



## **MECHANICAL ENGINEERING DEPARTMENT**

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**DJJ5141:**  
**PROJECT 1 & 2 (DURIAN OPENER)**

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**TITLE:**  
**FINAL YEAR PROJECT 1 & 2 REPORT**

**LECT NAME:**  
**PUAN WAN MAJDAH BIN TON MAMAT**

**MEMBERS:**

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**SESSION: JUN 2020**



**POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH**

**DURIAN OPENER**

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**Laporan ini dikemukakan kepada Jabatan Kejuruteraan  
Mekanikal sebagai memenuhi sebahagian syarat  
penganugerahan Diploma Kejuruteraan Mekanikal  
(Pembungkusan)**

**JABATAN KEJURUTERAAN MEKANIKAL**

**JUN 2020**

## AKUAN KEASLIAN DAN HAK MILIK

**TAJUK : DURIAN OPENER**

**SESI : JUNE 2019**

1. Kami,            1. MUHAMMAD SYAFIQ ZAHIRUDDIN BIN SAAMIN  
                          (08DMP18F1089)
2. MUHAMMAD SHAHRUL AIMAN BIN MOHD FAUZI  
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Adalah pelajar tahun akhir **Diploma Kejuruteraan Mekanikal, Jabatan Kejuruteraan Mekanikal, Politeknik Sultan Salahuddin Abdul Aziz Shah**, yang beralamat di **Persiaran Usahawan, 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 kami tanpa mengambil atau meniru mana-mana harga intelek daripada pihak-pihak lain.

3. Kami bersetuju melepaskan pemilikan harta intelek 'projek tersebut' kepada 'Politeknik tersebut' bagi memenuhi keperluan untuk peanugerahan **Diploma Kejuruteraan Mekanikal** kepada kami. Diperbuat dan dengan sebenar-benarnya diakui

Oleh yang tersebut;

1. MUHAMMAD SYAFIQ ZAHIRUDDIN BIN SAAMIN (001124-10-2047)	.....  MUHAMMAD SYAFIQ ZAHIRUDDIN
2. MUHAMMAD SHAHRUL AIMAN BIN MOHD FAUZI (000106-11-0049)	.....  MUHAMMAD SHAHRUL AIMAN
3. AIMAN HAKIMIN BIN ABD MALIK (000126-02-0921)	.....  AIMAN HAKIMIN

Di hadapan saya, WAN MAJDAH BINTI TON .....  
MAMAT (811009-11-5330)

sebagai penyelia projek pada tarikh: ( 10.12.2020 )    WAN MAJDAH BINTI TON MAMAT

## **ABSTRACT**

In Malaysia, the process of opening the durian skin is mostly still using a machete. Opening durians using a machete poses some risk to injury. This tool we introduce uses a pressure mechanism system. This tool also does not require much energy. This durian opener will reduce the risk of injury and speed up the process of opening the durian. Therefore, our objective is to reduce the risk of injury and speed up the process of opening the durian so that we can enjoy the durian with a short and safe waiting time. The research data we obtained from the survey conducted stated that it is difficult to open durian, especially among women. As a result of the discussion, the ideal size for durian opener is 100cm high, 35cm long and 30cm wide. The size of the durian is not a problem because various sizes of durians can be opened using this tool. From the research, we found that most of the minimum diameter sizes for large category durians are 80cm and as high as 30cm while medium to large durians are 50cm in diameter and as high as 20cm. Durian opener is able to open the durian within 12 seconds depending on the strength of the user who operates it. The suggestions for improvement for this durian opener is to increase the load on the handle so that the impact applied to the fruit will be high and it will reduce the time to open the durian.

### Key Note:

- Durian
- Durian opener

## **ABSTRAK**

Proses membuka kulit durian majoritinya masih menggunakan parang contohnya di Malaysia dan Indonesia. Umum mengetahui bahawa buah durian mempunyai beberapa jenis dan masing-masing mempunyai duri yang tajam. Membuka buah durian dengan menggunakan parang mendatangkan beberapa risiko kecederaan kepada manusia. Alat yang kami perkenalkan ini menggunakan sistem mekanisma tekanan. Alat ini juga tidak memerlukan tenaga yang banyak. Alat istimewa ini akan mengurangkan risiko kecederaan pada tangan dan mempercepatkan proses membuka buah durian. Oleh itu, objektif kami ialah ingin mengurangkan risiko kecederaan dan mempercepatkan proses membuka buah durian agar kita dapat menikmati buah durian dengan masa menunggu yang singkat dan selamat. Data kajian yang kami peroleh dari kaji selidik yang dilakukan menyatakan bahawa rata-rata masyarakat umum sukar untuk membuka buah durian terutamanya dari kalangan wanita. Hasil dari perbincangan, kami telah mengeluarkan saiz yang ideal untuk kegunaan masyarakat umum iaitu 100cm tinggi, 35cm Panjang dan 30cm lebar. Saiz buah tidak mempunyai masalah kerana pelbagai saiz boleh digunakan oleh alat ini kerana kebanyakan saiz diameter minimum bagi buah durian kategori besar ada 80cm dan setinggi 30cm manakala durian sederhana besar adalah berdiameter 50cm dan setinggi 20cm. Hasilnya, alat ini mampu untuk membuka buah durian dalam tempoh 12 saat bergantung kepada kekuatan pengguna yang mengoperasikan alat ini. Cadangan penambahbaikan untuk alat kami ialah dengan menambahkan beban di atas pemegang supaya impak yang dikenakan kepada buah akan tinggi maka dengan itu masa yang diperlukan juga akan dapat dikurangkan.

Kata Kunci:

- Pembuka buah durian
- Durian

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

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# **CHAPTER 1: INTRODUCTION**

*Prepared by SHAHRUL AIMAN*

## **1.1. INTRODUCTION**

The mechanical industry is a new industry that is rapidly evolving at this point. As an engineering student, the idea is very necessary to secure the future of Malaysia to be on par with the developed foreign countries nowadays. A variety of facilities are created to make people's life become easier. Previously, the durian fruit was created to open one durian fruit. Opening the durian fruit using a knife for a large number of quantities is not a simple job and takes too much time and needs the skills to open it. Thus, we improvise them by making a tool based on previous invention, the Durian opening tool where the process is also manually opening the Durian using 5 blades. The time taken for this product is more efficient and does not use much energy to open durian. Through this module, it is possible to apply the theories to be more effective so that the production of projects can be successfully implemented. Developments in the field of engineering have been increasing and this promotes the use of modern technology and various ideas to keep producing a good product.

## **1.2. BACKGROUND OF RESEARCH**

Malaysia is a country that has a variety of cultures and races. Malaysians have different preferences but what they have in common is mostly they agreed that they love to eat the so-called King of Fruit, named Durian. Durian's physical characteristic is a thorny fruit that comes with different sizes. Up until now, Malaysians still use the old school

opening tools such as machete or knife. However, we believe that by using those tools, it can cause horrible injuries even for veterans or youngster. Therefore, this study is conducted in order to create a safer condition.

### **1.3. PROBLEM STATEMENTS**

Most of the durian's seller have a problem when it comes to open the fruit. Opening durian is not as easy as it seems because durian have a thorny and hard skin. So, the seller took quite a time just to open the fruit. However, by using our special tool opening the fruit will reduce the time taken so it is convenient to anyone that have the tool.

For an average consumer, we all know that not everyone has the skills and energy to open the fruit. Thus, they are tends to take a risk of injuries by using traditional method such as using machete or knife.

Therefore, studies are needed to obtain a better way to peel the durian skin in a safer way and faster.

### **1.4. RESEARCH OBJECTIVES**

- I. Minimize or eliminate the risks of injuries when opening the durian when using our special product.
- II. Reduce the time taken to open the durian compared to using the traditional method.

*Prepared by SHAHRUL AIMAN*

## **1.5. RESEARCH QUESTIONS**

- I. Will using our product helps to reduce the time taken opening durian compared to traditional method that use machete and knife?
- II. Can our specific tool can help lowering the risk of injuries compared to the old school method.

## **1.6. SCOPE OF THE RESEARCH**

The research is held at the certain villages around Kuala Selangor that have large farms that harvesting durians.

*Prepared by SHAHRUL AIMAN*

## **1.7. SIGNIFICANCE OF THE RESEARCH**

The demand of durian is increasing rapidly whether from the country or internationally. Thus, we can see a lot of durian farm grows according to the demands itself but we still using the old traditional method to open the fruit. As we know, the old method still lacks any security features. Using our tool can improve the productivity and security to the users

## **1.8. SUMMARY**

In a summary , Durian is the fruit of the tourists' favourite. After that, it also can gives a large impact to local dealers to sell as well as to ransom and promoting local fruit that can only be planted in the southeast Asian country. Beside that, the trader can also increase income from the sale of Durian's or local fruits. So the seller need to use a some device to open the Durian's skin to take the contents to make a some food product to promote. The problem when peel or open the Durian's fruit that faced by many people out there make us feel that we have to settle this problem. The problem when peel or open the Durian's fruit is dangerous for users because they need to touch the Durian's thorn skin by their hands and their use a machete to peel the Durian's fruits. For safety, it is not sure either it safe or not to users because it can make a some injuries if their not beware while using a machete.

*Prepared by SHAHRUL AIMAN*

## **CHAPTER 2: LITERATURE REVIEW**

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

### **2.1 INTRODUCTION**

Today, many durian sellers and gardeners still use the traditional method of opening durian but the methods are lacking in terms of time and safety. This has inspired us a team to create better durian tools. Our goal in creating this tool is to ensure safety when opening durians. This product not only guarantees safety but also saves time for opening durians. We have conducted research on durian traders and entrepreneurs. Most of them complain about safety issues and time constraints when they open the durian fruit skin to get the essence in it. Previously, a durian fruit was invented but it still has many drawbacks. With the improvements we make, we believe our products can be used more efficiently and comfortably for consumers such as gardeners, traders and durian orchard entrepreneurs.

### **2.2 CONCEPT AND THEORY**

The concept we describe is a concept related to durian fruit and an innovative tool for opening or peeling durian fruit to get the essence in it. We came up with the idea of innovating the durian front end to better use its features, our innovative products can have a great impact in terms of safety, comfort, usability and user convenience. Due to the inherent weaknesses of the durian opener, we have improved our product by creating durian stamps on sites that mimic durians that can hold many different types of durians. Next, we also changed the mechanism or way this tool works to unlock durations. In addition, we have been updating the columns that play a key role as these "adjustable poles" can be adjusted according to the height or size of the durian.

Finally, we put the wheel at the bottom of the "site" to make it easy to carry or move. In conclusion, our updated durian opener is perhaps a bit more interesting in terms of design, usability and convenience for our users.



Figure 2.2.1 : open using a knife or machete



Figure 2.2.2 : peeling using by hand

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*



Figure 2.2.3 : using a old durian peeler

## 2.3 LITERATURE REVIEW

Durian is a hardy, prickly fruit. In Malaysia, durian is a popular attraction for local people because of its delicious taste despite its strong aroma. Durian is predominantly found in south eastern Asian countries. Durian fruit takes a long time to grow and it usually takes about 10 to 15 years to bear fruit, so Durian trees need to be widely planted and they are called "Durian fruit trees". Many of the fruits that attract tourists from abroad are both durian because of its delicious taste and the soft texture of its essence which is a craze for the public.

Durian is very expensive because it is hard to find and it takes a long time to bear fruit. Durian is often diversified into the way it is used in the food industry; it has become a food product. Among them are durian Cendol, Durian ice cream, Durian porridge, Durian pulp/puff and more.

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*





Figure 2.3.1 : DURIAN CENDOL



Figure 2.3.2 : DURIAN ICE CREAM

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*



Figure 2.3.3: DURIAN PORRIDGE



Figure 2.3.4 : DURIAN PULP / PUFF

Just call it "durian", we can smell this local fruit from afar. People say, don't know then don't love. Durian or in scientific terms called durio, is a popular attraction in Asian countries that attracts many world travellers. The frenzy of the fruit king has been proven in Thailand recently, where a Kanayo durian was auctioned for 1.5 million Thai Baht (RM199,000) for its perfect size, shape, and maturity.



The season here has begun, and it's time for you to enjoy the best of the orchard! With more than 200 varieties of durian registered with the Department of Agriculture, Malaysia is the largest durian producing country over Thailand and Indonesia. Here are some of the most popular durian varieties in Malaysia so far:

1. MUSANG KING (D197)



2. TEKKA (D160)



*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

3. RED SHRIMP (D175)



4. SULTAN (D24)



*Prepared by MUHD SYAFIQ ZAHIRUDDIN*



5. BLACK THORN (D200)



6. GOLDEN PHOENIX (D198)



*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

## 7. DURIAN VILLAGE (888)



In the modern age, there are still people who open or cut durian fruits in the traditional way of using machetes or knives. Here we can see that the safety aspects of durian traders or entrepreneurs are extremely unsafe. It may be difficult for experienced traders to open a durian with a hand but it is still dangerous to use on people who want to learn to cut or peel it. So, our Product or Project can handle this problem. The durian opener that it once had, it still lacks for example it was created only to split the durian but to take the essence of having to use the hand to open it can cause injury to the palm even when we wear gloves.

Therefore, we would like to describe the functions of our Project / product that we would like to market. First of all, our product name is ' Durian portable peeler ".

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

The advantage of our product is that it is young to carry anywhere without having to lift it because we have added a wheel to the" base

"of this product so it's easy to carry and it reduces the energy to brought it and its "site" also rotate 360 degrees because we put a "Bearing Ball" on it. The "pillar or body" of our product can be adjusted according to the height and size of different durations. "to hold small or large durian grips. Finally, we changed the 'Blade' to" Hander "because the use of" Hander "and" Pressure Holder "was able to split and open the hard durian skin with neat results such as open the durian with your hands when it is not using your hands at all. We can avoid injury to the hand because if we use the hand for durians this could possibly hurt the palm further if we peel it with a machete or a knife. Alternatively, this product can save time because traders need a short time to peeling durian in large quantities. Finally, the product can provide convenience and convenience to consumers especially traders, gardeners and durian entrepreneurs.

## **2.4. SUMMARY**

In a summary, So with the various kinds of Durian fruits, we need to create a more advanced tool and effective to the dealer to simplify the process to serve the Durian's to the customers. In other words, the more customers ask for orders, the sooner the process of our work to serve them. So dealers take a quick time and it doesn't need much energy during business. So it's an idea to create a Durian's opening device for ease of business. Before that Durian's fruit have different type , shape and size so some old method can be use but some method are not can be use. Our product is produce to make the users time to peel or open the Durians skin become more short and they will be able to keep it anywhere because it is easy to keep. Our products also can open and peel at any type, size and shape of Durian's

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

## **CHAPTER 3: METHODOLOGY**

*Prepared by AIMAN HAKIMIN*

### **3.1 INTRODUCTION**

Methodology is the most appropriate method to run a research and to determine the effective procedures for answering the problem of research. This chapter include introduction, research design, data collection method, data analysis method, research instrument, sampling techniques and summary of the chapter.

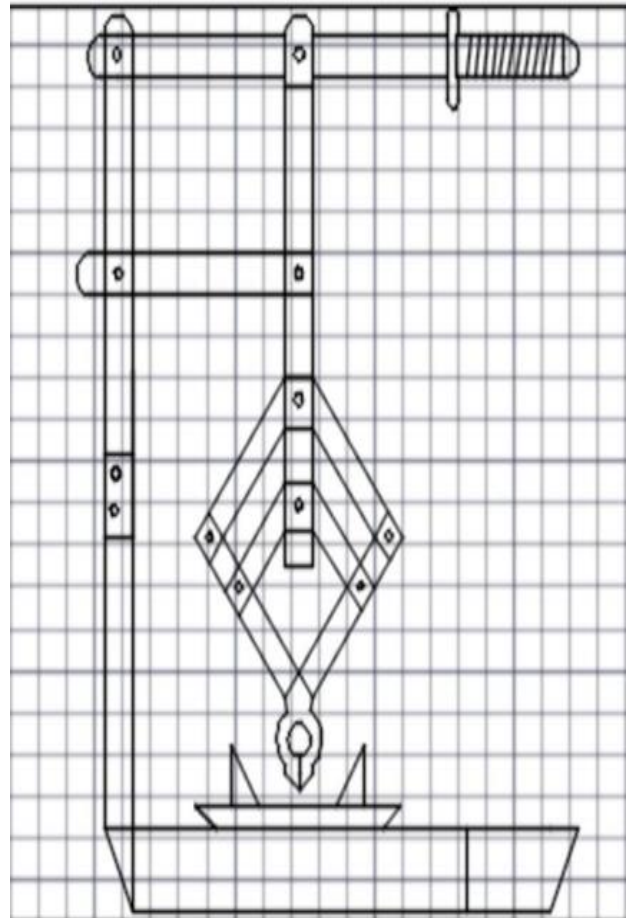
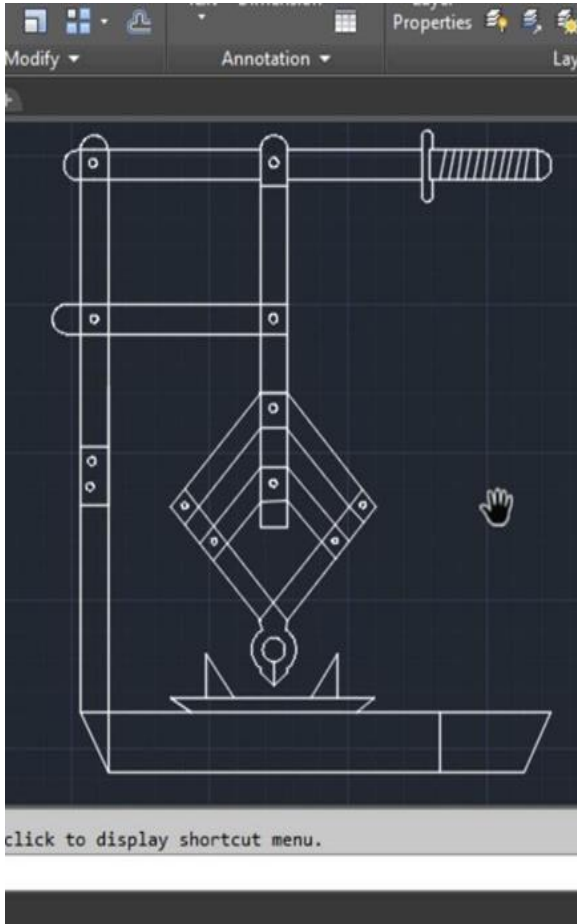
However there is a one subtopic that contained in this chapter is the biggest thing that have relation with the type of product will be produce. Some research maybe need more detailed discussion relate to the design and Instrument research than the other research. Methodology is one of the engineering aspects that should be taken seriously in making a products. Methodology has been define as a ways of selection and analysis method. Moreover with this methodology, a product that made can be make perfectly and excellently. Methodology also a method and a technique to design, collect and analysis data to have an evidence to support a research. Methodology will explain the problem that be examined and cause of a method and technique use in this research.



## 3.2 PROJECT DRAWING ( 2D AND 3D )

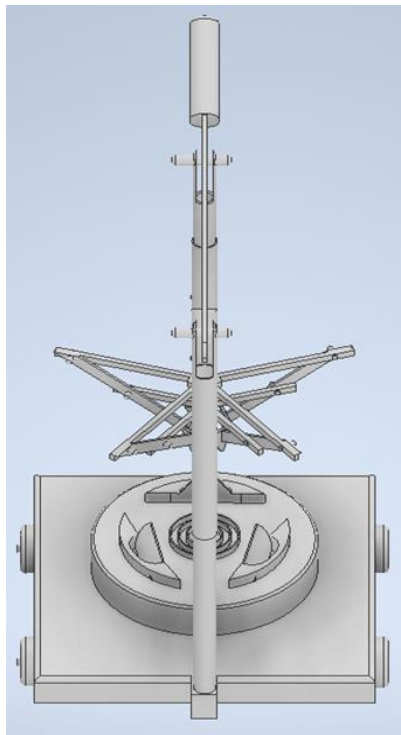
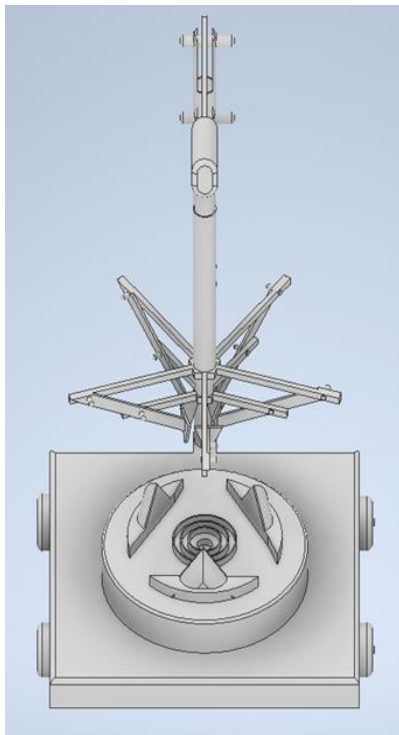
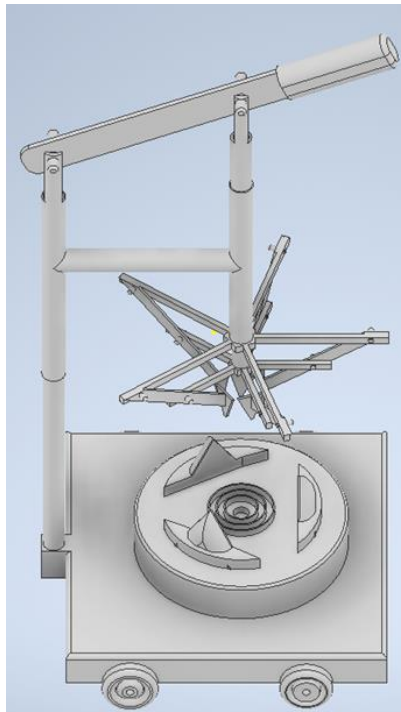
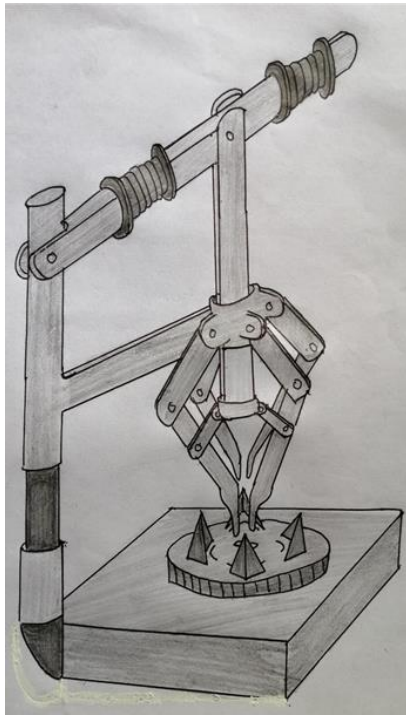
### A. 2D DRAWING (DURIAN OPENER)

(MODEL MODE & LAYOUT MODE)

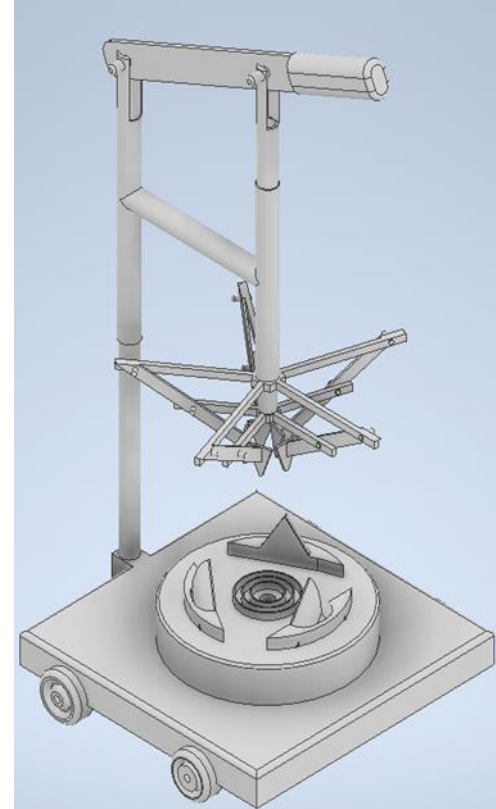
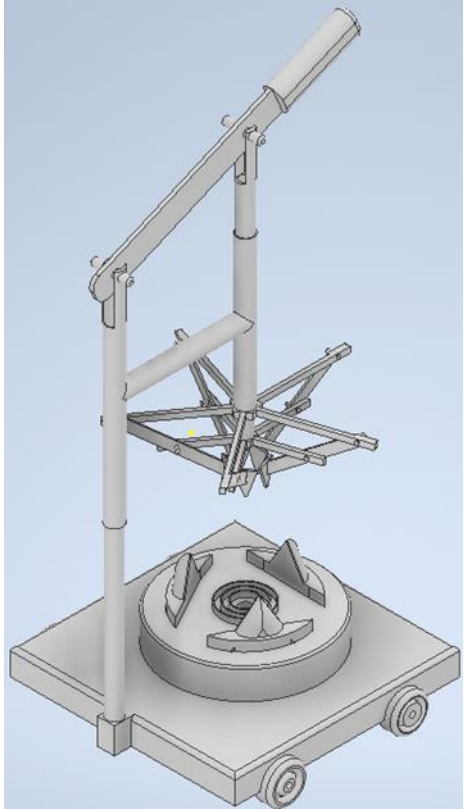
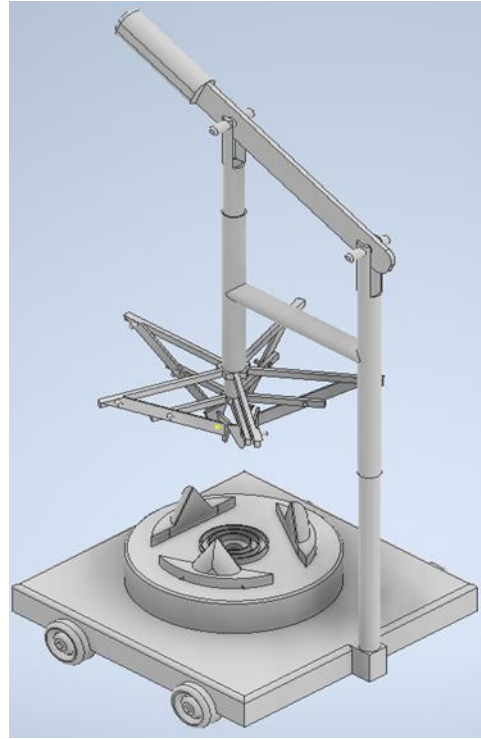
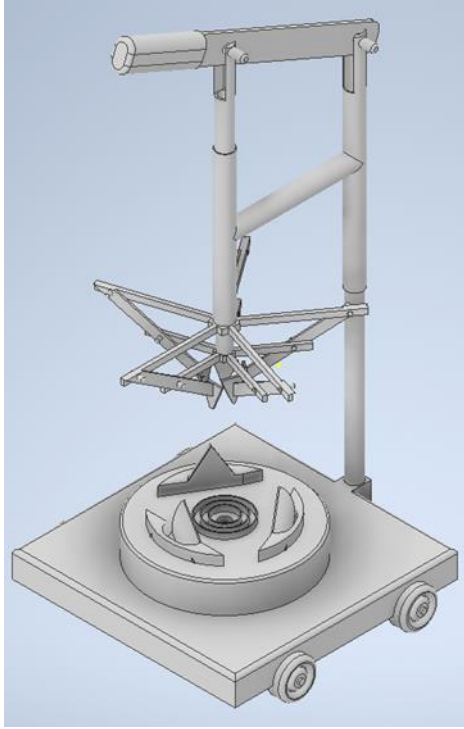


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**B. 3D HAND DRAWING AND IN INVENTOR (DURIAN OPENER)**



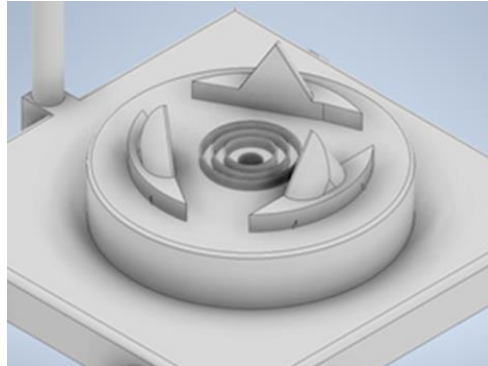
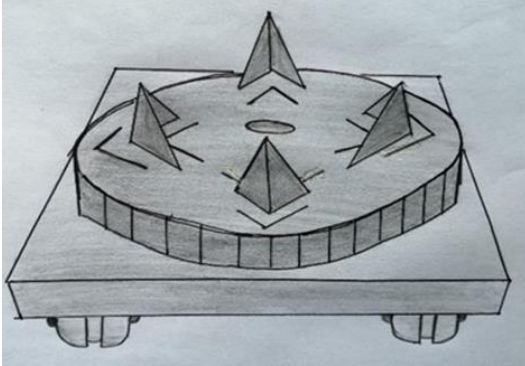
*Prepared by MUHD SYAFIQ ZAHIRUDDIN*



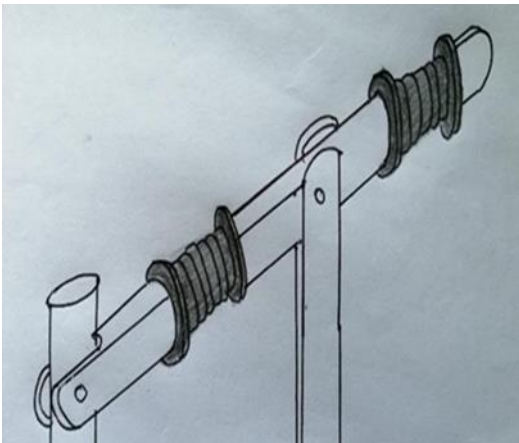
*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

## C. PART OF COMPENENTS (DURIAN OPENER)

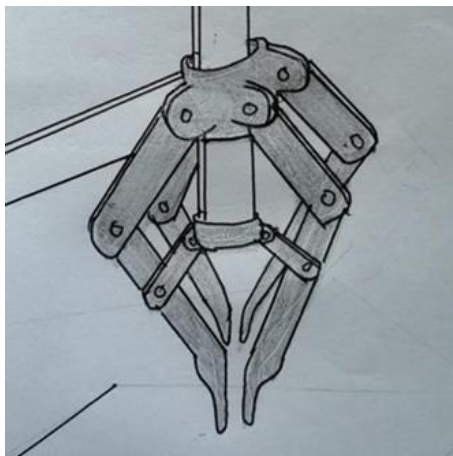
### GRIPPER / BASE :



### HOLDER PRESSER

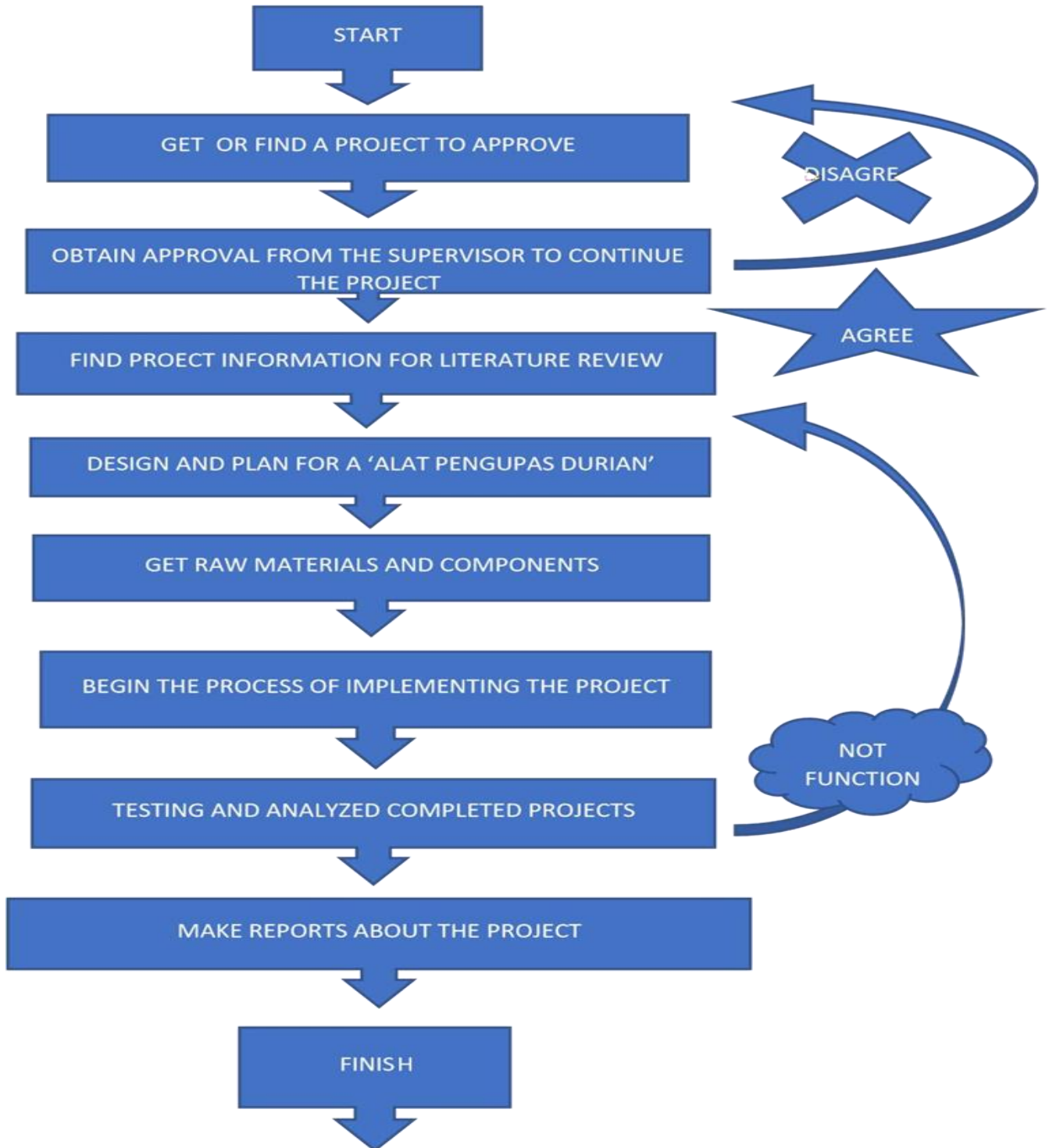


### HANDER:



*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

### 3.3. FLOW CHART



### **3.3.1. IDENTIFYING PROBLEM**

To recognize the problem of peeling the durian with a short time rate was done at the beginning of this analysis. Careful preparation is then applied by developing a "durian opener" to solve the problem. During the peeling process, this saves time and makes it easier for the user to quickly peel the durian to prevent injuries or accidents.

### **3.3.2. DESIGN TO CREATE**

This model is intended to reflect before the implementation is completed, even this design would provide more comprehensive details to create a "durian opener" before the project is implemented.

### **3.3.3. MATERIAL SELECTION**

Material selection is intended to promote the implementation process of the project. Furthermore, it can also prevent cost production wastage because we made the selection of the right material and appropriate for the project to be produced before starting the project.



### **3.4. RESEARCH DESIGN**

The research is conducted using qualitative, casual and by Google Form method.

#### **3.4.1. PROJECT DESIGN DRAWING METHOD**

There are 3 concept production groups. The first is an established design in which the scale, shape, safety features and performance are minor improvements. The second is to use an existing design or take it and design it in another type to work. Finally a new concept is born in which the design is a new idea.

#### **FIRST DESIGN**

This concept was created in the initial phase of idea creation. This bump model is just a summary of the project we are going to make.

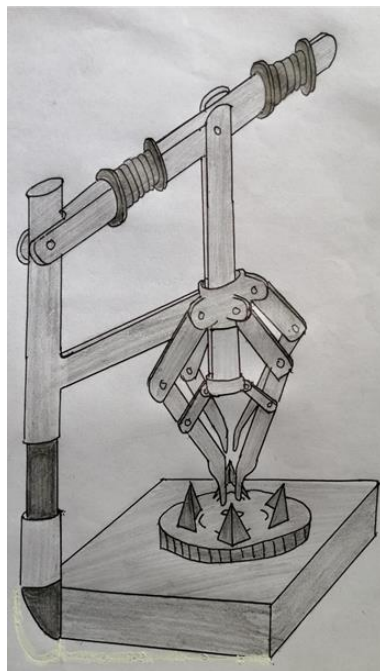


Figure 3.4.1: First design

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

## SECOND DESGN

After the research was carried out, structural improvements were made to achieve the machine's safety and reliability. It was planned to be easy to operate for this project.

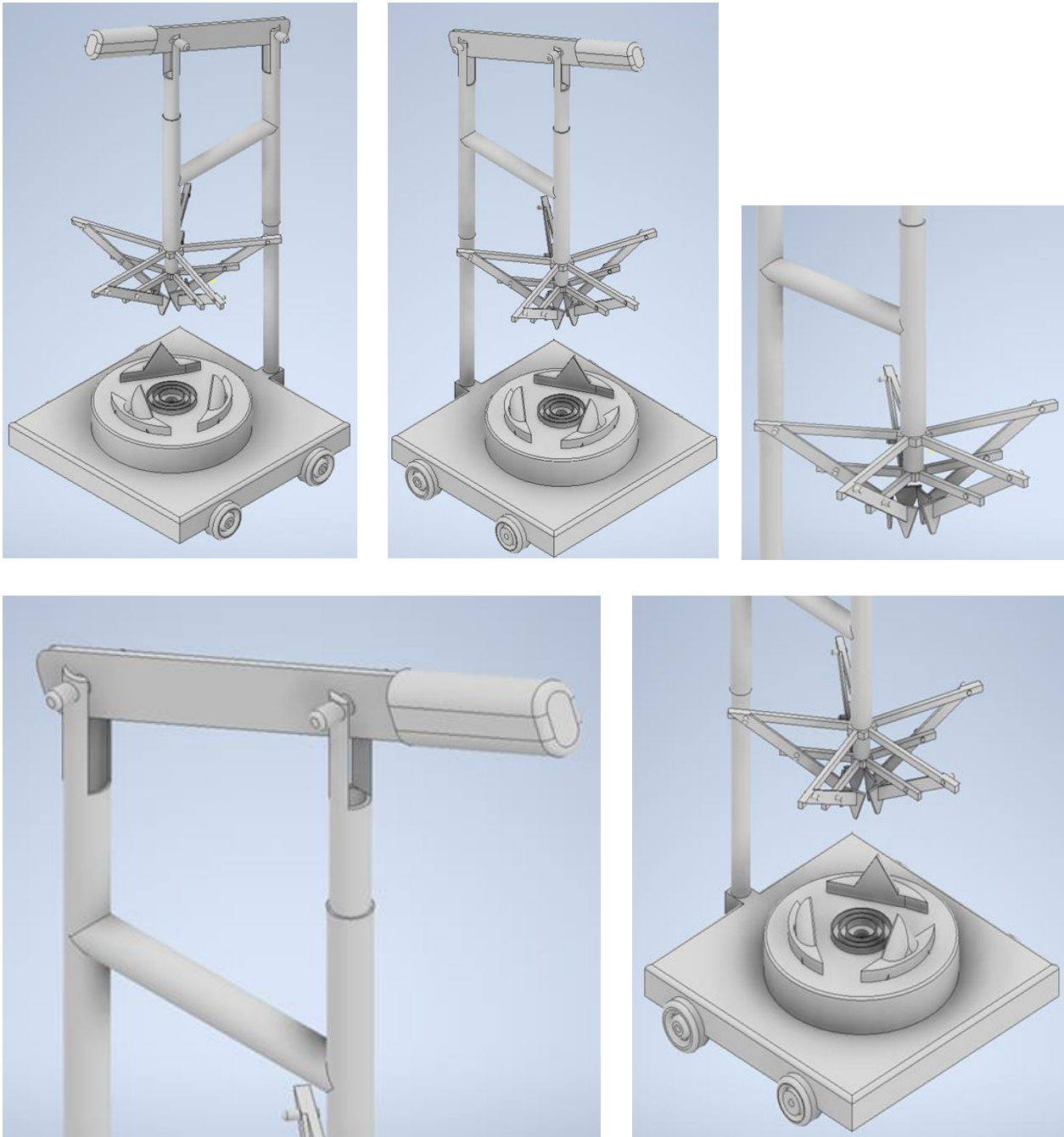


Figure 3.4.1 : Second design

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*



### **3.4.2. PROJECT EQUIPMENT AND MATERIAL**

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

A significant factor affecting material selection is:

I. Material efficiency and quantity

II. Climate/Environment

III. Price of Product (manufacturing rate, material cost).

Among the materials used to create this "DURIAN OPENERER" in the project are :

**MATERIAL SELECTION ON THIS PROJECT IS OVERALL FROM STAINLESS STEEL**

In order to do a project, the choice of materials is something that must be emphasised. To avoid wastage, the selection process of goods must be welcomed precisely. It is necessary to accurately schedule the selection of goods so that the material is safe to use and can last a long time.

#### **1. IRON PLATE**



The Iron plate is a material that can be made by smelting iron ore in a furnace. it is using to be a BASE for GRIPPER of durian.

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

## **2. BEARING BALL**



A bearing is a machine element that constrains relative motion to only the desired motion, and reduces friction between moving parts, so because of that we suggest to use it as GRIPPER for grip the durian and can adjust like rotate in the good position to peel it.

## **3. STEEL PLATE**



Steel Plate, or structural steel is simply steel sheet material that can be customarily cut and welded to develop a more elaborate product. It is made by compressing multiple steel layers together into one, forming a plate of steel. Applications for Steel Plate are based acutely on the specifics of the projected .So we use it for make a hander as peeler in this machine (DURIAN OPENER).

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

#### 4. IRON HOLLOW BAR



A **hollow bar** is always **round** and can look like a pipe or a tube, however, typically the walls are much thicker. A **hollow bar** has the strength of a solid **round bar**, but since there is no center, there is less weight per foot. We take this iron hollow bar to make a “knife” to attach (weld together) with Steel flat Plate as a HANDER.

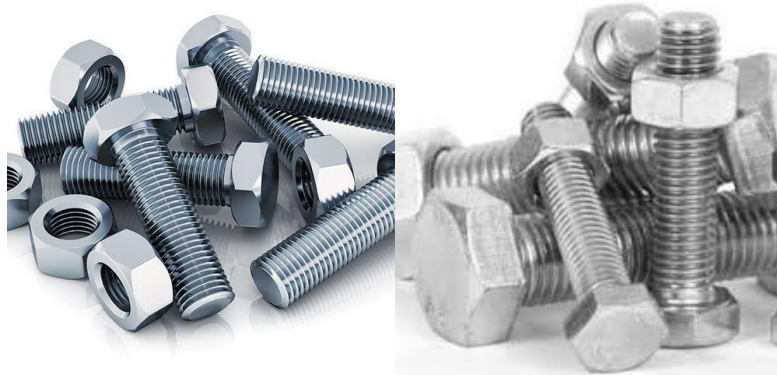
#### 5. STAINLESS STEEL PIPE ( 2 TYPES WITH DIFFERENT DIAMETER )



Stainless steel is a versatile material comprised of a steel alloy and a small percentage of chromium. In the addition of chromium adds to the material's corrosion resistance, a trait that earned stainless steel its name. So we use it for make a BODY inner and outer for this machine. it is like piston mechanism operation.

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

## 6. BOLT AND NUT



Many threaded fasteners can be described as either **screws** or **bolts**, depending on how they are used. **Bolts** are often used to make a bolted joint. This is a combination of the **nut** applying an axial clamping force and also the shank of the **bolt** acting as a dowel, pinning the joint against sideways shear forces. We use it to connect the HANDBOOK as the joint for each part.

## 7. SMALL WHEEL



In its primitive form, a **wheel** is a circular block of a hard and durable material at whose center has been bored a hole through which is placed an axle bearing about which the wheel rotates when torque is applied to the wheel about its axis. So we put this wheel above the base for make it easy to move after use this machine.

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

### 3.5. ESTIMATION COST OF PROJECT

NO	MATERIAL	QUANTITY	COST/UNIT	PRICE
1.	IRON PLATE	2	RM30.00	RM60.00
2	BEARING BALL	1	RM20.00	RM20.00
3	STAINLESS STEEL PIPE / BG PIPE	4	RM15.00 1 METER	RM60.00
4	STRIPE PLATE	1	RM20.00	RM20.00
5	STEEL PLATE (10MM)	1	RM20.00	RM20.00
6	STEEL PLATE (6MM)	1	RM 25.00	RM20.00
7	IRON HOLLOW	3	RM 30.00	RM90.00
8	BOLT	2	RM15.00 1 PACKET	RM30.00
9	NAT	2	RM15.00 1 PACKET	RM30.00
10	RUBBER HAND GRIP	1	RM10.0 0 1 PAIR	RM10.00

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

### **3.6 DATA COLLECTION METHOD**

Quantitative methods were selected for data collection using questionnaires and Google Form. The questionnaire was distributed to respondents face to face while the Google Form and distributed to citizen. The data collection period took place for 6 months from Jan 2020 to June 2020. The data obtained are use to improve the design and functions.

### **3.7 RESEARCH METHODOLOGY**

The research instrument is based on the scales. These include supplier opinions, information sharing, people opinion. The questionnaire used consisted of a 5-point type format (1 = strongly disagree to 5 = strongly agree) divided into three sections. The first part examines the personal informations such as gender, age and etc. The second part are about design acceptance of our product. The third part are about overall opinions, design improvement suggestions and etc.

### **3.8 SAMPLING TECHNIQUES**

For the research, we use the clustered sampling. A group of the population are used as the sampling unit, rather than individuals. The population is divided into subgroups, known as clusters, which are randomly selected to be included in the research. We will primarily use a single stage of clustered sampling. In single-stage cluster sampling, all members of the chosen clusters are included in the research.

*Prepared by AIMAN HAKIMIN*

### **3.9 DATA ANALYSIS METHOD**

The data that have been collected will be process and analysis so that we can get the ideas on the product. The data collected will be use to improve our product and make a little changes.

#### **3.9.1. ANALYSIS**

The information collected is gathered, processed and evaluated in order to allow the next steps to be taken and the study to be decided as required in the objectives.

#### **3.9.2. FINAL SELECTION OF MATERIAL**

The method of choosing the materials to be used prior to buying project materials is the final selection of materials. This helps to prevent cost wastage and to be able without any difficulties to start a project.

#### **3.9.3. MANUFACTURING PROCESS**

The cutting, joining, measuring, grinding, welding and attaching process to all components is a method to make our 'DURIAN OPENER' work well for durian peeling.

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

#### **3.9.4. IMPROVEMENTS**

In addition to the project, modification activities are intended to enhance the project if it does not work well and has other needs. For our project to look better than before, modifications are also very important.

#### **3.9.5. PROJECT TESTING**

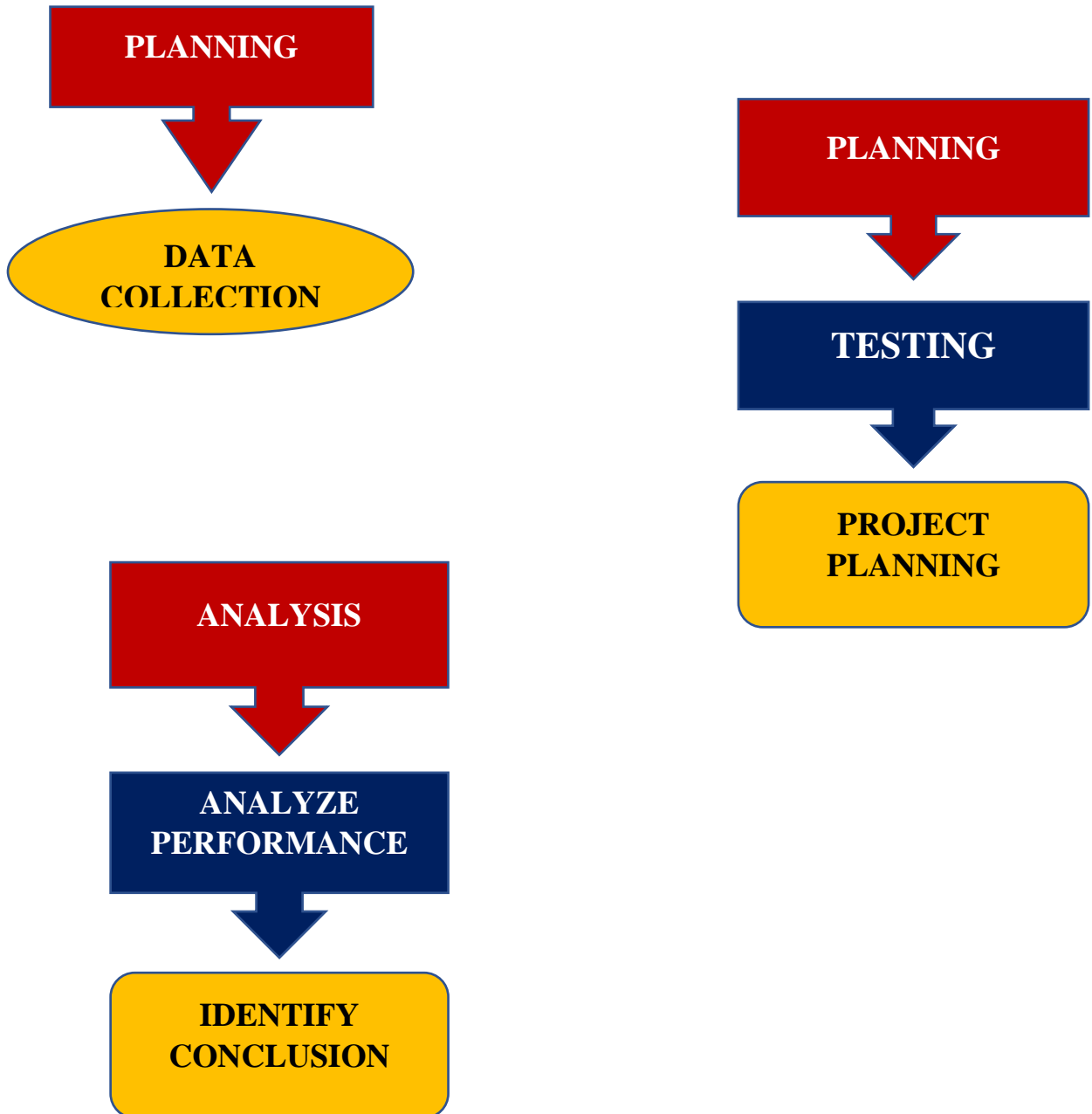
Perform a final test by selecting a 'DURIAN OPENER' to see the results or not with a lot of fittings. We have identified any shortcomings and will make changes from time to time.

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### 3.10. DEVELOPMENT OF PROJECT

This project includes three main steps, starting with planning, execution and testing, to implement the project. All of the methods used are to find and analyse related project information.



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### **3.11. SUMMARY**

In the summary of the stages, research design, data collection method, research instruments, sampling techniques and data analysis method are made systematically for knowing the fact and information to support the research and to imagine it clearly in this research. After data analysed is made, it important to did a summary and conclusion for the result and hypothesis either the peeler tool is effective or not. So from that, we can move to the next step to produce the products. This topic is to make the users know the important of our products and how better the improvements that we made to overcome the others product/peeler tools disadvantage.

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

## **CHAPTER 4: FINDING AND ANALYSIS**

### **4.1 INTRODUCTION**

Analysis is an innovative and systematic attempt to improve knowledge, including individual, cultural and social knowledge, and the use of knowledge to create new applications. It is used to create or verify evidence, reaffirm previous work, solve problems that are new or current. The findings of the research that we obtained from the survey we conducted. A selection of answers that we can and will use in our studies. In addition, our analysis of the respondents' data provided about our products complements the results of our investigation. We have conducted the survey to the locals and to other students. The survey given in a google form, the responds that we got are good and can be use as a parameter in understanding our local's problem and opinions.

### **4.2 RESPONSE RATE**

A survey that we conducted in about 2 months have been answered by 66 people. From the beginning, initial target was 100 respondents. Since we only can get the response rate 66% from out of 100%. The remaining target are 40 respondents that doesn't participate in the survey, we cannot do the statistic out of it.

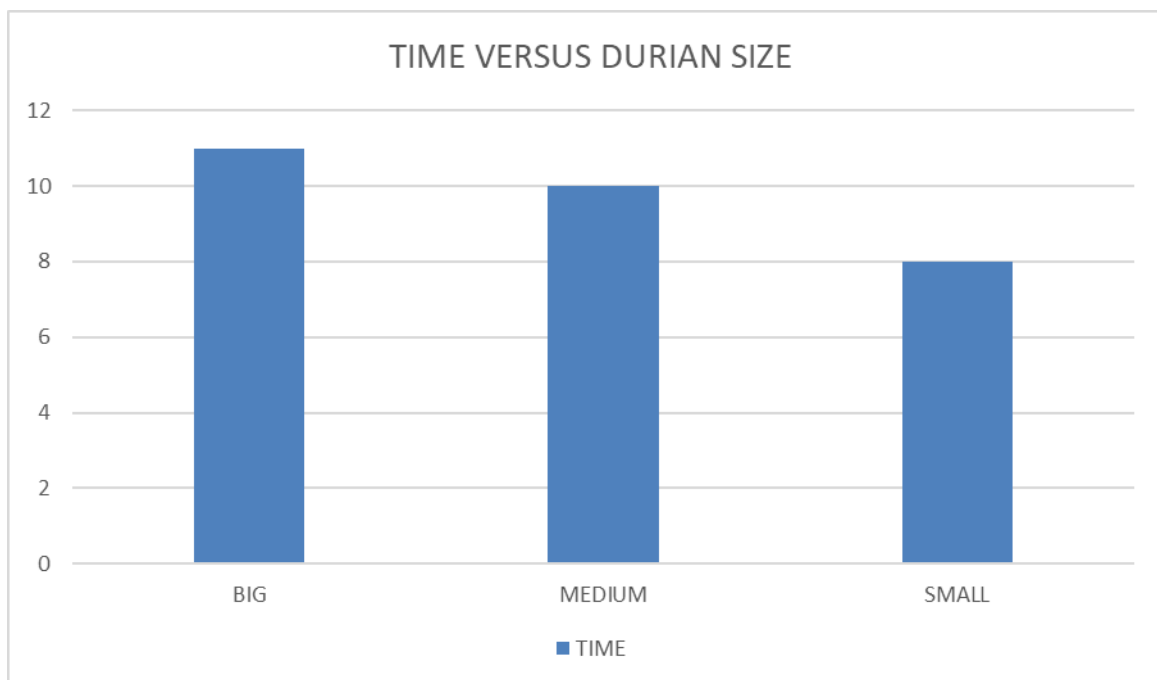
*Prepared by AIMAN HAKIMIN*

### 4.3 DEMOGRAPHY PROFILE OF RESPONDENTS

Out of 66 respondents are 32 women and 24 man. 25 women and 5 man answered that they don't know how to open durian. The remaining do know the way to open it. 60% of the respondent knew that using the machete is harmful and want a tool that are safe to use while other 40% also knew the harm but preferred to use machete since they're already used to it.

### 4.4 RESEARCH FINDING

An experiment has been done after the tool that we created can be use practically. There's some limitation because we are doing the experiment in off-season of durian. With the limitation we can create a graph for Time versus Size of durian. The durian that we tested are 2.47 Kilogram. Trough that, the graph should be like this:



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## **4.5 SUMMARY**

From what have been done, the size of durian does matter in determine the time taken to open the durian. Our tool can be use by any size of durian but what really matter is the force to operate the tool. The tool still can be improvised by a lot of difference way. The time also can be reduced if the operator has a strength since this tool depends on the force.

*Prepared by AIMAN HAKIMIN*

## **CHAPTER 5: CONCLUSION AND DISCUSSION**

### **5.1. INTRODUCTION**

This chapter discusses the project's debate, conclusion and upgrade plan all together. The study was performed from the data from the project's test run. The discussion of all the outcomes of the test run and interpretation will therefore be clarified in this chapter. Then, based on the debate and upgrade plan that has been made, the decision will be made. The aim of the discussion is to encourage people during the semester to ask questions related to the project. This is because, as well as fully operating programmes, all work methods can be carried out and documented in the report book. Such meetings are often carried out from time to time to ensure that the targets can be completely met. In terms of resources, project quality, utilisation survey, and successful ways to execute its output, specific issues or issues that need to be addressed are.

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## **5.2 DISCUSSION**

### **5.2.1 Issues faced during project execution**

#### **1. Problems in time terms**

In terms of time, among the issues that often occur when carrying out a project is. Things and components needed for the project need to be identified for a long time. It was because we were able to find a reliable and affordable product for our project.

#### **2. Problems in terms of services**

Depending on the preparation time set, the issue of lack of equipment allows the execution of the project not to operate smoothly. This is because a lot of machinery has to be used in order to get a tidy and perfect project result. At the polytechnic workshop, the equipment given is too small and shared by some other members of the community. Therefore, it will be possible to borrow and share equipment with other group members to solve this issue. In this way it is possible to prevent loss of cost in buying equipment.

### **5.2.2 Another problems.**

Many aspects - aspects that need to be taken and emphasised during the process of planning a project so that the product created is able to achieve the desired goals and meet the needs of customers. For instance, several factors need to be taken into account in the development of this final project product, 'DURIAN OPENER'. One of them is the method in question, items that are helpful to customers, cost of Manufacturing ,the time needed to complete it, fair price or affordable price and consistency .

*Prepared by SHAHRUL AIMAN*

In addition, there are some variables that need to be taken so that the function of the instrument can be questioned. The characteristics that need to be defined are Uncomplicated handling process and Simple to use.

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### **5.3. CONCLUSION**

In the conclusion , This final task can be prepared in preparation for there are some conclusions taken, including is First, this portable durian fruit tool there is a more realistic operating theory, which is Pressure splits at one time, as well as quite simple placement. Next ,the process time of the activity is more effective, which is  $\pm 12$  to 20 seconds / fruit and 5 to 7 Kg instrument weight .Although ,this tool is very practical and effective for helping fruit sellers and customers or buyers. For the future this machine can be designed using the technology of electric motors or other actuators to no longer use manpower, so that the durian fruit can be moved by the conveyor as its conveyor.

### **5.4. SUMMARY**

The results obtained from this experiment will achieve the specified goals based on the studies that have been performed, which is that fruit traders, farmers and the general public can peel or open the durian skin to get the material more efficiently. Moreover, compared to the instruments or methods that used to be manual, it can also save time during the peeling process. Then this machine can help avoid accidents during the peeling process and make it easy for a consumer to use.

*Prepared by SHAHRUL AIMAN*

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- [https://www.youtube.com/watch?v=Im6eMeuXp\\_Y&ab\\_channel=sawatkos](https://www.youtube.com/watch?v=Im6eMeuXp_Y&ab_channel=sawatkos)
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*Prepared by SHAHRUL AIMAN*

# APPENDIX

Prepared by MUHD SYAFIQ ZAHIRUDDIN

## A. SURVEY QUESTIONS

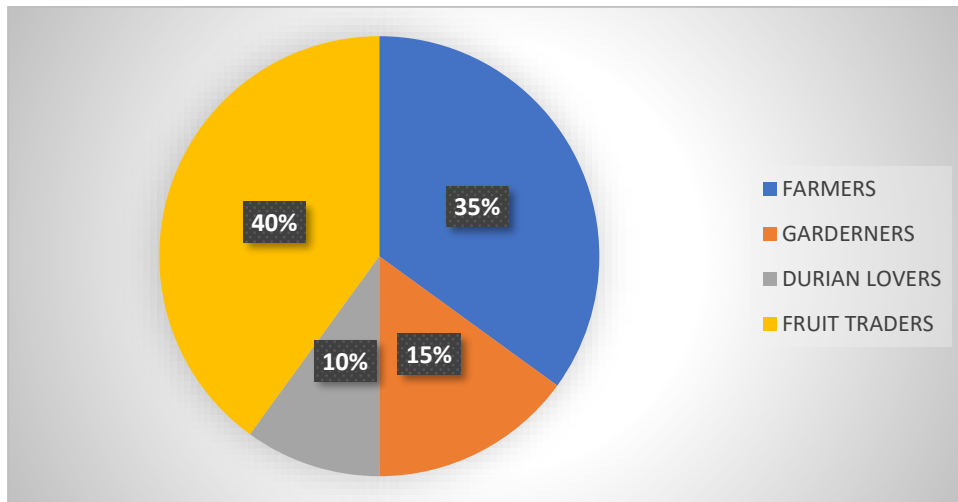
1. Who are you?

Farmers

Gardeners

Fruit traders

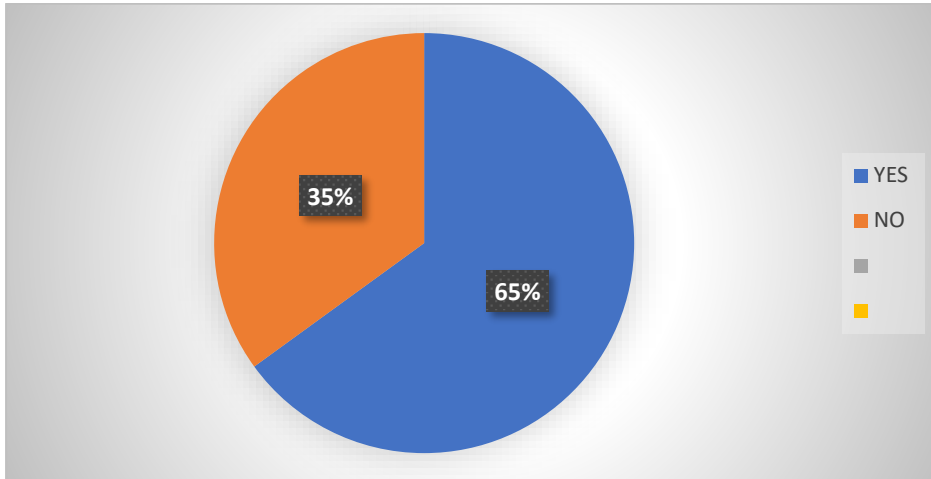
Durian lovers



2. Do you find it difficult to opening or peeling durian skin to take the contents ?

Yes

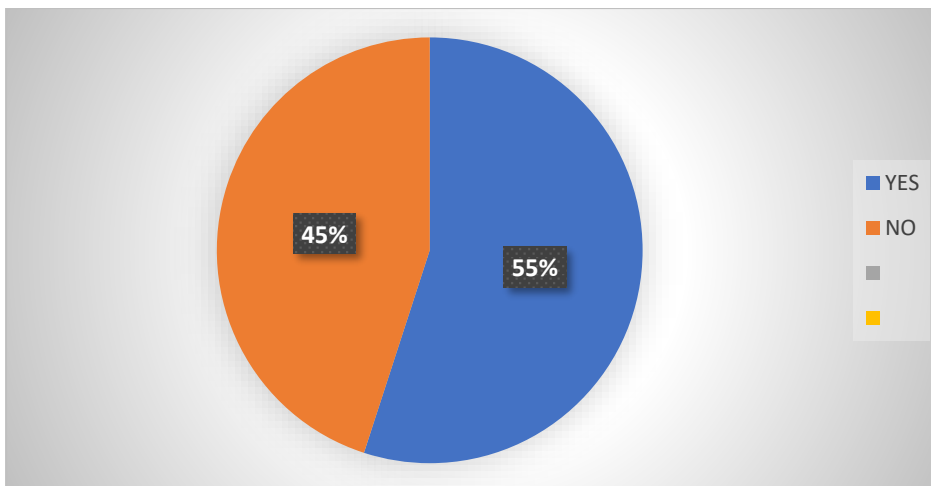
No



3. Are you satisfied with the way you peeling durian using traditional method before this ?

Yes

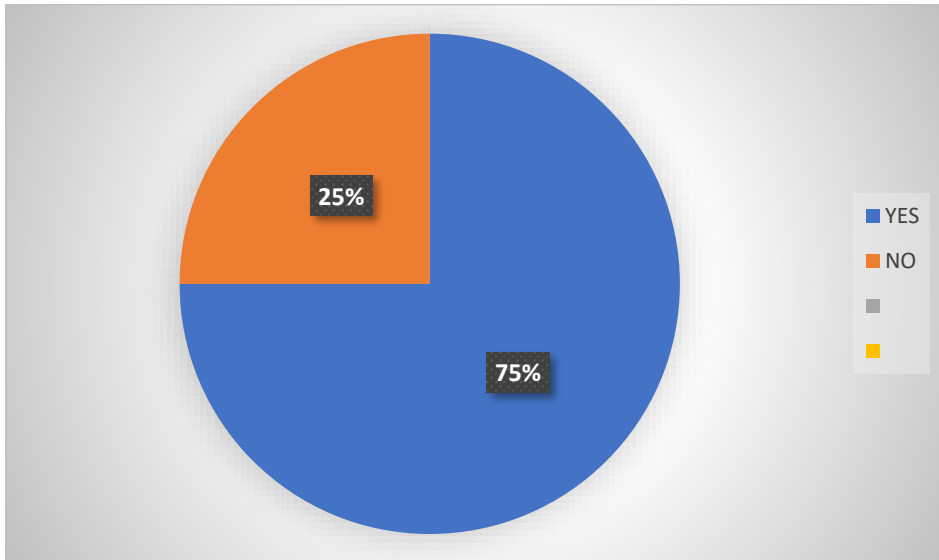
No



4. Do you take too much time when peeling during manually process ?

Yes

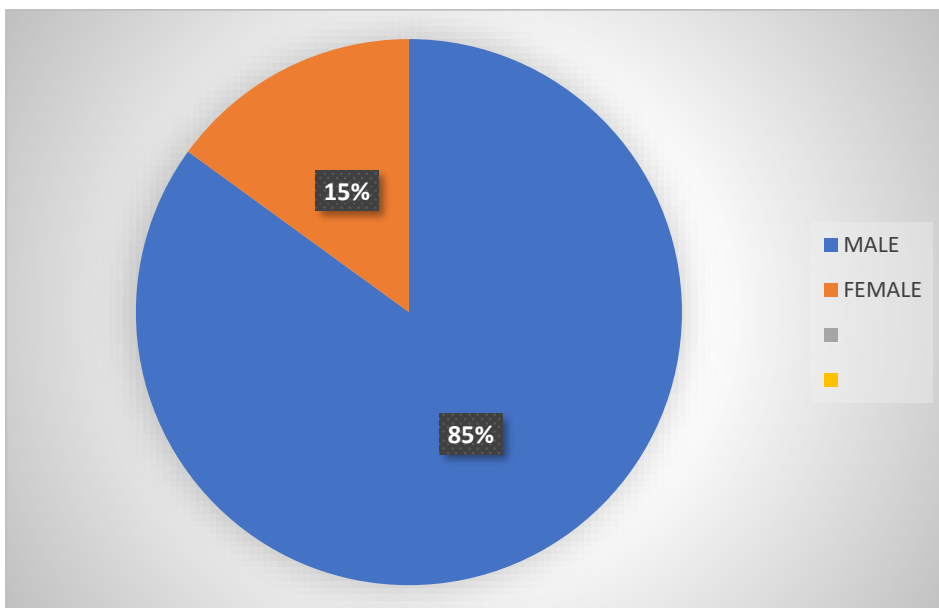
No



5. What is your gender ?

Male

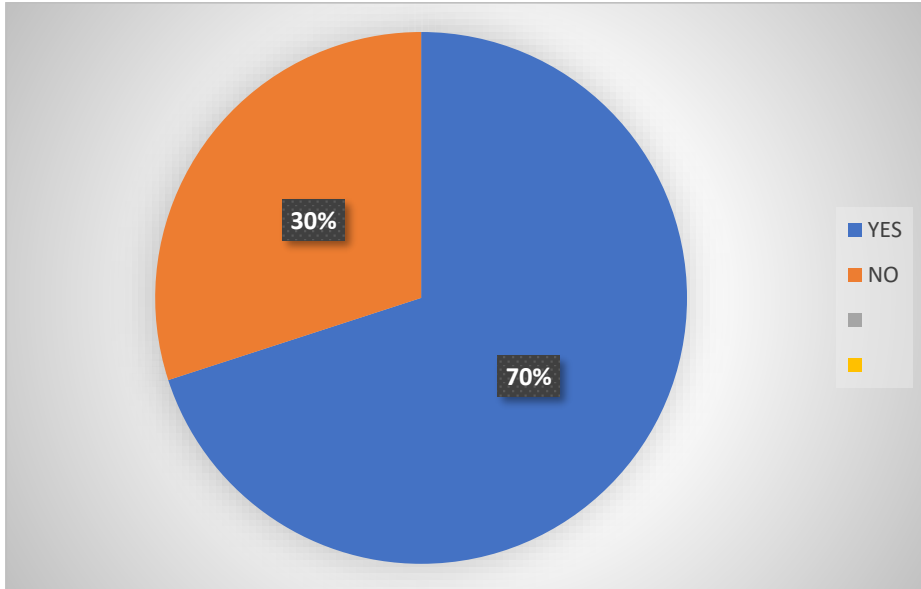
Female



6. If the Durian opener tools now is reasonable, are you interested to buy?

Yes

No

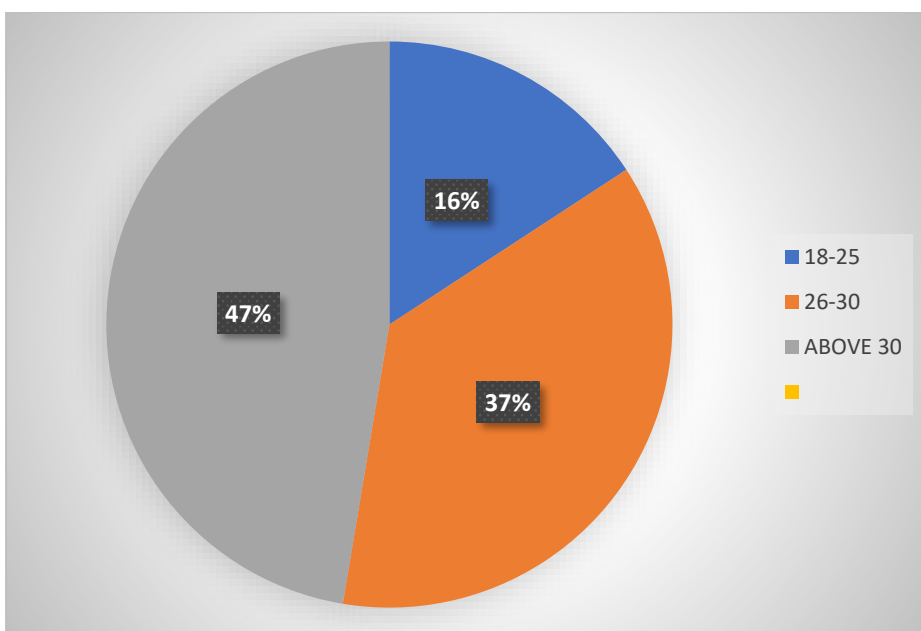


7. How old are you ?

18 – 25

26 – 30

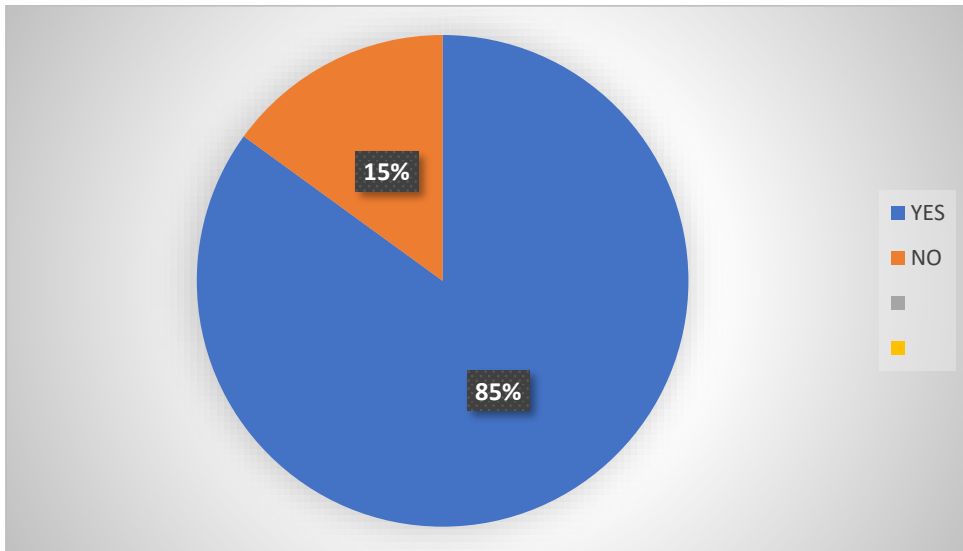
Above 30



8. Have you been ever injured while splitting Durians ?

Yes

No

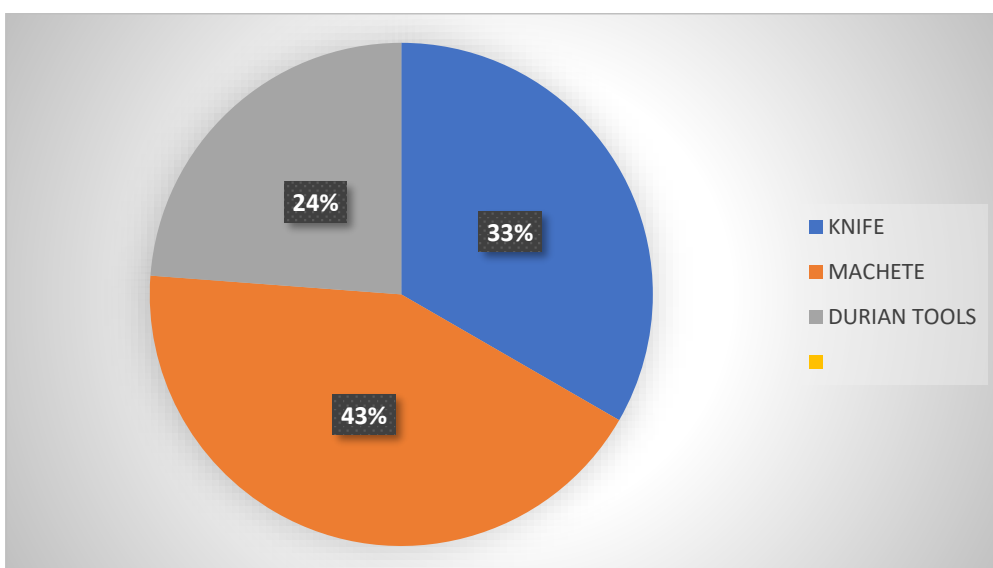


9. What tools do you use to cut durians ?

Knife

Machete

Old Durian openers tools



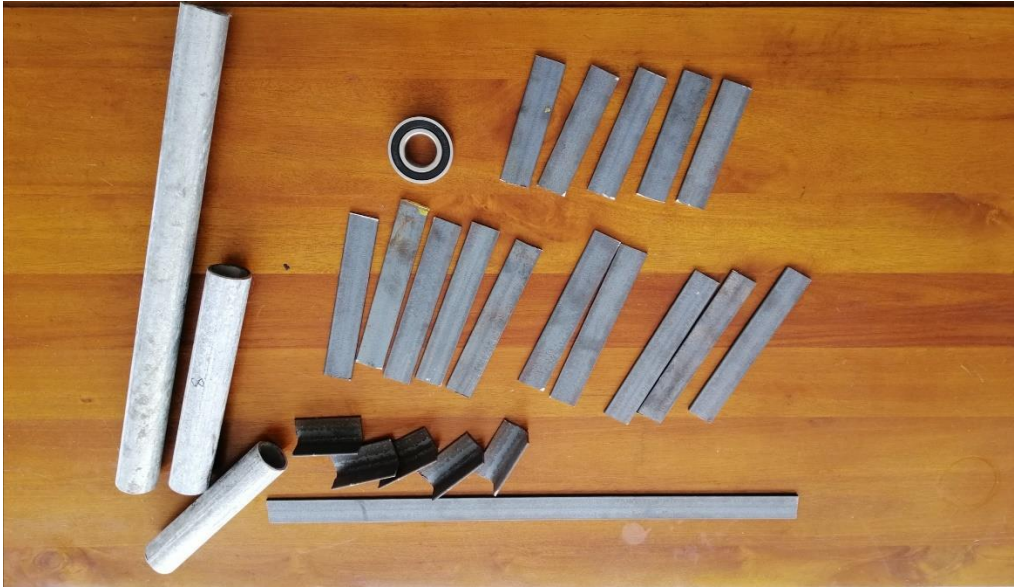
10. Please state your problem when clean the ceiling fan?

## PROCESS TO MAKE A “DURIAN OPENER“

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

### 1. BUY AND PREPARED MATERIALS

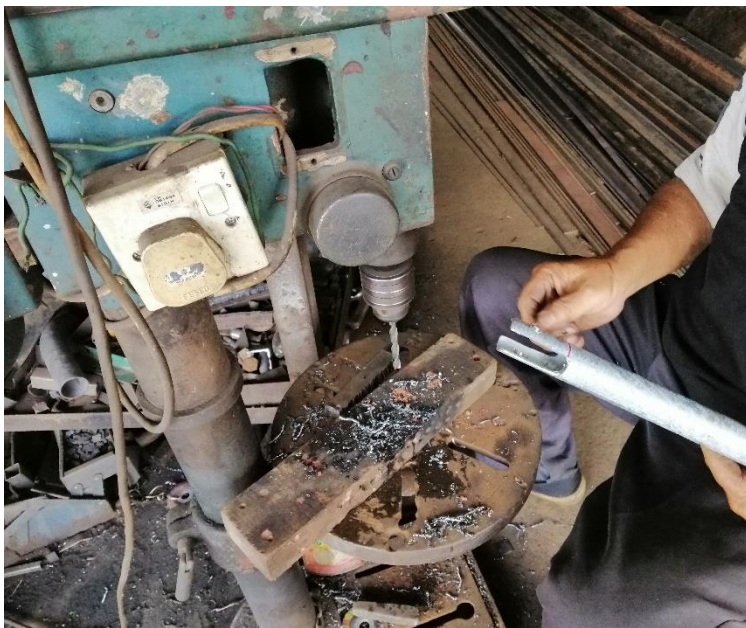
- PIPE, FLAT STEEL, BEARING, HOLLOW PIPE AND ETC





## 2. MEASUREMENT , DRILLING AND CUTTING/GRINDING PROCESS

- MEASUREMENT AND DRILLING



- GRINDING AND NOTCHING





- WELD PROCESS USING ARC WELDING



- PAINTING THE BODY





- INSTALLATION OF PROJECT



*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

## **SAFETY UNIFORM / UNIT**

Several aspects need to be taken into consideration before the project work is finished and one of them is the safety factor. The most critical factor is this aspect of safety which should be prioritised before work is completed. If an accident or injury is sustained by one of the group members, the project execution may be affected and will not be completed within the stipulated time. The protection measures to be presented here are about: -

### **OWN SAFETY**

#### **Protective attire**

For safety and security when in the workshop, protective equipment such as goggles or face cover, gloves, boots, and aprons should be worn.

#### **General Uniform**

Clothing worn when working, i.e. not too tight, should be suitable.

Items such as watches, rings and chains should be maintained as they can cause accidents as short circuits move due to being trapped or being electrical conductors.

*Prepared by SHAHRUL AIMAN*



**SAFETY SHOES**

High Quality  
Protective Goggles



**GOGGLES**



## **GLOVE**



## **APRON**

Safety of equipment use • Make sure the surrounding conditions are in good condition.

- When running the machine , do not laugh , kidding or joking .
- According to the applicable workshop, make sure to wear sufficient safety equipment.
- Before using the workshop, they need to seek permission from the lecturer.
- Clean up the workshop by sweeping and placing back in place the instruments used.
- Run the machine according to correct directions to prevent injuries when operating it.
- Makes sure Switch the switch off and put it in its original state.

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## **B. GANTT CHART (PROJECT 1)**

TOPIC	WEEK														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Group Selection	/														
	*														
Project Brainstorming		/	/												
		*	*												
Title selection			/	/											
			*	*	*										
Literature Review		/	/	/	/	/	/	/	/						
		*	*	*	*	*	*	*	*	*					
Design							/	/	/						
							*	*	*	*					
Methodology						/	/	/	/						
						*	*	*	*						
Material Selection							/	/	/						
							*	*	*	*					
Cost Estimate							/	/	/	/					
							*	*	*	*	*				
Gan Chart						/	/	/	/	/	/				
						*	*	*	*	*	*				
Presentation														/	/
														*	*

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## C. GANTT CHART (PROJECT 2)

TOPIC	WEEK														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Findings	/	/	/	/	/										
		*	*	*	*	*									
Discussion and conclusion	/	/	/	/	/	/	/								
	*	*	*	*	*	*	*	*	*						
Project making	/	/	/	/	/	/	/	/	/	/	/	/	/		
	*	*	*	*	*	*	*	*	*						
Proposal	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Poster	/	/	/	/	/	/									
			*	*	*	*									
Abstract	/	/	/	/	/	/	/								
	*	*	*	*	*	*	*								
Presentation	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

*Prepared by MUHD SYAFIQ ZAHIRUDDIN*

## **. ESTIMATION COST OF PROJECT**

<b>NO</b>	<b>MATERIAL</b>	<b>QUANTITY</b>	<b>COST/UNIT</b>	<b>PRICE</b>
<b>1.</b>	<b>IRON PLATE</b>	<b>2</b>	<b>RM30.00</b>	<b>RM60.00</b>
<b>2</b>	<b>BEARING BALL</b>	<b>1</b>	<b>RM20.00</b>	<b>RM20.00</b>
<b>3</b>	<b>STAINLESS STEEL PIPE / BG PIPE</b>	<b>4</b>	<b>RM15.00 1 METER</b>	<b>RM60.00</b>
<b>4</b>	<b>STRIPE PLATE</b>	<b>1</b>	<b>RM20.00</b>	<b>RM20.00</b>
<b>5</b>	<b>STEEL PLATE (10MM)</b>	<b>1</b>	<b>RM20.00</b>	<b>RM20.00</b>
<b>6</b>	<b>STEEL PLATE (6MM)</b>	<b>1</b>	<b>RM 25.00</b>	<b>RM20.00</b>
<b>7</b>	<b>IRON HOLLOW</b>	<b>3</b>	<b>RM 30.00</b>	<b>RM90.00</b>
<b>8</b>	<b>BOLT</b>	<b>2</b>	<b>RM15.00 1 PACKET</b>	<b>RM30.00</b>
<b>9</b>	<b>NAT</b>	<b>2</b>	<b>RM15.00 1 PACKET</b>	<b>RM30.00</b>
<b>10</b>	<b>RUBBER HAND GRIP</b>	<b>1</b>	<b>RM10.0 0 1 PAIR</b>	<b>RM10.00</b>

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