POLITEKNIK SULTAN SALAHUDDIN

ABDUL AZIZ SHAH

BUS STOP NOTIFICATION SYSTEM

NAME	REGISTRATION NO
AQMAL BIN NOOR AZIZI	08DEP17F2020
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JABATAN KEJURUTERAAN ELEKTRIK

DECEMBER 2019

ENDORSEMENT

"I hereby acknowledge that I have read this report and I find that its contents meet
The requirement in term of scope and quality for the award of the Diploma in
Electronic Engineering (COMMUNICATION)"

Name of Supervisor: MDM. AKMARYA SYUKHAIRILNISAH BT MOHD AKHIR

Date: DECEMBER 2019

Signature:

Name of Supervisor: MDM. ASTRAHUDA KAMARULAINI BINTI MOHD FAHMI

Date: DECEMBER 2019

Signature:

Name of Supervisor: MDM. ZAITUN BINTI TAAT

Date: DECEMBER 2019

Signature:

Name of Supervisor: SIR. KHAIROL NAPISHAM BIN ABD RAZAK

Date: DECEMBER 2019

Signature:

DEDICATION

This project is dedicated to my family, friends and the citizen of the Polytechnic Sultan Salahuddin Abdul Aziz Shah with their assistant, guidance, advised and giving fully support at my industry training session about knowledge of maintenance and servicing and more understand about situation working place during my industrial training. It also for the people that involved in this project directly and indirectly. Thank you for all support.

TABLE OF CONTENTS

ACKNOWLEDGEMENT

ABSTRACT

Blind and deaf-blind people often rely on public transit for everyday mobility, but using transit can be challenging for them. We conducted semi-structured interviews with 13 blind and deaf-blind people to understand how they use public transit and what human values were important to them in this domain. Two key values were identified: independence and safety. This study focused on building a bus stop notification system by using an RFID sensor which could detect an on the road bus by such length. This project are closely related to blinded and deaf people on facing difficulties when waiting for a bus at a local bus stop. They didn't know and can't recognized well whether it's their bus or not. By building this system, people with those disabilities could step on a bus much easier than before. An LCD and a speaker will be put inside the bus stop pole so that the blinded people can heard the speaker and the deaf people can see through an LCD placed on it if there is a nearer bus going to pick people at the bus stop. The system will automatically detect the bus in the coded range which would notify the people waiting at the bus stop. A concept of transmitter and receiver are used in this built.

CHAPTER 1

INTRODUCTION

INTRODUCTION

This section gives an overview about the project such as idea of the project and the project's background. The project title is "Bus Stop Notification System". This built of this project is to help alert the people about what time the bus is arriving by build the project that used Radio Frequency (RF) transmitter, receiver as the medium to pass and propagate the signal wave when trigger the button at transmitter circuit while Arduino Uno as a microcontroller.

Radio Frequency (RF), Tx-Transmitter and Rx-Receiver are a wonderful technology with many applications in our society. It is common for remote nowadays to use RF Transmitter and Receiver as medium for transfer and receive signal. Without RF Transmitter and Receiver, they have to use Infrared (IR) Transmitter and Receiver that only cover small area of coverage propagation. The function of RF Transmitter and Receiver is not only transmit the signal in one single direction but it can transmit the signal in any direction and it can cover a large coverage area compared to IR Transmitter and Receiver where the IR Transmitter and Receiver can only transmit the signal in one direction. An RF module (Radio Frequency module) is a small electronic device used to transmit and receive radio signals between two devices. In an embedded system it is often desirable to communicate with another device wirelessly. This wireless communication may be accomplished through optical communication or through Radio Frequency (RF) communication. For many applications the medium of choice is RF since it does not require line of sight. RF communications incorporate a transmitter and receiver. RF modules are widely used in electronic design owing to the difficulty of designing radio circuitry. Good electronic radio design is notoriously complex because of the sensitivity of radio circuits and the accuracy of components and layouts required achieving operation on a specific frequency. In addition, reliable RF communication circuit requires careful monitoring of the manufacturing process to ensure that the RF performance is not adversely affected. Finally, radio circuits are usually subject to limits on radiated emissions, and require conformance testing and certification by a standardization organization such as European Telecommunications Standards Institute (ETSI) or the Federal Communications Commission (FCC). RF modules are most often used in medium and low volume products for consumer applications such as garage door openers, wireless alarm systems, industrial remote controls, smart sensor applications, and wireless home automation systems. They are sometimes used to replace older infrared communication designs as they have the advantage of not requiring line-of-sight operation. Several carrier frequencies are commonly used in commercially available RF modules, including those in the industrial, scientific

and medical (ISM) radio bands such as 433.92 MHz, 315 MHz, 868 MHz, 915 MHz, and 2400 MHz. These frequencies are used because of national and international regulations governing the use of radio for communication. RF modules may comply with a defined protocol for RF communications such as Bluetooth low energy, or Wi-Fi, or they may implement a Proprietary protocol.

The project title is "Bus Stop Notification System" at Politeknik Sultan Salahuddin Abdul Aziz Shah. Universal bus notification system is a device used to alert people with disabilities about what time bus is coming and arrived at bus stop. Currently bus notification system for local uses only timetable or schedule system. However, the constraints of timetable system are the disabled people do not alert and warned about the arrival of bus. Therefore, in this project, a transmitter, a receiver, and an RF technique is proposed due fact that RF signal covers longer distance and reliable. The range of this project is limited to 10-100 meters with the operating frequency of 3-30MHz. The development of the proposed RF remote control consists of designing a transmitter-receiver circuit. A one directional communication concept is applied in transmitting the signal from transmitter circuit to receiver circuit. A reliable and robust RF bus notification system is expected to be developed.

PROBLEM STATEMENT

Bus system at local place nowadays, used only timetable or schedule system. This system is not so effective. The constraints of the timetable system are the people with disabilities did not alerted and warned about the arrival of the bus. This project is wanted to help alert those people about what time the bus is arrived. Also students that live at hostel always miss to take the bus to go to class because one or two minutes late. It is because they do not notice about what time bus arrived at bus stop. People normally face problem while waiting for the bus especially during rainy day. This is due to the improper shelter in the bus stop as well as there is no fixed drop location. These factors make these people unable to get the bus on a proper time.

OBJECTIVE

The aim of this project is to develop the bus notification system. This goals can be attained by:

1. Developing a bus notification system that will alert, notice and warn people with disabilities about what time bus is arrived at bus stop.
    - First objective is to build a project which implement a system that can help alerted, noticed and warned those people about the arrival of bus at the parking lot. Nowadays, local bus-stop still use the conventional method which are the schedule and timetable system. The system is not practical to alert those people about what time the bus is coming.
2. Designing a circuit for bus notification system.
    - The second objective is to design a circuit using Multisim and Proteus Software then simulates the design circuit.
3. Developing a coding for Arduino Uno Microcontroller.
    - The last objective of this project is to develop the code for Arduino Uno. The coding will be stored in Arduino Uno as to control all the process of the project.

SCOPE OF PROJECT

This study will focus on developing two components of development. There are hardware development and software development. For hardware development, this project will use a RF technique, transmitter, receiver and bell or buzzer. The transmitter and receiver has their own advantage because this electronic device using a wave as a medium to propagate. The nature wave is spread the wave everywhere. Therefore, the transmitter and receiver are not limited to one direction only.

For software development, the programming for Arduino Uno Microcontroller is using Arduino Software and for the circuit design, the most suitable is Proteus software. The Proteus software can be and it can be used for stimulating the circuit created and changing the parameter required. This project has a distance ranged, it only covers around 100 metres of the bus parking lots.

CHAPTER 2

LITERATURE REVIEW

LITERATURE REVIEW

This section extend the literature reviews that cater the information in accordance with the objectives of this project. The relevant information and other extra features were gathered as shown below.

1. Bus Notification System

Mr.S.B.Ambhore1 [1], This project introduction is concentrated on such person to determine the buses which are coming at the bus terminal and also give the information about the route through which they are going. The issues of this project is got issue in need of data connection or mobile data or Wi-Fi. System needs of android device. Method that they used is efficiently sending the Mac-id and Bluetooth name to web server and retrieving the data from web server to mobile application. The work is concentrated on providing route and stops of the buses of the remote areas on an android devices.

2. Strategy Model in Bus Tracking and Information Application (BTA) Towards Smart Mobility in Urban Spaces

Azham Hussain [2], The inventor focused on traffic management in real- time, management of passenger transport means, tracking applications and logistics, car sharing services, car park management and more smart mobility services. Problems on sharing the data with the proposed system, bus's service alert and bus's ETAs. The data are retrieved from the PostgreSQL Database through the API with GET Method so the users can view the past and latest announcements that are stored in the database. It will be possible for governments to provide a smart solution for the management of public infrastructures and urban facilities

3. Real time bus monitoring and passengers information system

GauravChheda, [3]. Standalone system designed to display the real- time location(s) of the buses in Mumbai city. A passenger in Mumbai often faces the decision of whether it would be quicker to wait for the next bus or to walk or to hire a cab/rickshaw to reach his/her destination. This system will enable the tracking device to obtain GPS data of the bus locations, which it will then transfer it to centralized control unit and depict it by activating LEDs in the This system will assist pedestrians in making the decision of whether to wait for the bus or walk.

4. Real Time Bus Position and Time Monitoring System

Vipul Pandey. [4], the movement of vehicles is affected by different uncertain conditions as the day progresses such as traffic congestion, unexpected delays, random in passenger demand, irregular vehicle- dispatching times and incidents. passengers are suffering and are waiting for their bus on their bus stops for long time since they do not have updated real time information about their buses. In This paper focuses on the implementation of a Real Time bus Tracking (RTBT) system, by installing GPS devices on city buses which will transmit the current location on GPS Receiver. With the advent of GPS and the ubiquitous cellular network, real time vehicle tracking for better transport management has become possible.

5. Real-Time Bus Tracking System

Dhruv Patel1, [5], a system which provides real- time information about the location and estimated time of arrival of the buses. randomness in passenger demand, irregular vehicle dispatching times take place and as a result of which the schedule of the passengers are affected and they inevitably have to wait for the arrival of their respective bus. This project focuses on the implementation of a Real-Time bus Tracking System (RTBTS), by installing GPS (Global Positioning System)-module devices on college buses which will transmit the current location on the GPS Receiver. With the advent of GPS and the omnipresent cellular network, real-time vehicle tracking for better transport management has become possible.

METHODOLOGY

INTRODUCTION

Methodology is one important while completing a project. Methodology help us at every stage of a project from initiation to implementation to the closure end. Methodology can be act ass the project manager employ for the design, planning, implementation, and achievement of their project objectives. With different type of project management methodology, it can be benefit to different project.

For this project, we had state our fully process from start of the project until the end of project step and implementation. Process of project, had state the flow of tank we had implementation and how can it help on the project. Thus, describe the way of came out this project which is Bus Stop Notification System.

Gantt Chart

NO	TASK	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Selection of Project title		■												
2	Defend on project title			■	■										
3	Make a research and plan project			■	■	■	■								
4	identify and buy components		■												
5	Collect inforation and start the project			■	■	■	■	■	■	■					
6	Make a program for the project						■	■	■	■					
7	Identify and solve problem for program				■	■	■	■							
8	Installing the components					■	■	■	■	■					
9	Applying the project								■	■	■	■			
10	Making a survey on the project											■	■		
11	Presentation												■		
12	Making a report												■	■	■

Table 3.1: Gantt chart

FLOW CHART

Making project
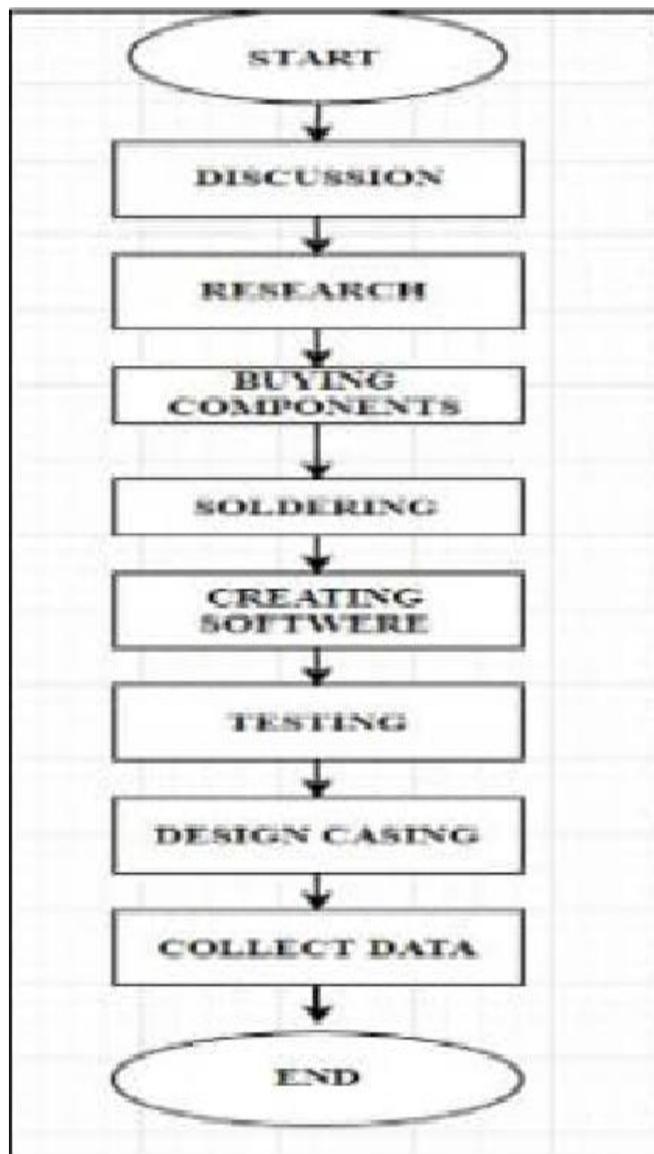
Figure 3.2: Flow chart before making project

Full project
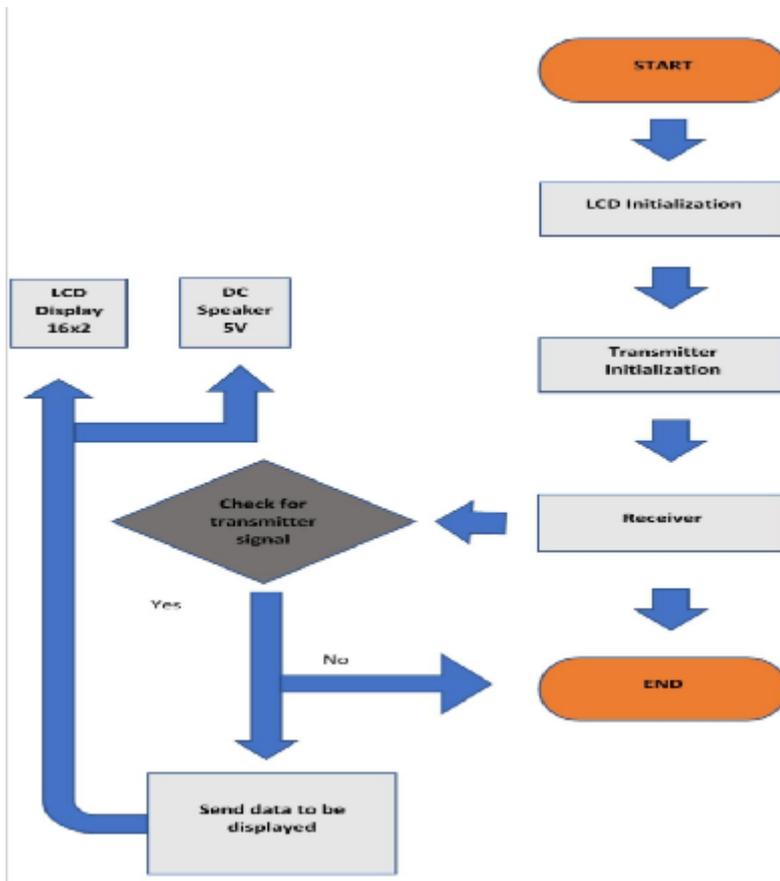
Figure 3.3: Flow chart project

Firstly, transmitter will put inside the bus and the receiver will put at the bus stop. When the receiver receive the signal from the bus receiver will check for transmitter signal if the signal has receive at receiver the LCD will display that bus has arrived meanwhile speaker will announce that the bus has arrived. If receiver don't get any signal from the transmitter there will no anything happen to the LCD and Speaker.

BLOCK DIAGRAM

SCHEMATIC DESIGN
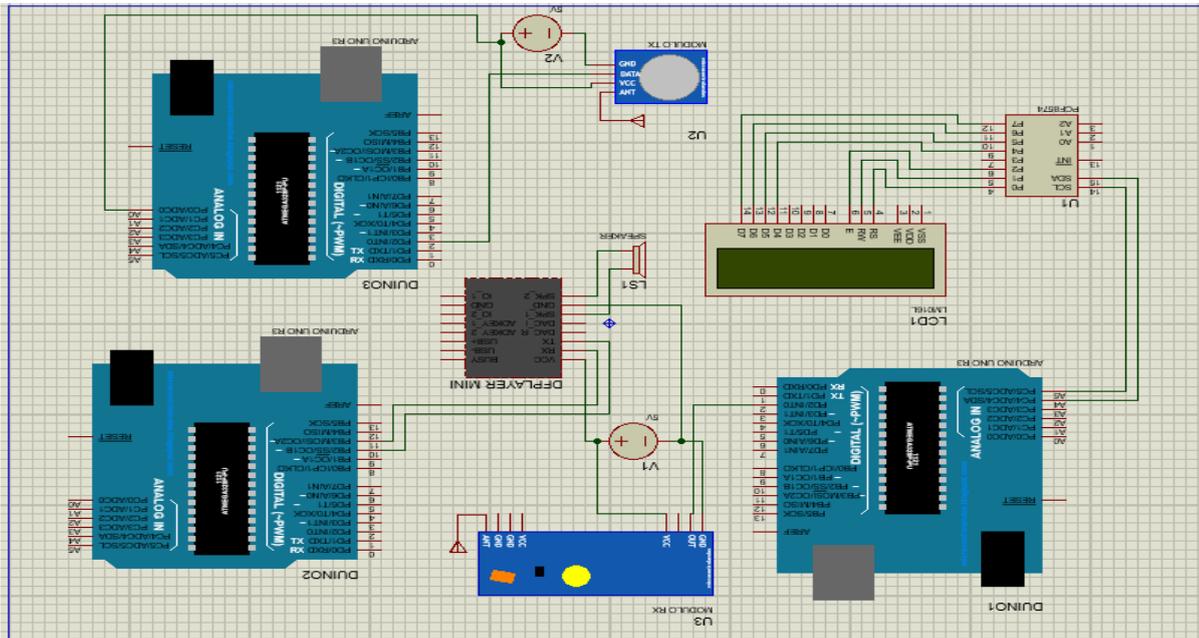
LIST OF COMPONENTS

Technology used in this project;

1. Arduino

Arduino Uno is a microcontroller board which is an open-source electronics platform mainly based on AVR microcontroller. It allows the designers to control and sense the external electronic devices in the real world It has 14 digital input/output pins, 6 analogue inputs, a 16 MHz quartz crystal, a USB connection, an ICSP header and a reset button, a power jack.

2. Transmitter and Receiver
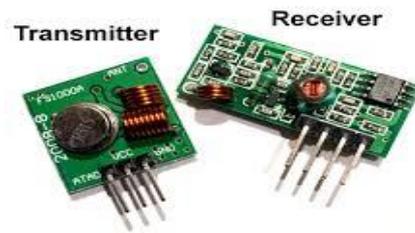
Transmitter and a receiver combined in one unit is called a transceiver. The term transmitter is often abbreviated "XMTR" or "TX" in technical documents. The purpose of most transmitters is radio communication of information over a distance. The information is provided to the transmitter in the form of an electronic signal, such as an audio (sound) signal from a microphone, a video (TV) signal from a video camera, or in wireless networking devices, a digital signal from a computer. The transmitter combines the information signal to be carried with the radio frequency signal which generates the radiowaves, which is called the carrier signal. This process is called modulation.

3. LCD
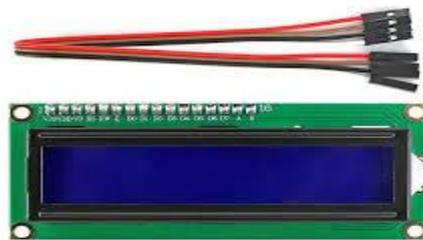
LCDs were a big leap in terms of the technology they replaced, which include light-emitting diode (LED) and gas-plasma displays. LCDs allowed displays to be much thinner than cathode ray tube (CRT) technology. LCDs consume much less power than LED and gas-display displays because they work on the principle of blocking light rather than emitting it. Where an LED emits light, the liquid crystals in an LCD produces an image or writing using a backlight

.

4. Speaker

Speaker is an electroacoustic transducer a device which converts an electrical audio signal into a corresponding sound. The dynamic speaker operates on the same basic principle as a dynamic microphone, but in reverse, to produce sound from an electrical signal. When an alternating current electrical audio signal is applied to its voice coil, a coil of wire suspended in a circular gap between the poles of a permanent magnet, the coil is forced to move rapidly back and forth due to Faraday's law of induction, which causes a diaphragm (usually conically shaped) attached to the coil to move back and forth, pushing on the air to create sound waves. Besides this most common method, there are several alternative

5. BATERY 5V

A battery is a device consisting of one or more electrochemical cells with external connections[1] for powering electrical devices such as flashlights, mobile phones, and electric cars. When a battery is supplying electric power, its positive terminal is the cathode and its negative terminal is the anode. The terminal marked negative is the source of electrons that will flow through an external electric circuit to the positive terminal. When a battery is connected to an external electric load, a redox reaction

converts high-energy reactants to lower-energy products, and the free-energy difference is delivered to the external circuit as electrical energy. Historically the term "battery" specifically referred to a device composed of multiple cells, however the usage has evolved to include devices composed of a single cell.

6. DFPLAYER MINI

The DFPlayer Mini MP3 Player For Arduino is a small and low price MP3 module with an simplified output directly to the speaker. The module can be used as a stand alone module with attached battery, speaker and push buttons or used in combination with an Arduino UNO or any other with RX/TX capabilities.

COST

COMPONENT	PRICE
ARDUINO UNO R3	RM 27 X 3 = RM81
LCD	RM 29
SPEAKER	RM 20
RF TRANSMITTER AND RECEIVER	RM 29
BATERY 5V	RM 5
DFPLAYER MINI	RM15
TOTAL	RM 179

CHAPTER 4

ANALYSIS AND RESULT

INTRODUCTION

For this chapter I decide to ask people who always take a bus to their destination, they been asked to fill our questionnaire that consist of question about on the view of Bus Stop Notification System, satisfication of the Bus Stop Notification System for the people in daily especially for people who deaf and blind.

RESULT AND DISCUSSION

Result: Once the circuit has been discussed in chapter 3, the transmitter and receiver has been programmed by using atduino uno software. We programmed that if the transmitter transmit the signal to receiver, the LCD and speaker function such as LCD will display that "bus has arrived" meanwhile for speaker I already set that will announce that the bus has arrived.

PIE CHART SHOW THAT OUR PROJECT SATISFICATION OF OUR PROJECT

Adakah anda pernah menaiki bas untuk ke tempat kerja atau belajar ?

21 responses

- Ya
- Tidak

19%

81%

Pada pendapat anda, jika produk "Bus Stop Notification System" berada dalam pasaran, adakah anda akan menggunakannya ?

21 responses

- Ya
- Tidak

9.5%

90.5%
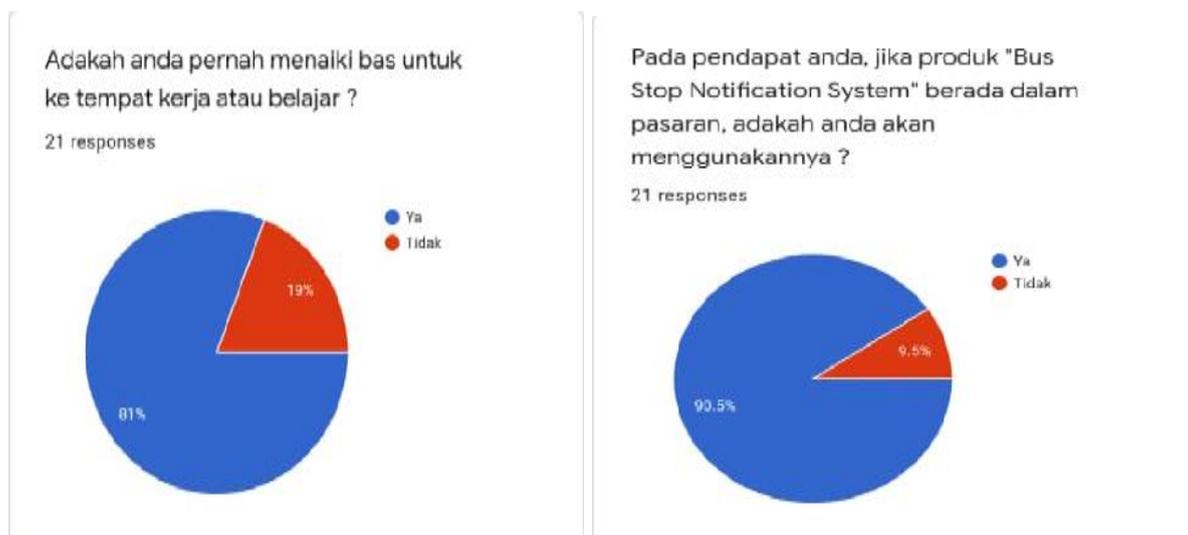
DISCUSSION

This Bus Stop Notification System inform the bus has arrived or not at the bus stop, it will easy for people who have lack of attention. Not just that this bus stop also help blind and deaf people to take the bus. At the same time it help old person who have a farsightedness.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

CONCLUSION

We can conclude that this project is useful especially to people who have disabilities such as blind or deaf. With this proposed scheme, a visually and hearing impaired person can successfully travel from his location to his desired destination using a bus independently without any hassle. At the same time this project useful for all people who had careless while waiting for the bus.

RECOMMENDATION

This project only focused on for bus operator like RAPID KL. Not just that, we also focused for government who can provide this to community such as at Shah Alam, Selangor, we have bus smart Selangor. If government will approve this project, this project can improve such as do collaboration with application Selangor Intelligent Transport System (SITS). The application give information to the user such as estimated time of arrival is provide for each of the bus stops.

Figure 5.1: Logo of Application of SITS

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APPENDICES

BUS STOP NOTIFICATION SYSTEM

MANUAL BOOK

TEAM MEMBERS

1. AQMAL BIN NOOR AZIZI (08DEP17F2020)
2. AMIRUL AIMAN BIN CHE OMAR (08DEP17F2023)

SUPERVISOR NAME

1. PUAN AKMARYA SYUKHAIRILNISAH BT MOHD AKHIR
2. PUAN ASTRAHUDA KAMARULAINI BINTI MOHD FAHMI
3. ENCIK KHAIROL NAPISHAM BIN ABD RAZAK
4. PUAN ZAITUN BINTI TAAT

SOP OF OPERATION TO USE THE BUS STOP NOTIFICATION SYSTEM

1.0 OBJECTIVE

to lay down the procedure and application of Bus Notification System

2.0 SCOPE

This SOP is applicable for using Bus Stop Notification System

3.0 CAUTION

BEFORE READING THE PROCEDURE, MAKE SURE TO READ EVERY LINE FOR THE BUS STOP NOTIFICATION SYSTEM TO WORK PROPERLY.

4.0 PROCEDURE

OPERATIONAL PROCEDURE

i)   Build the Bus Stop Notification System

ii)   On the system first when you want to active that system by switch on

iii)   Then the LCD and Speaker will ready to use

iv)   After that you need to put transmitter system inside the bus for transmit the signal at bus stop.

v)   The transmitter will automatic turn on when you start the engine of the bus

vi)   After that you can use this Bus Stop Notification system

TURNING OFF THE BUS STOP NOTIFICATION SYSTEM

i)   Turn the bus stop notification system, simply turn the switch off at the system at the bus stop

ii)   So that the receiver will not receive the signal from transmitter

iii)   The transmitter system will automatic off when the bus start the engine

PROBLEM STATEMENT

Bus system at local place nowadays, used only timetable or schedule system. This system is not so effective. The constraints of the timetable system are the people with disabilities did not alerted and warned about the arrival of the bus. This project is wanted to help alert those people about what time the bus is arrived. Also students that live at hostel always miss to take the bus to go to class because one or two minutes late. It is because they do not notice about what time bus arrived at bus stop. People normally face problem while waiting for the bus especially during rainy day. This is due to the improper shelter in the bus stop as well as there is no fixed drop location. These factors make these people unable to get the bus on a proper time.

ADVANTAGES OF BUS STOP NOTIFICATION SYSTEM

- It give advantage to all people to take the bus by the announcement of the arrival of the bus
- Also give advantage for deaf and blind people to take the bus
- Give information to who have farsightedness especially age persons

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

BUS STOP NOTIFICATION SYSTEM

ABOUT OUR PROJECT

INTRODUCTION

The project title is "Bus Stop Notification System" at Politeknik Sultan Salahuddin Abdul Aziz Shah. Universal bus notification system is a device used to alert people with disabilities about what time bus is coming and arrived at bus stop. Currently bus notification system for local uses only timetable or schedule system. However, the constraints of timetable system are the disabled people do not alert and warned about the arrival of bus. Therefore, in this project, a transmitter, a receiver, and an RF technique is proposed due fact that RF signal covers longer distance and reliable. The range of this project is limited to 10- 100 meters with the operating frequency of 3-30MHz. The development of the proposed RF remote control consists of designing a transmitter-receiver circuit. A one directional communication concept is applied in transmitting the signal from transmitter circuit to receiver circuit. A reliable and robust RF bus notification system is expected to be developed.

OBJECTIVE

- Designed specifically for people with disabilities such as deaf and blind to help them in going from their present area to their destination
- Make it easy for them to take the bus on their own without any guidance
- This is not limited to just visually impaired individual, it likewise

If any enquiries regarding to our project, you can email at us at:

- aqmalnoorazizi@gmail.com
- nnniam9@gmail.com

TEAM MEMBERS

1) AQMAL BIN NOOR AZIZI (08DEP17F2020)

2) AMIRUL AIMAN BIN CHE OMAR (08DEP17F2023)

SUPERVISOR

- PUAN AKMARYA SYUKHAIRILNISAH BT MOHD AKHIR

- PUAN ASTRAHUDA KAMARULAINI BINTI MOHD FAHMI

- ENCIK KHAIROL NAPISHAM BIN ABD RAZAK

- PUAN ZAITUN BINTI TAAT

APPENDIX C – POSTER

KEMENTERIAN PENDIDIKAN MALAYSIA

POLITEKNIK PITEX
INVENTION & INNOVATION TECHNOLOGY EXPOSITION

Tajuk

BUS STOP NOTIFICATION SYSTEM

Logo Pertandingan Jabatan

EEEiC

Ketua Penyelidik / Pecipta
(Main Researcher / Inventor)

- PUAN AKMARYA SYUKHAIRILNISAH BT MOHD AKHIR
- PUAN ZAITUN BINTI TAAT
- PUAN ASTRAHUDA KAMARULAINI BINTI MOHD FAHMI
- ENCIK KHAIRUL NAPISHAM BIN ABD RAZAK

Nama Kumpulan Penyelidik / Pecipta Bersama
(Researchers/Inventors Groups)

- AQMAL BIN NOOR AZIZI (08DEP17F2020)
- AMIRUL AIMAN BIN CHE OMAR (08DEP17F2023)

E-Mel
(E-mail)

- aqmalnoorazizi@gmail.com
- nmiam9@gmail.com

Info Grafik
(Graphical Information)

Deskripsi Produk Abstrak
(Product Description/ Abstract)

This study focused on building a bus stop notification system by using an Transmitter and Receiver which could detect an on the road bus by such length. This project are closely related to blinded and deaf people on facing difficulties when waiting for a bus at a local bus stop. They didn't know and can't recognized well whether it's their bus or not. By building this system, people with those disabilities could step on a bus much easier than before. An LCD and a speaker will be put inside the bus stop pole so that the blinded people can heard the speaker and the deaf people can see through an LCD placed on it if there is a nearer bus going to pick people at the bus stop. The system will automatically detect the bus in the coded range which would notify the people waiting at the bus stop. A concept of transmitter and receiver are used in this built.

Pernyataan Masalah
(Problem Statement)

- People with disabilities such as deaf and blind have difficulity waiting for the bus
- Each visualy impaired individual faces different challenges based on their specific level of vision to get in the bus
- Some people does not know about the route of the bus

Objektif
(Objectives)

- Designed specifically for people with disabilities such as deaf and blind to help them in going from their present area to their destination
- Make it easy for them to take the bus on their own without any guidance
- This is not limited to just visually impaired individual, it likewise help senior individual

Metodologi
(Methodology)
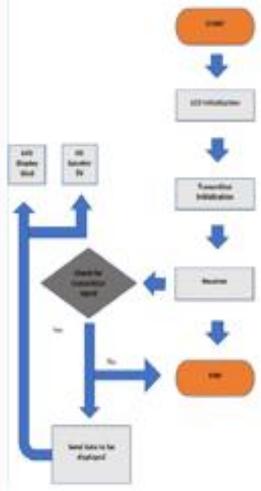
Potensi Market
(Market Potentials)

- For bus operators like Rapid
- For Government who can provide this to community

Harta Intelek (IP)
(Intelectual Property)

Industrial Design :

Copyright :

Kolaborasi Industri / Instituti
(Industrial / Institution Collaboration)

- Politeknik Sultan Salahuddin Abdul Aziz Shah

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GANTT CHART SEMESTER 4

TASK	WEEK														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Introduction to final year project	■	■													
Decide a topic for final year project and problem			■	■											
Discussion with supervisor	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Literature review					■	■	■								
Block diagram and circuit design								■	■	■					
Presentation												■	■		
Submitted proposal														■	■

GANTT CHART – SEMESTER 5

NO	TASK	WEEK													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Selection of Project title		■												
2	Defend on project title			■	■										
3	Make a research and plan project			■	■	■	■								
4	identify and buy components		■	■											
5	Collect inforation and start the project			■	■	■	■	■	■	■					
6	Make a program for the project					■	■	■	■	■					
7	Identify and solve problem for program				■	■	■	■							
8	Installing the components				■	■	■	■	■	■					
9	Applying the project							■	■	■	■				
10	Making a survey on the project										■	■			
11	Presentation											■			
12	Making a report											■	■	■	■

APPENDIX E – AKUAN SUMPAH

STATUTORY DECLARATION

I, **WAN ROSEMEHAH BINTI WAN OMAR** *(*NRIC No.:740506-03-6080)of full age and care of **Politeknik Sultan Salahuddin Abdul Aziz Shah, Persiaran Usahawan, Seksyen U1, 40150 Shah Alam, Selangor, Malaysia** sincerely and solemnly declare as follows:

1. I am the **Head of Research and Innovation Unit, Politeknik Sultan Salahuddin Abdul Aziz Shah**, a higher learning institution incorporated under the laws of Malaysia with an address at **Persiaran Usahawan, Seksyen U1, 40150 Shah Alam, Selangor, Malaysia** (hereinafter referred as "PSA").

2. I am duly authorized to make this Statutory Declaration on behalf of PSA. Unless otherwise stated, the fact herein are within my knowledge or derived from the records of PSA to which I have access.

3. I am advised and verily believe that copyright subsists in the following works title **"Bus Stop Notification System"** (hereinafter referred as "the Works") identified accordingly below:

Exhibit No.	Author and IC No.	Date Completed
PSA- BUS STOP NOTIFICATION SYSTEM-JKE	1) **AQMAL BIN NOOR AZIZI (991227-14-6101)** 2) **AMIRUL AIMAN BIN CHE OMAR (990626-02-5935)**	**1/03/2019**

The authors listed above shall collectively be referred to as the "Authors".

4. I am advised and verily believe that copyright subsist in the Works by virtue of the following facts:

   i. The authors, were and are at all material times citizens of Malaysia, and the Works were created and completed in Malaysia on the date set out in paragraph 3 above. The Works qualify for copyright protection under the Copyright Act 1987 by virtue of Section 3 and 10 of the copyright Act, 1987.

   ii. That sufficient and substantial skill, effort and time has been expanded on the Works by the Authors to render them original in character under Section 7(3)(a) of the Copyright Act 1987.

   iii. That the Works have been reduced to material form as required under Section 7(3) (b) of the Copyright Act 1987 as at the date of completion as set out in paragraph 3 above.

5. I am advised and verily believe that at all material times PSA is the owner of the copyrights subsisting in the said Works by virtue of the following facts:

    i. that at all material times, the Authors were and are employees of PSA and the Works were created by the Authors in the course of employment with PSA,

    ii. that at all material times, the Authors were and are students of PSA and the Works were created by the Authors in the course of fulfilment the study with PSA,

    iii. that at all material times, the Works were created, developed, generated using material, funds and other resources owned by PSA.

    iv. that at all material times, the Works were created with support and supervision of employees of PSA, and

    v. that at all material times, the Works were commissioned or created under direct request of PSA.

By virtue of Section 26(2)(a) and (b) of the Copyright Act 1987, the copyright of the said Works are deemed to be transferred to PSA.

6. PSA now asserts copyright in the Works and hereby claims ownership in the copyright subsisting in the Works at all material times.

7. The Works is eligible for copyright protection as literary work under the Copyright Act 1987 and by the virtue of the Copyright (Application to Other Countries) Regulations 1990, the Berne Convention for the Protection of Literary and Artistic Works 1886 extends copyright protection for the Works to all member countries of the Berne Convention.

8. PSA not at any time authorized any third party in Malaysia or elsewhere to reproduce any part of the Works,

and I make this solemn declaration conscientiously believing the same to be true and by virtue of Section 26A(3)(b) Copyright 1987 and the Statutory Declaration 1960.

Subscribed and solemnly declared by the abovenamed)
    WAN ROSEMEHAH BINTI WAN OMAR *(NRIC No.: 740506-03-6080)

at Shah Alam on   )

Before me,

Commissioner for Oaths

Adakah anda menaiki perkhidmatan awam ?

21 responses

- Ya
- Tidak

23.8%

76.2%

Jenis kenderaan apakah yang dinaiki anda ?

21 responses

- Bas
- Kereta
- Motorsikal
- Teksi

47.6%

14.3%

38.1%

Adakah anda pernah menaiki bas untuk ke tempat kerja atau belajar ?

21 responses

- Ya
- Tidak

19%

81%
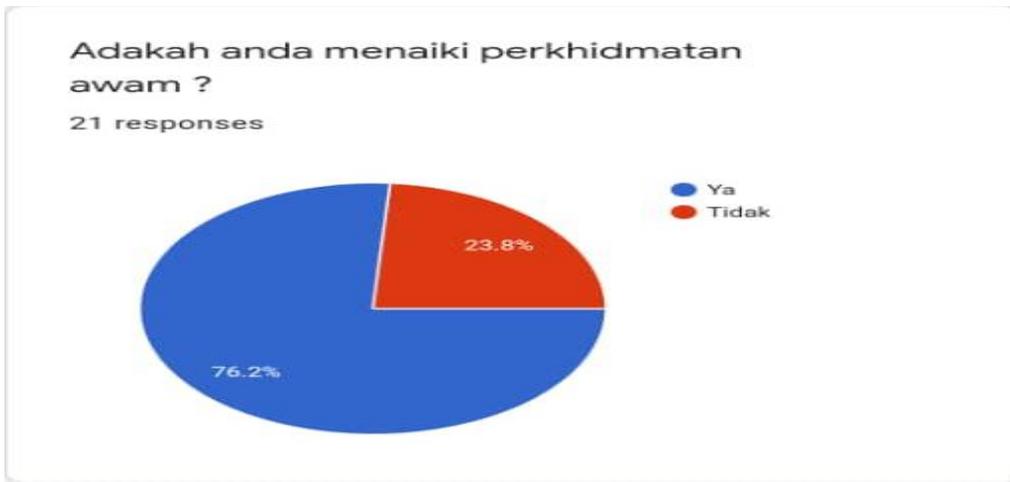
Kesulitan yang dialami ketika menunggu bas ?
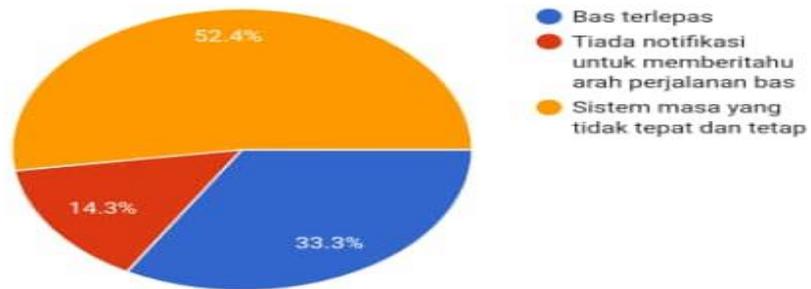
21 responses

- Bas terlepas
- Tiada notifikasi untuk memberitahu arah perjalanan bas
- Sistem masa yang tidak tepat dan tetap

52.4%
14.3%
33.3%

Pada pendapat anda, jika produk "Bus Stop Notification System" berada dalam pasaran, adakah anda akan menggunakannya ?

21 responses

- Ya
- Tidak

90.5%
9.5%
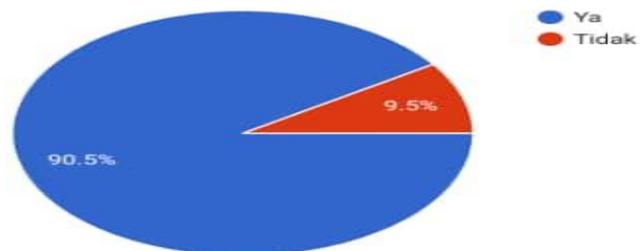
APPENDIX G – PROGRAMMING

This is the coding for Transmitter 433MHz :

```
1578555382499_Bus_RF_Transmitter

int bus1;
int bus2;


#include<VirtualWire.h>// include this library to enable the communication between transmitter and receiver of RF module

void setup()
{
  delay(1000);
  // Initialise the IO and ISR
  vw_set_ptt_inverted(true);              // Required for RF Link module
  vw_set_tx_pin(2);                       // pin 10 is used as the transmit data out to the TX Link module,
  pinMode(A0,OUTPUT);
  pinMode(A1,OUTPUT);
    pinMode(7,OUTPUT);


}

void loop()
{
  bus1 = digitalRead(A0);
  bus2 = digitalRead(A1);

  if(bus1 == 1)
  {
      rfSend("1");//this is unique code to be trasmitted by the transmitter
      digitalWrite(7,HIGH);
      delay(5000);
      digitalWrite(7,LOW);
  }




      rfSend("1");//this is unique code to be trasmitted by the transmitter
      digitalWrite(7,HIGH);
      delay(5000);
      digitalWrite(7,LOW);
  }


    if(bus2 == 1)
  {
      rfSend("2");//this is unique code to be trasmitted by the transmitter
      digitalWrite(7,HIGH);
      delay(5000);
      digitalWrite(7,LOW);

  }


}

void rfSend(String message)
{
  char output[100];

  message.toCharArray(output, 99);

  vw_setup(2000);
  vw_send((uint8_t *)output, strlen(output));
  vw_wait_tx();                          // Wait for message to finish
  vw_setup(40);
}
```

This is the coding for Receiver 433MHz :

```
Bus_RF_Receiver

#include <Wire.h>
#include <LiquidCrystal_I2C.h>

//I2C pins declaration
LiquidCrystal_I2C lcd(0x3F, 2, 1, 0, 4, 5, 6, 7, 3, POSITIVE);


int count = 0;
#include<VirtualWire.h>// include this library to enable the communication between transmitter and receiver of RF module, but the
                       // library must be downloaded first

#define rxPin 2// connect pin ATAD of Rf receiver to pin 2 Arduino

// RF Transmission container
char CharMsg[4];

// Unique code container
int Data;

long onMillis = 0;           // will store last time LED was updated


void setup()
{
  Serial.begin(9600);
 pinMode(A0,OUTPUT);
 pinMode(A1,OUTPUT);
  lcd.begin(16,2);//Defining 16 columns and 2 rows of lcd display
  lcd.backlight();//To Power ON the back

   vw_set_ptt_inverted(true);          // Required for RX Link Module
   vw_setup(2000);                     // Bits per sec
   vw_set_rx_pin(rxPin);               // We will be receiving on pin 2 ie the RX pin from the module connects to this pin.
   vw_rx_start();                      // Start the receiver
 }

 void loop()
 {


   uint8_t buf[VW_MAX_MESSAGE_LEN];
   uint8_t buflen = VW_MAX_MESSAGE_LEN;

   if (vw_get_message(buf, &buflen))   // check to see if anything has been received
   {
     int i;
     // Message with a good checksum received.


     for (i = 0; i < buflen; i++)
     {
     CharMsg[i] = char(buf[i]);
     }

    CharMsg[buflen] = '\0';

    onMillis = millis();

    // Convert CharMsg Char array to integer
        Data = atoi(CharMsg);

        Data = atoi(CharMsg);
    Serial.println(Data); //display the unique code received
  if(Data == 1)
  {
    Serial.println("Bus A");
    lcd.setCursor(0,0);
    lcd.print("Bus A");
    lcd.setCursor(0,1);
    lcd.print("Arriving");
    digitalWrite(A0,HIGH);
    delay(3000);
    digitalWrite(A0,LOW);
    lcd.clear();
  }

  if(Data == 2)
  {
    Serial.println("Bus B");
    lcd.setCursor(0,0);
    lcd.print("Bus B");
    lcd.setCursor(0,1);
    lcd.print("Arriving");
    digitalWrite(A1,HIGH);
    delay(3000);
    digitalWrite(A1,LOW);
    lcd.clear();
  }


   }
 }
```

This is the coding for DFRobot DFPlayer Mini :

```
Bus_Audio_Player
#include <Wire.h>
#include <LiquidCrystal_I2C.h>

//I2C pins declaration
LiquidCrystal_I2C lcd(0x3F, 2, 1, 0, 4, 5, 6, 7, 3, POSITIVE);


int Data;
int count = 0;
int bus1;
int bus2;


#include "Arduino.h"
#include "SoftwareSerial.h"
#include "DFRobotDFPlayerMini.h"

SoftwareSerial mySoftwareSerial(10, 11); // RX, TX
DFRobotDFPlayerMini myDFPlayer;
void printDetail(uint8_t type, int value);

void setup()
{
  mySoftwareSerial.begin(9600);
  lcd.begin(16,2);//Defining 16 columns and 2 rows of lcd display
  lcd.backlight();//To Power ON the back light
  Serial.begin(9600);

  Serial.println();
  Serial.println(F("DFRobot DFPlayer Mini Demo"));
  Serial.println(F("Initializing DFPlayer ... (May take 3~5 seconds)"));

  if (!myDFPlayer.begin(mySoftwareSerial)) {  //Use softwareSerial to communicate with mp3.
    Serial.println(F("Unable to begin:"));
    Serial.println(F("1.Please recheck the connection!"));
    Serial.println(F("2.Please insert the SD card!"));
    while(true);
  }
  Serial.println(F("DFPlayer Mini online."));

  myDFPlayer.volume(30);  //Set volume value. From 0 to 30

  pinMode(A0,INPUT);
  pinMode(A1,INPUT);
  pinMode(7,OUTPUT);


}

void loop()
{

  bus1 = digitalRead(A0);
  bus2 = digitalRead(A1);

  if(bus1 == 1)
  {

    myDFPlayer.play(1);  //Play the first mp3
    delay(4000);
     /*printDetail(myDFPlayer.readType(), myDFPlayer.read());
    lcd.setCursor(0,0);
    lcd.print("Bus 1 ");

  --.----    -.
  {


    myDFPlayer.play(2);  //Play the first mp3
    delay(4000);
     /* printDetail(myDFPlayer.readType(), myDFPlayer.read());
    lcd.setCursor(0,0);
    lcd.print("Bus 2");
    lcd.setCursor(0,1);
    lcd.print("Arriving ");
    lcd.clear();*/

  }
count++;

}

void printDetail(uint8_t type, int value){
  switch (type) {
    case TimeOut:
      Serial.println(F("Time Out!"));
      break;
    case WrongStack:
      Serial.println(F("Stack Wrong!"));
      break;
    case DFPlayerCardInserted:
      Serial.println(F("Card Inserted!"));
      break;
    case DFPlayerCardRemoved:
      Serial.println(F("Card Removed!"));
```

```cpp
      Serial.print(F("DFPlayerError:"));
      switch (value) {
        case Busy:
          Serial.println(F("Card not found"));
          break;
        case Sleeping:
          Serial.println(F("Sleeping"));
          break;
        case SerialWrongStack:
          Serial.println(F("Get Wrong Stack"));
          break;
        case CheckSumNotMatch:
          Serial.println(F("Check Sum Not Match"));
          break;
        case FileIndexOut:
          Serial.println(F("File Index Out of Bound"));
          break;
        case FileMismatch:
          Serial.println(F("Cannot Find File"));
          break;
        case Advertise:
          Serial.println(F("In Advertise"));
          break;
        default:
          break;
      }
      break;
    default:
      break;
  }
}
```

```cpp
      Serial.print(F("DFPlayerError:"));
      switch (value) {
        case Busy:
          Serial.println(F("Card not found"));
          break;
        case Sleeping:
          Serial.println(F("Sleeping"));
          break;
        case CheckSumNotMatch:
```

APPENDIX H – PICTURE

APPENDIX I – DIGEST PAPER

BUS STOP NOTIFICATION SYSTEM

Lecturer : i) Puan Akmarya Syukhairilnisah binti Mohd Akhir, ii) Puan Astrahuda Kamarulaini binti Mohd Fahmi, iii) Puan Zaitun Binti Taat , iv) Encik Khairol Napisham Bin Abd Razak

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ABSTRACT :-

Blind and deaf-blind people often rely on public transit for everyday mobility, but using transit can be challenging for them. We conducted semi-structured interviews with 13 blind and deaf-blind people to understand how they use public transit and what human values were important to them in this domain. Two key values were identified: independence and safety. This study focused on building a bus stop notification system by using an **RF module sensor** which could detect an on the road bus by such length. This project are closely related to blinded and deaf people on facing difficulties when waiting for a bus at a local bus stop. They didn't know and can't recognized well whether it's their bus or not. By building this system, people with those disabilities could step on a bus much easier than before. An **LCD 16x2** and a **5V speaker** will be put inside the bus stop pole so that the blinded people can heard the speaker and the deaf people can see through an LCD placed on it if there is a nearer bus going to pick people at the bus stop. The system will automatically detect the bus in the coded range which would notify the people waiting at the bus stop. A concept of transmitter and receiver are used in this built.

Keywords : RF module sensor, LCD 16x2 and 5V speaker.

METHODOLOGY

- **Items used in this project :-**

HARDWARE	SOFTWARE
• ARDUINO UNO R3 • LCD • SPEAKER • TRANSMITTER • RECEIVER • BATERY 5V • DF PLAYER • DF ROBOT	• ARDUINO SOFTWARE COMPILER • PROTEUS DESIGN SUITE

- **Flowchart**
  - **Making Project and Full Project.**
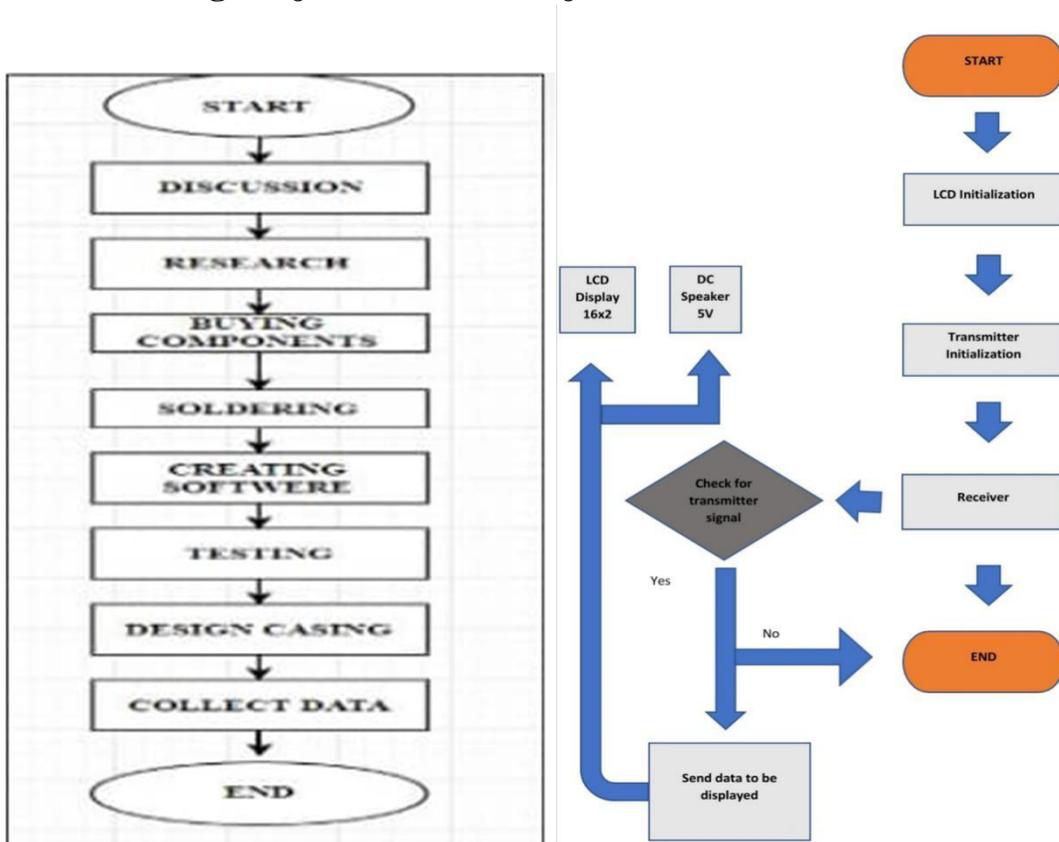
- **Block Diagram**

INTRODUCTION

The project title is "UniBus Notify" at Politeknik Sultan Salahuddin Abdul Aziz Shah. Universal bus notification system is a device used to alert people with disabilities about what time bus is coming and arrived at bus stop. Currently bus notification system for local uses only timetable or schedule system. However, the constraints of timetable system are the disabled people do not alert and warned about the arrival of bus. Therefore, in this project, a transmitter, a receiver, and an RF technique is proposed due fact that RF signal covers longer distance and reliable. The range of this project is limited to 10-100 meters with the operating frequency of 3-30MHz. The development of the proposed RF remote control consists of designing a transmitter-receiver circuit. A one directional communication concept is applied in transmitting the signal from transmitter circuit to receiver circuit. A reliable and robust RF bus notification system is expected to be developed.

PROBLEM STATEMENT

Bus system at local place nowadays, used only timetable or schedule system. This system is not so effective. The constraints of the timetable system are the people with disabilities did not alerted and warned about the arrival of the bus. This project is wanted to help alert those people about what time the bus is arrived. Also students that live at hostel always miss to take the bus to go to class because one or two minutes late. It is because they do not notice about what time bus arrived at bus stop. People normally face problem while waiting for the bus especially during rainy day. This is due to the improper shelter in the bus stop as well as there is no fixed drop location. These factors make these people unable to get the bus on a proper time.

OBJECTIVE

1. Designed specifically for people with disabilities such as deaf and blind to help them in going from their present area to their destination.
2. Make it easier for them to take the bus on their own without any guidance.
3. This is not limited to just visually impaired individual, it likewise help senior communities.

LITERATURE REVIEW

i. STATISTICS

Statistics of people with disabilities taking bus in 2019

| | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
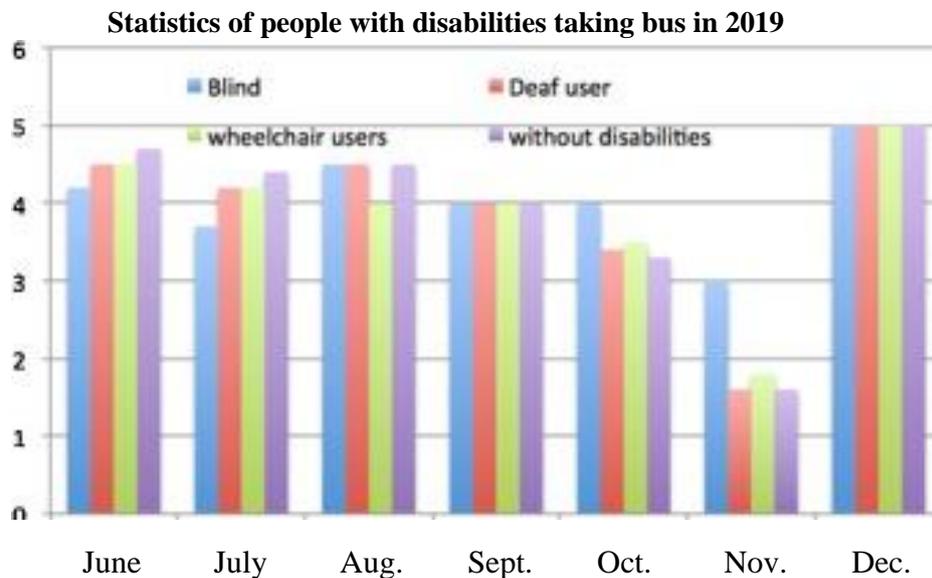
In 2016, we can conclude that the people with disabilities taking bus decreases during November because there is not enough capabilities for them to take a bus to go anywhere they want. After developing our small project, the statistics in December rose to the top quickly because the bus stop has been installed with our project. Not just the people with disabilities, but senior citizens love taking the bus because it makes them easier to catch a bus without any hesitation anymore.

What is visually and hearing impaired person ?

Visual impairment, also known as **vision impairment** or **vision loss**, is a decreased ability to see to a degree that causes problems not fixable by usual means, such as glasses. Some also include those who have a decreased ability to see because they do not have access to glasses or contact lenses Visual impairment is often defined as a best corrected visual acuity of worse than either 20/40 or 20/60. The term **blindness** is used for complete or nearly complete vision loss. Visual impairment may cause people difficulties with normal daily activities such as driving, reading, socializing, and walking.

Hearing loss, also known as **hearing impairment**, is a partial or total inability to hear. A **deaf** person has little to no hearing. Hearing loss may occur in one or both ears. In children, hearing problems can affect the ability to learn spoken language and in adults it can create difficulties with social interaction and at work. In some people, particularly older people, hearing loss can result in loneliness. Hearing loss can be temporary or permanent.

CONCLUSION

This research has developed a bus stop notification system for the community. We can conclude that this project is useful especially to people who have disabilities such as blind or deaf. With this proposed scheme, a visually and hearing impaired person can successfully travel from his location to his desired destination using a bus independently without any hassle. At the same time this project useful for all people who had careless while waiting for the bus.

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