`

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

ELECTRICAL ENGINEERING DEPARTMENT

SESSION 2 2022/2023

SMART KITCHEN SAFETY SYSTEM

NAME	MATRIC NO.
MUHAMMAD SHAHROL NAIM BIN FAHRURRAZI	08DJK20F2001

`

POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH

SMART KITCHEN SAFETY SYSTEM

MUHAMMAD SHAHROL NAIM BIN FAHRURRAZI 08DJK20F2001

This project is submitted in partial fulfillment of requirements for the award of Diploma in Electrical Engineering (Control)

ELECTRICAL ENGINEERING DEPARTMENT

SESSION 2 2022/2023

`

CONFIRMATION OF THE PROJECT

The project report titled "SMART KITCHEN SAFETY SYSTEM" has been submitted, reviewed and verified as a fulfills the conditions and requirements of the Project Writing as stipulated

Checked by :

Supervisor's name :

Supervisor's signature :

Date :

Verified by :

Project Coordinator name :

Signature of Coordinator :

Date :

"I acknowledge this work is my own work except the excerpts I have already explained to our source"

1. Signature :

Name : Click here to enter text.

Registration Number : Click here to enter text.

Date :

`

DECLARATION OF AUTHENTICATION AND OWNERSHIP

TITLE: SAFETY MOSQUE FUND

SESSION : 2 2022/2023

1. Im, **MUHAMMAD SHAHROL NAIM 08DJK20F2001**
the final year student of **Diploma in Electrical Engineering (Control), Politeknik SultanSalahuddin Abdul Aziz Shah**, located at **Persiaran Usahawan, 40150 Shah Alam, Selangor.**

2. We verify that **SMART KITCHEN SAFETY SYSTEM** and its intellectual properties are our original workwithout plagiarism from any other sources.

3. We agree to release the project's intellectual properties to the above said polytechnic inorder to fulfil the requirement of being awarded **Diploma in Electrical Engineering (Control).**

`

ACKNOWLEDGEMENT

Alhamdulillah, I am grateful to God because with His abundant grace I was able to complete the project and report at the appointed time. I have also given my full effort in this Project. However, it would not have been possible without the support and help from many individuals and also from my supervisor to complete the "SMART KITCHEN SAFETY SYSTEM" project. I want to say a big thank you to all of them. I am deeply indebted to my supervisor EN.IDRIS BIN KAMARUDDIN for her continuous guidance and supervision and for providing the necessary information regarding the Project & also for her support in completing the Project.

I would like to express my gratitude to my parents & also to my beloved supervisor EN.IDRIS BIN KAMARUDDIN for their cooperation and encouragement who helped me in completing this project. Not forgetting to say a thousand thanks to my many comrades in arms give me support and opinion in completing this project. Also, don't forget to all the lecturers who are directly and indirectly involved in the production of this project. Finally, thanks to anyone who helped me in completing this project. I hope that this award can represent our gratitude to all those who have played a role in the success of this project. Without the contribution of every individual and group involved, this achievement would not have been possible. Thank you for your cooperation and irreplaceable support. Thank you.

`

ABSTRACT

We used Node MCU to implement an IoT-based smart kitchen with monitoring. In addition, a separate section has been dedicated to Smart Kitchen. Various appliances and their applications in the smart kitchen have been described. Kitchen-related accidents have recently grown in both commercial and residential kitchens. People frequently visit the kitchen to prepare food. However, if there is a leak in the gas cylinder, the situation becomes perilous. Our goal is to use the Internet of Things to eliminate dangers in the kitchen. These mishaps may be prevented by utilizing IoT technology such as monitoring the entire kitchen from a device such as a phone. From the side of integrated software Node MCU and mobile applications have been used. This system allows the monitoring of gas leaks, the presence of smoke and fire in the kitchen and thus leads to faster response time in the event of a dangerous situation and during the night if there is a gas leak for example we can see in the application.

ABSTRAK

Kami menggunakan Node MCU untuk melaksanakan dapur pintar berasaskan IoT dengan pemantauan. Di samping itu, bahagian berasingan telah dikhaskan untuk Dapur Pintar. Pelbagai peralatan dan aplikasinya di dapur pintar telah diterangkan. Kemalangan berkaitan dapur baru-baru ini berkembang di dapur komersial dan kediaman. Orang ramai kerap mengunjungi dapur untuk menyediakan makanan. Walau bagaimanapun, jika terdapat kebocoran dalam silinder gas, keadaan menjadi berbahaya. Matlamat kami adalah untuk menggunakan Internet Perkara untuk menghapuskan bahaya di dapur. Kemalangan ini boleh dicegah dengan menggunakan teknologi IoT seperti memantau keseluruhan dapur daripada peranti seperti telefon. Dari sisi perisian bersepadu Node MCU dan aplikasi mudah alih telah digunakan. Sistem ini membolehkan pemantauan kebocoran gas, kehadiran asap dan kebakaran di dapur dan dengan itu membawa kepada masa tindak balas yang lebih cepat sekiranya berlaku situasi berbahaya dan pada waktu malam jika berlaku kebocoran gas contohnya kita boleh lihat dalam aplikasi.

TABLE OF CONTENTS

`

LIST OF TABLE

8 LIST OF FIGURE

`

`

`

CHAPTER 1
1 INTRODUCTION

1.1 INTRODUCTION

The Internet of Things has altered human existence. The massive rise in Internet users and advancements in internetworking technologies enable the networking of common devices. Each object is individually identified by its embedded computing system within the internet architecture. There are various advantages to having the environment's settings adjust to human behaviour automatically. Ambient intelligence responds to the behaviour of residents in their homes and offers them with numerous services. The Internet of Things is all about actual objects communicating with one another. Machine-to-machine and person-to-computer connectivity will be extended to things. The ultimate goal is to create a better world for human beings‖, where objects around us know what we like, what we want, and what we need, and hence act accordingly without explicit instructions. Natural gas is an energy source that is commonly used in homes for cooking, and heating. Financial loss as well as human injuries are happened due to accident cause by gas leakage. To detects gas leakage and alerts the subscriber through alerts and status stored in database and display on android device is the work aims of the designing a system. The system is an intelligent system, as it does not create a noise nuisance by continuously sounding alarm but gives the alerts to the users. Explosions due to gas leakages are avoided by this technology and improve safety of life and property while using domestic cooking gas. We proposed the design and construction of an SMS based Gas Leakage Alert System. Gas sensors were used to detect gas leakages in a kitchen; its outputs are then interfaced with an microcontroller programmed in assembly language. The GSM phone is set up to transmit short message service notifications for gas leaks (SMS). This and other safety systems are available. This system comprises a flame sensor and a smoke sensor, and it continuously monitors gas leaks in the kitchen. Despite the fact that much work has been done to put the Internet of Things (IoT) into practise, the Internet of Things (IoT) is a network of physical objects or things embedded with electronic, software, sensors, and connectivity to allow objects to exchange data with manufacturers, operators, and connected devices. Our IoT-based project is Smart Kitchen Using IoT. The "Smart Kitchen Safety System" project

`

1.2 BACKGROUND RESEARCH

In the year 2009, Kiritsis proposed a new definition of intelligent product based on what happened with us as human being. It suggests closed loop product life cycle management to develop more enhanced product data technologies, which can be used in future to develop smart or intelligent product and also to deal not only with static but of dynamic product data as well. In the year 2009 Eisenhauer et. Al., was published which proposed a platform to create an intelligent application for wireless devices and sensors. This will work as a middleware for the developer to create intelligent application for the embedded systems. It used unique combination of Service-oriented Architecture (SoA) and a semantic-based Model Driven Architecture to build this platform. In year 2010 Rolf focuses on new security measures and various privacy challenges in the IoT. It focuses on different parameters like attacks, data authentication, access control and client privacy to study the privacy challenges and to build new security model. This paper also describes the importance of establishment of a task force doing research on the legal challenges of the IoT. It also suggests to build a legal framework which will be more flexible and easy to adjust according to specific needs. In 2010 Haller, focuses on describing all the important terminologies used in the internet of things in detail. This paper tries to bring clarity by describing the most important terms like things, devices, and entities of interest, resources, addressing, identity and more importantly, the relationships between them. In 2010 HONG et. al, it proposed wireless sensor network technologies on the basis of various standard protocols, internet protocols to facilitate internet of things. It focuses on how to adapt the IP to the space of things. This article introduces the Sensor Networks for an All-IP World (SNAIL) approach to the IoT. It also includes four significant network protocols: mobility, web enablement, time synchronization, and security. In the year 2013 Tsado et. Al proposed to detect the gas leakage with the help of GSM cell phones. They used two gas sensors; used to detect gas leakages in a particular location. They have also used 8051 microcontrollers programmed in assembly language and a GSM phone. The GSM phone is configured to send gas leakage alerts in the form of a short message service (SMS) message which indicates the exact location to another GSM phone to enable prompt necessary action. This whole system will lead to a faster detection when the gas leakage occurs. In 2013 Guo et. al, suggest to create an IoT based on the ad hoc, opportunistic networking of devices (e.g., mobile phones and

`

smart vehicles) using short-range radio techniques (e.g., Bluetooth and Wi-Fi). This will create a close relationship between human and opportunistic connection of smart things because it deals with information forwarding and dissemination within and among the opportunistic communities formed based on the movement and opportunistic contact nature of human. This paper suggests a method to create IoT in a different manner so that it can be created whenever needed with the help of radio frequencies. In the year 2014 Apeh et. Al proposed a system that detects gas leakage and alerts the subscriber through alarm and status display and also turning off the gas supply valve automatically. It automatically uses a normally closed solenoid valve for the shutting off of the gas valve before calling for help via visual display and alarm. It automatically opens the valve again for normal operations once the leakage goes below the set point. In 2014 Bello and Zeadally, focuses on how two devices in any IOT should communicate intelligently because the quality of the information gathered depends on how smart the devices are. In IoT, different devices work on different network standard, so this can lead to several networks challenges & this cannot be solved by traditional routing protocols. So this paper proposed state-of-the-art routing algorithms, which can help to achieve an intelligent D2D communication in the IoT. In the year 2016 Sun et. Al proposed that one can use IoT to make a network of various connected devise and smart sensors, so that this network can able to remember the past & plan for the future. They also argued that to use big data analytics to get the desired SCC. It suggested that one can use mobile crowd sensing and cloud computing to build SCC and suggested that SCC will help to improve livability, preservation and attainability.

1.2 PROBLEM STATEMENT

With the previous system that is now only using alarms so the purpose of this project is to be more effective. Like we can tell when there is a fire in the kitchen only the alarm will sound but we can't know if there is a gas leak. In addition if the user is in other places such as in the living room. In addition, kitchen users will forget to turn off the fire after using it. If there is a fire, this will make the situation more dangerous and the fire will spread to other places.

`

1.3 OBJECTIVES

- ✓ Develop a hardware prototype for users in the kitchen when cooking
- ✓ Reduce adverts event.

1.4 SCOPE OF RESEARCH

- ✓ Kitchen or restaurant
- ✓ Apply various techniques to make the system more secure
- ✓ Sensor mq2 for detect gas and smoke
- ✓ Sensor dht11 for temperature
- ✓ Sensor flame for detect fire

1.5 CONTRIBUTION OF PROJECT

As the globe moves towards the Fourth Industrial Revolution, technology in innovation and invention is required to boost economic growth. Although there are other initiatives to avoid kitchen fires caused by gas leaks, this project makes use of IoT components by supplying the appropriate sensors.

1.6 CHAPTER SUMMARY

In a summary, this chapter may be ended by stating that the research study has aided in the development of this project, as it has been mentioned that it can overcome the usual obstacles encountered by individuals. Despite the fact that the major goal of this effort is to meet the objectives, the project has also incorporated the relevance of technology in the production. This is because technical progress allows for the production of more and better assets in a more efficient manner.

`

CHAPTER 2

2 LITERATURE REVIEW

2.1 INTRODUCTION

In the year 2009, Kiritsis proposed a new definition of intelligent product based on what happened with us as human being. It suggests closed loop product life cycle management to develop more enhanced product data technologies, which can be used in future to develop smart or intelligent product and also to deal not only with static but of dynamic product data as well. In the year 2009 Eisenhauer et. Al., was published which proposed a platform to create an intelligent application for wireless devices and sensors. This will work asa middleware for the developer to create intelligent application for the embedded systems. It used unique combination of Service-oriented Architecture (SoA) and a semantic-based Model Driven Architecture to build this platform. In 2010 HONG et. al, it proposed wireless sensor network technologies on the basis of various standard protocols, internet protocols to facilitate internet of things. It focuses on how to adapt the IP to the space of things. This article introduces the Sensor Networks for an All-IP World (SNAIL) approach to the IoT. It also includes four significant network protocols: mobility, web enablement, time synchronization, and security. In 2014 Bello and Zeadally, focuses on how two devices in any IOT should communicate intelligently because the quality of the information gathered depends on how smart the devices are. In IoT, different devices work on different network standard, so this can lead to several networks challenges & this cannot be solved by traditional routing protocols. So this paper proposed state-of-the-art routing algorithms, which can help to achieve an intelligent D2D communication in the IoT. In the year 2016 Sun et. Al proposed that one can use IoT to make a network of various connected devise and smart sensors, so that this network can able to remember the past & plan for the future. They also argued that to use big data analytics to get the desired SCC. It suggested that one can use mobile crowd sensing and cloud computing to build SCC and suggested that SCC will help to improve livability, preservation and attainable

`

2.2 PREVIOUS RESEARCH ON SMART KITCHEN SAFETY SYSTEM

- IoT based Smart kitchen security system

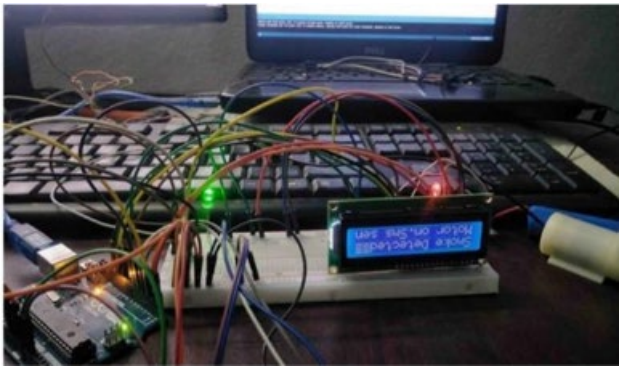


Figure 2.2.1: Iot Based Smart Kitchen Security System

The system comprises all features to defend against a fire like other associated works and provides some unique features. It gives special priority to children and pets and ensures protection. Two separate modes have been introduced that serve to control manually or automatically.

- Smart kitchen system using IoT

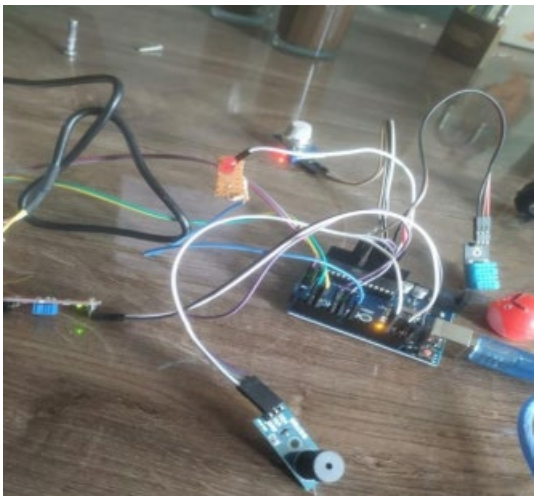


Figure 2.2.2 Smart Kitchen System Using Iot

In this system, the MQ5 gas sensor is used to sense the LPG, methane, butane and various gases. This sensor sends a signal (digital pulse) to the microcontroller when gas is being leaked. An alert message is sent through mail to the authorized user about gas leakage. The Flame sensor is used to detect fire or flame. If due to gas leakage, a short circuit takes place and causes fire, the flame sensor will sense it and send the signal to the microcontroller about the fire. An alert message is sent through mail to

`

the authorized user, a buzzer alarm is activated and automatically the main power supply will be off. This alarm produces a huge sound which drops down the attention of the user

- Automation and Monitoring Smart Kitchen Based on Internet of Things (IoT)

Figure 2.2.3: Automation And Monitoring Smart Kitchen Based On Internet Of Things (Iot)

This project created a system which can detect changes in temperature and fire caused by the use of gas stoves in the kitchen. In the system, the DHT11 sensor is mounted to detect temperature changes, an MQ-135 gas sensor to detect Liquefied Petroleum Gas (LPG) leak, IR flame sensor to detect fire, and passive infrared (PIR) sensors to detect human activity in the kitchen. In this system, there is also a relay to control the fan that serves to control the temperature and blow out of gas in the event of a gas leak or smoke from the kitchen in case of fire. This system can be controlled and monitored via the internet directly from laptops or smartphones anytime, even from a place far from the kitchen. In case of fire or gas leak, this system will provide a warning in the form of alarm, as well as information to be sent via short message service (SMS), e-mail, or in-app notification on a smartphone.

`

- Automatic Smart Kitchen System Using Microcontroller

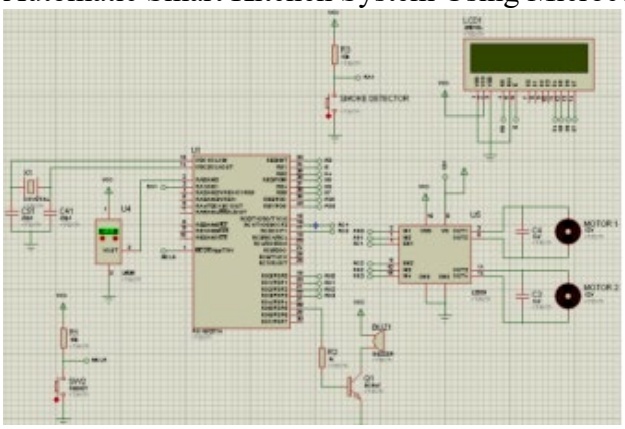


Figure 2.2.4: automatic smart kitchen system using microcontroller

This project is related to the Automatic Smart Kitchen System by using Microcontroller. The system is designed is to discharge heat and smoke in the kitchen by controlling the speed of air blower. Hence, the speed of air blower can be controlled using PMW (Pulse Width Modulation) waves generated by a PIC 16F877A microcontroller based on temperature sensor. It is also part of the smart home application where the air blower will gradually increase the speed if the temperature in the surrounding kitchen is increasing. Besides that, the component that made up the temperature sensor is known as LM35 and photoelectric detector is installed to encounter the presence of smoke.

2.3 SUMMARY

Based on the test, each of sensors contained in this system works well. After installing, calibration should be done so that the results can be in accordance with the expected. All collected data can be displayed on the web and apps. In the delivery of such information, is strongly influenced by the quality of Wi-Fi networks used. In simulated fires and gas leaks, the fan can function properly. A warning system can work. Email and SMS can be received directly by the mobile device.

`

CHAPTER 3

3 RESEARCH METHODOLOGY

3.1 INTRODUCTION

Hardware Products that we used. It consists of NODEMCU ESP32 microcontroller, Relay module, Sensor MQ2, Sensor DHT11, Flame sensor, LED battery 9v, buzzer, Water Pump Waterproof Amphibious Submersible and Dc 5v fan.

3.2 DESIGN OF THE PROJECT

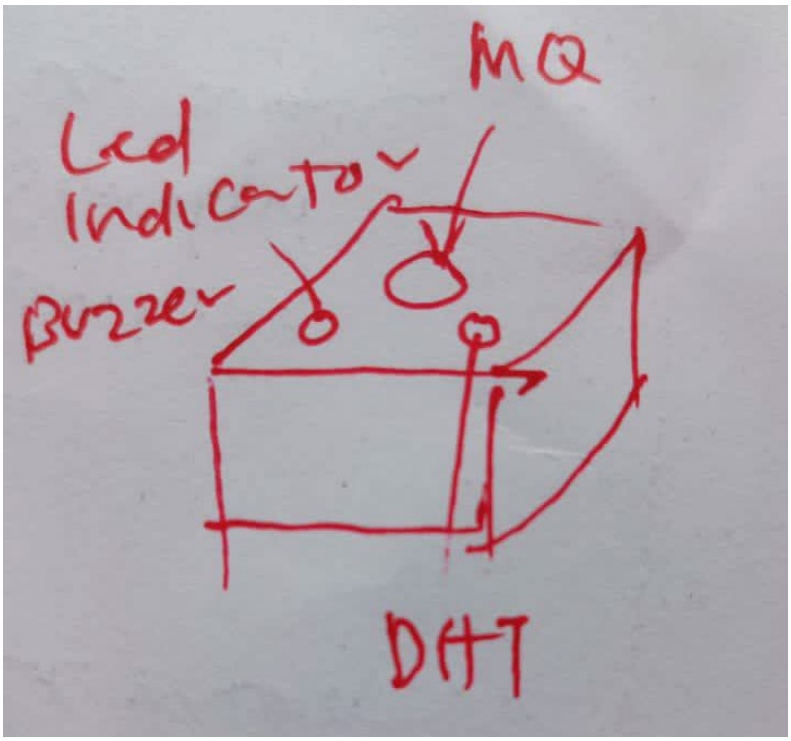
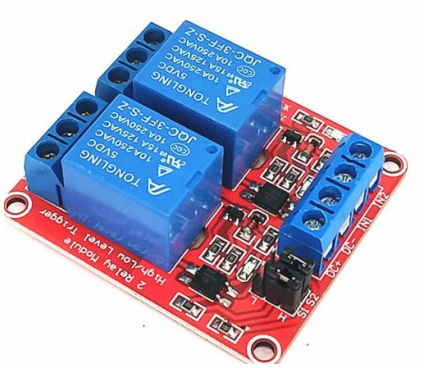


Figure 3.2.1: Design smart kitchen safety system

`

MICROCONTROLLER (NODEMCU ESP 32)

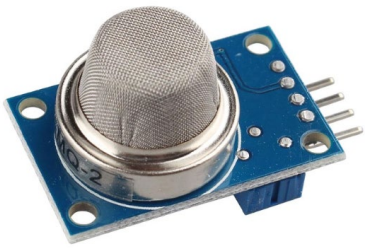
Interface Atmega16 with ESP8266 NodeMCU to make it communicate wirelessly through internet**. ESP8266 NodeMCU** is widely used WiFi module with community support and easily available libraries. Also ESP8266 NodeMCU is easily programmable with Arduino IDE. ESP8266 can be interfaced with any microcontroller.[1]



RELAY MODULE

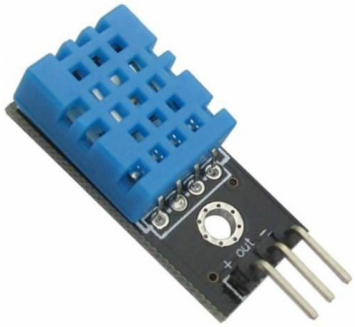
2-Channel 5V Relay Module is a relay interface board, it can be controlled directly by a wide range of microcontrollers such as Arduino, AVR, PIC, ARM and so on. It uses a low level triggered control signal (3.3-5VDC) to control the relay. Triggering the relay operates the normally open or normally closed contacts. It is frequently used in an automatic control circuit.

`



SENSOR MQ2

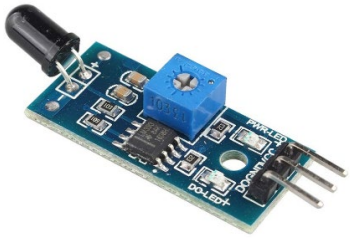
The MQ2 gas sensor operates on 5V DC and consumes approximately 800mW. It can detect **LPG**, **Smoke**, **Alcohol**, **Propane**, **Hydrogen**, **Methane** and **Carbon Monoxide** concentrations ranging from 200 to 10000 ppm.



SENSOR DHT11

The **DHT11** is a commonly used **Temperature and humidity sensor that** comes with a dedicated NTC to measure temperature and an 8-bit microcontroller to output the values of temperature and humidity as serial data.

`



SENSOR FLAME

This sensor detects flame otherwise wavelength within the range of 760 nm – 1100 nm from the light source. This sensor can be easily damaged to high temperature. So this sensor can be placed at a certain distance from the flame. The flame detection can be done from a 100cm distance and the detection angle will be 600. The output of this sensor is an analog signal or digital signal. These sensors are used in fire fighting robots like as a flame alarm

LED

Those blinky things. A must have for power indication, pin status, opto-electronic sensors, and fun blinky displays. This is a very basic 5mm LED with a red lens. It has a typical forward voltage of 2.0V and a rated forward current of 20mA.

`

BATTERY 9v

Made for remote controllers and other compact electronic devices, the Energizer 9V Batteries are of high quality. The longevity of these batteries are certain to leave you using your electronic devices for longer without having to replace the power source. It comes with PowerSeal Technology that acts as the innovation that delivers energy you can rely on for longer periods.

BUZZER

This little unit makes a beep sound when power is supplied to it via transistors, microcontrollers etc. They are normally used as an audible indication for some reason like a temperature upper limit is reached, errors occurred etc. This 5V active buzzer has small PC boards build in for sound generation and can thus be used without microcontrollers or circuits that need to generate an audible sound. In short, they only require power.

`

Water Pump Waterproof Amphibious Submersible

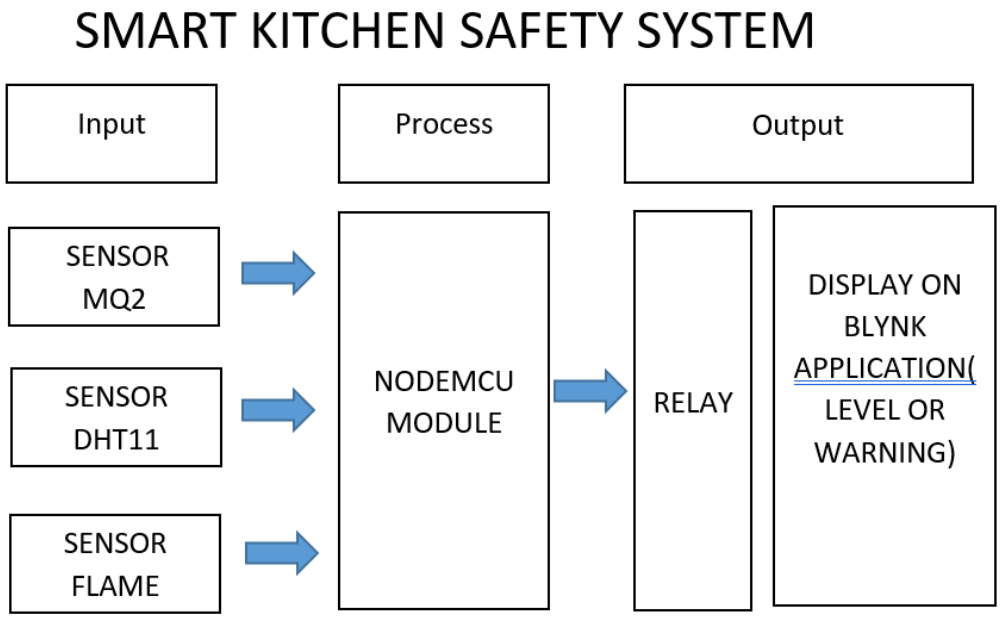
A water pump is a mechanical device designed to move water from one location to another. A waterproof amphibious submersible water pump is a specific type of water pump that is designed to operate both in and out of water. It is designed to be submerged or partially submerged in water while still being able to function effectively.

FAN

5V DC fan is a compact and low-power device that provides cooling and airflow in various electronic applications. Its size, airflow capacity, bearing type, and noise levels can vary, allowing users to select a fan that suits their specific cooling needs while considering factors such as power consumption and space constraints.

`

3.3 BLOCK DIAGRAM OF THE PROJECT



`

3.4 FLOWCHART OF THE PROJECT 2

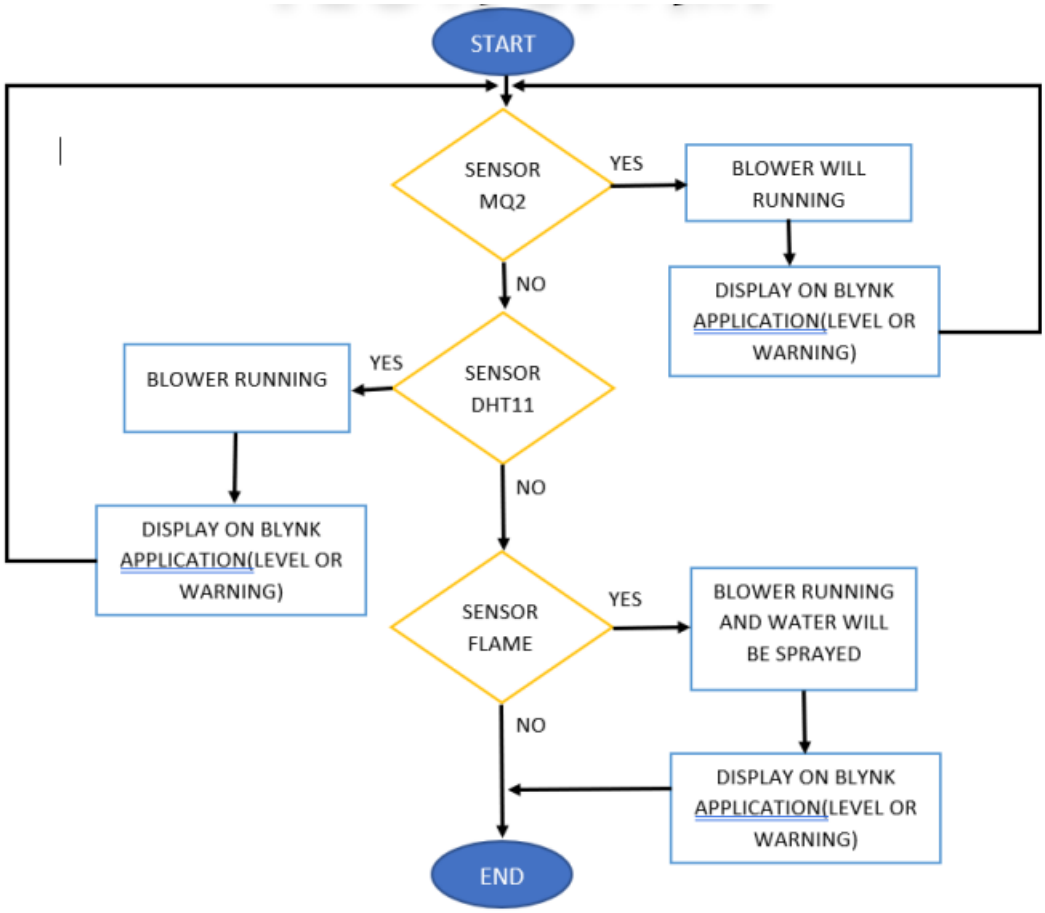


Figure 3.2.2: Flow chart of operation of the system

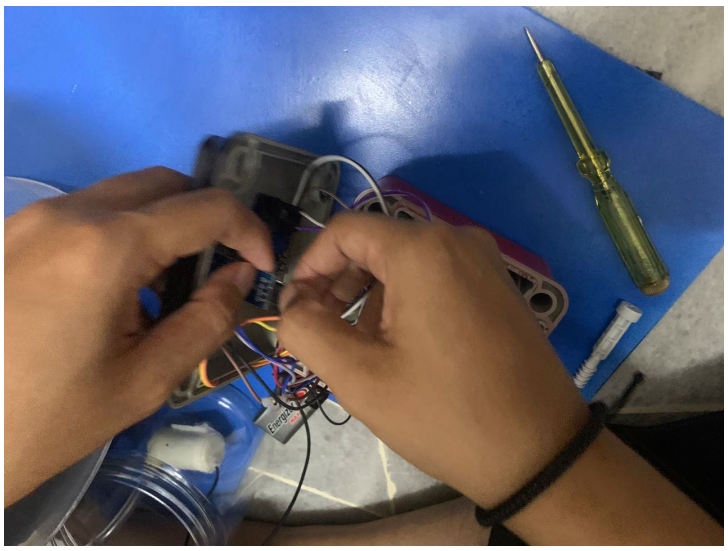
`

3.5 PROJECT EXECUTION

3.5.1 PROJECT STRUCTURE BUILDING

i. WIRING CONNECTION

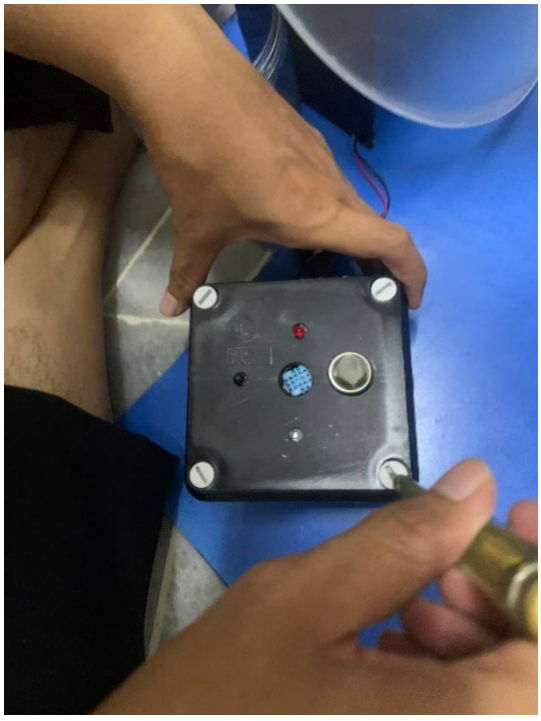
Make wiring connection for each components by following the schematic diagram that have been planned.



`

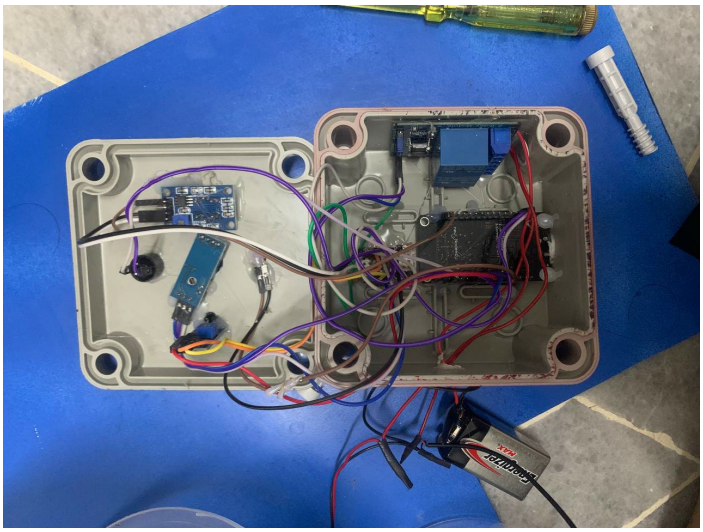
ii. CASING

Place all the components inside the casing and glue it to look neater.



`

3.6 PROJECT MOVING MECHANISM



3.7 SCHEMATIC CIRCUIT

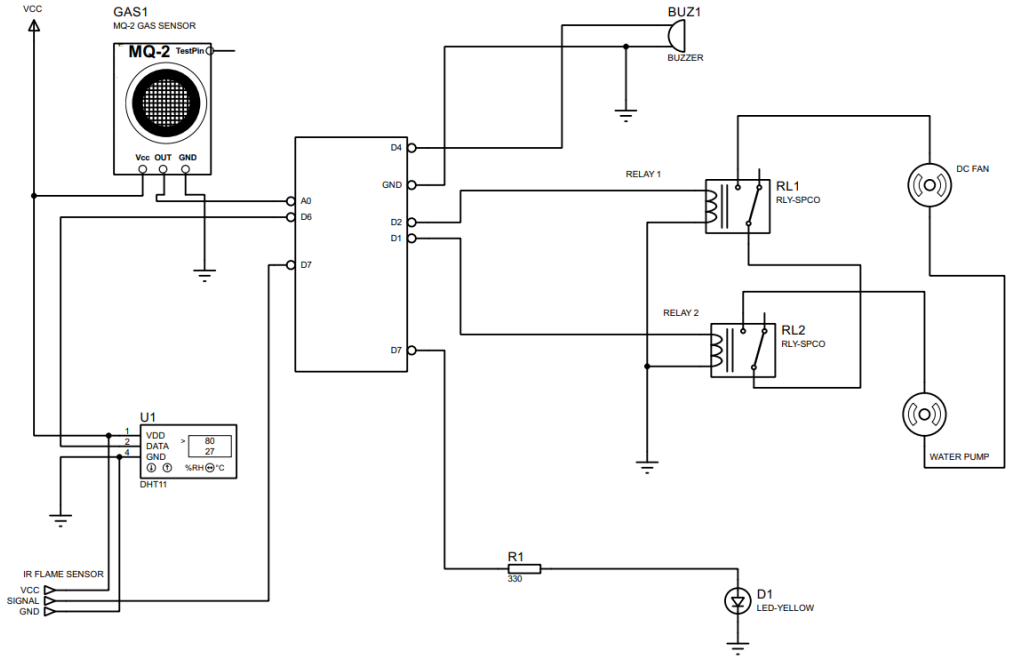


Figure 3.7.1: Schematic circuit

`

3.8 CODING AND PROGRAMING

Coding is the process of translating codes from one language to another. It can also be regarded a subset of programming because it implements the first steps of programming. It is necessary to write programmes in a number of languages as recommended. The machine can only understand machine code, sometimes known as binary language, and cannot converse with people. A coder's primary responsibility is to translate requirements into machine-readable language. Coders must be fluent in the working language of the project. However, they generally code in accordance with the project's standards and directions. This is the first step in creating a software product. Programming is the process of creating a machine-level executable programme that can be executed without mistake.

The first stage involves the creation of code, which is then analysed and applied to produce the necessary machine level output. It also includes all of the major parameters, including debugging, compilation, testing, and implementation. To generate the necessary machine outputs, programmers must analyse and comprehend the various communication components. The Arduino Integrated Development Environment (IDE) is used to generate Arduino programmes. The Arduino IDE is a computer application that allows you to create sketches (Arduino slang for programmes) for numerous Arduino boards. Processing, a relatively simple hardware programming language akin to C, is the foundation of the Arduino programming language. The sketch should be uploaded to the Arduino board for execution after being written in the Arduino IDE.

Figure 3.8.1: Arduino ide software

`

```
extern "C" {
  #include "user_interface.h"

  void app_loop();
}

#include "Settings.h"
#include <BlynkSimpleEsp8266_SSL.h>

#ifndef BLYNK_NEW_LIBRARY
#error "Old version of Blynk library is in use. Please replace it with the new one."
#endif

#if !defined(BLYNK_TEMPLATE_ID) || !defined(BLYNK_DEVICE_NAME)
#error "Please specify your BLYNK_TEMPLATE_ID and BLYNK_DEVICE_NAME"
#endif

#include "BlynkState.h"
#include "ConfigStore.h"
#include "ResetButton.h"
#include "ConfigMode.h"
#include "Indicator.h"
#include "OTA.h"
#include "Console.h"

inline
void BlynkState::set(State m) {
  if (state != m && m < MODE_MAX_VALUE) {
    DEBUG_PRINT(String(StateStr[state]) + " => " + StateStr[m]);
    state = m;

    // You can put your state handling here,
    // i.e. implement custom indication
  }
}

void printDeviceBanner()
{
  Blynk.printBanner();
  DEBUG_PRINT("---------------------------");
  DEBUG_PRINT(String("Product:  ") + BLYNK_DEVICE_NAME);
  DEBUG_PRINT(String("Firmware: ") + BLYNK_FIRMWARE_VERSION " (build " DATE " " TIME ")");
  if (configStore.getFlag(CONFIG_FLAG_VALID)) {
    DEBUG_PRINT(String("Token:    ...") + (configStore.cloudToken+28));
  }
  DEBUG_PRINT(String("Device:   ") + BLYNK_INFO_DEVICE + " @ " + ESP.getCpuFreqMHz() + "MHz");
  DEBUG_PRINT(String("MAC:      ") + WiFi.macAddress());
  DEBUG_PRINT(String("Flash:    ") + ESP.getFlashChipRealSize() / 1024 + "K");
  String coreVer = ESP.getCoreVersion();
```

`

```
  coreVer.replace("_", ".");
  DEBUG_PRINT(String("ESP core: ") + coreVer);
  DEBUG_PRINT(String("ESP SDK:  ") + ESP.getSdkVersion());
  DEBUG_PRINT(String("Boot Ver: ") + ESP.getBootVersion());
  DEBUG_PRINT(String("Boot Mode:") + ESP.getBootMode());
  DEBUG_PRINT(String("FW info:  ") + ESP.getSketchSize() + "/" + ESP.getFreeSketchSpace() + ", MD5:" + ESP.getSketchMD5());
  DEBUG_PRINT(String("Free mem: ") + ESP.getFreeHeap());
  DEBUG_PRINT("--------------------------");
}

void runBlynkWithChecks() {
  Blynk.run();
  if (BlynkState::get() == MODE_RUNNING) {
    if (!Blynk.connected()) {
      if (WiFi.status() == WL_CONNECTED) {
        BlynkState::set(MODE_CONNECTING_CLOUD);
      } else {
        BlynkState::set(MODE_CONNECTING_NET);
      }
    }
  }
}

class Edgent {

 public:
   void begin()
   {
     indicator_init();
     button_init();
     config_init();
     console_init();

     printDeviceBanner();

     if (configStore.getFlag(CONFIG_FLAG_VALID)) {
       BlynkState::set(MODE_CONNECTING_NET);
     } else if (config_load_blnkopt()) {
       DEBUG_PRINT("Firmware is preprovisioned");
       BlynkState::set(MODE_CONNECTING_NET);
     } else {
       BlynkState::set(MODE_WAIT_CONFIG);
     }
   }

   void run() {
     app_loop();
     switch (BlynkState::get()) {
```

`

```
    switch (BlynkState::get()) {
    case MODE_WAIT_CONFIG:
    case MODE_CONFIGURING:       enterConfigMode();    break;
    case MODE_CONNECTING_NET:    enterConnectNet();    break;
    case MODE_CONNECTING_CLOUD:  enterConnectCloud();  break;
    case MODE_RUNNING:           runBlynkWithChecks(); break;
    case MODE_OTA_UPGRADE:       enterOTA();           break;
    case MODE_SWITCH_TO_STA:     enterSwitchToSTA();   break;
    case MODE_RESET_CONFIG:      enterResetConfig();   break;
    default:                     enterError();         break;
    }
  }

};

Edgent BlynkEdgent;
BlynkTimer edgentTimer;

void app_loop() {
    edgentTimer.run();
    edgentConsole.run();
}
```

3.9 FINISHING OF PROJECT

Figure 3.9.1: Project picture

`

3.9.2 COSTING OF PROJECT

Table below shows the amount of money spent to purchase the materials needed to producethe project.

Component	Price
Nodemcu esp32	RM30
Relay Module	RM22.80
Sensor MQ2	RM10.50
Sensor DHT11	RM14.10
Sensor Flame	RM15.50
Cooling Fan	RM15.80
Water Pump	RM20.50
Battery 9v	RM35.50
Casing Project	RM16
Led	RM0.50
Buzzer	RM5
Battery	RM16.5
TOTAL	**RM214.70**

3.9.3 CHAPTER SUMMARY

At the end of this chapter, a detailed diagram of how I built the Backwash Turbidity Sensor was provided. We also conducted a poll before choosing the equipment and materials on Shopee, Lazada, and at some hardware stores to get the best materials at a fair project budget.

`

CHAPTER 4
ANALYSIS DATA & DISCUSSIONS

4.1 INTRODUCTION

This chapter will discuss the significance of conducting data analysis prior to planning a project. We acquired some data while utilising the IOT-enabled smart kitchen safety device. Not only that, but having a discussion based on the data analysis is also very beneficial because this is where we learn and enhance our ideas in order to choose the materials for the project. On the other hand, the most significant aspect that has been considered while carrying out the project is guaranteeing safety precautions.

`

4.2 SUMMARY

This chapter discusses the level of gas leaking, which is a crucial factor in assessing the level of safety in the case of a gas leak. This study provides a device for detecting gas leaks or the presence of a fire at a minimal cost. We describe a low-cost IoT-based system for real-time monitoring and control of home kitchen conditions in this study. This system employs numerous sensors, including mq2 to detect gas and smoke. Furthermore, fire sensors are utilised to detect fire. When the gas and fire levels reach a specified threshold, the system activates and sends a notification over WiFi to the display panel and Android phone.

`

CHAPTER 5

5.1 INTRODUCTION

In this chapter, talks are made by examining the project's existing design through limitation aspects and future upgrade plans in order to reach a conclusion on the project. The project limitation aspect clarifies the project's capability. The upgrade recommendations are intended to maintain the importance and benefits of our project to the target users**.**

5.2 PROJECT LIMITATION

The smart kitchen safety system based on IoT has its own set of strengths and limitations. This is because, as previously stated, we only install modest capacity components for the sake of my Final Year Project. This is an essential constraint.

• Can only be used in the corner at the top of the cooking area. For example: at a height of 7 feet.

• Due to its low capacity, the water pump cannot accommodate pumping in or pumping out huge amounts of water (may be upgraded in the future as needed).

• The flame sensor probe is advised to be placed away from the cooking flame because can damage the sensor probe.

5.3 CONCLUSION

Finally, a smart kitchen safety system is the most crucial piece of equipment that any household should have. The major reason it should be in every home is that we don't know what kind of fire will occur when we are not at home. For example, we may forget to switch off the cooker when we leave the kitchen. To check the condition in the kitchen on a regular basis is one of the most basic demands for human life.

`

REFERENCES

1. https://how2electronics.com/iot-based-smart-kitchen-automation-monitoring-with-esp8266/

2. https://www.jetir.org/papers/JETIR1906A36.pdf

3. https://www.researchgate.net/publication/353109815_IoT_Based_Smart_Kitchen_System

4. https://ieeexplore.ieee.org/document/9065663

5. https://www.irjmets.com/uploadedfiles/paper/issue_6_june_2022/27173/final/fin_irjmets1656515544.pdf

`

2 APPENDICES

APPENDIX A- GOOGLE FORM

APPENDIX B- GANT CHART

APPENDIX C- EICC POSTER

APPENDIX D-PITEC 4.0 POSTER

APPENDIX E-SIJIL PENYERTAAN PITEC 4.0

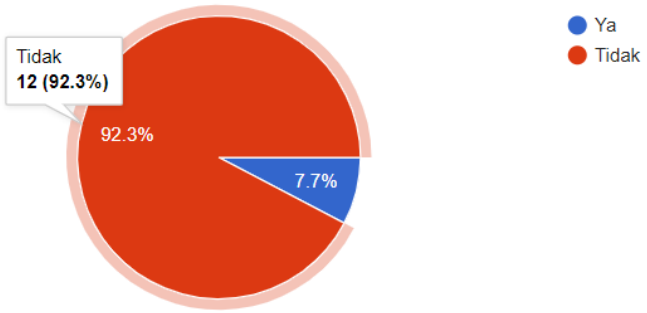
`

APPENDIX A – GOOGLE FORM

Adakah anda mempunyai alat untuk mengesan sebarang kebocoran gas atau kebakaran di rumah anda?

Salin

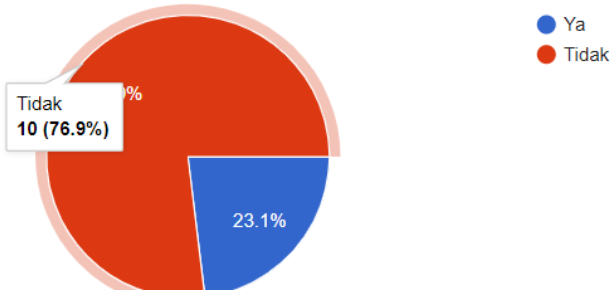
13 jawapan



Adakah di rumah anda sering berlaku kebocoran gas?

Salin

13 jawapan

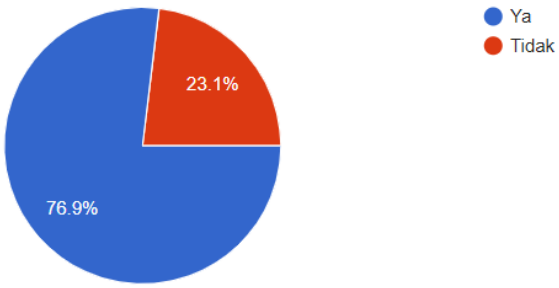


`

Adakah keluarga anda mengambil langkah awal dalam menangani masalah kebakaran di rumah anda?

Salin

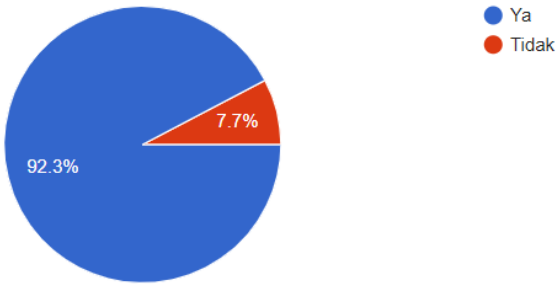
13 jawapan



Adakah alat keselamatan ini mampu membantu anda sekiranya anda tiada di rumah?

Salin

13 jawapan



Apakah pendapat anda pada alat keselamatan ini untuk mengelakkan kebakaran di rumah kerana tidak mempunyai alat pemadam api?

Salin

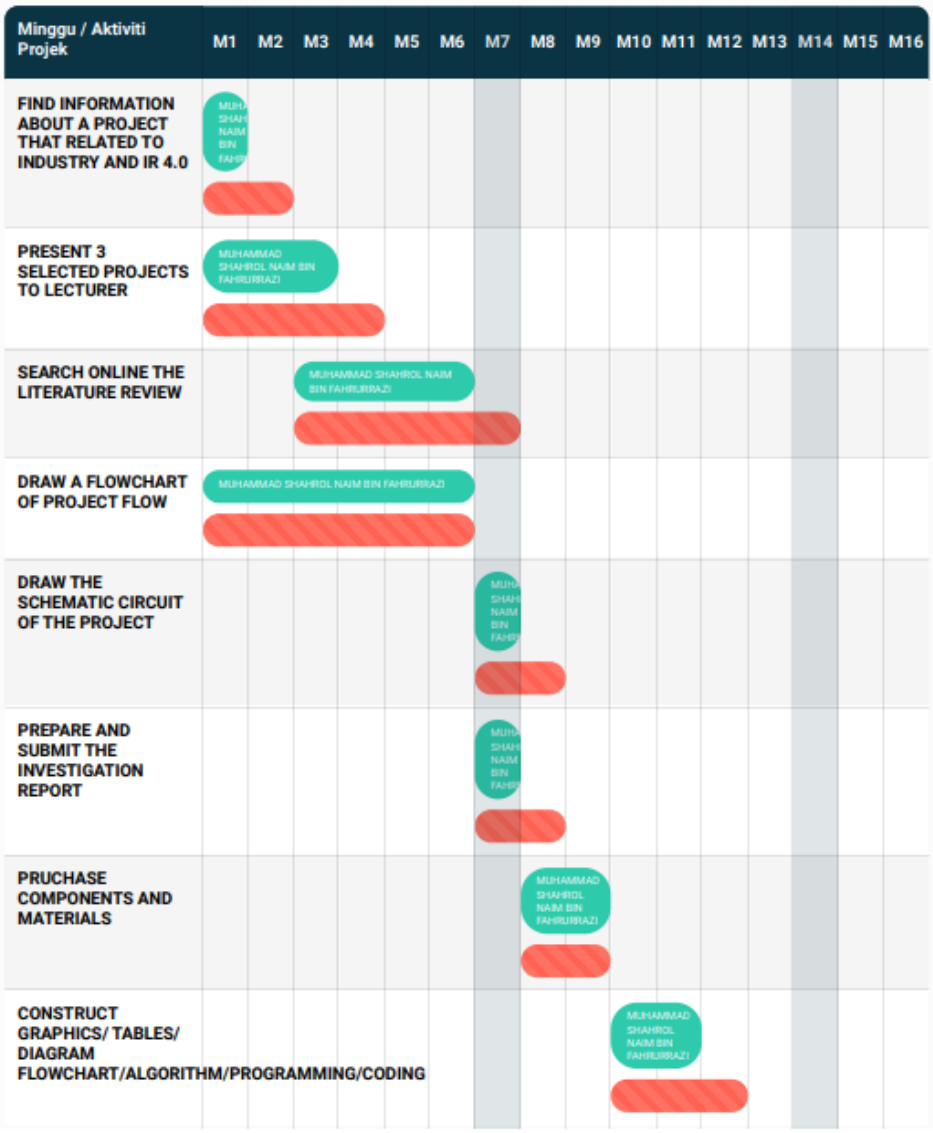
13 jawapan

`

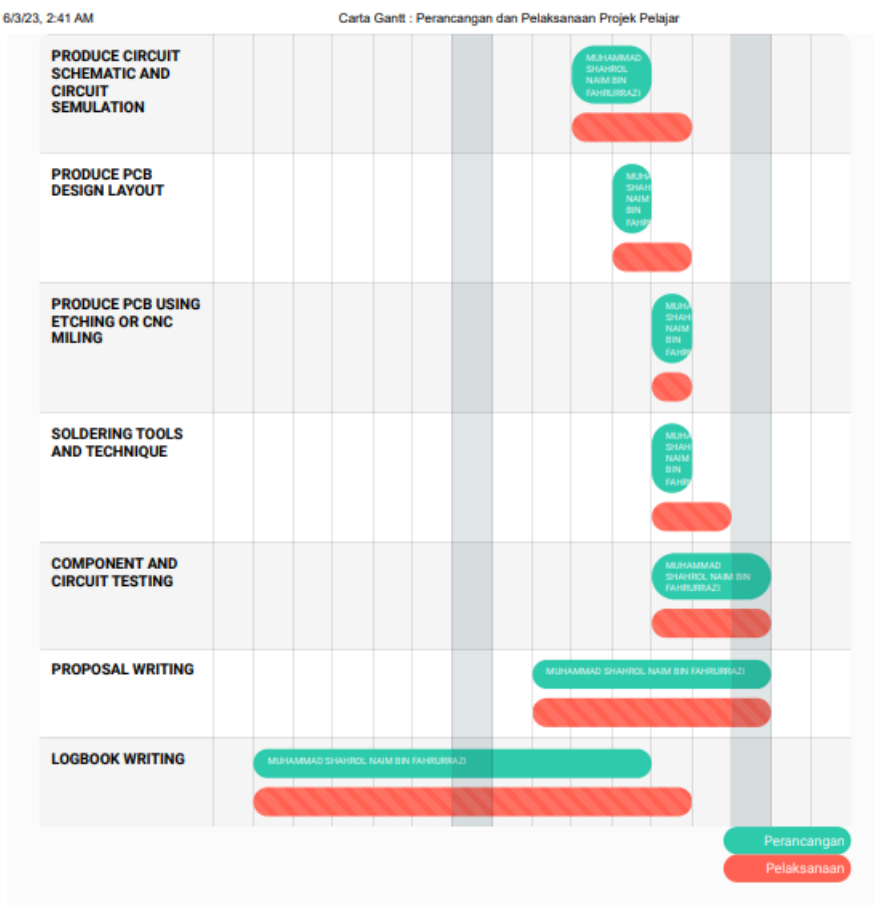
APPENDIX B – GANT CHART

CARTA GANTT : PERANCANGAN DAN PELAKSANAAN PROJEK PELAJAR

SESI : 1 : 2022/2023
JABATAN: JKE
KODKURSUS: DEE40082
TAJUK PROJEK : SMART KITCHEN SAFETY SYSTEM



`


6/3/23, 2:41 AM
Carta Gantt : Perancangan dan Pelaksanaan Projek Pelajar
PRODUCE CIRCUIT SCHEMATIC AND CIRCUIT SEMULATION
PRODUCE PCB DESIGN LAYOUT
PRODUCE PCB USING ETCHING OR CNC MILING
SOLDERING TOOLS AND TECHNIQUE
COMPONENT AND CIRCUIT TESTING
PROPOSAL WRITING
LOGBOOK WRITING
MUHAMMAD SHAHROL NAIM BIN FAHRURRAZI
Perancangan
Pelaksanaan

`

APPENDIX C- EICC POSTER

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

ELECTRICAL & ELECTRONIC ENGINEERING
FIGHT THE POWER
JOIN THE RESISTANCE
INNOVATION COMPETITION

Nama Pelajar :Muhammad Shahrol Naim Bin Fahrurrazi
No. Pendaftaran :08DJK20F2001
Nama Penyelia:En.Idris Bin Kamaruddin

SMART KITCHEN SAFETY SYSTEM

PROJECT BACKGROUND

- We used Node MCU to implement an IoT-based smart kitchen with monitoring.
- our goal is to use the Internet of Things to eliminate dangers in the kitchen.
- IoT technology such as monitoring the entire kitchen from a device such as a phone.
- This system allows the monitoring of gas leaks, the presence of smoke and fire in the kitchen and thus leads to faster response time in the event of a dangerous situation

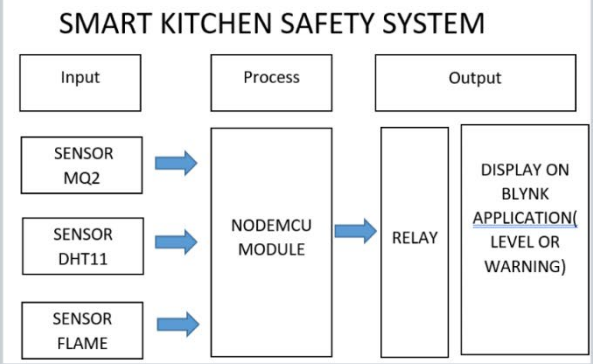
OBJECTIVE

- Develop a hardware prototype for users in the kitchen when cooking
- Reduce adverst event.

ADVANTAGE

- Detect gas,smoke and fire early
- More effective
- Lighter and simple

BLOCK DIAGRAM OF PROJECT



`

APPENDIX D-PITEC 4.0 POSTER

`

APPENDIX E-SIJIL PENYERTAAN PITEC 4.0

`


KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI
POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH
SIJIL PENYERTAAN
Adalah dengan ini diakui bahawa
MUHAMMAD SHAHROL NAIM BIN FAHRURRAZI
020714-08-0785
Penyelia
IDRIS BIN KAMARUDDIN
bagi projek inovasi
SMART KITCHEN SAFETY SYSTEM
dengan jayanya telah menyertai
PITEC 4
PERTANDINGAN AKHIR PROJEK PELAJAR DAN PAMERAN INOVASI
SESI II 2022 / 2023
POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH
PENGARAH
POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH
MALAYSIA MADANI
POLYCC
INNOVATION • ACCELERATES • TRANSFORMATION TVET