DIPLOMA IN ELECTRONIC ENGINEERING (COMMUNICATION)

JABATAN KEJURUTERAAN ELEKTRIK

FINAL YEAR PROJECT

Title :

CAR PHONE DOCK SYSTEM

SUPERVISOR'S NAME: PN. MASRIAINI BINTI MANSOR

This Report Is Submitted In Partial Fulfillment oF The Requirement For

Diploma in Electronic Engineering (Telecommunication)

Jabatan Kejuruteraan Elektrik

Politeknik Sultan Salahuddin Abdul Aziz Shah

JUNE 2019

DECLARATION

I declare that this report is my original work and all references have been cited adequately as required by the Politeknik Sultan Salahuddin Abdul Aziz Shah.

Date: Signature: ……..

Full Name: DEVAN SIVARAM

Registration No. : 08DEP17F1158

ENDORSEMENT

We have examined this report and verify that it meets the programme and Politeknik Sultan Salahuddin Abdul Aziz Shah requirements for the Diploma in Electronic Engineering (Telecommunication)

Date: Signature: ……..

Supervisor's Name: DR MARLINA BINTI RAMLI

Official Stamp

Date: Signature: ……..

Supervisor's Name: PN MASRIAINI BINTI MANSOR

Official Stamp

Date: Signature: ……..

Supervisor’s Name: PN NOR ROFIZAH BINTI ABDUL MUTALIB

Official Stamp

Date: Signature: ……..

Supervisor’s Name: PN JULAIHA BINTI OMAR

Official Stamp

DECLARATION OF ORIGINALITY

I confirm that the project report we are submitting are entirely our own work and that any material used from other sources has been clearly identified and properly acknowledged and referenced.

Project Title: Car Phone Dock System

Author Name : DEVAN SIVARAM

Registration No : 08DEP17F1158

Date : 11.10.2019

E-mail : devansivaram@yahoo.com

Author Signature : …….

Acknowledgement

We express our sincere gratitude to our institute, Polytechnic Shah Alam for providing us an opportunity to undertake and complete such an interesting project report.

I am very thankful to our very respected Dr. Marlina Binti Ramli for the confidence she had on me regarding this project. She was my backbone and my guide throughout this project. Without her assistance, I wouldn't have completed this project within a short period of time. I also thank other supervisors for inspiring and motivating me to bring out a successful project.

It would be really unfair without mentioning our friends and families. The immense love and moral support they have given is truly unmeasureable.

Abstract

Addicted to gadget while driving is one of the main reasons in increasing number of accidents in Malaysia. Everybody tends to keep updating status on social media at any time even though while driving. These people tend to disobey the traffic rules. Now, it is becoming a practice and habit among us. It would cause distraction for the drivers and end up meeting with accidents. Development of Car Phone Dock System is to ensure the driver will concentrate their driving. There will be a built-in phone holder in the vehicle with additional feature in it. Before the car moves, the smartphone will be placed on the phone dock. IR sensor will be used in the Car Phone Dock System as a switch to turn on the buzzer system and controlled by Arduino. As the driver picks up the smartphone from the phone dock, the sensor on the phone holder will detect that there is no phone on the holder, so the buzzer will be turned on and makes a distasteful sound. Hence, the driver will be forced or to be triggered to put down the smartphone back to the dock and focus on driving. With this invention, accidents that happen due to the tendency to use the smartphone while driving are expected to be reduced.

Keywords: accidents ; driving ; smartphone; life ; focus ; accidents reduced

Abstrak

Kecanduan alat semasa memandu adalah salah satu sebab utama peningkatan jumlah kemalangan di Malaysia. Semua orang cenderung terus mengemas kini status di media sosial pada bila-bila masa walaupun semasa memandu. Orang-orang ini cenderung tidak mematuhi peraturan lalu lintas. Kini, ia menjadi amalan dan kebiasaan di kalangan kita. Ia akan menyebabkan gangguan kepada pemandu dan akhirnya bertemu dengan kemalangan. Pembangunan Sistem Dok Telefon Kereta adalah untuk memastikan pemandu akan menumpukan perhatian memandu mereka. Akan ada pemegang telefon terbina dalam kenderaan dengan ciri tambahan di dalamnya. Sebelum bergerak kereta, telefon pintar akan diletakkan di dok telefon. Sensor IR akan digunakan di Sistem Dok Telefon Kereta sebagai suis untuk menghidupkan sistem buzzer dan dikawal oleh Arduino. Apabila pemandu memungut telefon pintar dari dok telefon, sensor pada pemegang telefon akan mengesan bahawa tidak ada telefon di pemegang, maka pembesar akan dihidupkan dan membuat bunyi yang tidak menyenangkan. Oleh itu, pemandu akan dipaksa atau dicetuskan untuk meletakkan semula telefon pintar itu kembali ke dok dan memberi tumpuan kepada memandu. Dengan ciptaan ini, kemalangan yang berlaku disebabkan kecenderungan untuk menggunakan telefon pintar semasa memandu dijangka dikurangkan.

Kata kunci: kemalangan; memandu; telefon pintar; kehidupan; tumpuan; kemalangan dikurangkan

Content

Chapter 1

a) Introduction

Every student who studies at Polytechnic must do a project as a final year task that takes part in the last 2 semesters for students to graduate with skill certificate or diploma.

The project course is a compulsory course for a specific program of study that must be implemented to meet the qualification requirements of the Ministry of Higher Education Polytechnic Diploma (KPT). This course provides students with an opportunity to apply their prior knowledge and skills as well as showcase their skills in realizing ideas, creativity, innovation and problem solving towards producing commercially valuable and competitive projects.

Smartphones are class of mobile phones and of multi-purpose mobile computing device. It has become the most attractive and overly engrossed device among people not just in Malaysia but across all around the world. It is really addictive until smartphones are used while driving on roads too. Apart from that, based on the statistics of road accidents in Malaysia by the Ministry of Transportation, it shows that the number of road accidents in Malaysia is increasing yearly and it is not reducing.

Many lives have been lost in Malaysia and the percentage number of citizens who dies just the reason of using smartphones while driving drastically increasing yearly. Furthermore, still there is no stop for this serious matter. As a solution for this problem, steps have been taken to create a phone dock system to be placed in a car to avoid smartphones to be on the driver's hands while driving.

b) Project Definition

Project scope is the part of project planning that involves determining and documenting a list of specific project goals, deliverables, features, functions, tasks, deadlines, and ultimately costs. In other words, it is what needs to be achieved and the work that must be done to deliver a project.

c) Problem Statement

The number of road accidents in Malaysia is increasing yearly. One of the causes of this drastic increment is using smartphone while driving. Drivers might be surfing the internet or go through social media while driving such as Facebook, Twitter, Instagram, etc. Furthermore, there are also drivers speak through the phone by one hand holding the phone and the other hand holding the steering wheel while driving. To stop this, I came up with an idea which is to make a phone dock system where drivers will not hold their phone while driving. By creating a phone dock in the car, I can safe many innocent lives and the statistics of road accidents in Malaysia will be decreased.

d) Objective

- To reduce the number of road accidents with the reason of smartphone usage while driving in Malaysia.
- To avoid drivers to grab their smartphones while driving

e) Outline of Report

Chapter 1 is about the project which is problem statement, objective and definition of project.

Chapter 2 is the literature review where the parts and researchs of the Car Phone Dock System will be described and getting to know all the components that will be used for this project. The purpose of this chapter is to provide an overview the scope of study for this project.

Chapter 3 is methodology section where the methods or steps that have been used to make this project work will be explained thoroughly.

Chapter 4 is the result and discussion where all the result of the project will be shown. Discussion and observation of the outcome of the research in relation to evidence obtained from project and theories will be made in this chapter.

Chapter 5 is conclusion for this project, which describe the overall project based on the observation of the result obtained and summarize the entire project. This chapter also discuss the recommendation for future planning.

Chapter 2

a) Literature Review

Road traffic accidents lead to injuries and deaths affecting individuals, families and communities. It burdens the healthcare delivery system with occupation of limited hospital beds and utilisation of resources, as well as results in loss of productivity and income, with social and economic consequences.

More than half of all road traffic deaths usually involve adults aged between 15 and 44 years, who are often the family breadwinners. The reasons for road traffic accidents are multiple and include rapid urbanisation, poor safety standards, lack of enforcement, people driving distracted or fatigued, influence of psychoactive drugs and alcohol, speeding, and failure to wear seat belts or helmets.

Pedestrian walkers also got no safety as drivers can just ram over the pedestrian walker since drivers use their phone while driving. Malaysia has the third highest fatality rate from road traffic accidents in Asia and Asean. These fatality rates are similar to that of some African countries. This means that numerous Malaysian families are affected annually by such deaths, serious injuries, hospitalisations and disabilities.

Distracted driving, cellphones seen as factors in pedestrian deaths

TECH NEWS

Monday, 2 Jul 2018 9:30 AM MYT

By **Nathan Bomey** and **Eric D. Lawrence**

Reports of drivers using their phones to send and read text messages, check e-mail or watch videos are not unusual, but all of those activities, when they happen behind the wheel, can be extremely risky. — TNS

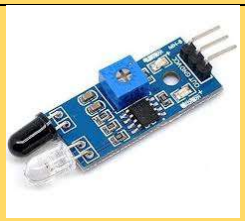
A sensor is a device that detects and responds to some type of input from the physical environment. The specific input could be light, heat, motion, moisture, pressure, or any one of a great number of other environmental phenomena. The output is generally a signal that is converted to human-readable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

Criteria to choose a Sensor

There are certain features which have to be considered when we choose a sensor as below :-

1. Accuracy
2. Environmental condition - usually has limits for temperature/ humidity
3. Range - Measurement limit of sensor
4. Calibration - Essential for most of the measuring devices as the readings changes with time
5. Resolution - Smallest increment detected by the sensor
6. Cost
7. Repeatability - The reading that varies is repeatedly measured under the same environment

Characteristics Of Sensors

Characteristics	IR sensor	Digital IR sensor	Ultrasonic sensor	PIR Motion Sensor
Input voltage	3.3VDC OR 5VDC	6-36VDC	5VDC	5-20VDC
Dimension	3.1cm x 1.5cm	1.6cm x 6.7cm	45.3mm x 20.4mm x 15.4mm	32.2mm x 24.3mm x 25.4mm
Detection Angle	35°	-	<15°	70°
Adjustable sensitivity	Yes	Yes	No	Yes
No. of pins/wires	3	3	4	3
Obstacle range	2cm to 10cm	5V = 20cm 12V = 60cm 30V = 80cm	2cm to 400cm	6m
Size	Small	Medium	Medium	Medium
Response Time	Fast	Fast	Slow	Slow
Diagram				
Price	RM5	RM18	RM4	RM5

b) Tools and equipment used

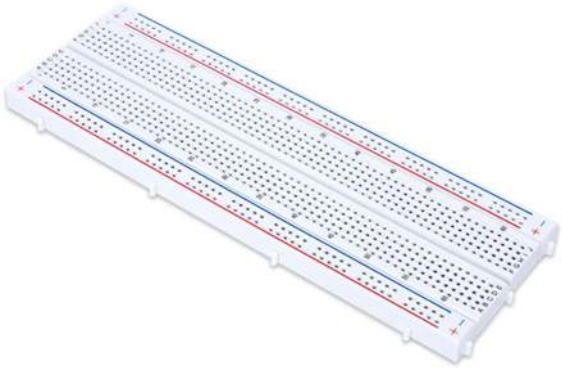
- Arduino

Arduino is an open-source hardware and software company, project and user community that designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical and digital world.

- IR sensor

An infrared sensor is an electronic device, that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion. These types of sensors measures only infrared radiation, rather than emitting it that is called as a passive IR sensor. Usually in the infrared spectrum, all the objects radiate some form of thermal radiations. These types of radiations are invisible to our eyes, that can be detected by an infrared sensor. The emitter is simply an IR LED (Light Emitting Diode) and the detector is simply an IR photodiode which is sensitive to IR light of the same wavelength as that emitted by the IR LED. When IR light falls on the photodiode, the resistances and these output voltages, change in proportion to the magnitude of the IR light received.

- Breadboard



A breadboard is a solderless device for temporary prototype with electronics and test circuit designs. Most electronic components in electronic circuits can be interconnected by inserting their leads or terminals into the holes and then making connections through wires where appropriate.

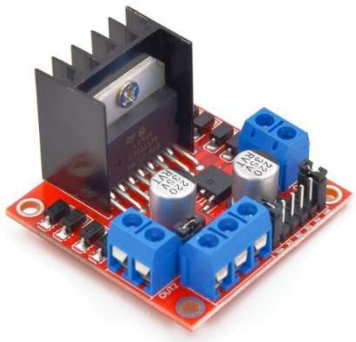
- Wires

A jump wire is an electrical wire, or group of them in a cable, with a connector or pin at each end, which is normally used to interconnect the components of a breadboard or other prototype or test circuit, internally or with other equipment or components, without soldering.

- DC Motors

To represent a car

- L298N Motor Driver

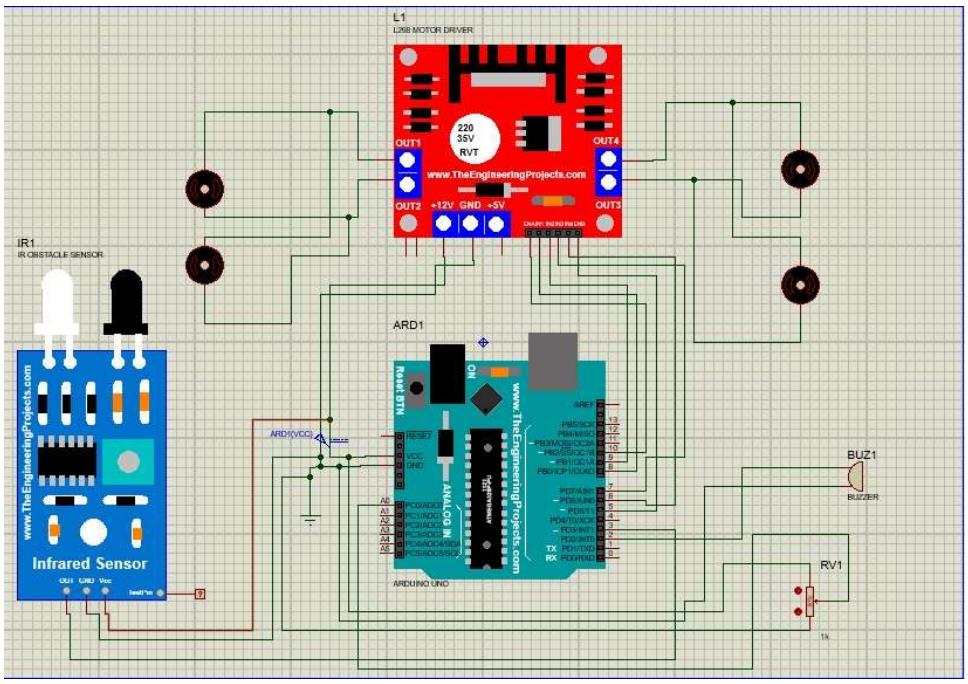


The L298N is an integrated monolithic circuit in a 15- lead Multiwatt and PowerSO20 packages. It is a high voltage , high current dual full-bridge driver designed to accept standard TTL logic level sand drive inductive loads such as relays, solenoids, DC and stepping motors

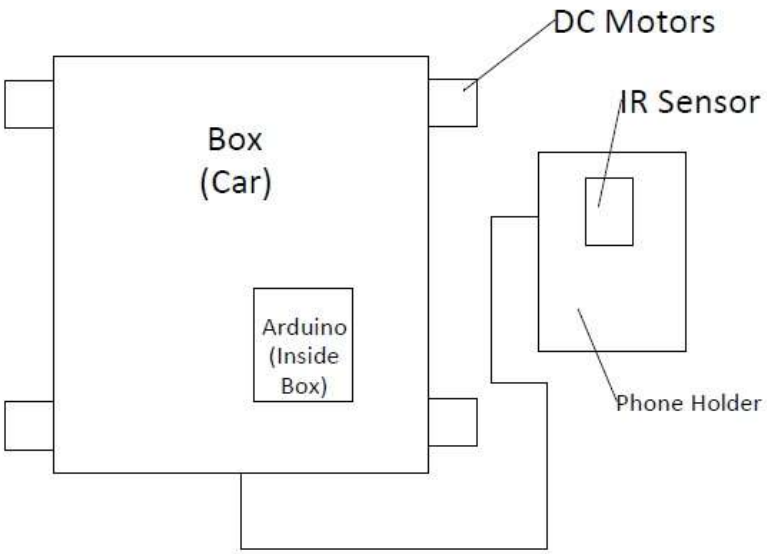
Chapter 3

a) Methodology

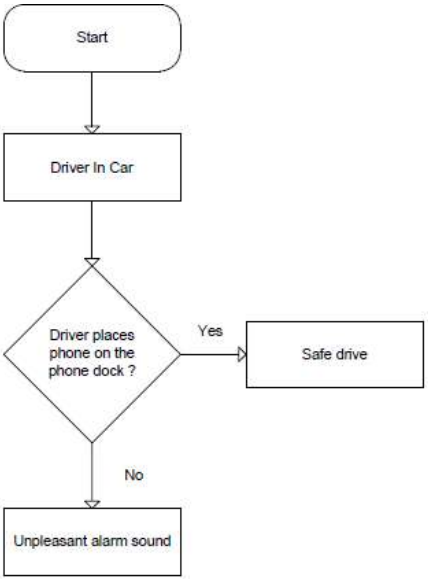
- Circuit Diagram



- Block Diagram



- Flowchart


Start
Driver In Car
Driver places phone on the phone dock ?
Yes
Safe drive
No
Unpleasant alarm sound

- Coding

```
//Motor A
int in1 = 8;
int in2 = 9;
int EnableA = 10;
int MotorA = 0;

//Motor B
int in3 = 7;
int in4 = 6;
int EnableB = 5;
int MotorB = 0;

//IR Sensor
int irsensor = 3;
int sensor = 0;

//Buzzer
int buzzer = 2;

//LED
int led = 13;

//Potentiometer
int potentio;

void setup() {
  Serial.begin(9600);
  pinMode(irsensor,INPUT);
  pinMode(in1, OUTPUT);
  pinMode(in2, OUTPUT);
  pinMode(EnableA, OUTPUT);
  pinMode(in3, OUTPUT);
  pinMode(in4, OUTPUT);
  pinMode(EnableB, OUTPUT);
  pinMode(led,OUTPUT);
}
void TurnMotorA(){     //We create a function which control the direction and speed
digitalWrite(in1, LOW);     //Switch between this HIGH and LOW to change direction
digitalWrite(in2, HIGH);
potentio = analogRead(A0);
potentio = potentio*0.2492668622; //We read thea analog value from the potentiometer calibrate it
analogWrite(EnableA,potentio);   // Then inject it to our motor
}
void TurnMotorB(){    //We create a function which control the direction and speed
digitalWrite(in3, HIGH);   //Switch between this HIGH and LOW to change direction
digitalWrite(in4, LOW);
potentio = analogRead(A0);
potentio = potentio*0.2492668622;  //We read the analog value from the potentiometer calibrate it
analogWrite(EnableB,potentio);  // Then inject it to our motor
}
```



```
void loop() {
```

```
TurnMotorA(); //one function that keeps looping you can add another one with different direction or
stop
TurnMotorB();
{
 {
  if(digitalRead(MotorA) == 0)
  {
   Serial.println(digitalRead(MotorA));
   digitalWrite(sensor, LOW);
  }
  else
  {
   digitalWrite(sensor, HIGH);
  }
 }
}
 {
  if(digitalRead(MotorB) == 0)
  {
   Serial.println(digitalRead(MotorB));
   digitalWrite(sensor, LOW);
  }
  else
  {
   digitalWrite(sensor, HIGH);
  }
 }
{
sensor = digitalRead(irsensor);
if (sensor == HIGH)
{
 Serial.println("Phone Not Detected");
 tone(buzzer,1000, 100);
 delay(95);
 {
 digitalWrite(led, HIGH);
 delay(100);
 digitalWrite(led, LOW);
 delay(100);
 }
}
 else
 {
  Serial.println("Phone Detected");
  noTone(buzzer);
  digitalWrite(led, LOW);
 }
}
}
```

- Operating Expenses

No	Type	Value & product code	Unit	Price(RM)	Total(RM)
1	Arduino Uno		1	15.00	15.00
2	IR Sensor		1	10.00	10.00
3	Wires	2 meters	1	2.00	2.00
4	Buzzer		1	8.00	8.00
5	Phone holder		1	10.00	10.00
	Total				45.00

- Margin gross profit

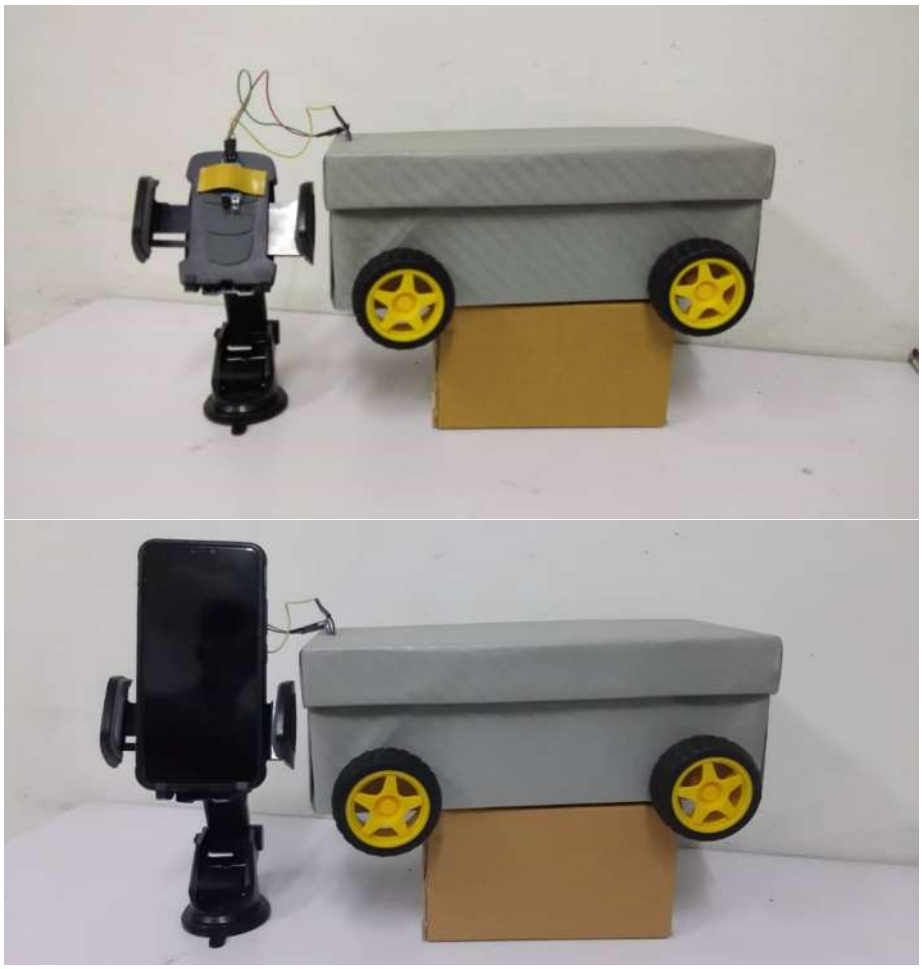
Margin cost profit = (RM90 – RM45)/RM90
= 0.5
= 50%

- Selling price

Selling price = cost/(1-0.5)
= RM45/(0.5)
= RM90

Chapter 4

Result/Analysis

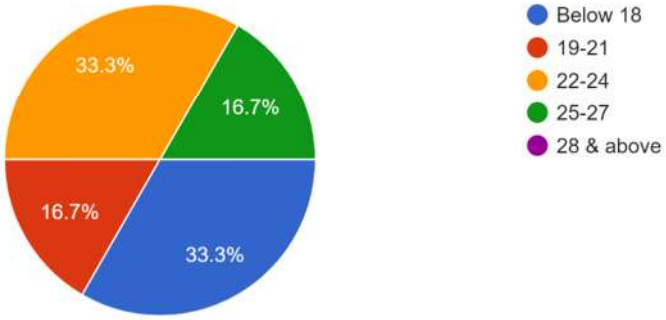


When the phone is taken out from the phone holder, there will be a noise/sound coming from the box. The box and wheels represent as a car. This way is to make sure drivers are concentrating their driving. It will be a reminder or alert for the driver to place their phone back to the phone holder.

Survey Result

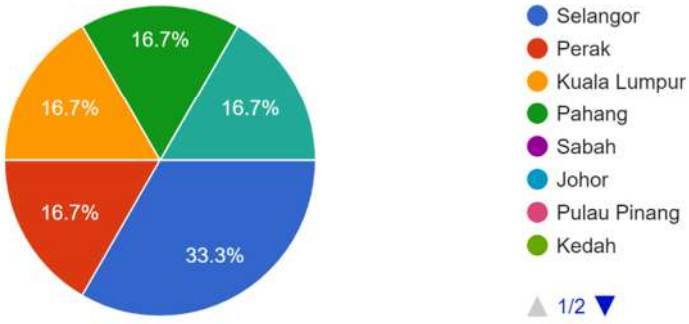
But before that, let me know your age ?

6 responses



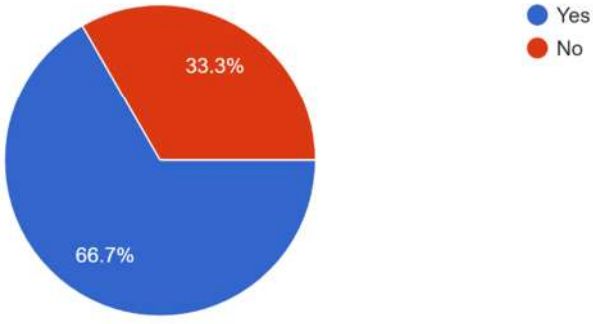
And which state do you live ?

6 responses



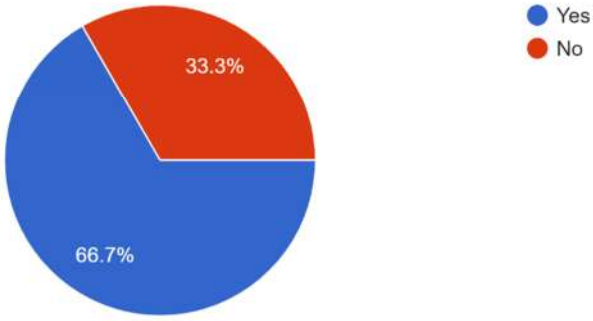
Have you been involved in an accident before ?

6 responses



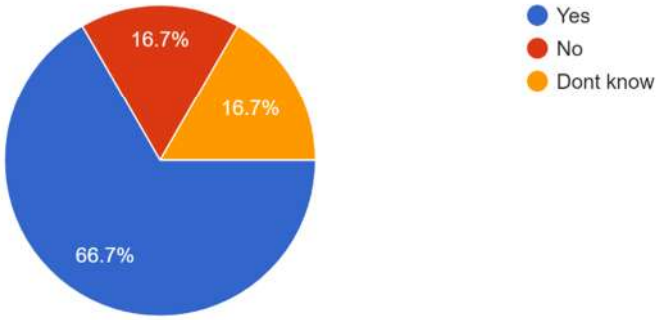
Have you used a phone holder in a car before ?

6 responses



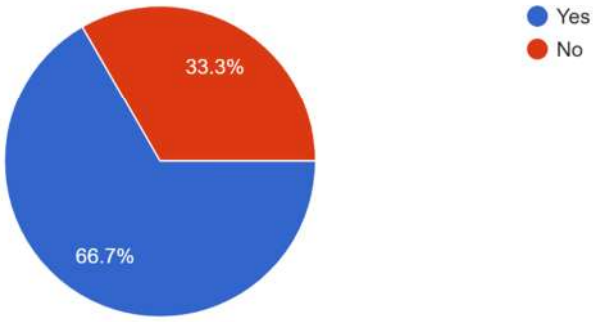
Is it comfortable and easy to be used ?

6 responses



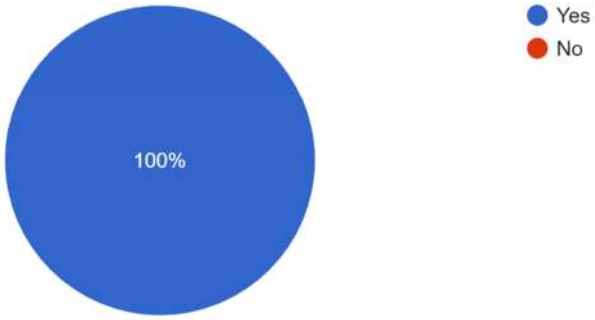
Do you think if there is a phone holder in a car can still cause accidents ?

6 responses



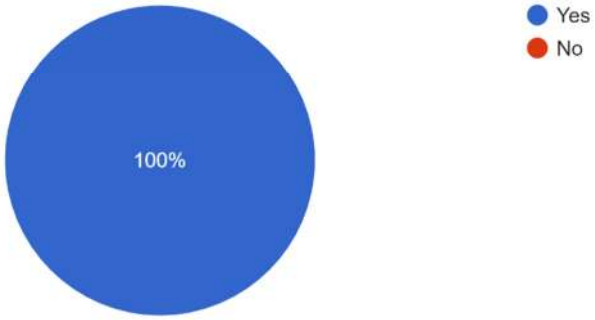
Do you think the phone holder needs some innovation ?

6 responses



Do you think by innovating this can reduce the number of car accidents in Malaysia ?

6 responses



Chapter 5

Conclusion

Car Phone Dock System to be designed in a car is successfully presented and discussed. The objective of this project is to ensure the safety of the driver and also passengers in a car and also to avoid for the driver to use their smartphones while driving. The usage of smartphones among humans are getting addicted until it is also used while driving a vehicle. Eyes will not be laid on the road and more attention on the phone while driving since the driver holds and look down on their phone. This makes the driver not paying attention on the road and may lead to accidents. It will not just only affect the driver itself but also maybe the passengers in the car and also every individual outside. The younger generation nowadays don't really know the consequences after getting accidents for the reason of using phone while driving. It would be a suffering scenario for them as well as for their families. Another hurting is where they will meet accidents and killing other innocent lives. To solve the problem to lessen the number of people being affected and also to help preventing accidents to happen, Smart Car Phone Holder is a suitable product for them.