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FINAL REPORT: PROJECT 1

DIPLOMA KEJURUTERAAN ELEKTRONIK (KOMUNIKASI)

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FUTURE PARCEL BOX

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COMMENT :

CONFIRMATION OF THE PROJECT

The project report titled Future Parcel Box" has been submitted, reviewed and verified as a fulfills the conditions and requirements of the Project Writing as stipulated

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Supervisor's name : Puan Zarina Binti MD. Amin

Supervisor's signature :

Date :

Verified by :

Project Coordinator name :

Signature of Coordinator :

Date :

DECLARATION OF ORIGINALITY AND OWNERSHIP

I hereby declare the final year project book is authentic record on my own work carried out for one-year final year project for the award of the Diploma of Electronic Engineering Communication with honours, under the guidance of **Puan Zarina Binti MD. Amin** from the week 1 until week 15.

SIGNATURE : 

NAME : AHMAD SYAFIQ BIN MASRILHISYAM

REGISTRATION NO : 08DEP20F1043

DATE : 18/06/2022

ENDORSEMENT

I hereby acknowledge that I have read this report and I find that its contents meet the requirements in terms of scope and quality for the award of the Diploma in Electronic Engineering (Communication).

SIGNATURE :

NAME : Puan Zarina Binti MD. Amin

POSITION : PROJECT SUPERVISOR

DATE: 18/06/2022

ACKNOWLEDGEMENTS

I have taken efforts in this Project. However, it would not have been possible without the kind support and help of many individuals and organizations. I would like to extend my sincere thanks to all of them. I am highly indebted to all supervisor, for their guidance and constant supervision as well as for providing necessary information regarding the Project & also for their support in completing the Project.

I would like to express my gratitude towards my parents & member of my classmate for their help which help me in completion of this Project. I would like to express my special gratitude and thanks to industry persons for giving me such attention and time.

My thanks and appreciations also go to my colleague in developing the Project and people who have willingly helped me out with their abilities.

ABSTRACT

Online shopping in Malaysia recorded a significant increase annually. The number of online shopping rocketed due to the COVID-19 pandemic outbreak and movement control order (MCO) enforced by the Malaysian government. The current situation contributes to the volume of the parcel that needs to be delivered by delivery companies in Malaysia. The case of unattended parcel delivery, parcel lost, and failed delivery attempts had caused a lot of trouble to the household and the delivery company. It costs time and money because the household lost their valuable parcel, and the delivery company needs to reschedule the delivery. Future Parcel Box aims to overcome these issues by accepting parcels delivered without requiring the recipient to be present and send a delivery notification to the household to alert parcel delivered. This paper discusses on the design and the development of the Future Parcel Box prototype towards the actual development of this system. The Future Parcel Box development is significant to households or recipients, delivery companies, and property developers. Future Parcel

Box consists of a Future Parcel Box device with ESP8266, solenoid doorlock, and Android mobile application. The Mobile Application Development Life Cycle (MADLC) methodology is adopted as a guideline in the project development. The Future Parcel Box mobile application works as an interface for the recipient to interact with the Future Parcel Box device. Every parcel delivery will be scan the QR code at the Future Parcel Box device, and the notification will be sent to Future Parcel Box mobile application to alert the user. Then, the user will inform directly to the owner of the parcel Thus, this Future Parcel Box system is beneficial if it can be used by the household or adopted by property developer to equip newly developed property in smart city area in Malaysia.

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CHAPTER 1

1.1 Introduction

Data from Statista's Digital Market Outlook survey shows that Malaysians spent more than US$6 billion online in 2018, with purchases of consumer goods value amounted to 3.1 billion US dollars. During the COVID-19 pandemic outbreak, the volume of online buying increases dramatically. Pos Malaysia recorded a 69% increase in parcel volumes to 590, 000 daily average during the full month of movement control order (MCO). Along with the increment of online shopping, failed delivery attempts and parcel theft issues have also emerged.

The parcel will still be delivered regardless the resident is at home or not because this can save the delivery cost up to 60%. Online shopping trend has increased tremendously worldwide, and the problem of parcel theft also increases when the parcel is delivered without the recipient at home. The other problem is when the recipient failed to show up to receive parcel delivery and caused failed delivery attempt which is a waste of time and money for the delivery company and the recipient as they have to reschedule the delivery, or the recipient has to pick up the parcel at the collection center.

Based on this, the safety of the parcel depends on what type of security application is attached to it. Even with that, cybersecurity of the application and the robustness of hardware that will be used to protect the parcel has also become a challenge. Nevertheless, IoT application and cloud computing which has triggered the development of smart home, and later triggers the development of smart cities in recent time can therefore be employed as an idea to be integrated with other appliances, such as smart parcel receiving box to alert parcel delivery, unlock the box to allow parcel deposited by a delivery man, trigger alarm for illegal attempt, and other features to overcome parcel theft issues is proposed as an Intelligent Parcel Receiving Box System via Future Parcel Box in the present study.

Online shopping is great and easy. As we are working outside or travel outside, sometime worry unable to get the parcel. With this product, you may not worry at all. It able to let courier drop off your package inside the box in case nobody at home.

This Smart Drop Off and Pick up Parcel Box allows customer to pick up parcel even the shop is closed. And It allows you to receive the parcel from courier when you are not at home. It is perfect solution for those who working outside and love to online shopping. With this, you can online shopping without worry nobody at home to receive you parcel anymore!

The locking system is used Solenoid Door Lock 12V that connected with Single Channel 5V Relay Module. Single Channel 5V Relay Module act as ON/OFF of the Solenoid Door Lock 12V. By using MA-01 Kit, its allow to connected the devices between the smartphone by using Blynk application. The locking and unlocking of the Smart Drop Off and Pick up Parcel Box is controlled via a smartphone.

1.2 Background Research

Along with the passage of time, people become busier with everyday affairs due to their own specific reasons and commitment, but some of them are not be able to rest at all which lead them to stress. According to the study, stress often impacts focus and attention more than memory. But this can lessen men ability to recall new information. In fact, the mind will be distracted with other concerns and thoughts then later forget. For this reason clearly an adverse impact on individuals and could have the side effects on other things. Due to forgetfulness habit, men need be reminded at all time and in most cases people need a lot of pushing at first but eventually build up enough momentum that doing what needs doing becomes a habit not an exception.

As technology has become so ingrained in society, people love things to be easier and that is why people are more difficult to disengage with their technology. According to research from RescueTime, one of several apps for iOS and Android created to monitor phone use, people generally spend an average of three hours and 15 minutes on their phone every day, with the top 20% of smartphone users spending upwards of four and a half hours. In addition, on average people pick up their phones 58 times a day purposely to send a quick text or inbox check. The existence of smartphones equipped with applications (apps) helps users to optimize their productivity.

Next, the residential places in urban area around Shah Alam are mostly condominiums, high rise apartment buildings and shopping mall lots. On average, people influences on housing preferences are based on their lifestyle. Influences on lifestyle include age, family type, family size, stage in the life cycle, social class, income, occupation, education and values. Most of the residents who live in this area are among the millennial and some who have small families. These residential area usually installed with a cluster mailbox or a cluster box unit (CBU), is a form of centralized communal mail delivery equipment. But there is no single residents that provides a parcel which that’s the courier can place all the residents parcels in one place.

1.3 Problem Statement

Nowadays, most parcel boxes are now in the regular and manual forms. Therefore, it will be less secure if someone leave the items too long in the box. There are some difficulties in daily life, mostly faced in condo, office and apartment buildings that have little time to regularly check items because of central location of boxes.Therefore, this will waste the user time to check their parcel boxes daily.

Besides that, Problems happen when an individual does not know or beinformed of item of their packages. The possibility of an important packages requiring immediate action or missed out on a fixed date may result in a penalty.Then, people should check their boxes content periodically everyday whether they receive the items or not.

1.4 Research Objectives

1. To design a parcel box that avoid the parcel from stolen
2. To construct a system that can secure the parcel ……

1.4 Scope of Research

The scopes of this project are to design an efficient Parcel box and this project focused on residents building such as condominium, offices buildings and apartment.

1.5 Project Significance

During project implementation, every aspect of the project or process needs to be known sure to ensure the project is completed as it has been targeted. Here is the stage of the project journey outlined.

- Easy to use
- Work perfectly
- Meet the tastes of users

1.6 Summary Of Chapter

The Future Parcel Box is a product that assists users to be more sensitive or alert with the presence of mails in the mailbox. To put it another way, the Future Parcel Box may help them to overcome their forgetful habit and checking their parcel as a habit. Besides the other problem that has been occur can be overcome with the technology applied in the Future Parcel Box. By all the research and survey, Future Parcel Box is the product that relevantly could help users. It is useful for all residents in their daily life and makes their life more convenient.

CHAPTER 2

LITERATURE REVIEW

The term “literature” means a research article that is referred to understand and study the research problem. The literature review is used to provide the context of the study by looking at the research that has been conducted in the field of research and not just summarizing the research conducted by other researchers. The contents of this chapter may contain a brief introduction to the subject of the study, concept or theory, previous studies related to the field of study and summary of this chapter.

2.1 Introduction

A literature review also focuses on the knowledge and ideas established on a topic as well as their strengths and weakness. Nowadays, technology is getting better and better to replacing the traditional system to speed up the process by introducing the computerized system. Before I start this Parcel Dropbox project, I have to analysis and choose the need of the project such as program and circuits that I should use for this project. Besides, the physical prototype also needs to be tested before I make the real one. This is a safe process to avoid the damages of this project.

2.2 Literature Review Topic 1

First thing first , Future Parcel Box allows customer to pick up parcel even the shop is closed. And It allows you to receive the parcel from courier when you are not at home. It is perfect solution for those who working outside and love to online shopping. With this, you can online shopping without worry nobody at home to receive you parcel anymore.

Next, smart system parcel box, in which the hardware kit is used to notify user that parcel is arrived. The mobile application is used to receive the notification. Here the obstacle sensor is used to detect the object .MA-01 Kit is used to send the notification through message and the GPS detects the location at which address the letter has been received.

Then, SFB is a courier/parcel collecting box which is to be installed in our home like A/C in a place where the outsiders and insiders can be able to access it for placing and collecting the parcel respectively. In our paper we have propose this solution that i.e Smart Parcel Box ,which will deliver the parcel at our place as well as it will. We are design our own app to control system, so user can click and receive the parcel securely. User will get message as well as live streaming of process after delivery of the parcel . It is very helpful to prevent the parcel from stolen.

Common problems faced by customers while shopping online that glorious invention which allows people to buy things from the comfort of their homes. No additional traveling to multiple stores to seek out the correct product; no additional having to influence over-enthusiastic sales persons; no additional standing in long lines at the checkout. The e-commerce boom has definitely modified the approach we have a tendency to buy the better.

Despite all the efforts of e-commerce corporations to alleviate them, there are a few problems that customers still have to face while shopping online. One of the major problem is delivery and logistics One difficulty that perpetually turns up whereas searching online is when the order are going to be delivered. While all e-commerce sites have order tracking systems for their customers, they are not always accurate. Delivery personnel often turn up at our homes when we're at work or out somewhere as there's no way to fix a particular time slot for the delivery to take place.

This same issue exists while returning products. Another problem is that the vast majority of the Indian population which lives in rural areas and Tier-III cities is unable to shop online because not all e-commerce sites provide delivery services to their locations.

2.3 Summary Of Chapter

From this chapter discussion, the purpose of this is to explain the perspective of the sensor that is used in previous research or project and to classify how much this project is related to those research and theory. Moreover, this chapter will show the theory and concept used to solve problem. Theoretical is very important as a guidelines in doing any kind of research.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

To realize this Project as a product that ready to use with safety characteristic, a very comprehensive plan is undertaking. A step by step procedure is done so that the Project can be completed in time. This include collecting data of sample design the mechanical part, circuit design testing and the prototype.

3.2 Project Design and Overview.

As mention in the previous chapter, the designed controller is using a ESP8266 as the main controller. The design of the controller circuit using ESP8266 realizes using Proteus Software and then convert to PCB circuit.

3.2.1 Block Diagram of the Project

Figure 3.1: block diagram

3.2.2 Flowchart of the Project

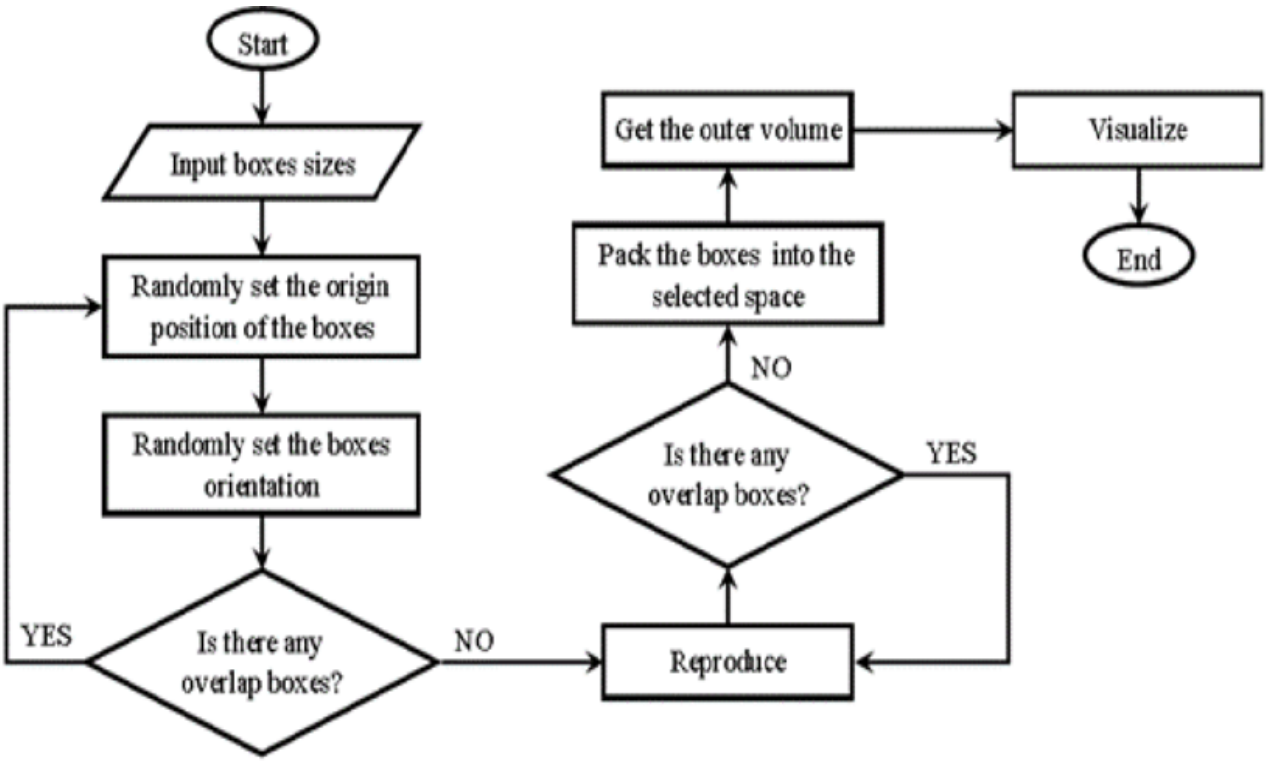

Figure 3.2: flowchart of the project

3.2.3 Project Description

A Future Parcel Box is the most recent and cutting-edge technology for collecting packages. It has the appearance of a human and has taken over the role of gathering stuff from humans. A Future Parcel Box is a self-contained system that was created using IoT and Cloud ideas. The project's goal is to create a Future Parcel Box that will be able to authenticate, receive, and return the ordered in a timely manner as well as appreciating customers because the person may not be available to receive the packages at all times. Working in the realm of societal development is a secondary goal. Finally, a new idea for automating parcel delivery collecting has been offered in this project. This facilitates the delivery of the package It has been suggested that parcel deliveries be collected. This makes parcel delivery easier and safer even when the consumer is not present.

3.3 Project Hardware

3.3.1 Schematic Circuit

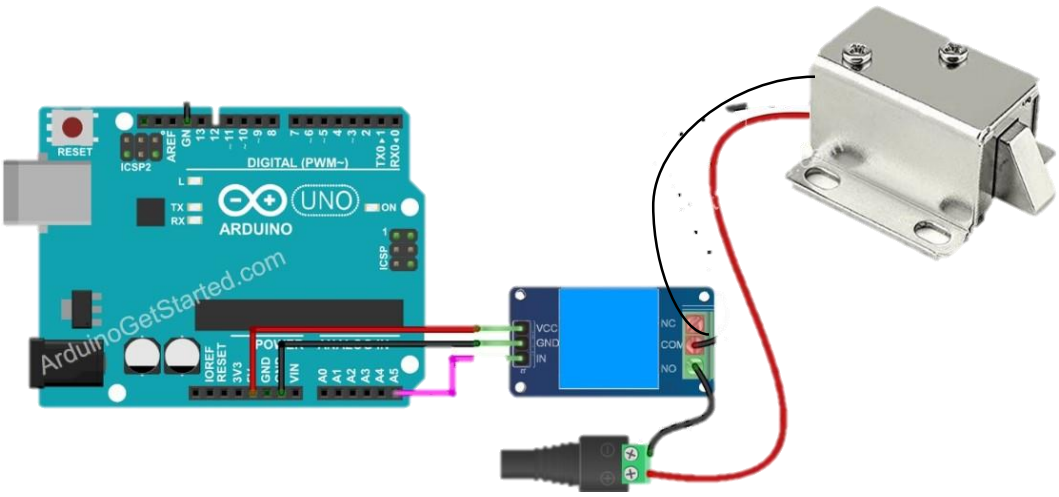

Figure 3.3: schematic diagram

3.3.2 Description of Main Component

3.3.2.1 ESP8266

Figure 3.3.1 : ESP8266

The ESP8266 is a low-cost Wi-Fi microchip, with built-in TCP/IP networking software, and microcontroller capability, produced by Espressif System in Shanghai, China.

The chip was popularized in the English-speaking maker community in August 2014 via the ESP-01 module, made by a third-party manufacturer Ai-Thinker. This small module allows microcontrollers to connect to a Wi-Fi network and make simple TCP/IP connections using Hayes-style commands. However, at first, there was almost no English-language documentation on the chip and the commands it accepted. The very low price and the fact that there were very few external components on the module, which suggested that it could eventually be very inexpensive in volume, attracted many hackers to explore the module, the chip, and the software on it, as well as to translate the Chinese documentation.

The ESP8285 is a similar chip with a built-in 1 MiB flash memory, allowing the design of single-chip devices capable of connecting via Wi-Fi.

3.3.2.2 Solenoid Doorlock

Figure 3.3.3.2 : Solenoid Doorlock

The solenoid lock denotes a latch for electrical locking and unlocking. It is available in unlocking in the power-on mode type, and locking and keeping in the power-on mode type, which can be used selectively for situations.

3.3.3 Circuit Operation

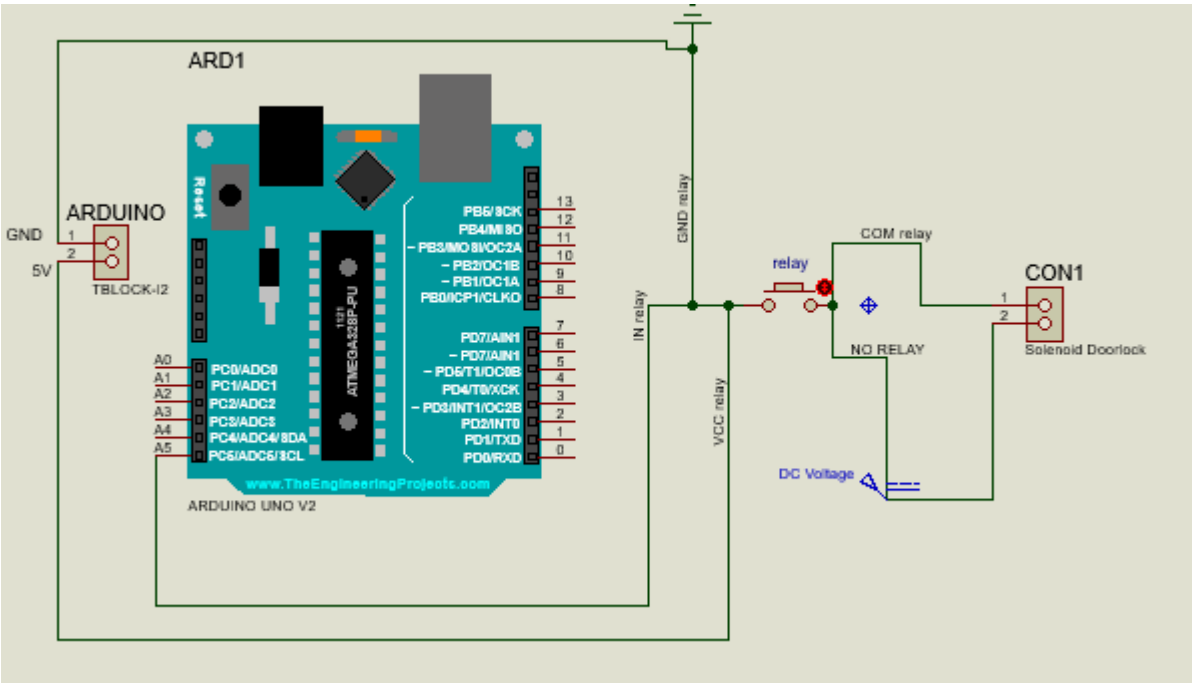

Figure 3.4 : Proteus Circuit Operation

3.4 Project Software

Figure 3.5.1 : Arduino IDE

Arduino IDE is a software that used to write and upload programs to Arduino compatible boards, but also, with the help of 3rd party cores, other vendor development boards. The Arduino Integrated Development Environment - or Arduino Software (IDE) - contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus. It connects to the Arduino and Genuino hardware to upload programs and communicate with them. (The Arduino Duemilanove) ("2009")

PROTEUS

Figure 3.5.2 : Proteus

The Proteus Design Suite is a proprietary software tool suite used primarily for electronic design automation. The software is used mainly by electronic design engineers and technicians to create schematics and electronic prints for manufacturing printed circuit boards.

It was developed in Yorkshire, England by Labcenter Electronics Ltd and is available in English, French, Spanish and Chinese languages.

3.5 Summary Of Chapter

In conclusion, we can conclude that human sometimes can be forgetful. They need to always be remind so that, something which is important will not be forgotten. By proposing Future Parcel Box project, this parcel box will help user reducing the loss of important parcel. The assemble of sensor in the Future Parcel Box will helps user to be more alert with the presence parcels. This is because this parcel box will send a notification to mobile application which will remind user of their parcel. Intelligent parcel box will function with a good connection of Wi-Fi and then it will send notifications through 'Blynk' apps. As shown in our survey, most of the respondents agree with the addition of sensor in the parcel box and mobile application that linked to user mobile phone will helps user to be more alert with the presence bill or letter. Apart from that, the testing that we had conducted also shows a positive result.The objectives discussed prove that this project gives a positive result and due to the survey that has been conducted, this project is well accepted

CHAPTER 4

PROJECT MANAGEMENT AND COSTING

4.1 Introduction

This new version of parcel will be a highly useful things in technology sector. About their parcel left anywhere when they can't pick them. So,once this product was existed, that kind of problems can be solved. In making this project , there are so many available technical resources discovered. In many industrial applications, there is a need of sorting. It's can be done by using many ways according to the research that I found. This project consists of components such as MA- 01 Kit, and Solenoid Doorlock 12V. The software that used in this project is Proteus 8.6 Professional, Microsoft Excel and Word. Financial resources for this project is self-financed with some of basic components and material are sourced at the project created. Based on the cost projection it is estimated at RM 413.00 . The development cost is still feasible with the duration of 14 weeks with only RM 29.50 per weeks. It is feasible and achievable based on the investigation conducted.

4.2 Gant Chart and Activities of the Project

Week/Activities project	Status	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15
Project Clarification	P															
	C															
Presentation of ideas project	P															
	C															
Preparing proposal	P															
	C															
Literature review	P															
	C															
Methodology	P															
	C															
Writing proposal	P															
	C															
Correction proposal	P															
	C															
Presentation Skill	P															
	C															
Presentation proposal	P															
	C															
Submission proposal	P															
	C															

P	PLANNING
C	COMPLETE

Figure 4.2 : Gant Chart and Activities of the Project

4.3 Cost and Budgeting

This project involves the cost of purchasing components and materials throughout its implementation. components involving cost are hardware Arduino, solenoid doorlock 12V, infared sensor, RTC circuit , relay 5V, and MA -01 Kit. All of these components are purchased through online purchase methods to make it easier as well as save on costs.

The overall gross budget estimate in the implementation of this project is RM 151.80 and other expenses at RM 124.00 as shown in Table 1 According to this budget cost, this project is can be considered as a less costly project compared to other projects that can cost over a thousand ringgit. The cost of the project is also in line with one of the key features of a good project developer that is low cost but have a high quality

No.	Component and materials	The unit price	Quantity	Total
1	Solenoid doorlock 12V	RM 30.00	1	RM 30.00
2	MA-01 Kit	RM 169.00	1	RM 169.00
3	Other materials	RM 50	-	RM 90.00
	Total :			**RM 289.00**
	List of other costing			
1	Transportation			RM 20.00
2	Postage			RM 30.00
3	Craft Work			RM 39.00
4	Internet			RM 35.00
5	Application			-
	Total :			**RM 124.00**
			Overall total	**RM 413.00**

Table 4.4.1: List of Components and Materials

4.4 Summary Of Chapter

From the testing result, we can know that the Intelligent Parcel Box is a functional system to reduce the pollution to the environment and help people to become more alert about the presence parcels. While the result still not perfect, but if we have completed it by improvement and modification, it will become a good product to protect our lovely earth.

Beside that, we have learned how to complete the testing on the project and the choosing the testing need to do. From the survey and choosing the selective place to be use on the testing process to find out the result, until the result had been find out, we were spending a lot of spirit and time to make this done. We have learned a lot of knowledge during this process, the knowledge includes how to create programming and how to make an apps.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

We propose a solution of Future Parcel Box is a parcel collection unit which will receive the parcel from courier person safely. This smart system will save time as it avoids rescheduling of the parcel delivery. Customer can click and receive our parcel securely through their emails. The important use of this product which user can save so much time. Finally, the stolen parcels case can be avoid by this new parcel box.

5.2 Recommendation

With this project in the market, I believe that this product will be good for a better in the market can be met. Therefore, I believe and hope that this project will be further expanded which can be great developments in technology sector.

In this regard, I hope that with the creation of this innovation can attract more interest and anyone who wants to create or improve tools to help anyone. This innovation can not only meet our needs but also ease the burden.

With this, it can not only prevent parcel fro stolen but also encourage young people to continue to think creatively. Perhaps new ideas can give this innovation even greater and can be widely used not only in this country but also all counries in this world.

5.3 Benefit to Organization /Society/Nation/Others

- Each and every mechanism is handled by customer itself through app, so parcel is fully protected.
- This Parcel Boxes secure your deliveries better than deterrents like security cameras and alarms and it will be good for this country in technology development.

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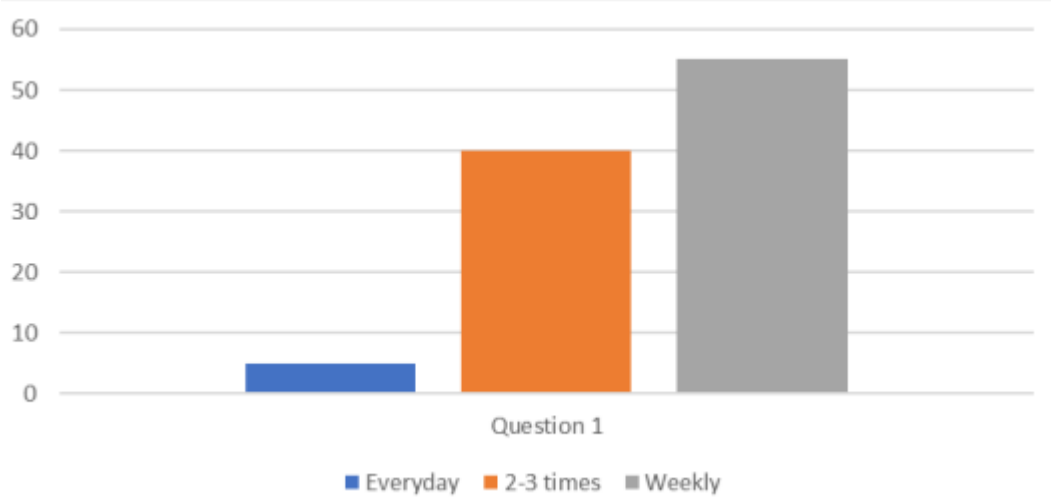
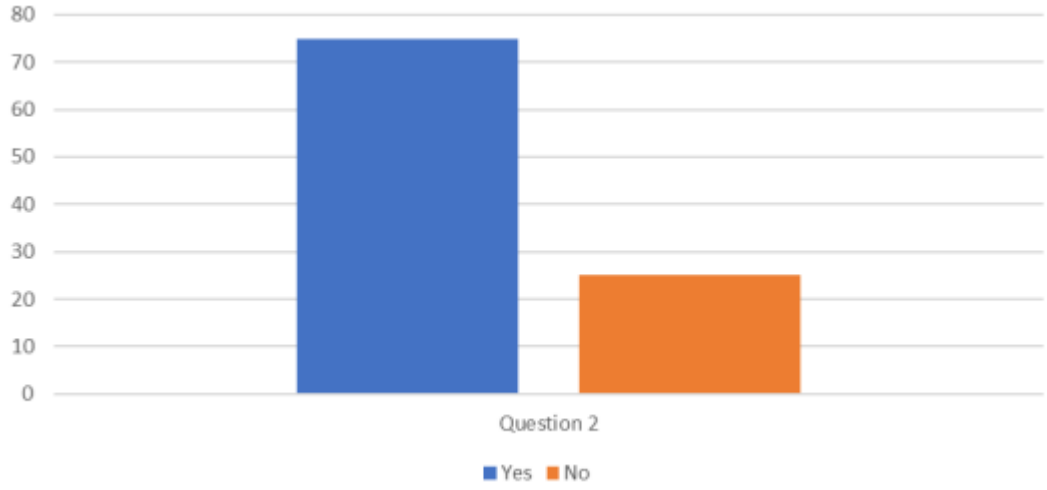
APPENDICES

APPENDIX A- THE SURVEY FINDING BEFORE DEVELOPMENT

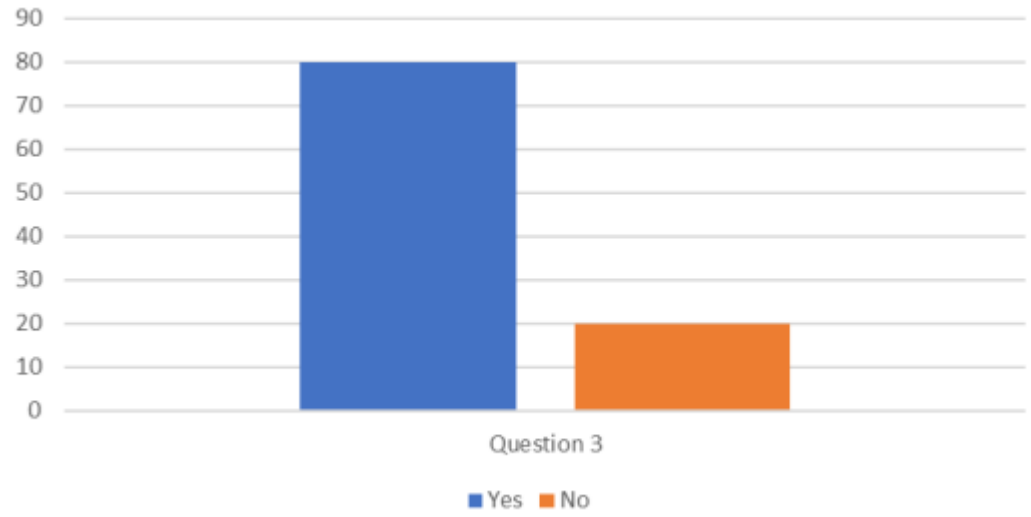
Q1. How many times in a week do you check your parcel?



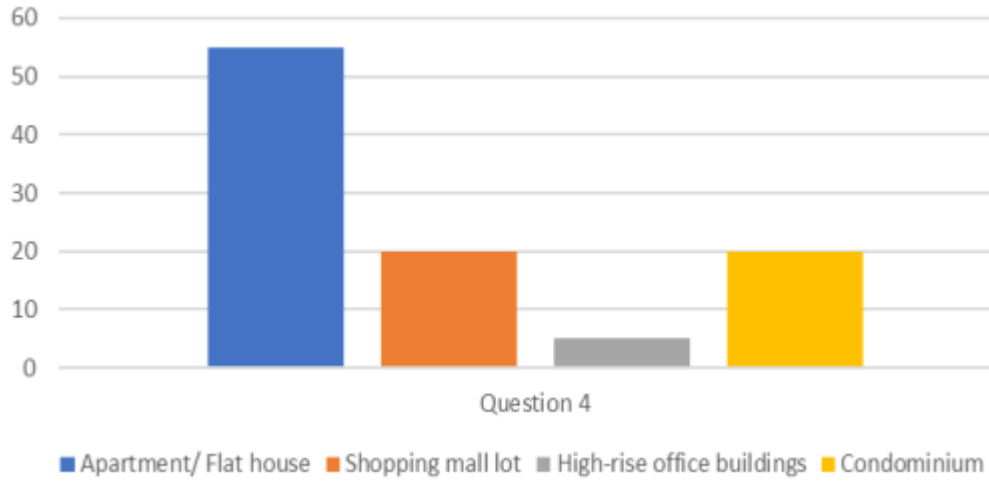
Q2. Have you ever forgotten to check your parcel?



Q3. Have you ever experienced loss of your parcels?



Q4. Which is the most suitable place to use this method?



APPENDIX B- PROGRAMMING

```
#include <Wire.h>
#define BLYNK_PRINT Serial
#include <ESP8266_Lib.h>
#include <BlynkSimpleShieldEsp8266.h>

char auth[] = "JtmWyDK1uzNsj2U74UHvpDNgTzueX6b0";
char ssid[] = "iPhone";
char pass[] = "yayaulala";

#include <SoftwareSerial.h>
SoftwareSerial EspSerial(12,13); // RX, TX

#define ESP8266_BAUD 9600

ESP8266 wifi(&EspSerial);

BlynkTimer timer;

int buttonState = 0;
int buttonState_2 = 0;
int speakerOut = 8;
int spin = 0;
int count = 0;
int i = 0;
bool check = false;
bool flag = false;
bool buzz = false;

void myEvent(){
  Blynk.virtualWrite(V0, count);
}

void setup() {
  Serial.begin(9600);

  EspSerial.begin(ESP8266_BAUD);
  delay(10);
```

APPENDIX C- PCB LAYOUT