DJJ40182 PROJECT

FINAL REPORT

DIPLOMA IN MECHANICAL ENGINEERING

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PROJECT INFORMATION:

TITLE	SAFETY SMART MAILBOX FOR APARTMENT
SUPERVISOR	PUAN NOR LIZA BINTI KASIM

SAFETY SMART MAILBOX FOR APARTMENT

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Laporan ini dikemukakan kepada Jabatan Keejuruteraan Mekanikal sebagai memenuhi sebahagian syarat penganugerahan Diploma Kejuruteraan Mekanikal

JABATAN KEJURUTERAAN MEKANIKAL

SESI 1 2022/2023

AKUAN KEASLIAN DAN HAK MILIK

SAFETY SMART MAILBOX FOR APARTMENT

1. Kami, **NAZHAN SYAHMI BIN NASIRRUDIN (NO KP:021209-04-0189)**, **NUR SHAHIRA BINTI MOHAMMAD ZAWAWI (NO KP: 021227-03-0478), LUQMAN BIN SHAIRUL (NO KP : 021010100447)** adalah pelajar Diploma Kejuruteraan Mekanikal, Politeknik Sultan Salahuddin Abdul Aziz Shah, yang beralamat di **Persiaran Usahawan, Seksyen U1, 40150 Shah Alam, Selangor**. (Selepas ini dirujuk sebagai 'Politeknik tersebut').

2. Kami mengakui bahawa 'Projek tersebut di atas' dan harta intelek yang ada di dalamnya adalah hasil karya/ reka cipta asli saya tanpa mengambil atau meniru mana-mana harta intelek daripada pihak-pihak lain.

3. Kami bersetuju melepaskan pemilikan harta intelek 'Projek tersebut' kepada 'Politeknik tersebut' bagi memenuhi keperluan untuk penganugerahan Diploma Kejuruteraan Mekanikal kepada kami.

Diperbuat dan dengan sebenar-benarnya diakui oleh;

NAZHAN SYAHMI BIN NASIRRUDIN

(NO.KP;021209040189)

……,

NUR SHAHIRA BINTI MOHAMMAD ZAWAWI

(NO.KP;021227030478)

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LUQMAN BIN SHAIRUL

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……..,

Di hadapan saya,

NORLIZA BINTI KASIM

(NO. KP; …….

Sebagai Penyelia projek pada tarikh …….

APPRECIATION

We are grateful to God for His blessings and grace, which enabled us to successfully complete this report. First and first, we would like to express our gratitude to the Politeknik Shah Alam for providing us with the chance to create this project as a supplement to our understanding of this research.

We also want to thank our supervisor, PUAN NOR LIZA BINTI KASIM, who has provided us with a lot of supervision and clear explanations since we were assigned to this project. Furthermore, we appreciate your confidence in us to complete this assignment.

Not to mention the numerous friends that helped me complete this study by providing encouragement, support, and assistance. We may not be able to execute this project perfectly without your help and encouragement.

Finally, we hope that all of our research will contribute to our knowledge and expertise, allowing us to apply it to our work in the future.

ABSTRAK

A "Security Smart Mailbox for Apartments" is designed to assist clients (recipients) who have problems with misplaced mail or packages while they are away from home. With the online purchasing is becoming popular, most of the delivery is done on weekdays or when they are away from home; while mail delivery was done during business hours. As a result, many clients experience the problem of losing letters or packages when they are out of the house. In this research, the "Security Smart Mailbox for Apartments" was created to facilitate and assist to those who have concerns about losing letters or packages when they are away from home. We have created a security lock on the door to prevent it from being stolen. Although the compartment door can be opened and closed without a key, security elements such as the compartment cannot be carried through the door after the compartment has reached the storage space means that it cannot be easily stolen. We have enhanced our project by deploying the “Arduino Maker Uno” board to get information on newly arrived mail or packages in the mailbox. With this, when a letter or parcel is put into the mailbox that we designed, the sensor can detect and send the information to clients’ smartphone. With that, you can find out about the presence of letters or parcels in it. For any misplaced mail or packages can be solved by the construction of "Security Smart Mailbox for Apartment."

LIST OF CONTENT

BAB 1

INTRODUCTION

1.1 INTRODUCTION

A mailbox is a necessary home appliance for every home. The use of the mailbox is to facilitate the postman's task of sending letters from house to house.

Therefore, the security of letters and parcels placed in the mailbox is an important matter to consider and other problems also users do not know about the presence of letters or parcels. This problem has led to the emergence of project ideas. "Safety Smart Mailbox For Apartment" is an innovation project that works to notify users that there is a letter in the mailbox.

In contrast to regular mailboxes, where the "Safety Smart Mailbox For Apartment" is equipped with some more interesting functions that are controlled by sensors and Arduino used to send a signal to the user that there is a letter in the mailbox.

The sensor and Arduino will send a signal to the user using the app on the smartphone. In addition, this "Safety Smart Mailbox For Apartment" is equipped with a security key to open it to ensure the security of the letter.

1.2 PROJECT BACKGROUND

Safety Smart Mailbox for apartment: Secure Mail with Notifications is a design to overcome problems faced by people nowadays who are unable to control/monitor their postage daily life. The project works similarly to a mailbox or pigeonhole where a letter or post would work placed in their mailboxes or pigeonholes. The method of reviewing incoming mail or mail mailboxes is not updated to this day and most people still check mailboxes by themselves every day.

For this project, electronic technology, or the internet of things (IoT) is used to solve this problem. This project was built using Arduino Uno. The sensors installed in the project will start working as soon as it detects the

document/letter/post received and sends an alert automatically alerts via notifications on smartphones. The project also makes people's lives easier by posting short-order notifications to notify users about mail or receipts and saving time in checking mailboxes every day.

The project can operate automatically without human inspection. When the project is complete, people don't have to repeatedly go to their mailboxes to check whether a letter or post sent or not. People also won't worry about forgetting to pick up mail or post them because there will be instant notification of mail sent or sent.

1.3 PROBLEM STATEMENT

Mailboxes should be simple and functional objects. However, there are some problems with mailboxes used by various users, including.

1. Existing mailboxes are unsafe and current mailbox designs are unsafe.
2. Consumers who are unaware of the presence of letters and parcels in their mailboxes face difficulties.
3. Consumers get the problem is items delivered to mailboxes getting easily stolen.

1.4 OBJECTIVE

Objectives for this project are:

1) To design the mailbox with a sensor for safety letters and parcels.

2) To inform users to know that there are letters and parcels in the mailbox and to be able to keep letters and parcels from being stolen and damaged.

1.5 PROJECT QUESTIONS

1. What is the main purpose of the implementation of this project which is to guarantee the safety of parcels/letters to users as well as to inform users about the presence of parcels/letters in it via mobile phones
2. Were the looks and features on the project successfully designed as desired?
3. Does this product successfully help consumers in overcoming the problems they face?
4. Can the project be implemented according to the actual objectives to be achieved?
5. Who are the main targets for this product's implementation?
6. Is this product able to provide convenience to consumers?
7. Has the research done to get results in implementing this project been successful?
8. Is the use of Arduino in implementing this project effective and functional?

1.6 SCOPE OF THE PROJECT

Our product design has 3 types of sizes which are (0.5 x 0.4 x 0.4) m, (1 x 0.6 x 0.6) m and (1.2 x 0.8 x 0.8) m. Besides that, our project design gives priority to residential areas. For this scope below refers to size (0.5 x 0.4 x 0.4)m.
The scope for our product is:
1. Letters are limited to 30 per mailbox.
2. The font size restriction is (0.3m x 0.2m).
3. The package size limit is (0.4m x 0.2m x 0.2m)
4. Package weight restriction is 3kg.
5. Letter weight restriction is 500g.

This safety smart mailbox for apartment can be attached to a fenced stone wall or the concrete ground for a house that does not have a fenced stone wall.

1.7 THE IMPORTANCE OF THE PROJECT

The target of this project is to make it easy for consumers, particularly those who buy things online while away from home. This invention eliminates the need for customers to constantly check their mailboxes for the existence of letters or packages because they may be detected and alerted through a smartphone. The proposal incorporates both letter and parcel storage. Simultaneously, this 'Safety Smart Mailbox For Apartment' can ensure the security of the parcel/letter sent, i.e., the design created can prevent theft. Furthermore, because the mail/parcel sender does not have to wait for the buyer to pick up the items, this project makes it easier for the mail/parcel sender to deliver the goods. The item must only be placed in the specified mailbox by the shipper. Consumers and consignors alike may benefit from the combination of mailbox and parcel.

1.8 DEFINITION OF OPERATIONS/TERMS

1. Research

According to the Dewan Bahasa dan, Pustaka Dictionary Fourth Edition, the study refers to the action (effort, process) of studying; or case studies on a topic based on detailed facts, information, and other sources gathered over time.

2. Design

According to the website Educalingo.com, common design encompasses applied art, architecture, and a variety of other creative endeavors. The word "design" can be used as a noun or a verb in a phrase. "Design" is a verb that means "the process of producing and making new objects." "Design" is a term that refers to the final product of a creative process, whether it is a plan, paper, presentation, modeling, or a physical object. The data is frequently collected from the study, thought, brainstorming, or pre-existing designs, and the design process generally considers features of function, aesthetics, and several other aspects.

3. Mailboxes

Mailboxes are all terms for containers used to receive incoming mail at a private residence or company. Mailboxes are commonly used for the opposite purpose of sending outgoing mail. The following are the primary designs of mailboxes or mailboxes:

- Boxes that are directly attached to the structure (delivery directly to the door)
- On or near the road, there are boxes (curtsied delivery)
- A centralized postal delivery station for the entire building, with individual mailboxes.
- Individual mailboxes for several recipients at various addresses in a given neighbourhood or town make up a centralized postal delivery station.

4. Maker UNO

UNO Maker is an Arduino-compatible board specially designed to simplify construction projects. Coding & electronics become easy and affordable with 12 built-in LEDs, a built-in buzzer, and buttons.

1.9 SUMMARY

The origins of ideas and inspiration have been discussed in this chapter. The stated objectives can be fulfilled by stating the challenges that have been encountered. As a result, everyone, especially online shoppers, can profit from the 'Safety Smart Mailbox For Apartment.' Finally, the 'Safety Smart Mailbox For Apartment' can affect consumers in terms of the security of parcels/letters despatched. Furthermore, it can benefit users who frequently purchase products online by eliminating the need to constantly check the mailbox because the existence of parcels/letters in the mailbox will alert customers via their smartphones.

BAB 2

LITERATURE REVIEW

2.1 INTRODUCTION

A literature review is a text of the scholarly paper, which is included in the current knowledge including substantive findings, as well as a theoretical and methodological contribution to related works.

There are a few devices related to Safety Smart Mailbox For Apartment. However, most of the devices did meet the requirement that was needed by the users.

2.2 PREVIOUS RESEARCH

2.2.1 Mailbox

Introduction

A mailbox is a box used to hold incoming mail for a private home or company. A post box is typically used to send mail out instead of receiving it.

Smart Postal Mailbox Device

Smart postal mailboxes. The basic function of the application is to detect the presence of consignment in the mailbox. Made of wood. In contrast to our products that can take letters and parcels, this Smart Postal Mailbox can only be used for mail delivery.

Smart Mailbox System And Related Method

Smart mailbox system. The idea will make it safe and convenient to automatically receive and deliver letters, saving time and effort. Because it contains a security system, this Smart Mailbox System can only ensure the security of mail sent. Using stainless steel material. In comparison to our products, which can detect the presence of letters/parcels.

A Mailbox Parcel

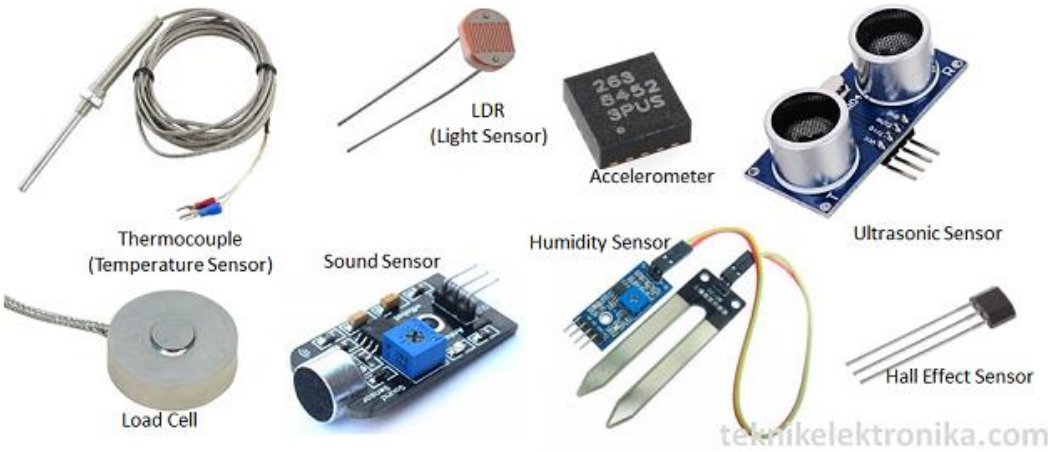
A mailbox parcel for receiving parcels and other large mail. Using stainless steel material. This " Mailbox parcel," in our opinion, lacks a security system for sent parcels. Because the parcel locker does not have a security measure, this "A Mailbox Parcel" can simply be stolen. As a result, we developed a “Safety Smart Mailbox For Apartment” with security elements to ensure that the products delivered are not easily stolen.

2.2.2 Sensor and Circuit

Introduction

The term "sensor" refers to a device that measures changes in physical quantities such as pressure, force, electrical quantities, light, motion, humidity, temperature, speed, and other environmental phenomena. After noticing the change, the input will be turned into an output that can be comprehended by humans and will either be displayed or processed into usable information for the user through the sensor device itself or electronically transferred across the network.

Sensor Types

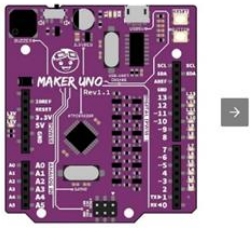


Materials Used

Ultrasonic Sensor

The main application of ultrasonic sensors is as proximity sensors. Self-parking automotive technology and anti-collision safety features contain them. In addition to industrial technology, ultrasonic sensors are employed in robotic obstacle detection systems.

Maker UNO: Simplifying Arduino



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Maker UNO: Simplifying Arduino for {Education}

Maker UNO is an Arduino Compatible board specially designed to simplify building your projects: Coding & Electronics are made easy with built-in:{ 12x LEDs; 1x buzzer; 1x button; } Troubleshooting made easy with LED indicators.

Cytron ESP8266 Wi-Fi Shield

1/3

Cytron ESP8266 WiFi Shield

This is Wi-Fi shield for Arduino. It comes with WROOM-02 which based on ESP8266 Wi-Fi SoC. The shield comes with header pins to choose UART/Serial communication pin to Arduino, can access to WROOM-02 and microSD card for data logging.

IR Line Tracking Module

1/4

IR Line Tracking Module

This module enables a robot to autonomously navigate a line-marked path. By drawing a line in front of a robot outfitted with a line tracker, one can dictate the robot's path by showing it where to go without using a remote control.

Male to Female Jumper Wire

Jumper wires typically come in three versions: male-to-male, male-to-female and female-to-female. The difference between each is in the end point of the wire. Male ends have a pin protruding and can plug into things, while female ends do not and are used to plug things into.

2.2.3 Aluminium

Aluminium does not exist in its pure state in nature. The production of primary aluminium metal begins with bauxite ore, which consists of hydrated aluminium oxide

(40% to 60%) mixed with silica and iron oxide. It takes about 4 to 5 tons of bauxite ore to produce 2 tons of alumina.

Aluminium Angle

A product with two legs that make a 90-degree angle is called an aluminium angle. This product is intended for use in both general fabrication and structural applications.

Aluminium Flat Bar

6061 Aluminium Flat Bar, is an extruded solid aluminium rectangle bar that is easy to work with and has a wide range of applications. Aluminium Flats are widely used for all types of fabrication projects where lightweight and corrosion resistance is a concern.

2.3 SUMMARY

Based on our research, we are confident that the products we create will provide more benefits to consumers as the 'Safety Smart Mailbox for Apartment' can detect the products included in it, and in addition, our products prioritize the safety of packages or letters sent.

BAB 3

METHODOLOGY

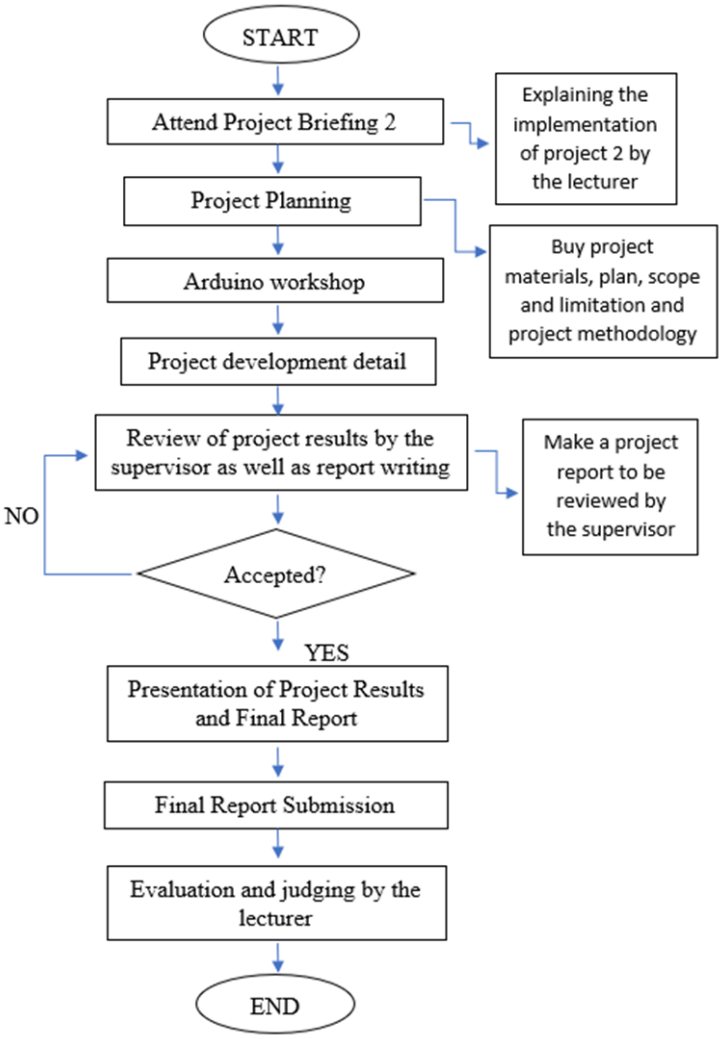
3.1 INTRODUCTION

Methodology is the process or method used to carry out a project in greater depth. This step is crucial to the project's implementation in order to guarantee that it is finished on schedule.

In order to ensure that the project runs well, methodology is crucial. Additionally, the technique makes it simpler for one to learn about a project that is in progress because it covers all the steps necessary for organization; yet this project will undoubtedly take longer to complete.

3.2 FLOWCHART

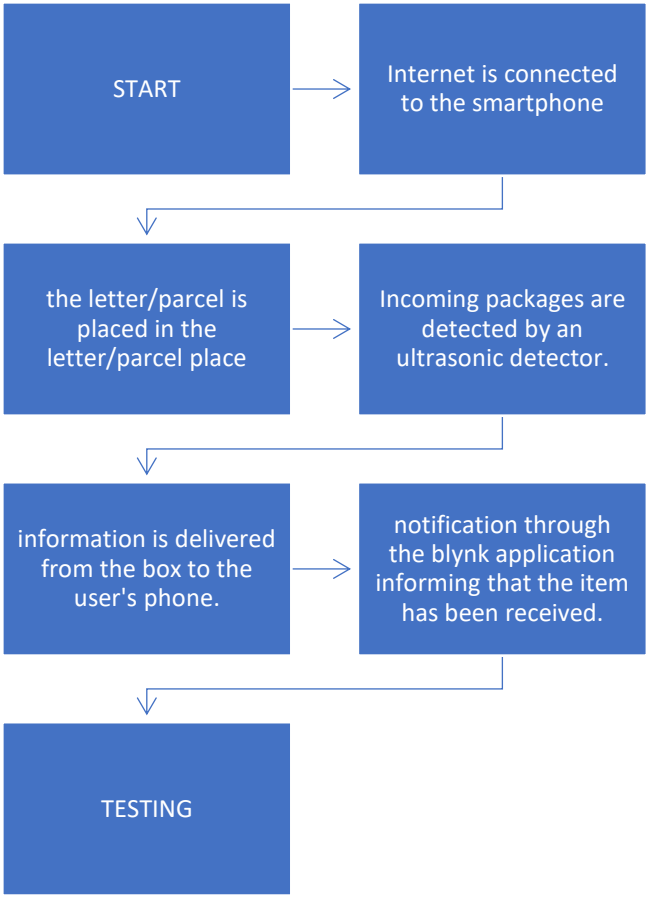
The term "methodology" refers to the process utilised to carry out the project and choose the best practises to guarantee its success. The materials and projected costs for creating the "Smart Parcel Receiver" will be covered in this chapter. Additionally, we'll talk about the approaches that will be taken for this project. We make flowcharts to make sure that every procedure adheres to the right, organised procedures. Our flowchart is depicted in the image below.



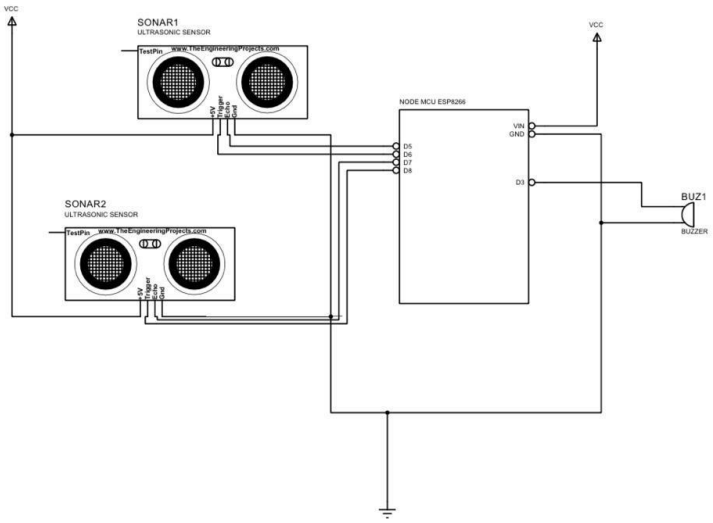
	WEEK/ PROJECT ACTIVITY	STATUS	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14
1	Project briefing, iSOLMS briefing	P														
		A														
2	Project Planning															
	project requirement															
	project plan	P														
	project scope and limitation	A														
	project methodology															
3	Design thinking / Arduino workshop	P														
		A														
	Project Development															
4	project development details	P														
	project techniques and tools	A														
5	validity and reliability measurement	P														
	project results and analysis	A														
6	Technical writing workshop	P														
		A														
7	Project report writing	P														
		A														

3.2.1 PROJECT PRODUCTION METHODS/ PROCEDURES/ TECHNIQUES.

As a team, we have done research on the materials used in the circuit connection or project design for our project, "safety smart mailbox for apartment," in order to accomplish it on schedule. 37 drawings from "Inventor" and design drawings were used to create this project. Each component has been made in accordance with the established measurements in order to prevent undesirable effects. These are the procedures from the start of creating a typical drawing to the end.



FLOW CHART FOR PRODUCT CIRCUIT TESTING



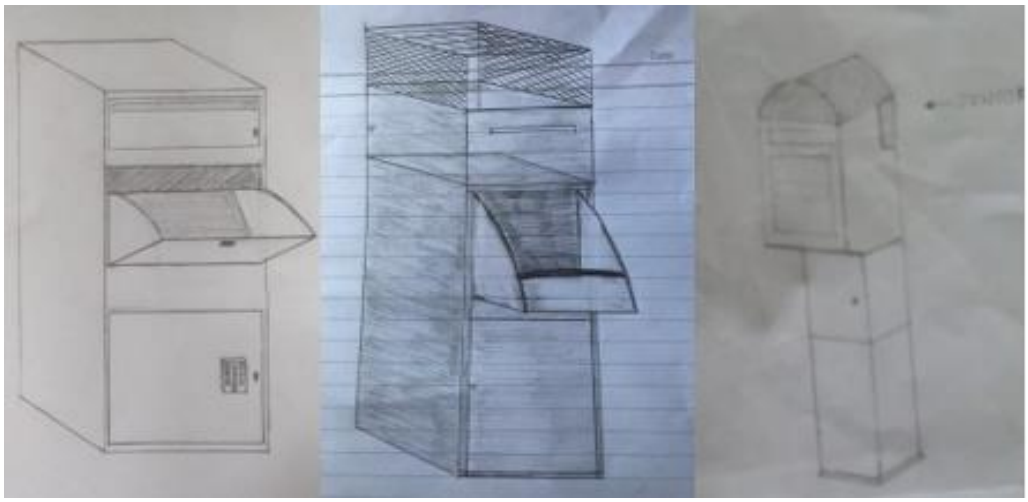
EXAMPLE OF CIRCUIT TO BE MADE FOR SAFETY SMARTY MAILBOX FOR APARTMENT

3.3 PROJECT DESIGN

The study was conducted using a distinctive design. We have distributed various types of questionnaires in the form of softcopy and hardcopy, especially to the residents of residential areas. This method has helped us gather information about the problems often faced by the occupants of the house During their absence at home. Most of the answers we got from the questionnaire were letters or parcels that were stolen and damaged after being sent by postmen. With the findings from this study, we have discussed producing a project that can overcome the problem with the creation of this innovative product study.

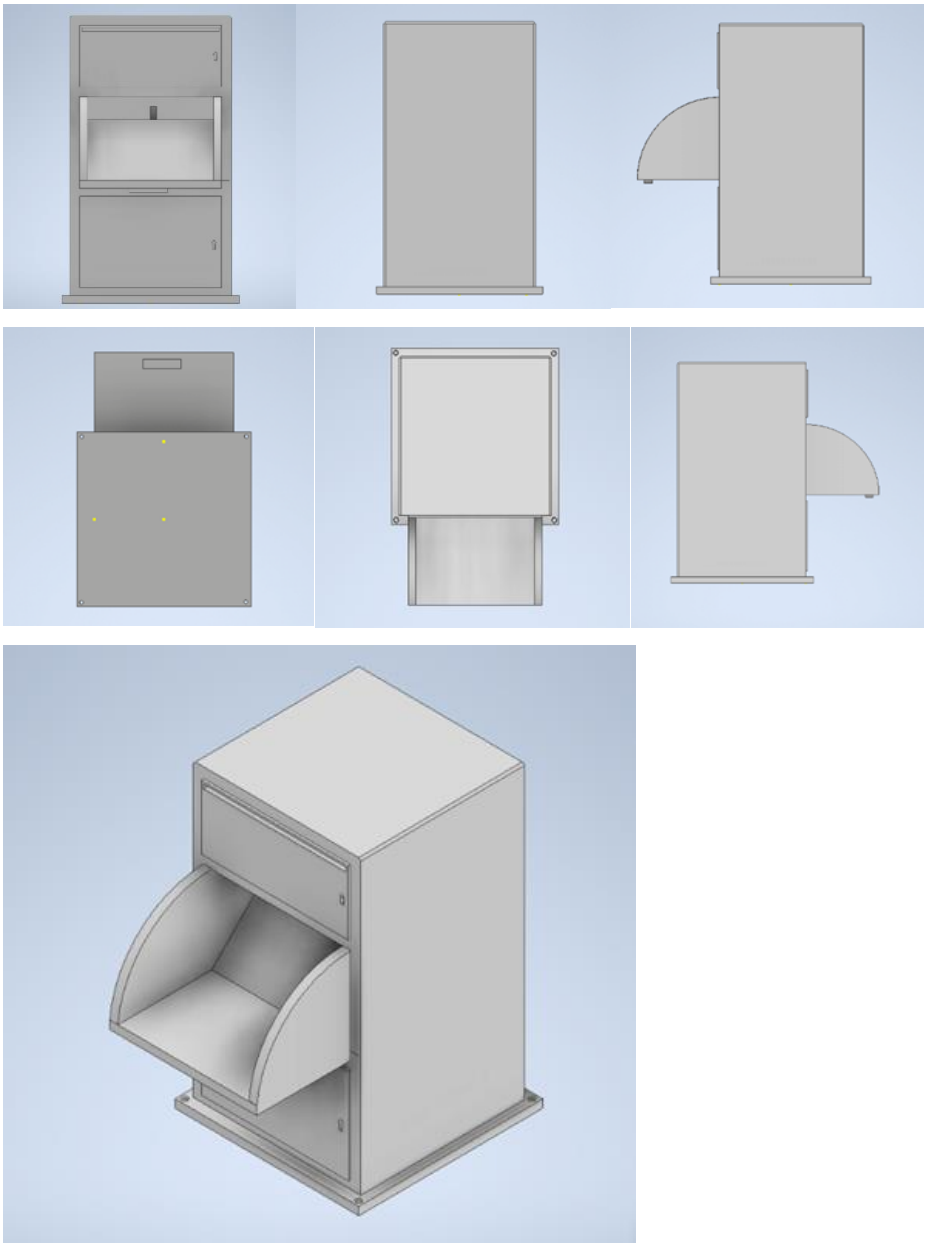
3.3.1 Design Selection Process

Our group has come up with some mailbox designs to test the safe criteria for parcels or letters being sent. First, we sketch some designs with the new design on paper. Then, we started to design a sketch for a template for a process that is easy to develop and estimate the appropriate dimensions so that the formation can be more perfect. After making all these, we started testing them. Here are examples of some of our sketch designs:

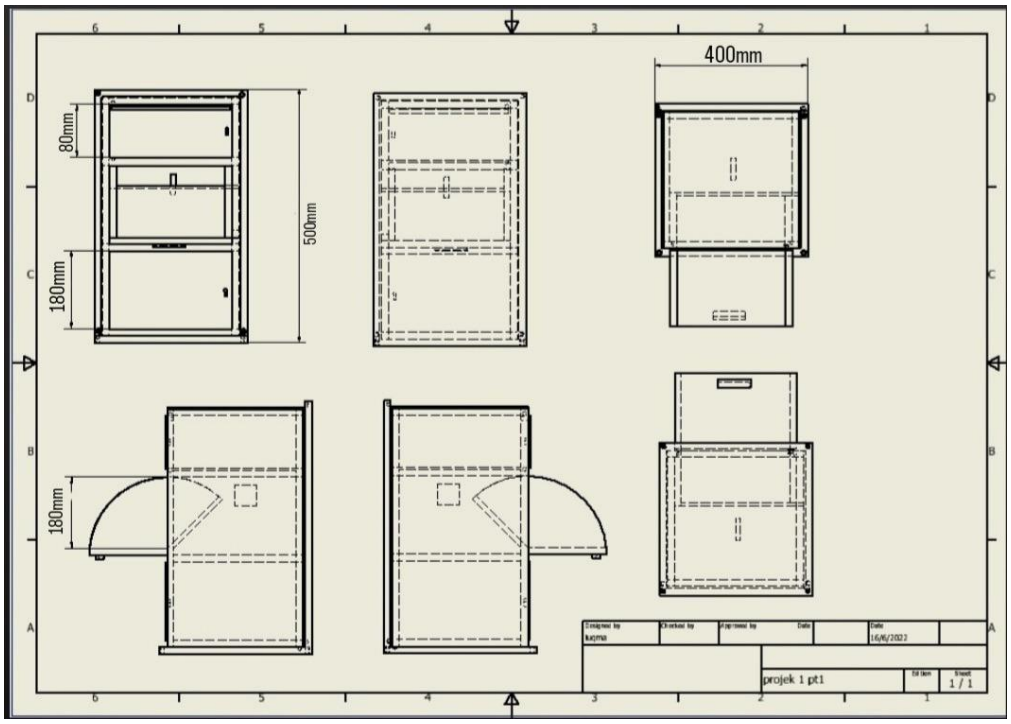


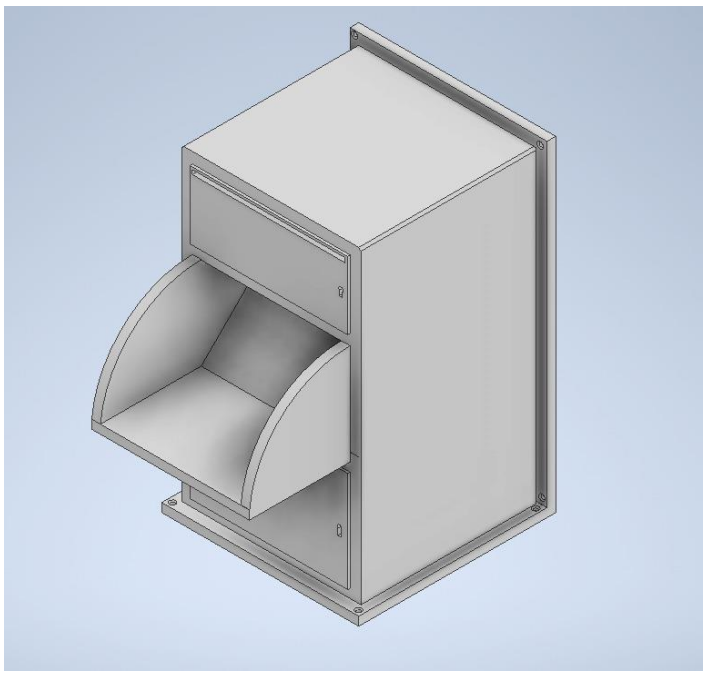
As a result of this design, we found that the mailbox design 1. Here are the factors why we chose design 1 which may affect some designs as follows:

3.3.2 Engineering Drawing

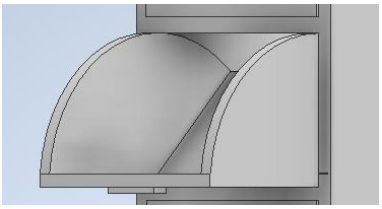
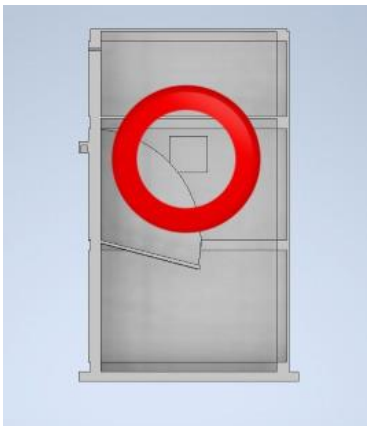


3.3.3 Product Size



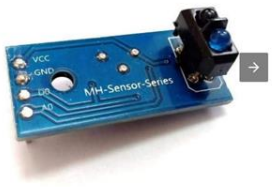


3.3.4 Product Function

SECTION	FUNCTION
	**This is a door or a section for placing letters. It is equipped with a key for security so that the letter is not stolen by any person.**
	**This is the part of the door for inserting parcels or items arriving at home. This door is equipped with a security feature that once it comes in, it cannot be pulled out of the door.**
	**An arduino sensor to detect whether any items or parcels have been put in the mailbox.**
	**This is the part of the door for removing parcels or items that are in the mailbox. It is also equipped with a security key to guarantee that items or parcels that are in the mailbox cannot be stolen or taken by non-owners.**
	**This is a site on the mailbox equipped with screw holes. such screw holes are used to attach the mailbox to the ground or the place of installation.**

3.4 MATERIALS AND EQUIPMENT

Material Cost Arduino

NO	MATERIAL	QUANTITY	PRICE
1.	Node MCU ESP8266 	1	RM 35.00
2.	Dc 5v power adapter 	1	RM 30.00
3.	Male to Female Jumper Wire 	4	RM 24.00
4.	IR Line Tracking Module 	2	RM 30.00

5.	Female To Female Jumper Wires 	4	RM 24.00
6.	Male To Male Jumper Wires 	4	RM 24.00
7.	Casing Box 4X4 	1	RM 15.00
TOTAL			RM 182.00

Equipment cost mailbox

No.	Equipment	Quantity	Price
1	Aluminium angle 	12	RM 42.00
2	Angle 	5	RM 151.50
3	Aluminum Flat Bar 	12	RM38.00
4.	Red cardboard 	4	27.6
TOTAL			RM 259.10

3.5 FABRICATE

NO.	PROCESS	PICTURE
1.	**Begin the process of measuring materials according to the size of the design.**	
2.	**Cut and join the frame that has been cut according to the design that has been set.**	
3.	**Join the cardboard board as the body of the letter box to ensure that the measurements made are according to the drawing.**	

4.	**Make a door equipped with a lock on the frame.**	
5.	**Attach all the finished parts including the body and door to the frame that has been made to see the whole project made according to the design that has been set.**	
6.	**Installing the iot sensor and wire setting on the mailbox that has been fully completed.**	
7.	**Adding some tidiness to the project and testing whether the project works properly or not.**	

3.6 METHODS OF DATA ANALYSIS

Every project that is undertaken and completed must have advantages and disadvantages of its own. It was discovered that this Mobile Study with IoT had a number of benefits and drawbacks after the project's manufacturing and testing phases were complete. As stated in the purpose of "safety smart mailbox for apartment," one benefit is the creation of mailboxes with sensors for letters and security packages. to inform the user that there are mail and goods waiting for them in the mailbox. in order to prevent parcels and letters from being stolen and damaged.

BAB 4

RESEARCH AND DISCUSSION

4.1 INTRODUCTION

The information used for analysis in this chapter was collected through surveys and user input on a "Google Form." This chapter will examine the findings of the questionnaires and surveys that were undertaken.

4.2 EARLY RESEARCH

Every project that is implemented and completed must have its own set of benefits and drawbacks. After the manufacturing and testing of this project, it was discovered that this Safety Smart Mailbox For Apartments offers a number of benefits and drawbacks. As stated in the purpose of Safety Smart Mailbox For Apartment, one of the advantages is that it may notify the occupants of the house that letters and parcels have arrived at their home. Furthermore, Safety Smart Mailbox For Apartment can assure the safe delivery of mail and parcels delivered by the sender of letters and parcels.

Furthermore, Safety Smart Mailbox For Apartment can protect the sender's letters and goods from damage. This is due to the fact that the design we created for this product ensures that the things shipped are not destroyed. The size of the Safety Smart Mailbox For Apartment is a drawback. This is due to the difficulty of establishing a suitable size for each home. So we have made a survey using google form for 5 days to ensure that this product gets the response from buyers. In addition, this survey has received a response from 70 people. The next question that we want to emphasize in the google form is as follows:

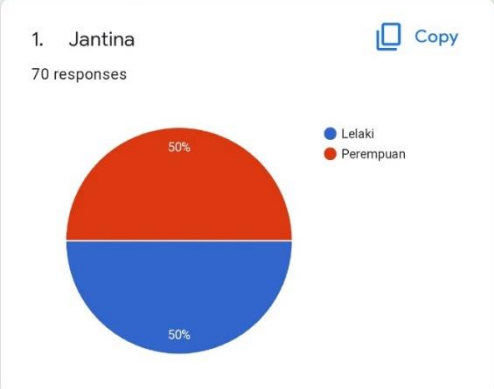


Figure 1

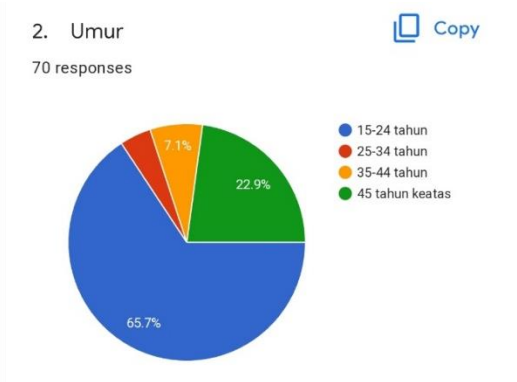


Figure 2

First of all, we have made a survey on gender and age as shown in figure 1 and figure 2. In figure 1 we can see that 50% of men and 50% of women have responded. This helps us in completing the survey because of the number of men and the women who responded are the same.While Figure 2 shows 66.7% who responded are the age range of adolescents.So this innovation product is very suitable very suitable in the future because adolescents will be the next generation.

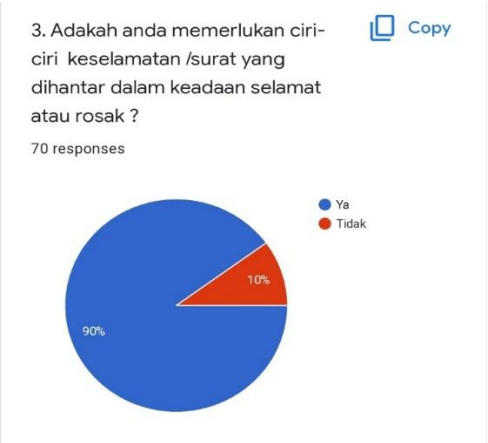


Figure 3

As can be seen in Figure 3, the majority of home occupants require mailboxes with security mechanisms to prevent their items or letters from being destroyed or stolen. This is because there has been a lot of property damage and loss in recent years.

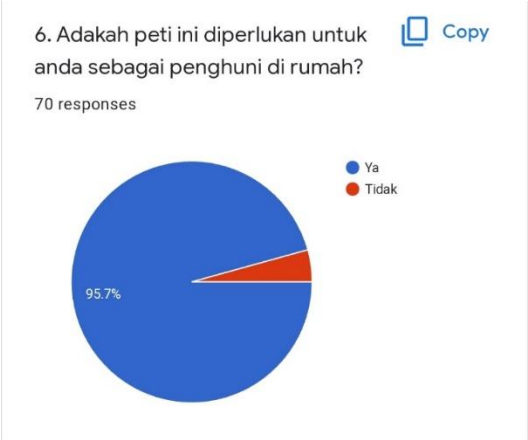


Figure 4 **Figure 5**

Next is regarding Figure 4 and Figure 5 which show that this innovation product has received response and support from residents around the housing area. This shows that this innovation product is useful and suitable for housing area.

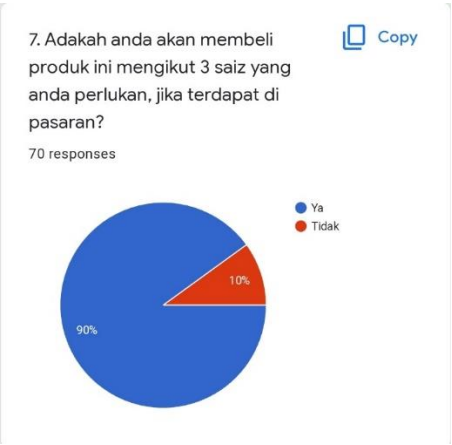


Figure 6 **Figure 7**

Finally, regarding the size of this innovation product. If we look at Figure 7 we can understand that there are 3 sizes that we provide to make it easier for housing residents to choose the size of the mailbox that suits their home. In addition, the size we provide is (0.7 x 0.4 x 0.4) m, (1 x 0.6 x 0.6) m and (1.2 x 0.8 x 0.8) m. If looking at Figure 6 above we find that the size (1 x 0.6 x 0.6) m gets the highest response from the occupants of the residential area.

SUMMARY

Based on the above statement we can assess that there are many positive responses. In addition, this innovative product received a high response from the residents of the housing estate. Therefore, if the innovation product is sold, it is likely to get a high response from the residents of the housing area.

4.3 PRELIMINARY DATA

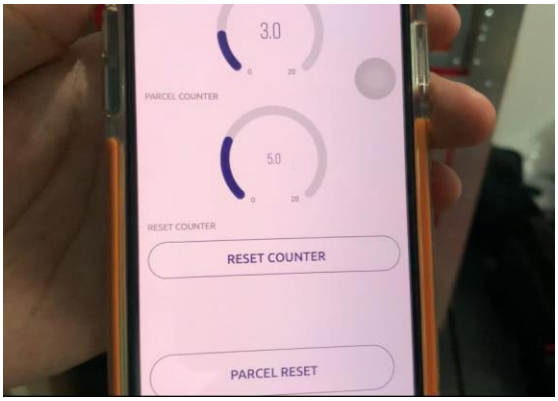
Primary data refers to information and findings from earlier studies, experiments, and demonstrations as well as from structured and unstructured interviews and literature reviews.

4.4 TESTING

The "safety smart mailbox for apartment" has undergone multiple attempts to guarantee that the project runs well. Here are some examples of code for the Arduino system:

```
{
  int pinValue1 = param.asInt(); // assigning incoming value from pin V1 to a variable
  Serial.println(pinValue1);
  digitalWrite(RELAY,HIGH);
 SANITIZED=1;
 TMER=0;

}


//---------------------------------------------------------------------


BLYNK_WRITE(V1)
{
 int DATA=param.asInt(); // assigning incoming value from pin V1 to a variable
  Serial.println(DATA);

}

//-----------------FOR TIMING INSIDE LOOP-----------------------------------------------
unsigned long startMillis;  //some global variables available anywhere in the program
unsigned long currentMillis;
const unsigned long period = 500;  //the value is a number of milliseconds
//-------------------------------------------------------------------------------------

void setup()
{
pinMode(IR,INPUT);
  pinMode(RELAY,OUTPUT);
  digitalWrite(RELAY,LOW);
  // Debug console
  Serial.begin(9600);

  Blynk.begin(auth, ssid, pass);
  // You can also specify server:
  //Blynk.begin(auth, ssid, pass, "blynk-cloud.com", 80);
  //Blynk.begin(auth, ssid, pass, IPAddress(192,168,1,100), 8080);

   Blynk.notify("IM ONLINE NOW!!");   //----------------------------------------------------------------------EXC 1 (Notification)
```

THE DIAGRAM SHOWS THE CODING USED FOR THE ARDUINO SYSTEM USED ON THE SAFETY SMART MAILBOX FOR APARTMENT



THE DIAGRAM SHOWS THAT THE SYSTEM WORKS WELL WHEN LETTERS AND PARCELS ARE PUT INTO THE BOX

4.5 RECOMMENDATION

The "safety smart mailbox for apartment" is used to accept parcels and protect them from theft and inclement weather.

Here are some recommendations to help enhance the study on "safety smart mailbox for apartment." It also seeks to determine the level of effectiveness: -

1) Install a camera in the mailbox to monitor the sender/parcel.

2) Using an IR sensor to identify objects more effectively.

4.6 SUMMARY

The findings of the experiment on "Safety Smart Mailbox for Apartment" revealed that this project met the study's goal of designing a mailbox with a sensor for the safety of letters and deliveries. Furthermore, to notify users that there are letters and parcels in the mailbox and to prevent letters and parcels from being stolen or destroyed.

"Safety Smmart Mailbox for Apartment" makes use of an IoT system that can safely receive parcels and alert the recipient that the delivery has been delivered to their house. This approach can save time and relieve the recipient of the need to wait for the gift to be securely delivered. Receivers may watch the shipment and will be alerted when it is delivered using the 'Blynk' application. Finally, this study demonstrated its ability to alleviate recipients' anxieties about the safety of parcels left outside their homes. This project is intended to be accepted, implemented, and fully employed in line with current technical improvements. The project's outcomes are anticipated to fulfil the demands of all users.

PROJECT PICTURE:

BAB 5

CONCLUSION AND SUGGESTION

5.1 INTRODUCTION

All of the conclusions drawn from the experiments carried out and the discussions in the previous chapters were taken into consideration when making the judgments in this chapter. Related topics to the study's goal and suggestions for further research are covered in this chapter as well. Additionally, this experiment's conclusions are drawn.

5.2 SUGGESTION

We created a test for "SAFETY SMART MAILBOX FOR APARTMENT" for smart mailboxes. The received package is verified using the UNO sensor. The "Blyn app" will receive a notification and a message informing the owner that a package has been placed in the smart package box each time one is filled with a package. This suggests that a smart safe was used to store the gift. In conclusion, as more packages are placed in the smart package box, more notifications are sent out.

5.3 CONCLUSION

The origins of ideas and inspiration have been discussed in this chapter. The stated objectives can be fulfilled by stating the challenges that have been encountered. As a result, everyone, especially online shoppers, can profit from the 'Safety Smart Mailbox For Apartment.' Finally, the 'Safety Smart Mailbox For Apartment' can affect consumers in terms of the security of parcels/letters despatched. Furthermore, it can benefit users who frequently purchase products online by eliminating the need to constantly check the mailbox because the existence of parcels/letters in the mailbox will alert customers via their smartphones.

REFERENCE

Mailbox · Letter box (also known as a letter plate, letter hole, deed or mail slot), a private receptacle for incoming mail

https://en.wikipedia.org/wiki/Mailbox

Arduino consists of both a physical programmable circuit board (often referred to as a microcontroller) and a piece of software, or IDE

https://learn.sparkfun.com/tutorials/what-is-an-arduino/all

This document explains how to connect your Uno board to the computer

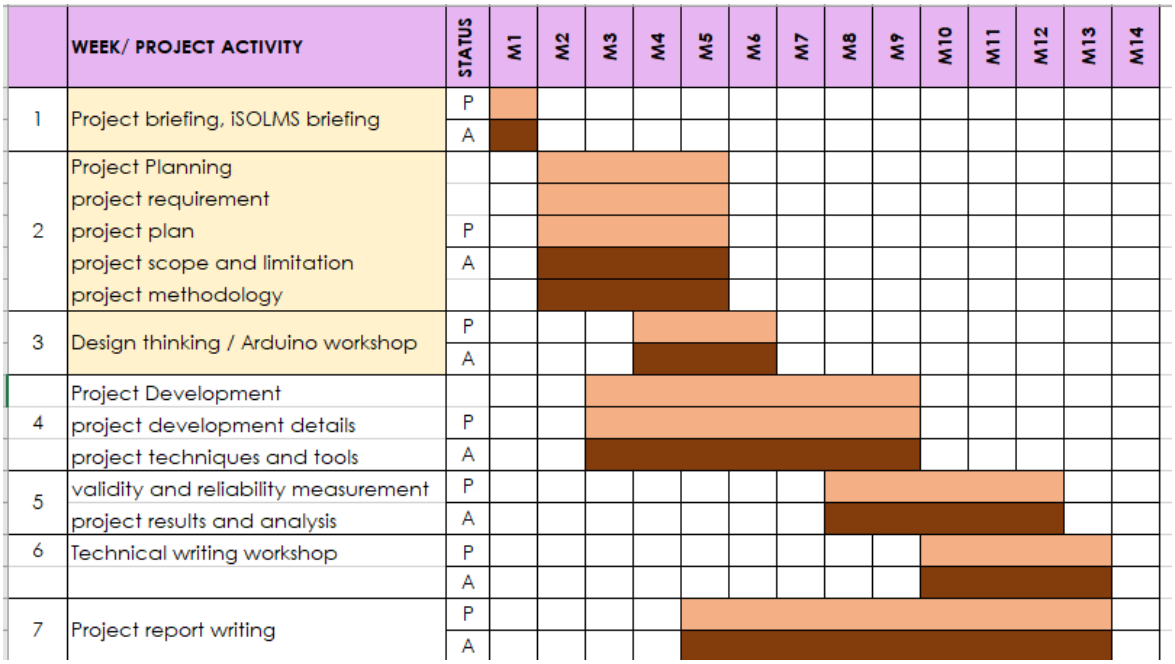
https://www.arduino.cc/en/Guide/ArduinoUno

Stainless steel is an extremely tough and highly durable material with high impact resistance

https://www.srsgroup.co.nz/blog/7-benefits-of-stainless-steel/

The Ring Mailbox Sensor will let you know when your mailbox has been opened and can trigger Alexa and other Ring devices.

https://www.pcmag.com/reviews/ring-mailbox-sensor



	WEEK/ PROJECT ACTIVITY	STATUS	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14
1	Project briefing, iSOLMS briefing	P														
		A														
2	Project Planning															
	project requirement															
	project plan	P														
	project scope and limitation	A														
	project methodology															
3	Design thinking / Arduino workshop	P														
		A														
	Project Development															
4	project development details	P														
	project techniques and tools	A														
5	validity and reliability measurement	P														
	project results and analysis	A														
6	Technical writing workshop	P														
		A														
7	Project report writing	P														
		A														