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**CONE WARNING SENSOR**

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THIS REPORT BOOK IS SUBMITTED TO THE CIVIL ENGINEERING DEPARTMENT IN  
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**CIVIL ENGINEERING DEPARTMENT**

**POLYTECHNIC SULTAN SALAHUDDIN ABDUL AZIZ SHAH**

**JUN2019**

## CONFESSION

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## **ABSTRACT**

Nowadays, technology is part of our daily use and is used in many aspects. For example, it is used for safety. Due to the public's negligence in safety there are many types of warning tools for the public to overcome in public. Therefore, our project title is 'Cone Warning Sensor'. It enhances existing cone alerts with lights, sensors and alarms. Cone alert sensors can provide a more effective warning to the general public as the sound of an alarm is triggered to distract them from approaching the ban.

Cone alerts are a safety tool that is used as a warning and alert to our people. There are other ways to show what is happening while in a danger zone but using a cone warning is practical for individual users who want to control public safety because it is easy to carry and keep. Therefore, the collapse warning should be enhanced with its level of usefulness to provide the maximum assurance that it can be met. Sensor function to detect the presence of an object (movement detection) or process status to enable the system to control the system whether it is partial or fully automatic. Sensors are usually connected to the input portion of the control system. In our project, we use sensors that detect movement to approach and then influence the sound of alarms and speakers. The function of alarms is to provide sound alerts to alert you more effectively.

## **APPRECIATION**

Alhamdulillah hirrabil'alamin , we are grateful for the abundance and generously prepared a final year report for our project, a cone warning sensor. product development and not forgetting the lecturers involved either directly or indirectly in our evaluation panel during the presentation of the project which has given us a lot of good ideas for further improvement of the products we have created.

We would also like to express our sincere thanks to our hard-working colleagues who have given us their full commitment and responsibility to make this task a success.

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## **CHAPTER 1**

### **PROPOSAL**

#### **1.1 INTRODUCTION**

The subject of DCB 5171 project 1 and DCB 6194 project 2 is a compulsory subject that must be taken for all student *Diploma of Building Services Engineering* (DPB) in polytechnic Sultan Salahuddin Abdul Aziz Shah. Students are required to pass this subject before being certified for the award of a Certificate or Diploma. This subject requires students to design an existing building-related tools for ease of use.

Additionally, this subject also trains students to be responsible for every work done. It is because each process starts with the project proposal until the project is created, the student will do it by himself with the guidance of the supervisor.

In this subject, students are distributed to several groups to produce a neat and quality project. Additionally, this subject educates students to have a sense of identity. This is because once the project is completed, the student is required to present the project to the project coordinator. The presentation is intended to ensure that every student understands how the product works, the components used, and can be used in the building. It is to produce useful graduates in the industry

#### **1.2 BACKGROUND**

Nowadays, technology is a part of our daily use and it was used in many aspects. For example, it is use for safety. Due to the public negligence in safety there are many types of warnings for our people to alert and overcome careless at the public. So, the title of our project 1 is '*Cone Warning Sensor*'. it is improving the existing cone warning with water pump, sensor and alarm. Cone warning sensors can warn more effectively to the general public as the bursts of water released can frighten them to approach the place of the ban.

Cone warning is a safety tool used as a warning and sign to our people. It is not shaped cone, but there are various forms of cone warning on the market. There are also other ways to indicate that something is happening while in danger area but usage of cone warning is the one practical for individual users who want to control the safety of the public as it is easy to carry and store. Therefore, cone warning should be enhanced by its level of use in order to provide the maximum

security that can be met. The sensor functions to detect the presence of an object (movement detect) or the status of a process to enable the system to control the system whether it's partial or fully automated. The sensor is usually connected on the input part of a control system. In our project we use sensors that can track movement to approached it and then impact the water pump spray water as a warning sign. The alarm function is to give signal in terms of sound to warn with more effectively.

Consequently, this cone warning sensor is created with a suitable colour so that people can be aware of such a thing or aware of the restricted areas and they can avoid the place at the same time.

### 1.3 PROBLEM STATEMENT

Cone warning sensors were created because of problems involving the safety of the public, where the rate of accident resulting in serious injury or death caused no initial warning provided in hazardous areas such as roadhouses, maintenance areas, sewage pits and so on.

Among the accidents involving the absence of a preliminary hazard warning, the news published in the newspaper on a student known as Nur Nazwa Ariana Raja Mohd Shahronizam, 7, was believed to have fallen into one of the four sewage shafts as deep as 3.6 meters while playing with some of his friends at break time. So, by this cone warning sensor it can be utilized by place 10meter from the sewage hole to control student safety.

In addition, cone warning sensors also can be used for disabled (blind) residents. it can be used to warn early if there are areas of danger, they cannot know because of visual impairments.



[utusan.com.my](https://utusan.com.my)



Nur Nazwa maut jatuh dalam lubang kumbahan - Nahas & Bencana ...

MURID Sekolah Rendah Agama Jaim Parit Penghulu Benteng, Raja Nur Nazwa ...

## 1.4 OBJECTIVES OF THE PROJECT

- I. To provide a more effective early warning
- II. To providing relief and helping the blind to identify dangerous places
- III. To reduce accidents involving civilians in the maintenance area.

## 1.5 SCOPE RESEARCH

### 1.5.1 Hospital / clinic

Scope of project in areas where maintenance and power activities are carried out which pose a hazard, for example in a gen-set room where the standby power supply is an unused power supply system under normal power supply, when used normally. Or otherwise disruptive, the cone warning sensor may be used in the Gen-Set room where it is operating to prevent or warn the public from entering the room at will.



Figure 1.5.1 HOSPITAL/CLINIC

### 1.5.2 Shopping mall

The next scope is the shopping mall where maintenance-related activities are operating around the shopping mall area.



Figure 1.5.2 SHOPPING MALL

### 1.5.3 Pedestrian (Blind)

In the pedestrian area of the blind .This is to help the blind to know when they are approaching a dangerous area.



Figure 1.5.3 PEDESTRIAN (BLIND)

### 1.6 MATERIAL, APPARATUS AND COSTING

NO	MATERIAL	QUANTITY	PRICE	TOTAL PRICE
1.	Traffic cone	1	RM 26.30	RM 26.30
2.	Arduino	1	RM 96	RM 96

3.	Ultrasonic Distance Measurement Sensor Module HC-SR04	2	RM 40.90	RM 81.80
4.	Single core wire	1	RM 2.30	RM 2.30
5.	Energizer MAX Alkaline battery	1	RM 87.20	RM 87.20
6.	Beacon light	1	RM30	RM30
7.	Portable Bluetooth speaker	1	Rm45	Rm45
8.	Waterproof plywood	1		
9.	Clear varnish	1	RM 46	RM 46
10.	Screw bolt and nut	4	RM 2.50	RM10
<b>TOTAL</b>			<b>RM 464.9</b>	

## 1.7 CONCLUSION

In the conclusion about the project, we have been discussing a lot about the title, introduction and the main point of the project. We also discuss about the material and which will be used to create the 'Cone Warning Sensor'. The goal of the project is also in the line with the way to address the problems in the industry. Next, we also make a project planning schedule for our plan to finish the project, hopefully this project is acceptable and successful.

The cooperation between us and the supervisor has strongly supported the project. Thanks to our supervisor Mrs Zurena binti Lemen for giving us to a full boost to carry out the project.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

Literature review needs to be carried out before designing this project to ensure that it achieves its objectives and achieves the best solution in strengthening our innovative product innovation, the cone warning sensor of this product involves the safety of consumers and the public in place such as the site construction and others. Besides to overcome this problem, a detailed study has been done to ensure the best method for inventing this invention. The methods used are the only way to get the best results and quality to satisfy all parties.

Through this survey, all the problems arising can be reduced by carefully reviewing the prescribed work program and inspire the previous plans, with comprehensive observation, all the problems encountered can be traced and reduced

Expected by the writing of this invention, it can reduce the problem of accidents being delayed due to being slipped when it rains. The users involved may be satisfied with the resulting product. The study conducted involves observation and looking for ideas to reduce the risk of crashes at site construction.

## **2.2 THEORY**

To implement this project, it has to go through several studies where it is a concept to help generate the rationale of the best and the best. Then, indirectly, the knowledge related to the features and features of the product can be viewed more clearly and in detail. The flow of information in manufacturing engineering can help to better understand .Before form a project, it is necessary to first look at the specification flow of the design. This is to ensure that a project is in accordance with the established standards. In the flow of design specifications, various aspects need to be considered identifying needs, defining problems, and assessment production analysis for *cone warning sensor*.

These cones are typically painted fluorescent “safety” orange because it is the easiest colour to distinguish from the colour of the sky. They also tend to have reflective striping on them to increase visibility during the night.

A sensor is a device that detects and responds to some type of input from the physical environment. The specific input could be light, heat, motion, moisture, pressure, or any one of a great number of other environmental phenomena. The output is generally a signal that is converted to human-readable display at the sensor location or transmitted electronically over a network for reading or further processing.

For security, this means giving immediate feedback on a potentially harmful situation to all related parties, this is because cone warning sensors can alert early to the public when they are involved in dangerous areas.

## **2.3 STUDY METHOD**

Among the research methods implemented are internet use, observation and journals. These rules have many advantages over other methods. For examples:

1. Various information can be obtained and able to compare with other information
2. The information obtained is more complete and fulfilled
3. Can save time

## **2.4 PREVIOUS RESEARCH**

Most previous studies indicate that published studies have been published in the past that report the results of research findings. This means theory, or trying to answer specific research questions

#### **2.4.1 TRAFFIC CONE**

(According to Homer D.Wells on August 21 1984) A foldable traffic warning cone utilizes a first panel of generally fan shape having triangular faces joined at adjacent sides along face folding lines. The first panel has opposite free sides which interconnect to fold the first panel into an upright polygon. The triangular faces of the first panel have bottom ends with extending flaps which cooperate with a second panel having a number of sides commensurate to the number of faces on the first panel and which forms a base for the first panel. The second panel has wings extending outwardly from each of the sides and which are foldable to provide a wall extending about the base. The wings also trap the flaps and thereby connect the upright polygon and the base together. The warning cone can be selectively folded and unfolded for use and storage.



Figure 2.4.1 TRAFFIC CONE



## 2.4.2 ARDUINO

Arduino first and foremost is an open-source computer hardware and software company. The Arduino Community refers to the project and user community that designs and utilizes microcontroller-based development boards. These development boards are known as Arduino Modules, which are open-source prototyping platforms. The simplified microcontroller board comes in a variety of development board packages.



Figure 2.4.2 ARDUINO

### 2.4.3 ULTRASONIC DISTANCE MEASUREMENT SENSOR MODULE HC-SR04

The HC-SR04 Ultrasonic Range Sensor uses non-contact ultrasound sonar to measure the distance to an object - they're great for any obstacle avoiding systems on Raspberry Pi robots or rovers! The HC-SR04 consists of two ultrasonic transmitters (basically speakers), a receiver, and a control circuit. The transmitters emit a high frequency ultrasonic sound, which bounce off any nearby solid objects, and the receiver listens for any return echo. That echo is then processed by the control circuit to calculate the time difference between the signal being transmitted and received. This time can subsequently be used, along with some clever math, to calculate the distance between the sensor and the reflecting object.

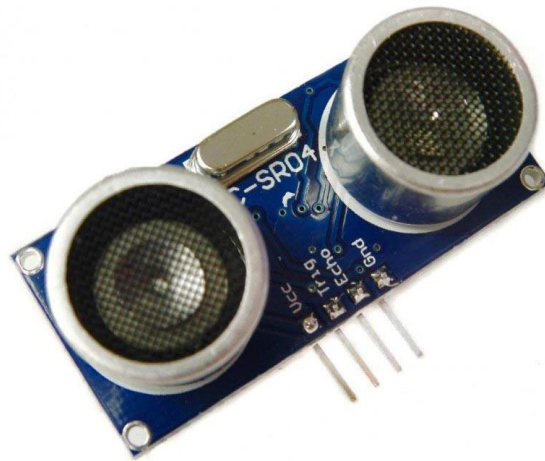


Figure 2.4.3 ULTRASONIC SENSOR

#### 2.4.4 SINGLE CORE WIRE

A wire is a single, usually cylindrical, flexible strand or rod of metal. Wires are used to bear mechanical loads or electricity and telecommunications signals. Wire is commonly formed by drawing the metal through a hole in a die or draw plate.



Figure 2.4.4 SINGLE CORE WIRES

#### 2.4.5 BATTERY 7A

(According to Koichiro ozawa on NOVEMBER 21 2001) A single dual-voltage battery capable of powering an automobile system having electrical equipment that requires different supply voltage. The battery allows idle stop, assisted drive and regeneration to be performed more efficiently by cooperative control of a controller and a DC/DC converter. Commonly performed external powering and starting can also be carried out if the battery has expired. The single dual-voltage battery is obtained by equipping a 12-V battery with a 24-V battery of a different type and adapted to supply power to respective electrical components. The 12-V battery unit is provided with a charging controllable DC/DC converter or downconverter. The ancillary battery condition is monitored and controlled. External powering and starting is facilitated by using an ultra-capacitor as the ancillary battery. The battery can be used with a single relay.



Figure 2.4.5 BATTERY 7A

## 2.4.6 BEACON LIGHT

(According to John E. Brain on July 23 1991) A portable light beacon for use on life rafts and the like that has a long life due to a flashing light allowing the battery to recharge and a water sensing switch that once wet remains on. The light beacon comprises a portable battery power source in a water proof container, a flashing light with watertight electrical connections between the flashing light and the power source, and a fluid sensing switch comprising a fluid absorbent composition positioned between two terminals with circuitry to activate the flashing light when an electrical conductive fluid has been absorbed by the fluid absorbent composition to provide an electrical path between the two terminals.



Figure 2.4.6 BEACON LIGHT

## 2.4.7 PORTABLE BLUETOOTH SPEAKER

(According to Lawrence Pham, Baotung Tran) project is to design and construct a 2.4 GHz wireless system, to transmit stereo audio from a 3.5 mm jack to play on a pair of speakers. The transmitter will convert the audio from analog to digital with an Analog-to-Digital Converter (ADC) and transmit this digital data via a 2.4GHz transmitter. The receiver will receive the digital data with minimal loss, and reconstruct the analog signal with a Digitalto-Analog Converter (DAC). The receiver will pass this audio signal through an audio equalizer to control the frequency response of the low, mid and high bands. A power amplifier will then be used to amplify the audio signal and play it though passive speakers. The project will also include an audio visualizer synchronized with the audio signal. The audio visualizer will be controlled via bandpass filters in series with peak detectors for each band of the audio visualizer. The receiver system will be stationary while the transmitter will be aimed for portability.



Figure 2.4.7 PORTABLE BLUETOOTH SPEAKER

## 2.4.8 WATERPROOF PLYWOOD

(According to Basri Aziri<sup>1</sup>, Violeta Jakimovska Popovska<sup>2</sup>, Borče Iliev<sup>2</sup> on 2013) The paper elaborates the water impact on the change of the physical properties of multilayered plywood for use in construction. The water impact is analyzed in controlled laboratory conditions through the change of dimensions of the test specimens (length, width and thickness), volume, density, thickness swelling and water absorption in the period of 24 to 1248 hours.

Experimental laboratory panels are made of structural beech and pine veneers. The veneers are glued with phenol-formaldehyde resin. The panels' surfaces are protected with phenol-formaldehyde foil.

The results from the research showed that the panels are characterized by uniform density, stability in volume, without any deformation of the shape and dimensions of the test specimens. The changes of the properties in the analyzed period are proportional to the change of the duration of the treating period of the test specimens. The panels have dimensional stability and meet the requirements of the standards for load-bearing panels for use in construction.



Figure 2.4.8 WATERPROOF PLYWOOD

## 2.4.9 SCREW BOLT NUT

(According to Ernest L. Defusco on AUGUST 23 1977) A shim nut and screw bolt assembly for rigidly securing together a pair of spaced apart components, the shim nut of this assembly having internal threads and opposite hand external threads which threadedly engage a nut fixed to or forming part of the first component, a screw bolt of this assembly extending through an aperture in the second component and having its threaded shank in threaded engagement with the internal thread of the shim nut whereby rotation of the screw bolt in a fastener direction will first cause the screw bolt to extend into the shim nut a sufficient axial distance whereby friction between this screw bolt and the shim nut then becomes such that the shim nut will be rotated to move it a sufficient axial distance outward relative to the first component into abutment with the second component after which, further rotation of the screw bolt in the fastening direction, will effect securement of the second component to the shim nut by the screw bolt and thereby attachment of the second component to the first component in spaced apart relation thereto.



Figure 2.4.9 SCREW BOLT NUT

## 2.4.10 CLEAR VARNISH

(According to *Luiz Fernando de Moura, Roger E. Hernández* on April 2005)

The understanding of adhesion mechanisms on wood surfaces is essential in order to extend service life of film-forming coatings. Pull-off adhesion test and accelerated aging were used to assess adhesion and performance of a high-solids polyurethane coating on sugar maple wood. Two surfacing processes were employed prior to coating: peripheral knife planing and sanding. Planning produced surfaces and subsurface virtually free of damage, which provoked a higher coating penetration. However, this was not sufficient to promote good adhesion. Sanding offered better wetting properties of wood surface even though superficial crushing of cells hindered coating penetration. Wetting was facilitated in the direction of abrasive scratches. Stronger pull-off adhesion and better aging-resistance of films on sanded surfaces were mainly associated to the presence of torn-out micro-fibrils, which promoted a better mechanical anchorage and offered a greater actual surface available to coating and wood interactions. Surface roughness, wetting properties and film aging-resistance were significantly correlated with pull-off adhesion.



Figure 2.4.10 CLEAR VARNISH



## **2.5 CONCLUSION**

At the end of this literature study, students have been able to find out a little about “Cone warning sensor”. This project is used to warn security in places where hazardous. This project is expected to reduce the incidence of unnecessary case scenarios in place of construction sites and so on. It is also expected to ensure efficient and effective results. Besides that, it is hoped that this project will provide ideas and knowledge to future generations to further develop in this field

## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

#### **3.1 INTRODUCTION**

Methodology is one of the most important aspects to be given full attention and attention to ensure that the implementation of the project works smoothly and according to the scheduled specifications. In addition, it is important to ensure that the required materials are adequate and meet the safety factor that has been set.

In other words ,the methodology is the method and technique of them- forming, collecting and analyzing data so as to produce evidence that can support a study. Methodology explains the way a problem is investigated and the reason for a specific method and technique is used. The purpose of the methodology is to help understand in more detail the application of the method by making a description of the research process.

This chapter briefly summarizes some important aspects in relation to the methodology to be used in this study. Convergence in this chapter will be given to study the effectiveness of this 'cone warning sensor '. In addition, this chapter will also explain the procedures, procedures and program implementation studies

The Methodology study can be stated and explained with the following points:

- a) Systematic studies on methods that can or have been used with discipline.
- b) A documented process for project management that contains procedures, definitions, and techniques clarification used to collect, store, analyze and present information

### 3.2 FLOWCHART OF THE PROJECT



Figure 3.2 FLOWCHART OF THE PROJECT

### 3.3 DESIGN OF THE PROJECT

The project design is a new product development process or modifier (improving the quality) of a project ready to meet the needs and needs of the users. Additionally, the design of the study is also intended to facilitate various work or to help solve various user problems. The design principles of this product are useful and able to solve existing problems or problems that the user will encounter. Among them the principle is the ability to meet the needs and wants of various consumer tastes. Next the product is unique because of the creation or modifier and has commercial value. Therefore, the products produced have the potential to be marketed.

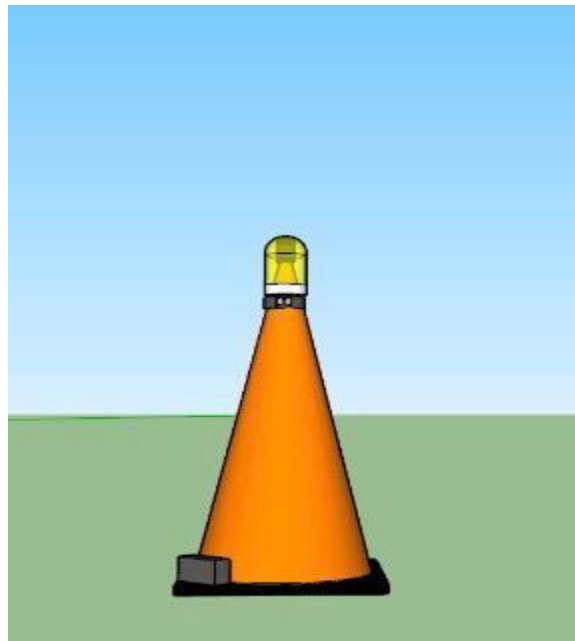


Figure 3.3 SKETCH UP

### 3.4 WORK PROGRESSION

we purchased an existing cone with a height of 30 cm and a footprint of 75x75 cm. and we have also costumed a design made of plastic to place the ultra sonic sensor on the outside of the cone as shown in the picture. In addition, we have also collaborated with hightech companies to teach and assist us in the work of such sensor programming.

<b>Figure</b>	<b>Description</b>
 <p data-bbox="396 1136 553 1167">Figure 3.4.1</p>	<p data-bbox="786 642 1349 894">We buy rubber cones that are currently available in hardware. There have been no changes to the existing cone design. We are improving on the part of the operating system</p>
 <p data-bbox="396 1881 553 1913">Figure 3.4.2</p>	<p data-bbox="786 1289 1349 1377">We made the prefix wiring for sensors and alarms before mounting them into the cone.</p>

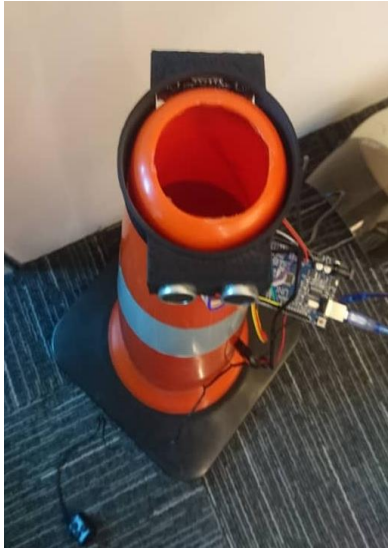


Figure 3.4.4

Battery to supply power to our sensors and alarms using a ready-to-use battery of 7A (motor battery), we put it inside the cone..

### **3.5 DATA COLLECTION METHOD**

Data collection works need to be carried out carefully to get the results of a favorable study and it is necessary to suit the topic, goals, objectives and scope of the study. The information obtained from the collection of data should be examined for its validity and the extent to which the data can help achieve the desired objectives.

#### **1. Questionare**

The quantitative method was selected for data collection conducted using questionnaire. The questionnaire was transmitted online to respondents to assist research and data collection.

#### **2. Reference Books**

The reference book is the method used to get information related to visiting nearby libraries so that the information obtained enables the objective and scope of the research to be determined by the research title.

#### **3. Website**

Surfing the internet is the second method used to get the information you want. It is the way to get the most easily used information nowadays. Through this method, information related to the continuation of the study title and objective of the study can be obtained easily and accurately.

#### **4. Interview**

An interview is a conversation where questions are asked and answers are given. In common parlance, the word "interview" refers to a one-on-one conversation between an interviewer and an interviewee.

### **3.6 RESEARCH OF INSTRUMENTS**

The research instrument is a solid method to support a product that has been produced. In this study, this instrument refers to the equipment used to obtain and collect research data. Among the equipment or used in the implementation of this project are.

#### **3.6.1 Diagonal Pliers**

Diagonal plier or wire cutters or diagonal cutting pliers or diagonal cutters or side cutting pliers are pliers intended for the cutting of wire. They are generally not used to grab or turn anything.



Figure 3.6.1 DIAGONAL PLIERS

#### **3.6.2 Screwdriver**

A screwdriver is a tool, manual or powered, for screwing and unscrewing, inserting and removing screws. A typical simple screwdriver has a handle and a shaft, ending in a tip the user puts into the screw head before turning the handle. The shaft is usually made of tough steel to resist bending or twisting.



Figure 3.6.2 SCREWDRIVER



### **3.6.3 Soldering Iron**

A soldering iron is a hand tool used in soldering. It supplies heat to melt solder so that it can flow into the joint between two work pieces. A soldering iron is composed of a heated metal tip and an insulated handle.



Figure 3.6.3 SOLDERING IRON

### **3.7 CONCLUSION**

In conclusion, the findings of this project are that we can use and advance technology in securing public safety. This project is very useful for the industry as well as for the public. With the creation of this project, the risk of accidents involving the public in construction can be effectively addressed. Theology and the implementation of the study should be done so that the project is easily handled by the public. This project will assist the polytechnics and the public if it is used, as well as ensure the safety of the public with the creation of this project.

we have learned and gained some information from data and research we do and find for the project. I hope this innovative feature of cone warning creation sensors will achieve the objectif of the project . In addition, for the first draft report the contents contained in our study are introduction, methodology and literature review, all of the findings have been listed in the report .In chapter 2 we also explained the scope and material of the product. In chapter 3 we have describe the data collection method and the do some research about the instruments for the project. I hope all the research will support all the process of formation in the success of the project.

## **CHAPTER 4**

### **ANALYSIS AND DATA**

#### **4.1 INTRODUCTION**

Once all the data and information has been obtained, the analysis is performed to see the advantages and disadvantages of using a cone warning sensor. This chapter contains data obtained from questionnaires, interviews and even decibels data readings for noise generated from cone warning sensors. We got all the data from the research we did at Serdang Hospital, the space U8 mall and the pedestrian area. The study was conducted using 30 respondents from the public for the questionnaire as well as the hospital, mall for the interview section.

#### **4.2 QUESTIONNAIRE SECTION**

The data we get for the questionnaire section is from 30 respondents from the public. Our purpose in conducting this survey was to measure the satisfaction by the public for the quality of our products and also to measure the effectiveness of our cones in providing early warning to the general public and people with disabilities

#### 4.2.1 ANALYSIS AND DISCOVERY OF DESCRIPTIVE DATA

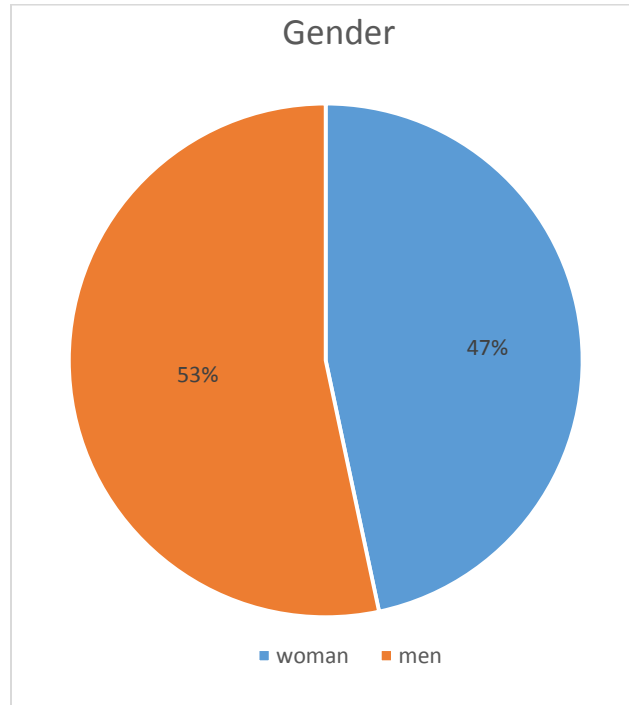


Figure 4.2.1: percentages respondent of gender

The findings of this study showed that out of 30 respondents, 16 (53%) were female respondents. The remaining 14 (47%) were male. It is not possible to distinguish between large gaps in respondents' gender selection. Clear information can be seen in the diagram

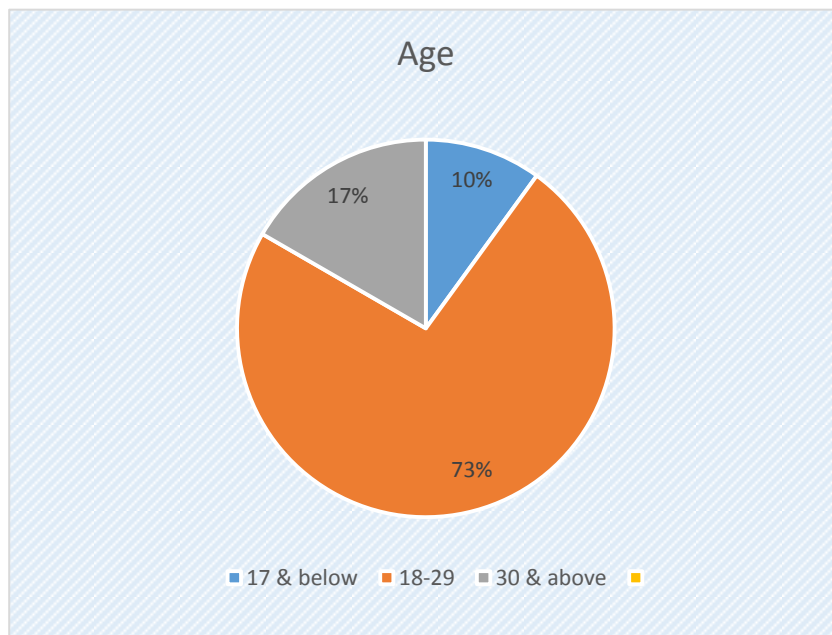


Figure 4.2.1: respondent age

Further, the results of Figure 4.2.2 found that 22 respondents of which 73% were aged between 18-30 years and this is because they consist of PSAS students and cloud persons. % were 30 years old and above while 3 respondents were 10% were 17 years old and below were school students.

## **4.2.2 ANALYSIS AND DATA ACQUISITION EMPIRICAL**

### **4.2.2.1 Data questionnaire**

The data falsified during our product testing were evaluated on the basis of income from respondents. These data will eventually be displayed in the form of tables and graphs. The opinion scale will be classified according to the satisfaction level of 1, 2, 3, 4, 5.

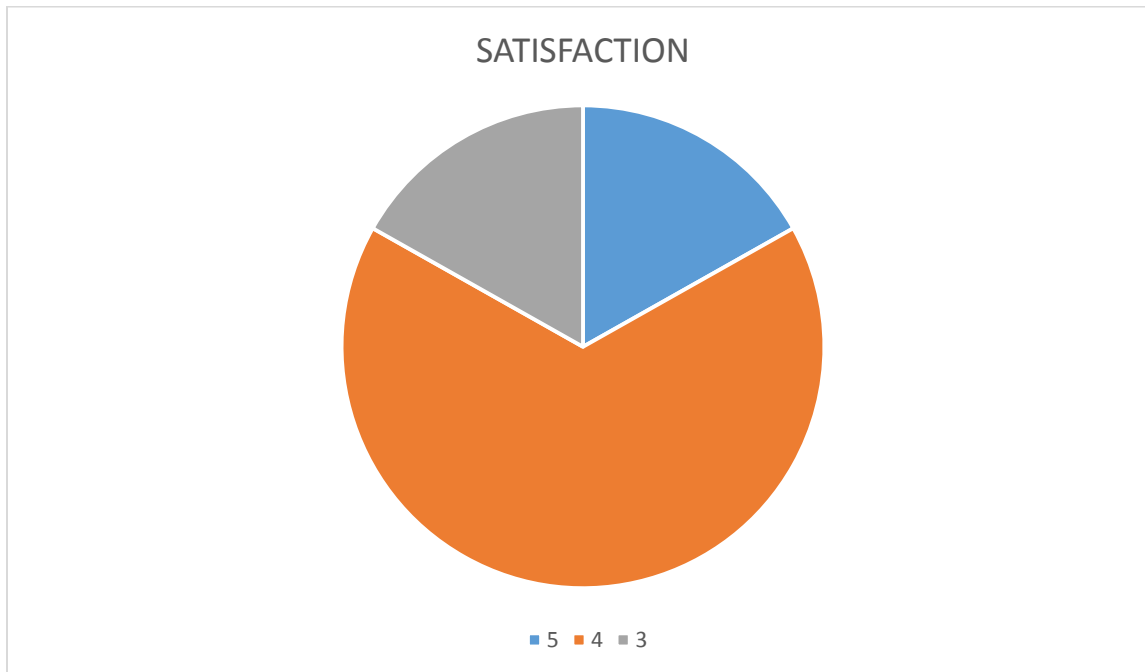
### **4.2.2.2 Analysis research data**

The process of analysing the study data will be shown in graphs, tables, and charts. The data shows that the respondents have given suggestions on CONE WARNING SENSOR products to improve this product in order to provide comfort to users of this product.

### 4.2.2.3 Research questionnaire

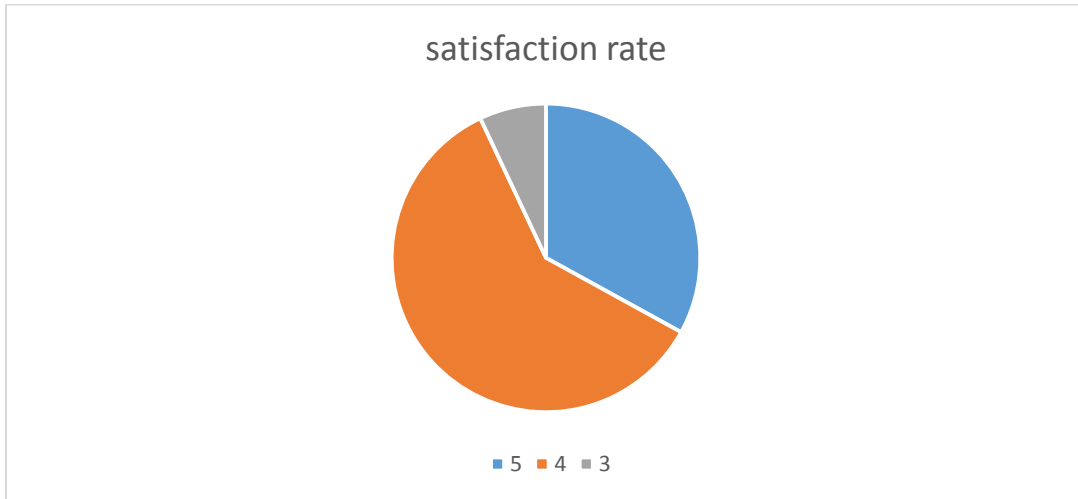
To further strengthen this research, the questionnaire was conducted using questions and scales from the general public and the disabled. The data obtained will be made into graphs to facilitate information to be analysed. The following is information related to the survey conducted.

- i) This product help people with disabilities (OKU)



Rajah 4.3.3.1

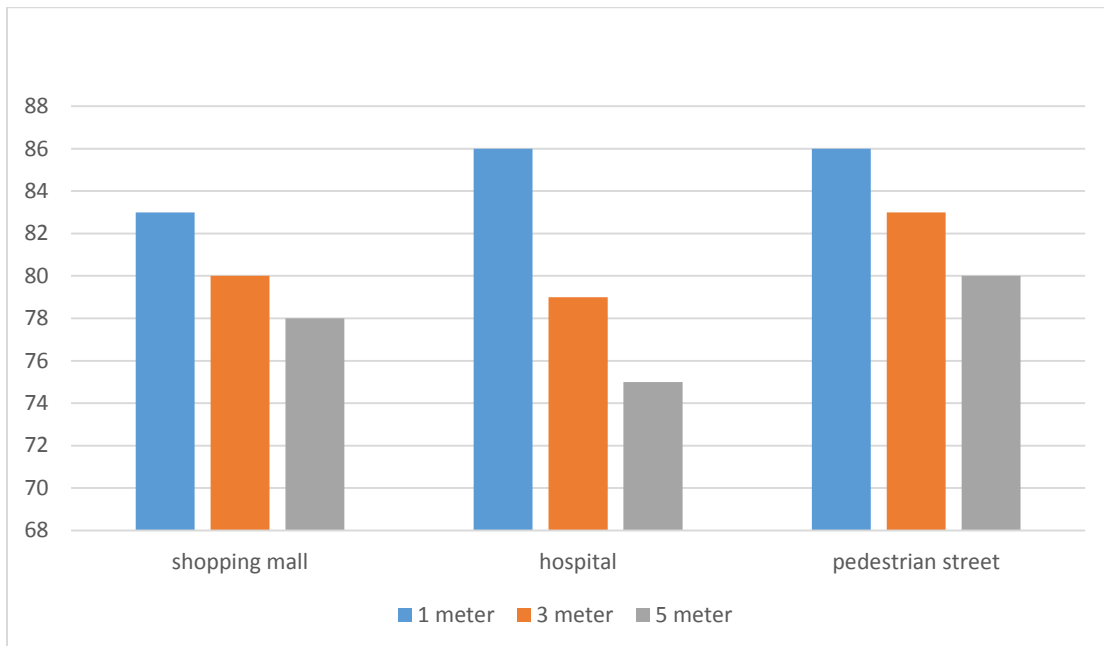
ii) To help the public avoid entry into the maintenance area



Rajah 4.3.3.2

### 4.3 DECIBEL READING DATA BY SCOPE

Our goal to get the decibel count was to measure the sound from speaker that was made on from the cone



## 4.4 INTERVIEW SECTION

We have made several visits to several companies to present our products namely censorship warning sensors. One of the companies or places we went to was Serdang hospital and space u8 mall where we cooperated to present our product.

### 4.4.1 Hospital Serdang

On SEPTEMBER 11, 2019, between 10 am-12am we conducted a study at Serdang Hospital (Radicare). We have presented our project to the Radicare technical officer, Serdang Hospital. In addition, we had the opportunity to conduct a demonstration in the GEN-SET room to study the effectiveness of sensors and alarms during GEN-SET maintenance.





#### 4.4.2 Space U8 Mall

On SEPTEMBER 4, 2019, we conducted a study at the SPACE U8 supermarket. We have presented the use of a cone warning sensor on Space U8 during maintenance and hazardous areas. In addition, we are conducting a demonstration of the sensor warning in the elevator under the maintenance process. As a result, the public can see how this cone warning sensor works and its benefits to public safety in the dangerous area.



iii) Suggestion for improvement

- |   |
|---|
| <b>1. Tiada papan amaran awal untuk amaran awal dari jarak jauh</b> |
| <b>2. Simpan speaker didalam kon</b>                                |
| <b>3. Buat ruang untuk letakkan speaker</b>                         |

#### 4.5 CONCLUSION

At this stage, the questionnaire design, data collection method, research instrument, data sampling technique and data analysis methodology were systematically developed in the methodological study to identify facts and information to support the results of the study and to illustrate more clearly in this study. After the analysis is done, there is a cone warning sensor product that can guarantee the safety of the disabled (OKU) and the public.

## **CHAPTER 5**

### **DISCUSSION, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 INTRODUCTION CHAPTER**

On the whole, students have successfully made this product a success in the time allotted. In innovating this product, students have successfully achieved the desired project objectives. For example, it provides effective early warning to society when they approach dangerous areas. In addition, it is carried out from time to time so that students can solve the problems they face together by seeking consensus from all members of the group. Students also often ask their supervisors to offer their opinions and resolve any concerns they may have.

In addition, to complete the final project the students have prepared well and well. For example, all members of the team perform well and at the same time know all the components, functions of each component and the main objectives of the project, as well as know all the tools used in the project making process, namely cone warning sensors. Therefore, all the items associated with the product have been reviewed and students have done enough research before the presentation so that all questions raised by the panel members can be answered with confidence.

Cone warning sensor are products that have been innovated from existing cones by adding key components such as sensors, beacons and speakers to provide effective early warning to the public as they approach areas where maintenance is underway and at the same time pose a danger. In addition, our products are also suitable for people with disabilities. This is because, with advanced sensors and speakers, it is possible to give more attention to people with disabilities especially to the blind. This product is one of the places where process maintenance is taking place to prevent the public from approaching dangerous areas. a lot of help in the production of this product, all the comments provided by our panel took and corrected any errors in the manufacture of the cone warning sensor.

## 5.2 DISCUSSION

The follow is a discussion of the results obtained and the problems that arise with the percentage of respondents regarding accidents that occur during maintenance. Next, data collection in identifying problems that arise and how they are resolved. Discussions with the supervisor of Zurena Binti Lemen facilitated our study and at the same time the objective of the cone warning sensor project was achieved.

In addition, each team member has his or her own role and commitment to work together to make this project successful. As such knowledge is shared with us to facilitate the process of producing cone warning sensors and each group member has researched the product Innovated to facilitate work to produce cone warning sensors. The overall commitment and cooperation of each team member is crucial to the success of this product as well as the time and commitment given by the supervisor.

## 5.3 RECOMMENDATION

During we were doing research at the company we selected, there was a comment we got while demonstrating cone warning sensors. The feedback we get is to improve the project to make it more interesting and functional.

Some of the recommendations that can be found in our research area are as follows:

- |   |
|---|
| <b>1. Don't have early warning sign.</b>  |
| <b>2. Put the speaker inside the cone</b> |
| <b>3. Do cover for speaker</b>            |

## **5.4 CONCLUSION**

We are very grateful and thankful that this project was successfully completed as planned. Various application methods were implemented throughout the course of this project. We are proud of the innovations that have been made to these cone warning sensors to help provide effective early warning to the general public, especially to the blind to prevent accidental maintenance where maintenance is taking place. gaining knowledge on how to properly manage a project, such as using a spare chart, using the project's chart can be completed systematically and systematically.

During the process of completing this project there were many issues but we managed it wisely .Every tolerance and cooperation was key to the success of this sensor cone warning product. effective can also be produced.

## **5.5 CHAPTER SUMMARY**

At the end of chapter 5, we are very proud of ourselves for successfully providing quality and useful products to Malaysians despite our expectations and obstacles but we have managed to deal with them wisely. The project has been going well for 7 months. Therefore we have found that cooperation is very important in the completion of this project because without the cooperation of the members of the mumgkin group this product would not have been possible. at least once a week for group members to come together and share ideas together to further develop a product.

In addition, our products are suitable for use during the maintenance process as this product can provide effective early warning to the public should they add to the area of operation where there is a risk of accidents and this product is especially suitable for people with disabilities because they have speakers, alarms and sensors that can provide an effective early warning when they approach dangerous areas.

Next, sacrifices in terms of time and money should also be allocated to make this project a success. Therefore, time and money should be wisely organized and used .We also learned a lot from past mistakes, presenting reports and collecting product-related information. patience and not giving up are also important in preventing road trip projects as product development is not easy and it is not difficult at all times, commitment and cooperation is wisely planned and given by team members. Finally, we are able to accept new experiences. as we work on this project and at the same time train us to work hard under pressure. This can be beneficial in the future.

## CHAPTER 6

### REFERENCES

#### 6.1 COST PROJECT AND COMPONENT LIST

In preparing a cone warning product this relatively high budget is needed at around RM 469.90. Therefore, one of the important steps in implementing this project is to make an initial estimate of the project cost to allocate the budget needed to carry out this project. Based on the monitoring of each component price and materials needed in most shops and we have found a rough estimate of the completion of this project is RM 464.90. The cost of this cone warning sensor project covers the entire project output until the final package is complete installation,

Overall, this product requires a lot of electronic components and there are some high-value materials and components on the market. In the accompanying appendix show the detailed cost of each component as well as the actual cost and cost of preparing this cone warning sensor product.

NO	MATERIAL	QUANTITY	PRICE	TOTAL PRICE
1.	Traffic cone	1	RM 26.30	RM 26.30
2.	Arduino	1	RM 96	RM 96
3.	Ultrasonic Distance Measurement Sensor Module HC-SR04	2	RM 40.90	RM 81.80
4.	Single core wire	1	RM 2.30	RM 2.30
5.	Energizer MAX Alkaline battery	1	RM 87.20	RM 87.20
6.	Beacon light	1	RM30	RM30
7.	Portable Bluetooth speaker	1	Rm45	Rm45
8.	Waterproof plywood	1		
9.	Clear varnish	1	RM 46	RM 46
10.	Screw bolt and nut	4	RM 2.50	RM10
<b>TOTAL</b>			<b>RM 464.9</b>	

## **6.2 APPENDIX**

### **6.2.1 APPENDIX A**

SOAL SELIDIK

### **6.2.2 APPENDIX B**

GANT CHART

## **6.3 REFERENCES**

1. Department of Occupational Safety and Health ministry of human resource(E.d) .2014  
GUIDELINES OF OCCUPATIONAL SAFETY AND HEALTH IN CONSTRUCTION  
INDUSTRY(MANAGEMENT)201X
2. Mohd Khairul Domadi,Koo Kean Eng,Ocupational Safety And Health.2016.Oxford  
Fajar.Academic Books , Education & Social Science, Polytechnic
3. Road safety department(Ed).2014-2020.ROAD SAFETY PLAN OF MALAYSIA 2014-  
2020.Malaysia
4. <https://randomnerdtutorials.com/complete-guide-for-ultrasonic-sensor-hc-sr04/>
5. <https://www.trafficsafetystore.com/traffic-cones>

## 6.2.1 APPENDIX A



### **BORANG SOAL SELIDIK KEPUASAN PENGGUNA**

1. JANTINA :

<input type="checkbox"/>	LELAKI
<input type="checkbox"/>	PEREMPUAN

2. UMUR :

<input type="checkbox"/>	17 DAN KEBAWAH
<input type="checkbox"/>	18 - 29
<input type="checkbox"/>	30 KEATAS

3. GOLONGAN:

<input type="checkbox"/>	BIASA
<input type="checkbox"/>	OKU

OKU, SILA NYATA:

### **MAKLUMBALAS KEPUASAN PENGGUNA**

Sila berikan perhatian/ kepuasan anda terhadap produk cone warning sensor yang disediakan mengikut skala yang telah ditetapkan :

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Sangat tidak memuaskan</b>	<b>Tidak memuaskan</b>	<b>Sederhana</b>	<b>Memuaskan</b>	<b>Sangat memuaskan</b>



BIL	SOALAN	TAHAP KEPUASAN				
		1	2	3	4	5
1.	Adakah produk ini dapat membantu golongan OKU					
2.	Produk ini dapat memberi amaran awal yang efektif					
3.	Alarm yang disediakan sangat jelas kedengaran					
4.	Produk ini mempunyai rekabentuk yang jelas kelihatan					
5.	Decibel kon 60 -70 db sesuai untuk memberi amaran awal kepada orang yang lalu pada kon					
6.	Produk ini sangat mudah digunakan dan mudah alih					
7.	Dapat membantu orang awam tidak memasuki kawasan peyelenggaraan					
8.	Dapat mengurangkan kadar kemalangan					
9.	Risiko kanak kanak tidak mendekati kawasan yang bahaya dapat dikurangkan					
10.	Produk ini sesuai digunakan di semua tempat					

Sila nyata pendapat/cadangan anda: