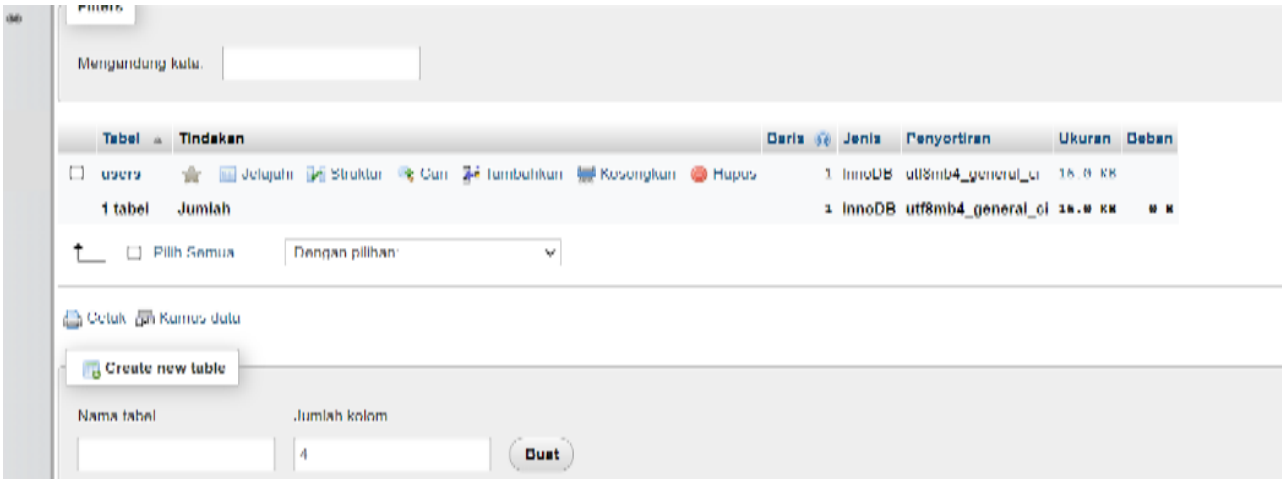
System Process:



DATABASE STRUCTURE WEB

System Process: user

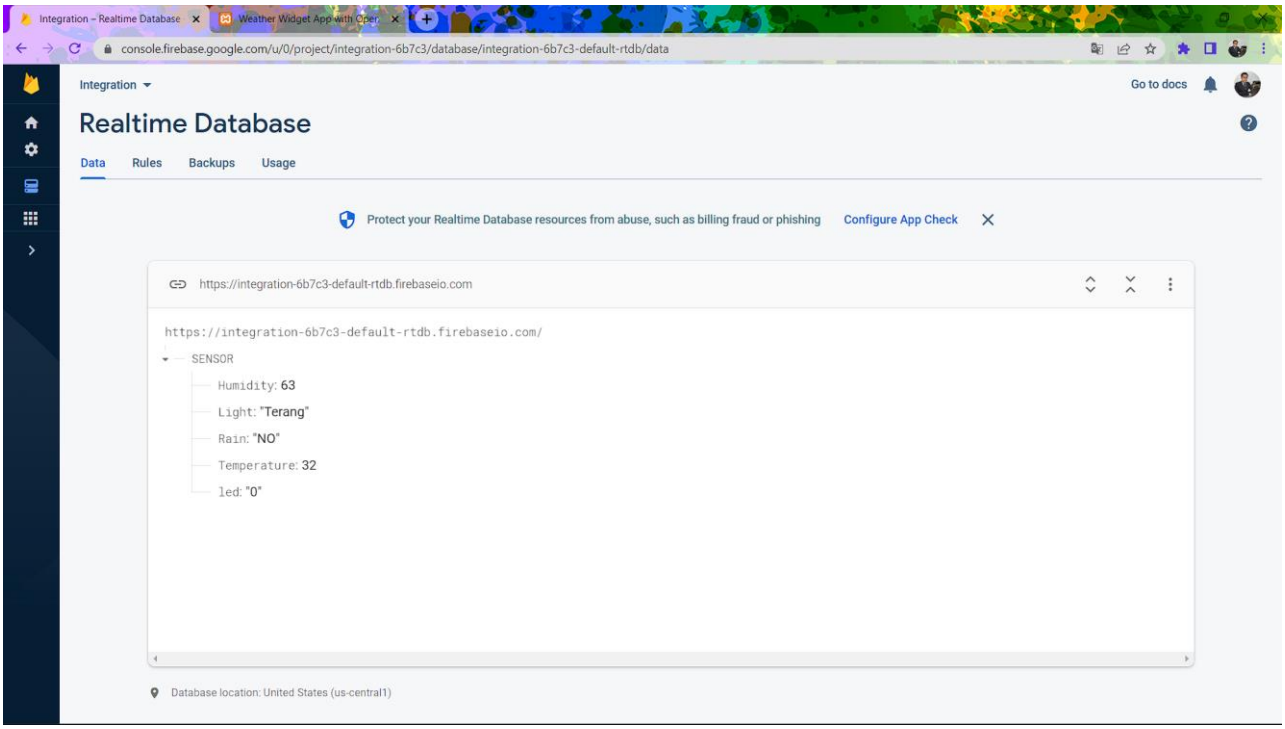
Field Name	Data Type	Width	Description
id	INT	11	Primary key for table login
email	Varchar	50	Contain email
username	Varchar	50	Contain username
Password	Md5	50	Contain Password



DATABASE STRUCTURE WEB

System Process: SENSOR

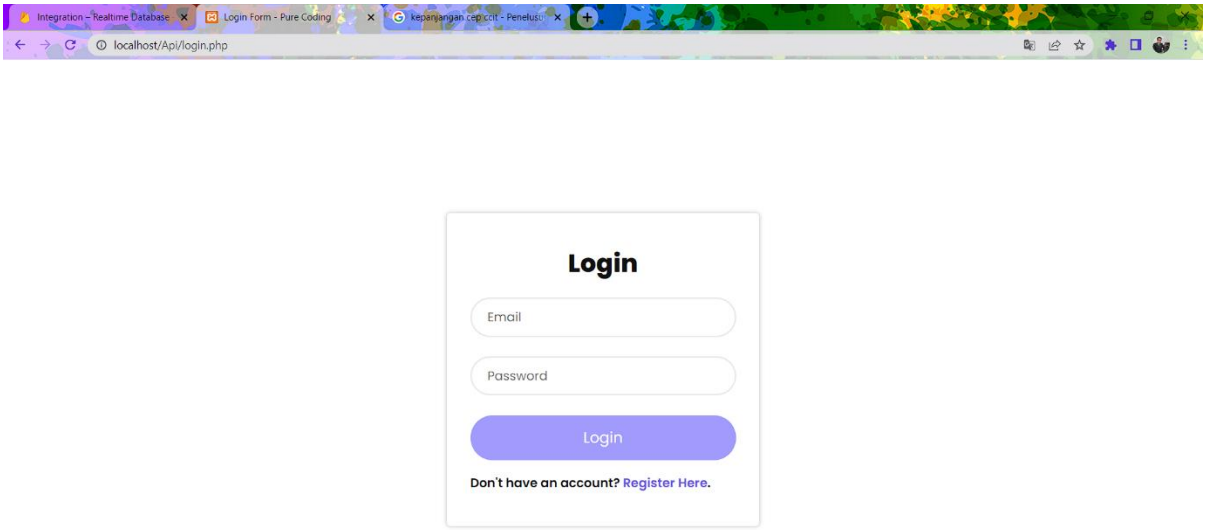
Field Name	Data Type	Description
Humidity	number	Value of humidity
Temperature	decimal	Value of temperature
LIght	test	Terang or Gelap
Rain	text	YES or NO
led	number	O or 1



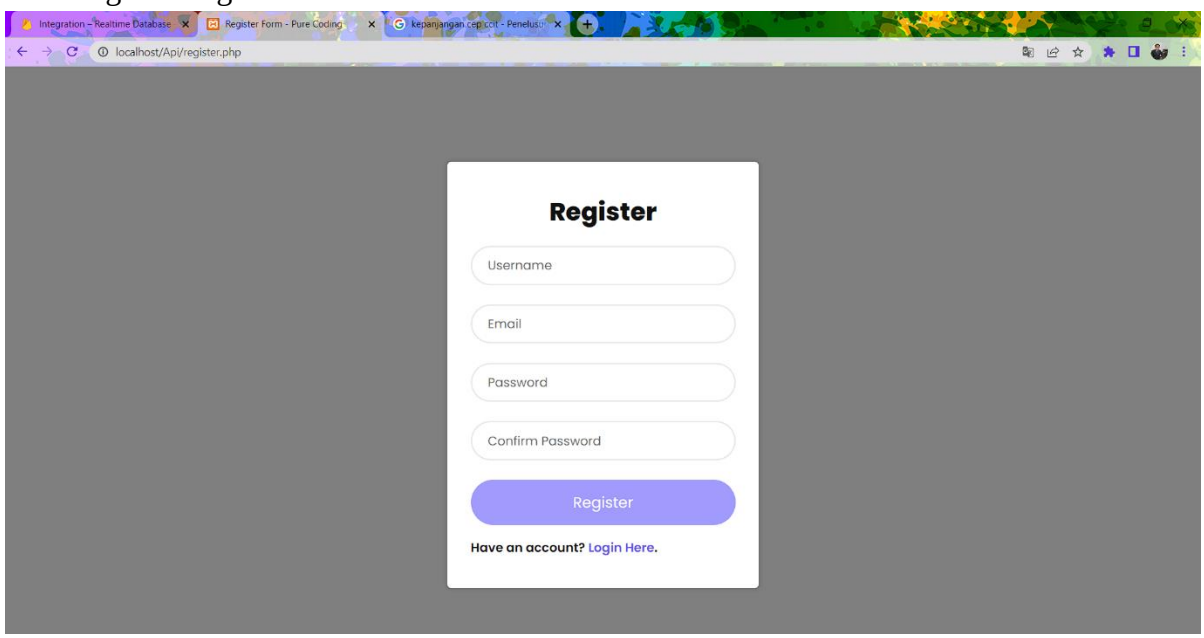
USER INTERFACE WEB

System Process:

Login Page :



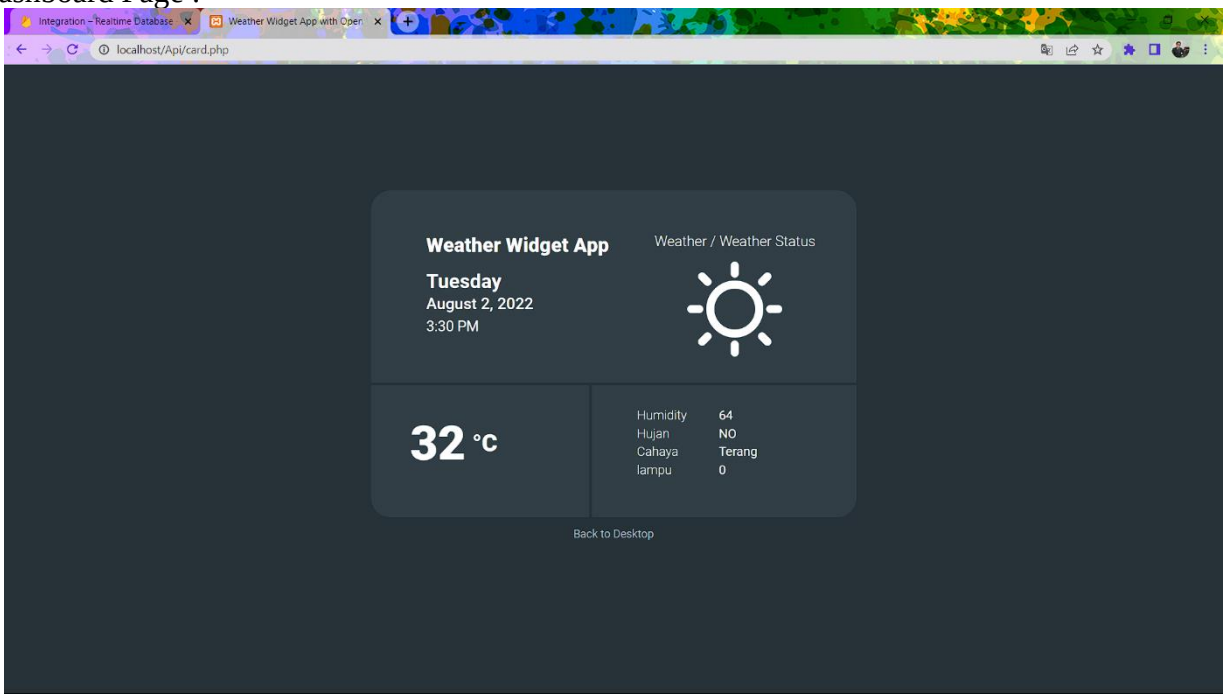
Register Page :



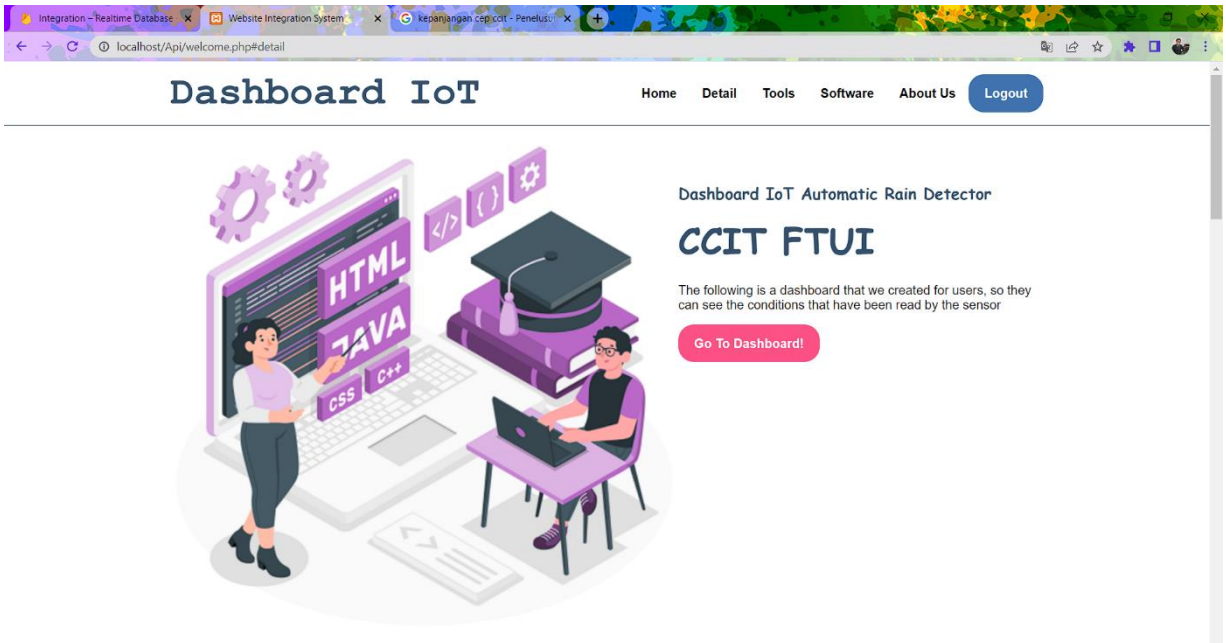
USER INTERFACE WEB

System Process:

Dashboard Page :



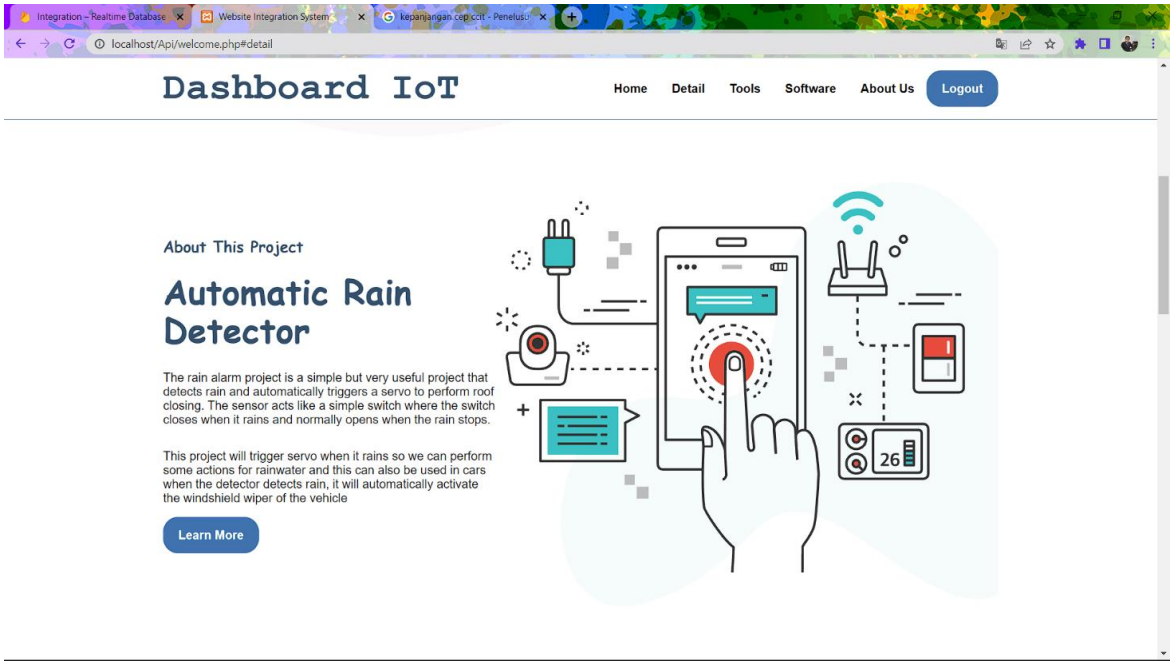
Home Page :



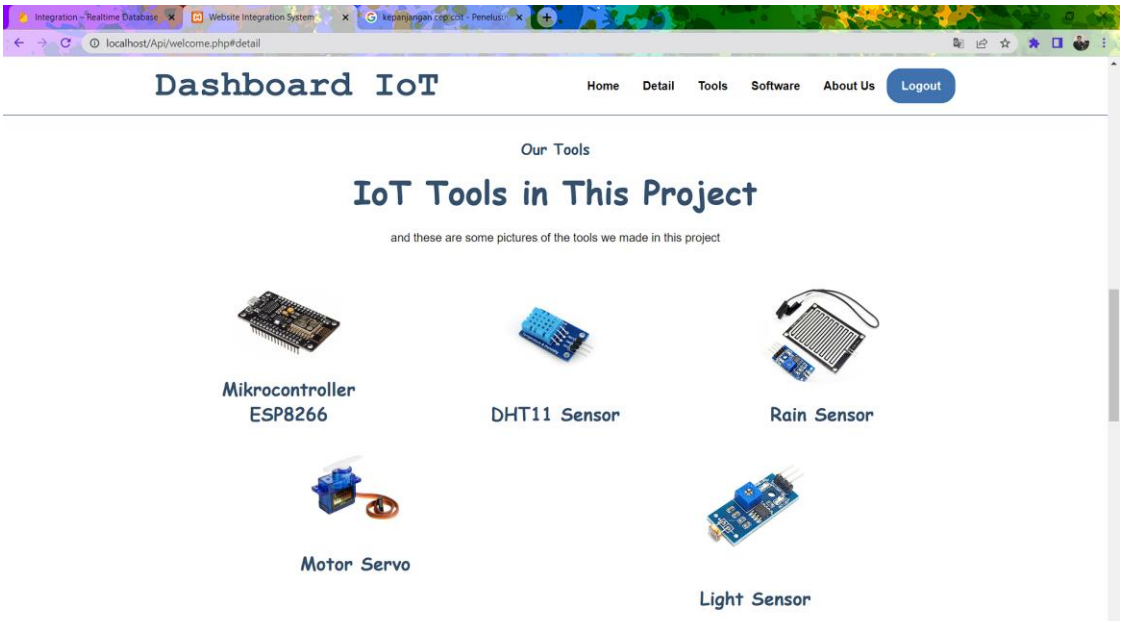
USER INTERFACE WEB

System Process:

Detail Page :

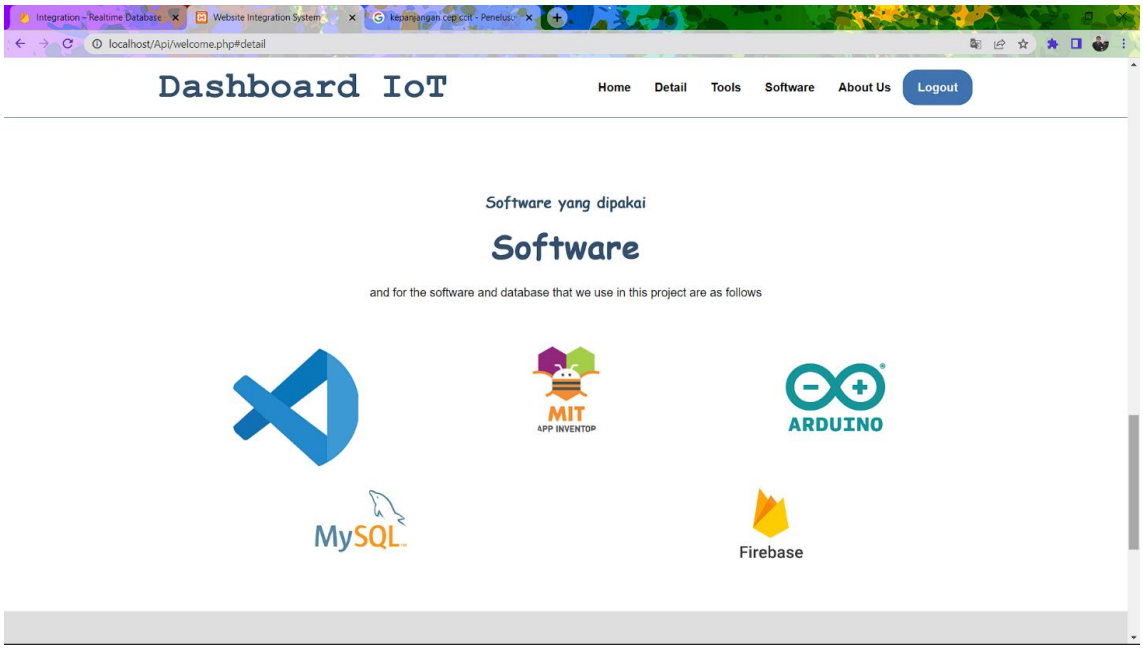


Tools Page :

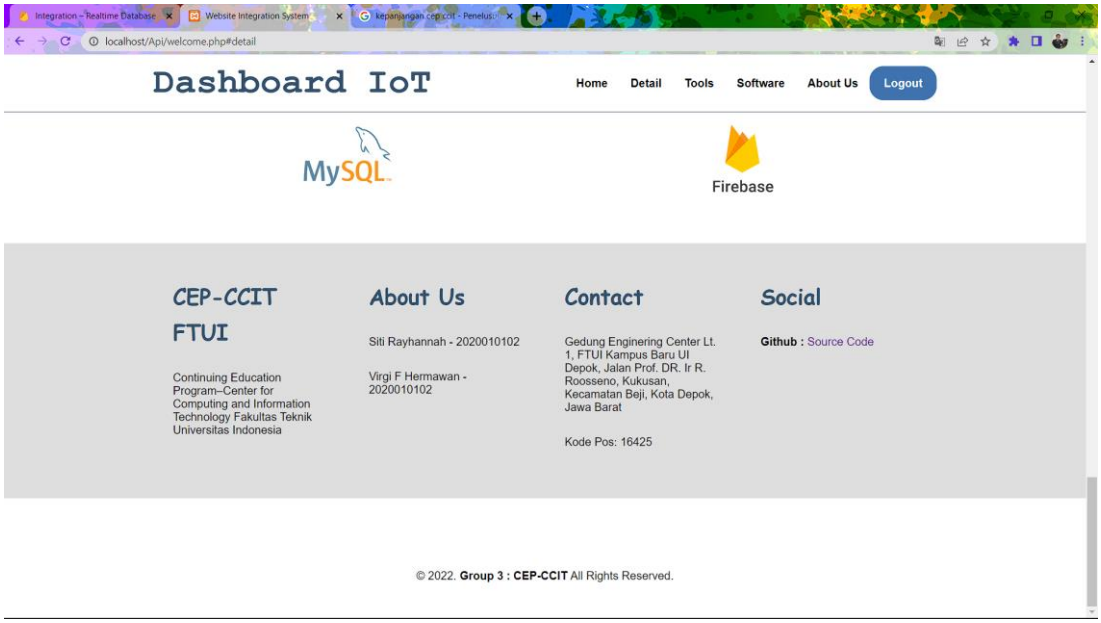


USER INTERFACE WEB

System Process:
Software Page :

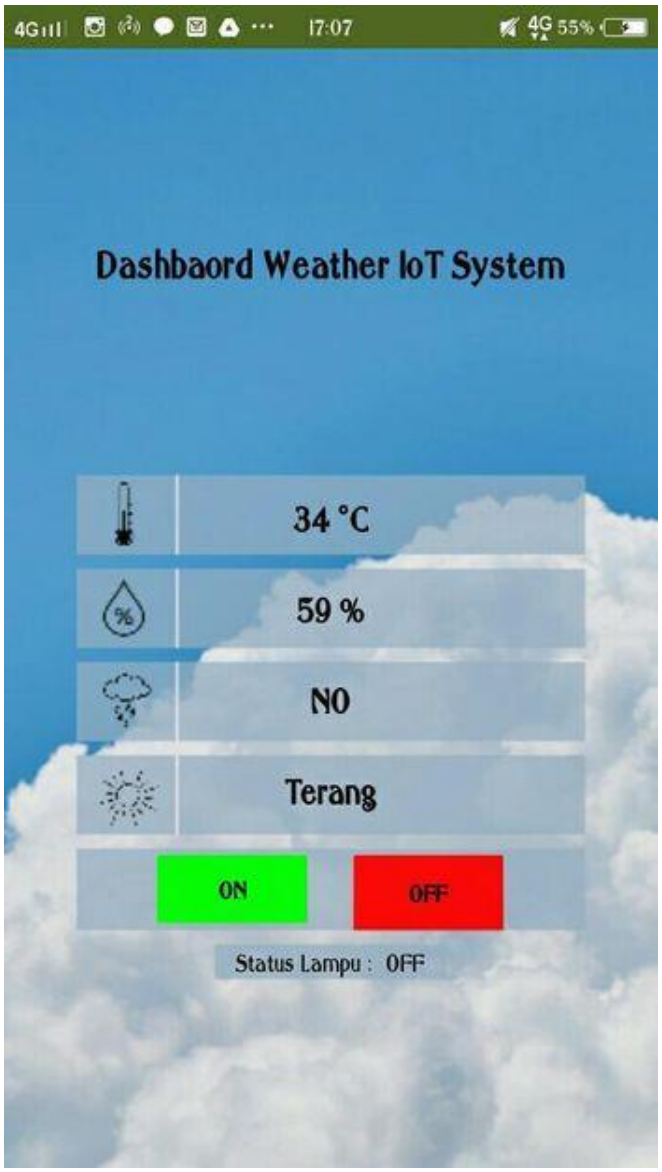


Contact Page :



USER INTERFACE MOBILE

System Process: MIT APP Inventor



CONFIGURATION

Hardware :

1. AMD Ryzen 7 3750H with Radeon Vega Mobile Gfx 2.30 GHz

2. 16 GB RAM, SSD 512 GB

Operating System :

Windows 11 Home Single Language

Software :

Arduino IDE, Visual Studio Code, Google

PROJECT FILE DETAILS		
No	**File Name**	**Remarks**
1.	ProjectRain.ino	Siti Rayhannah, Virgi Febrian Hermawan
2.	ProjectRain.pdf	Siti Rayhannah, Virgi Febrian Hermawan
3.	ProjectRain.pptx	Siti Rayhannah, Virgi Febrian Hermawan
4.	AndroidApp.aia	Siti Rayhannah, Virgi Febrian Hermawan
5.	WebApp.aia	Siti Rayhannah, Virgi Febrian Hermawan