



**POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH**

**SELF ADMISSION GATE**

<b>NAME</b>	<b>MATRIX NUMBER</b>
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**MECHANICAL ENGINEERING DEPARTMENT**

**JUNE 2019**

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**This report will be send to Mechanical Engineering Department as following the part of terms to received certification of Diploma in Mechanical Engineering.**

**Mechanical Engineering Department**

**JUNE 2019**

## DECLARATION OF ORIGINALITY AND OWNERSHIP

**TITLE: SELF ADMISSION GATE (SAG)**

**SESSION: JUNE 2019**

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Are a final year students of **Diploma in Mechanical Engineering, Department of Mechanical Engineering, Politeknik Sultan Salahuddin Abdul Aziz Shah**, which is located at **Persiaran Usahawan, 40150 Shah Alam, Selangor.**

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3. We agreed to relinquish ownership of intellectual property 'project' to 'Polytechnic' to meet the needs of the award of **Diploma in Mechanical Engineering** to us.

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) MOHD SHARIF)

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## **ABSTRAK**

Dengan pemodenan dan transformasi persekitaran yang pesat, komuniti berpagar dan terjaga (GGCs) telah berkembang seiring dengan kesedaran keselamatan masyarakat. Pada masa ini kebanyakan kawasan kediaman masih menggunakan sistem keselamatan manual dengan perkhidmatan pengawal keselamatan yang mengakibatkan masa yang lama diambil untuk mendapatkan kebenaran kemasukan. Juga salah faham boleh berlaku di antara pemilik, pengawal dan pelawat. Oleh itu, Self Admission Gate (SAG) adalah idea yang dibangunkan untuk membantu meningkatkan tahap keselamatan yang lebih optimistik. Hanya menggunakan aplikasi yang sejajar dengan misi negara ke arah Revolusi Industrial 4.0 (IR 4.0), sistem ini dapat dinikmati oleh semua pengguna. Projek ini melibatkan elektronik apabila penyambungan litar digunakan untuk menggerakkan pagar elektronik. Oleh itu,

Aplikasi Arduino digunakan untuk memasukkan kod pengaturcaraan berkaitan kod untuk menggerakkan projek tersebut. Seterusnya, untuk mewujudkan aplikasi yang akan menghubungkan pemilik rumah dengan pagar elektronik secara langsung, projek ini menggunakan saluran sedia ada seperti Blynk untuk membuat aplikasi khas yang akan digunakan oleh pemilik rumah untuk menghantar arahan. Oleh itu, tanpa perlu pemeriksaan pengawal keselamatan, kos dapat dijimatkan. Malah sambungan terus antara pemilik rumah dan pelawat melalui penggunaan aplikasi ini boleh dibina. Melalui aplikasi ini semua perkara boleh dilakukan dan diselesaikan hanya melalui hujung jari. Projek ini melibatkan proses menghasilkan konsep dan sistem baru dalam menghasilkan teknologi tinggi dan memberikan banyak faedah.

## **ABSTRACT**

With rapid modernization and transformation of the environment, gated and guarded communities (GGCs) have grown in tandem with community security awareness. Currently situation most of residential area are still using manual security system with guard services that cause a long time taken for permission to entry. Also misunderstanding can be happen between the owner, guards and visitor. So, the Self Admission Gate (SAG) is an idea developed to help increase the level of security that is more optimistic. Only using applications that align with the country's mission towards Industrial Revolution 4.0 (IR 4.0), this system can be enjoyed by all users. This project involves electricity when connecting the circuit is used to move the electronic fence.

Thus, the Arduino Application is used to insert code-related programming code to move the project. Next, to create an application that will link the homeowner with the electronic fence directly, the project uses an existing channel such as Blynk to create a special application that will be used by homeowners to deliver instructions. So, without having to examine security guards , cost can be saved. Even a direct connection between homeowners and visitors through the use of this app can be built. Through this application all the things can be done and solved only through the fingertips. This project involves the process of generating new concepts and systems in producing high technology and providing many benefits.

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# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 INTRODUCTION**

Studies show that security levels using security guards are less satisfying and effective. This is because, visitors have to wait a long time when they want to enter the house because security guards on duty take longer to allow visitors. There are even a few security guards in some places who implement the visitor verification system by requesting and keeping a visitor's identity card where it is unsafe and in violation of national regulations.

In addition, the activists are irresponsible to some security companies who take on foreign guards without a permit. This is not to be overlooked because it is unlikely that the foreign security guard had ever undergone a formal training course. In fact, unauthorized taking of foreign security guards is particularly dangerous in residential areas because there is no guarantee of safety and

can threaten public order in the event of a crime. In addition, no one will be held liable if the fraud caused by the illegal foreign or hired foreign security guards. Communication problems also often happen when these security guards are unable to communicate in both Malay and English.

## **1.2 BACKGROUND OF RESEARCH**

Security guards and gated systems are now widely used and can be said to be available in almost all types of housing using this service as well as the elite or low-income areas. This is because the system is very important to ensure the safety and well-being of the home and population. In fact, this enclosed area has been around for a long time and this system is very important to keep residential area safe and sound. But there is no denying that some of the problems are arising and that the existing system still lacks. The system should also be upgraded in line with the development of the Malaysia.

One of the most common problems is when some security guards give permission to outsiders as they wish and without the permission of the homeowner. In addition, the incidence of problems and misunderstandings between foreign guards with foreign visitors because there are guards who can't communicate in Bahasa Melayu and English. Visitors are also often faced with problems where they have to wait a long time to get their permission.

Lately, there are many unwanted criminal cases have occurred in communities involving security guards. It is undeniable that the security of these guards is also threatened and exposed to all kinds of dangers. For examples like the picture shown below, the life of a security guard is in danger just because of an unhappy citizen just because the guard doing their responsibilities.

So, to avoid these problems, a new system was created. With this new system, owners can keep in touch with visitors. Using an application that sends a signal to the barrier gate to operate at the command of the owner, time and cost can be saved when the workforce is reduced.



Figure 1.1: Images of News involves Guards

So, to avoid these problems, a new system was created. With this new system, owners can keep in touch with visitors. Using an application that sends a signal to the barrier gate to operate at the command of the owner, time and cost can be saved when the workforce is reduced.

### **1.3 PROBLEM STATEMENT**

1. Safety factor when visitors are given entry without the owner's permission.
2. The occurrence of problems and misunderstanding in communication with foreign guards who do not know to speak Bahasa Malaysia and English.
3. A long time taken for entry permission.

### **1.4 OBJECTIVE OF PROJECT**

1. Design a direct contact between the owner and the visitor.
2. Improving security systems in residential areas.
3. Run experiments against Self Admission Gate (SAG).

### **1.5 SCOPE OF PROJECT**

1. This system suitable for apartments, condominiums, and residential elites.
2. This system can be used in area within internet coverage.

### **1.6 SUMMARY OF CHAPTER**

Self Admission Gate are created to help resident to overcome the problems that keep arise nowadays between the owner, visitor and the guards.

With this project, security system in residential area can be improved to more impactful effect that will help resident to always aware about their safety. Visitor also no need to worrying anymore about need to wait for a long time to get permission from the owner because this system is directly connecting the owner and the visitor.



## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

In today's era of globalization, industry revolution 4.0 has played a big role in shaping a developed nation and providing the people with benefits and convenience. The increasing use of the Internet regardless of ages that can have a big impact on Malaysian technology modernization. There is no denying that this fast-paced technology facilitates matter and saves time and costs. In fact, safety and health have grown exponentially with today's technology. Housing security is what people right now care about. So our project focuses on these factors which aim to enhance the existing security system to something more impactful and time-saving. If ever, residential areas with fenced systems that use security services are upgraded to something new and give more benefits.

Homeowners now can determine visitor that are allowed by controlling the gated system. If visitors have had to deal with security guards long ago and have raised some issues, now with this project owners establish a direct relationship with visitors where time and energy can be saved.

The purpose of this study is to identify ways and concepts of materials and components that are important to the project to be successfully implemented. Each component or material in this project has its own way of working.

The purpose of this study is to identify ways and concepts of materials and components that are important to the project to be successfully implemented. Each component or material in this project has its own way of working. In terms of energy sources, working methods and coding methods. Understanding the concepts in each of these components plays a very important role in preventing errors from occurring.

## **2.2 AUTOMATIC GATE USAGE**

Automatic gates are used to control access into a secured area. Most commonly, automatic gates are used at the entrance to the facility, and are used to control vehicular access on and off of the site. For example, a manufacturing plant may use an automatic gate at its main entrance. All vehicles entering and exiting the plant must do so through the automatic gate. Automatic gates are also used at interior areas within a facility. For example, automatic gates are commonly used within the inside of a parking garage to separate employee parking areas from public areas of the garage.

## 2.3 BARRIER GATE



Figure 2.1: Image of Barrier Gate

Barrier arm gates consist of a vertical barrier arm that is rotated in and out of the gate opening. Barrier arm gates are used to control vehicles, not pedestrians. As it is very easy for a person to walk beside or climb over or under the gate arm, barrier arm gates provide almost no security.

Barrier arm gates are used primarily to control access in and out of parking facilities, or to control vehicular traffic at manned security entrances.

### Automatic Gate Accessories

There are many accessories that may be used in conjunction with automatic gates. Some of these include:

Access control systems: Automatic gates can be operated by a variety of access control devices, including card readers, vehicle tag readers, digital keypads, and portable wireless transmitters. In most commercial installations, automatic gates are controlled by the same access control system that is used to control the entrance doors to the buildings, allowing the same access card to be used in both places.

A typical home security system includes:

- A control panel, which is the primary controller of a home’s security system
- Door and window sensors
- Motion sensors, both interior and exterior
- Wired or wireless security cameras
- A high-decibel siren or alarm
- A yard sign and window stickers

Table 2.1: Variety of access control device.

Intercom systems	Intercom stations are often provided at automatic gates to give visitors and delivery drivers a means to contact someone inside the facility when the gate is closed. Most of these systems will allow the gate to be remotely opened by someone inside the facility once the visitor's identity has been verified.
Video surveillance systems	Video cameras can be used to view and record activity at the gate. The video surveillance system can be used in conjunction with the intercom system. This allows the identity of visitors to be visually confirmed before opening the gate.
Free exit devices	In many cases, it is desirable to have the gate open automatically when a vehicle exits the property. Devices that can be used to provide free exit include loop detectors, photoelectric beams, and pressure switches.
Post office and utility company access	The post office and many utility companies may require a means to enter through the gate. This usually requires the

	use of one or more key-operated switches that are keyed to the post office's or utility company's standard key.
Emergency access	Most fire departments and many law enforcement agencies require a means to gain access to your property through your gate at all times. Devices used to provide access can include key boxes (Knox Boxes), strobe or siren activated sensors, and radio receivers that can be activated by the emergency vehicle's two-way radio.

**INTERCOM SYSTEM**

An intercom (intercommunication device), talkback or door phone is a stand-alone voice communications system for use within a building or small collection of buildings, functioning independently of the public telephone network (Azori 2016). Intercoms are generally mounted permanently in buildings and vehicles. Intercoms can incorporate connections to public address loudspeaker systems, walkie talkies, telephones, and to other intercom systems. Some intercom systems incorporate control of devices such as signal lights and door latches.

There are simple house intercoms and intercoms developed for collective apartments. Some are equipped with video, and its wiring (electrical installation), can be connected to the outside with few pairs (4-6 pairs) while controlling an electric strike. The last generations are even compatible with computers and some models include TCP/IP.

Traditional intercoms and public address systems are composed entirely of analogue electronics components but many new features and interfacing options can be accomplished with new intercom systems based on digital connections. Video signals can be carried as well as voice. Digital intercom stations can be connected using Cat 5 cable and can even use existing computer networks as a means of interfacing distant parties.

Many schools and office buildings now use audio / video systems to identify visitors trying to gain access to a locked building, and can be interfaced with the building's access control system.

Besides fixed locations, intercom systems are used on many types of vehicles including trains, watercraft, aircraft and armored fighting vehicles.



Figure 2.2: Images of Intercoms' Devices

## 2.4 SMARTPHONES

Smartphones are mobile phones that have advanced computing features and connectivity compared to regular mobile phones. Smartphones allow its users install advanced applications in it based on phone platforms such as Android, iOS or Windows Phone. It also uses the operating system provides a platform for applications builder. Most smartphones now have Bluetooth or Wi-Fi system especially for this nowadays to receive signals and send signals from either close or wide range without using wires to connect. The code of the Arduino software will be including in downloaded application from Play store. To receive notification via smartphones about visitor, owner need to install Blynk because it will send data or information about visitor to owner through Blynk apps.



Figure 2.3: Images of Smartphones' Usage

## 2.5 CONCEPT OF PROJECT

In this project there are some concept that we are using in matter to create this project based on the literature review that we have done.

### 2.5.1 CONCEPT OF ARDUINO

Arduino is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board (often referred to as a microcontroller) and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board.

The Arduino platform has become quite popular with people just starting out with electronics, and for good reason. Unlike most previous programmable circuit boards, the Arduino does not need a separate piece of hardware (called a programmer) in order to load new code onto the board -- you can simply use a USB cable. Additionally, the Arduino IDE uses a simplified version of C++, making it easier to learn to program. Finally, Arduino provides a standard form factor that breaks out the functions of the micro-controller into a more accessible package.



Figure 2.4: Images of Arduino Uno R3



Arduino Uno is a microcontroller board based on the ATmega328P (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with AC-to-DC adapter or battery to get started. You can tinker with your UNO without worrying too much about doing something wrong, worst case scenario you can replace the chip for a few dollars and start over again.

"Uno" means one in Italian and was chosen to mark the release of Arduino Software (IDE) 1.0. The Uno board and version 1.0 of Arduino Software (IDE) were the reference versions of Arduino, now evolved to newer releases. The Uno board is the first in a series of USB Arduino boards, and the reference model for the Arduino platform; for an extensive list of current, past or outdated boards see the Arduino index of boards.

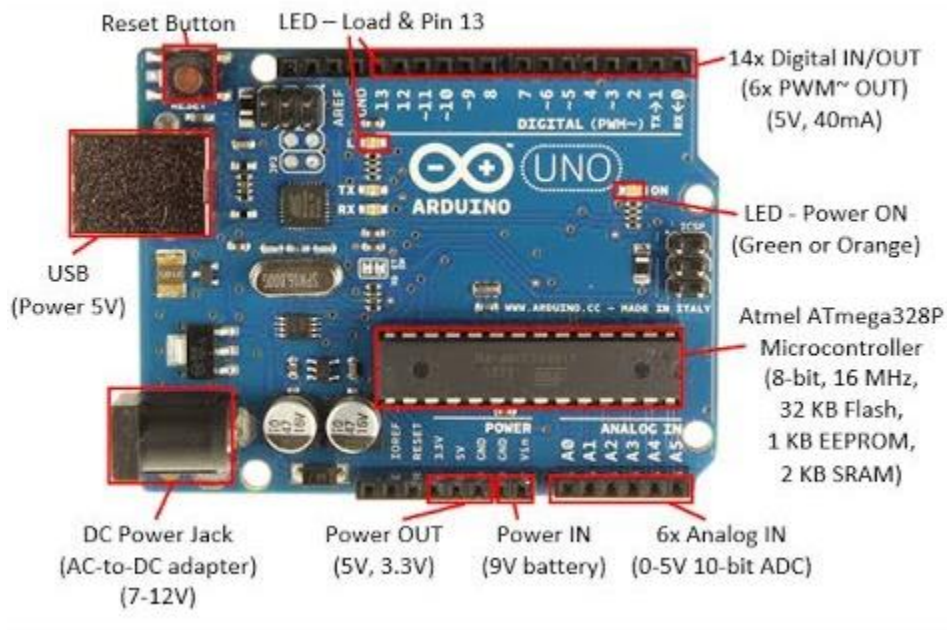


Figure 2.5: Images of Component in Arduino Uno R3

## 2.5.2 SERVO MOTOR



Figure 2.6: Images of Servo motor

Servo implies an error sensing feedback control which is utilized to correct the performance of a system. It also requires a generally sophisticated controller, often a dedicated module designed particularly for use with servomotors. Servo motors are DC motors that allows for precise control of angular position. They are actually DC motors whose speed is slowly lowered by the gears. The servo motors usually have a revolution cutoff from  $90^\circ$  to  $180^\circ$ . A few servo motors also have revolution cutoff of  $360^\circ$  or more. But servo motors do not rotate constantly. Their rotation is limited in between the fixed angles.

The servo motor is actually an assembly of four things: a normal DC motor, a gear reduction unit, a position-sensing device and a control circuit. The DC-Motor is connected with a gear mechanism which provides feedback to a position sensor which is mostly a potentiometer. From the gear box, the output of the motor is delivered via servo spline to the servo arm. For standard servo motors, the gear is normally made up of plastic whereas for high power servos, the gear is made up of metal.

In this project servo motor are used for the prototype of project where it is function to control the motion of barrier gate. Servo motor will be connected to the circuit so when the owner sends a signal to the circuit through the apps, barrier gate will react based on it. The barrier gate will open the owner allowed the visitor to enter and remain silent if the owner did not allowed the visitor to enter.

### 2.5.3 ESP 8266 WIFI MODULE

The ESP8266 Wi-Fi Module is a self-contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your Wi-Fi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor. Each ESP8266 module comes pre-programmed with an AT command set firmware, meaning, you can simply hook this up to your Arduino device and get about as much Wi-Fi. The ESP8266 module is an extremely cost-effective board with a huge, and ever growing, community. This is important component in this project to deliver or connect the data from apps; owner and deliver it to barrier gate system only in this way barrier gate can operates based on command from the data. It allowed the owner to use this application in wide range and even though far from the barrier gate.

Connecting to the Wi-Fi module through a TPLink WR841N router, as

- Able to ping the module at 479 meters with a huge rubber duck antenna soldered on, or 366 meters with the PCB antenna.

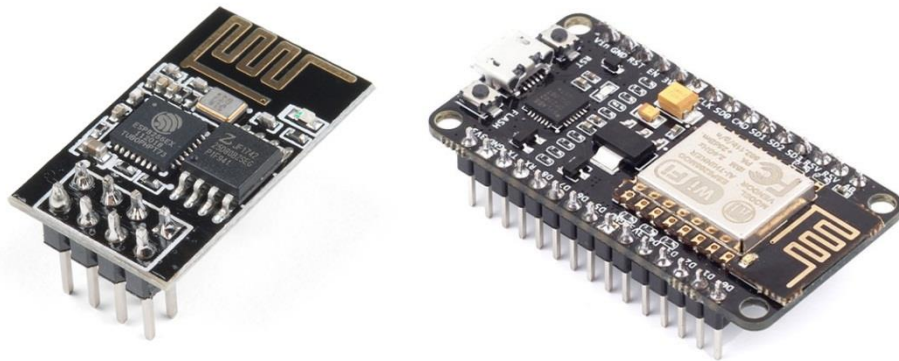


Figure 2.7: Images of ESP 8266 Wi-Fi Module

## 2.5.4 BUZZER PEIZO



Figure 2.8: Images of Buzzer Piezo

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric (*piezo* for short). Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

Piezoelectric buzzers, or piezo buzzers, as they are sometimes called, were invented by Japanese manufacturers and fitted into a wide array of products during the 1970s to 1980s. This advancement mainly came about because of cooperative efforts by Japanese manufacturing companies. In 1951, they established the Barium Titanate Application Research Committee, which allowed the companies to be "competitively cooperative" and bring about several piezoelectric innovations and inventions.

A piezoelectric element may be driven by an oscillating electronic circuit or other audio signal source, driven with a piezoelectric audio amplifier. Sounds commonly used to indicate that a button has been pressed are a click, a ring or a beep. A piezoelectric buzzer/beeper also depends on acoustic cavity resonance or Helmholtz resonance to produce an audible beep.

## 2.5.5 ARDUINO LCD DISPLAY 16X2

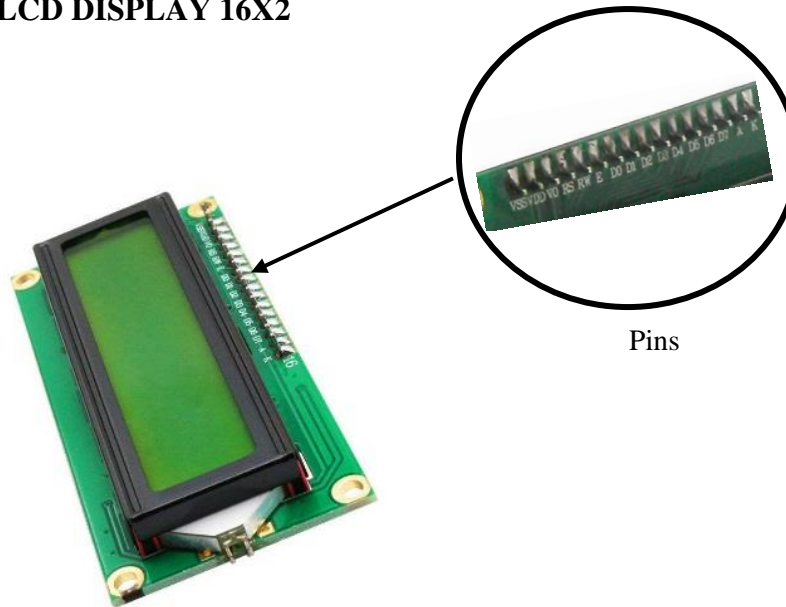


Figure 2.9: Images of LCD 12 x 6

A liquid-crystal display (LCD) is a flat-panel display or other electronically modulated optical device that uses the light-modulating properties of liquid crystals. Liquid crystals do not emit light directly, instead using a backlight or reflector to produce images in color or monochrome.<sup>[1]</sup> LCDs are available to display arbitrary images (as in a general-purpose computer display) or fixed images with low information content, which can be displayed or hidden, such as preset words, digits, and seven-segment displays, as in a digital clock. They use the same basic technology, except that arbitrary images are made up of many small pixels, while other displays have larger elements. LCDs can either be normally on (positive) or off (negative), depending on the polarizer arrangement. For example, a character positive LCD with a backlight will have black lettering on a background that is the color of the backlight, and a character negative LCD will have a black background with the letters being of the same color as the backlight. Optical filters are added to white on blue LCDs to give them their characteristic appearance.

LCD panels typically use thinly-coated metallic conductive pathways on a glass substrate to form the cell circuitry to operate the panel. It is usually not possible to use soldering techniques to directly connect the panel to a separate copper-etched circuit board. Instead, interfacing is accomplished using either adhesive plastic ribbon with conductive traces glued to the edges of the LCD panel, or with an elastomeric connector, which is a strip of rubber or silicone with alternating

layers of conductive and insulating pathways, pressed between contact pads on the LCD and mating contact pads on a circuit board.

The parallel interface consists of the following pins:

- Power Supply pins (Vss/Vcc): Power the LCD
- Contrast pin (Vo): Control the display contrast
- Register Select (RS) pin: Controls where in the LCD's memory you're writing data to.
- Read/Write (R/W): Selects reading mode or writing mode
- Enable pin: Enables writing to the registers
- 8 data pins (D0 -D7): The states of these pins (high or low) are the bits that you're writing to a register when you write, or the values you're reading when you read.
- Backlight (Bklt+ and BKlt-) pins: Turn on/off the LED backlight

For this project information from owner will be display on LCD to view it for visitor if the owner accepts the visitor, LCD will view word 'ACCEPTED' but if the owner did not approve the visitor access it will view 'ACCESS DENIED'.

## **2.6 SUMMARY OF CHAPTER**

There is solution that are created to solve the problems between the owner, security guard and visitor. This kind of things was mostly using back then even nowadays due to safety factors and make sure residential area are safe. It is also one of factor to attracting people to resident that area. Selection of right system so it will suitable to all kind of resident areas are really important.

The weakness existed system right now is time taken need to get a permission from owner. This delayed caused some problem to the visitor and there are guard who not even allowed the visitor to enter.

## **CHAPTER 3**

### **METHODOLOGY**

#### **3.1 INTRODUCTION**

Methodology is a process by which projects created can work well. The installation and connection of circuits should be carefully followed to ensure that the system runs as planned. In addition, the use of software that acts as a platform to build a custom application that will be used by both owners and visitors. The length of time for the barrier gate to open after obtaining permission from the owner is also required. The most important thing is that the time to send the command signal from the owner's application to the barrier gate system should also ensure that it works properly. To ensure the system runs smoothly, the residential area needs internet coverage to transmit the signal.

The design of project consists of Arduino Uno that played the big role to transmit the signal from apps to operate the barrier gate based on the data that have been entered with the help of Blynk apps. ESP8266 Wi-Fi is needed to help transmit the signal in width coverage area where this system will be used in residential area. It is to make sure everyone get to enjoy this apps. This project also involves the use of servo motor which is function to operate the barrier at 90° angles at XY- axis.

### 3.2 FLOW CHART

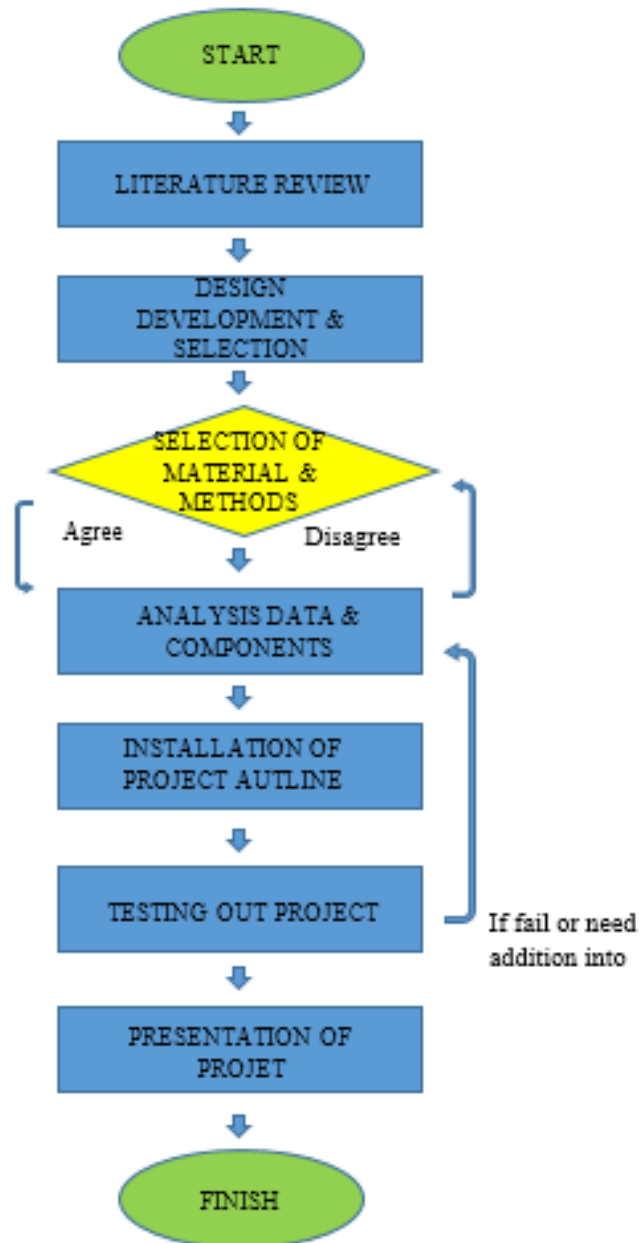


Figure 3.1: Flow Chart



To make this project a success, several steps need to be taken and must be followed to ensure that the project will be smooth and successful. In case of problems, this flow chart should be referred to assist before or during the project. with this flow chart it encourages the use of a more orderly and systematic time because it can follow all the directions in so accurate and perfect. Among the steps that need to be followed are as above.

### **3.2.1 THE IMPORTANCE OF RESEARCH**

#### **i. Literature Review**

The literature review is aimed to obtain information and data from previous researchers to know the background and the problems of this system security. With an earlier stage of studies, every problem can be identified and addressed. Therefore, a SAG was established. Any problems that occurred with existed security system are can be reduced. Self Admission Gate are more focused on visitor where usually visitor always faced the problems Therefore, long time taken and misunderstanding between visitor and security guard can be fixed

#### **ii. Generation and Selection of Concept**

In a process of designing, generating and selecting design concepts needs to be done in detail so that the project produced effective and a good impact on consumers. This is because effective project can be used in a long time and more durable.

iii. Detail Design

Detailed design is done in order to ensure the project meets the requirements of users. In addition, it can follow all the aspects which have been set as not to drop out from the project scope. By doing this income, detailed design projects are more effectively.

iv. Equipment

The prototype of project involves the use of electronic circuit, software to develop the apps and also servo motor to operate the barrier gate.

v. Prototype Testing

Models have been developed to test whether it can detect the signal from owner to visitor and send it by selected time. Also, the barrier gate also need to operates based on the command, open it if the owner accept the visitor and did not open and produces sound from buzzer for 4 seconds if owner reject the visitor.

### 3.3 DESIGN CONCEPT

#### 3.3.1 Blynk

In Figure 1 shows that Blynk apps was downloaded and installed on the computer to start to develop the mobile app. Blynk is a Platform with IOS and Android apps to control Arduino, Raspberry Pi and the likes over the Internet. It's a digital dashboard where you can build a graphic interface for your project by simply dragging and dropping widgets. The advantage of Blynk is it was really simple to use, many features, no additional hardware, active community and cool GUI.

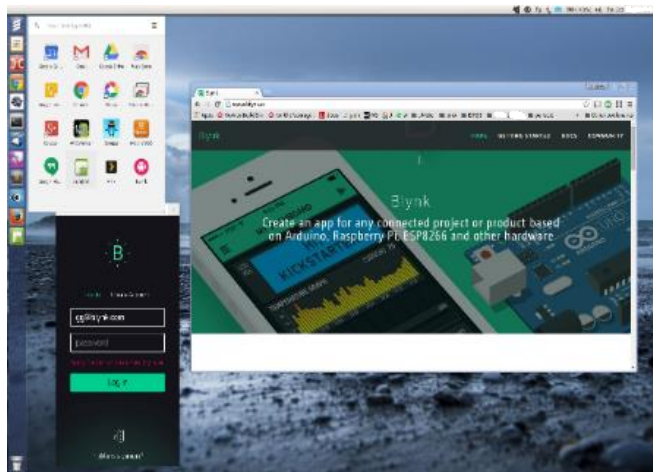


Figure 3.2: Images of Blynk Software

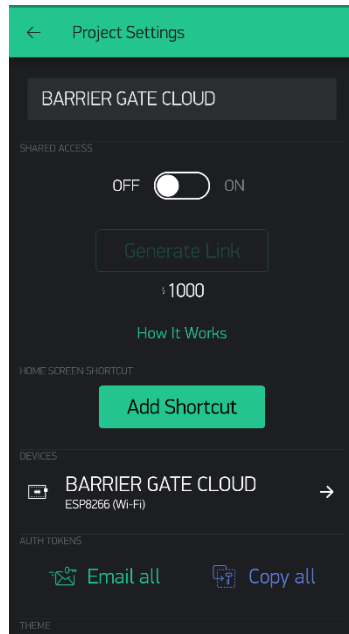


Figure 3.3: Images of Project Setting

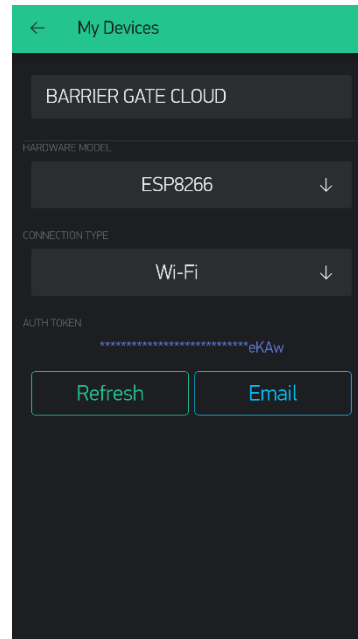


Figure 3.4: Images of Barrier Gate Cloud

The Blynk app is a function of storing information and data received from the data entered visitors. The data entered will be sent to the circuit to give directions to the barrier gate. Blynk can also determine if the information entered is valid or not in a short time. Notification that will be sent to the owner will come from Blynk apps.

### 3.3.2 MIT APPS INVENTOR

MIT Apps Inventor 2 are used to create the apps that will be used by owner and visitor. First, apps for owner are created. This application requires owners to log in to their account to allow them to receive notifications if there are visitor wants to visit them. Then information about the visitor will be sent to the owner's account. Only then the owner will press either open or close button which then sends the signal to the barrier gate to operate. For the user, it will enter the information that is provide on the monitor placed at the barrier gate then the information will be passed directly to the owner for the next action.



Figure 3.5: MIT Apps Inventor



Figure 3.6: Command and Setting of MIT Apps Inventor

### 3.3.2 CONNECTING CIRCUIT

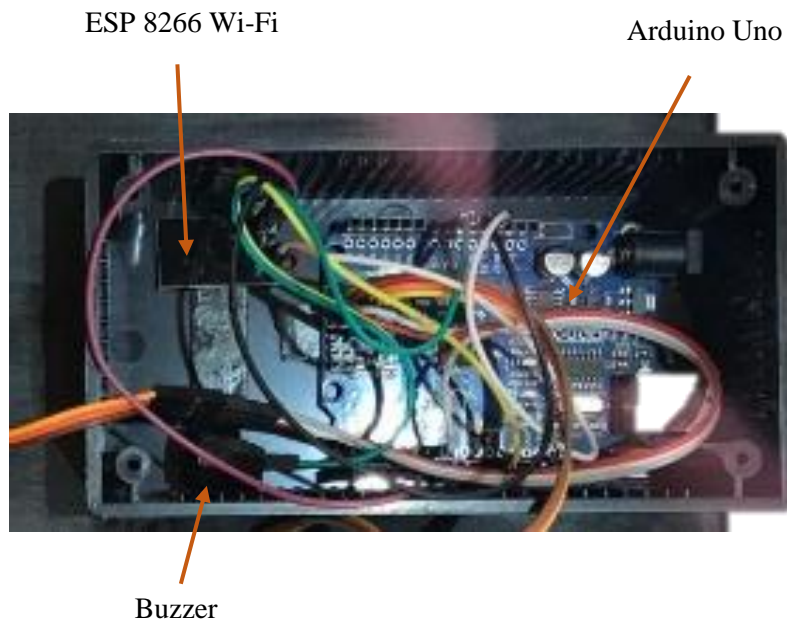


Figure 3.7: Images of Circuit

First of all, the installation of the circuit is done as a result of the design circuit that has been performed. This installation is for connecting between the barrier gates and receiving and storing data entered through this special application. This circuit works to convert the direction from the data to the action at the barrier gate. Connection of wires is done by connecting the servo motor to the Arduino Uno board so that the gate can be operated as desired. Buzzer also need to attached at the circuit and connecting the wires to each other. This buzzer is function for produces 'beep' sound for 4 seconds if the visitor's access been denied by the owner.

### 3.3.3 INSTALLING SERVO MOTOR

After connecting circuit done, servo motor needs to be put on and connecting the wires from circuit to the servo motor. Servo motor will react upon data that circuit received from owner's app. If the owner selects 'ACCEPT' option then the servo motor will react and if not then servo motor will remains static. For barrier arm that attach to servo motor, PVC sheet that have been cut to desired size are used to function as barrier arm that will rotates 90° C.

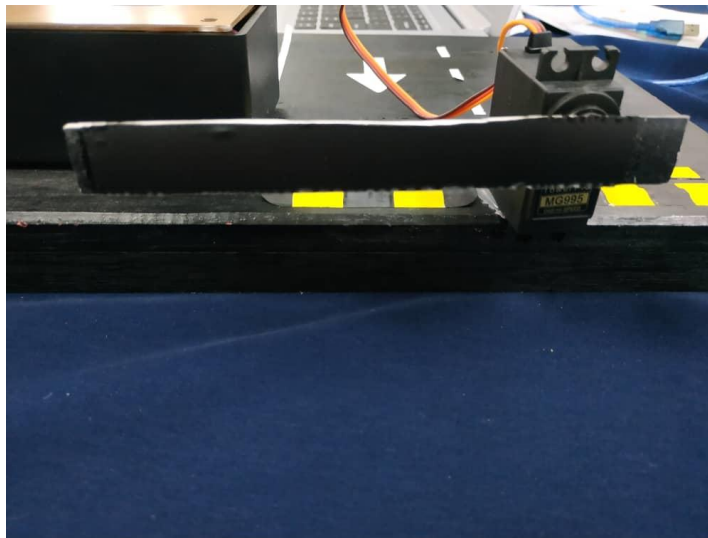


Figure 3.8: Images of Servo Motor and Barrier Arm.

### **3.4 SUMMARY OF CHAPTER**

Self admission gate will be a product and system that will benefit its users especially in the residential area. Security in a home is more secure and reduces the risk of crime that often occurs in a home. Visitors no longer have to wait a long time to get entry permissions as they can send direct instructions to the barrier gate system through special applications used to connect owners and visitors.

This system benefits and simplifies day-to-day operations by saving time and cost savings when security services are no longer needed. So no issues will arise between owners, security guards and also visitors



## **CHAPTER 4**

### **RESULT**

#### **4.1 INTRODUCTION**

The purpose of built up this project is applying the knowledge that have been learned before reality. It's also to make a better living and improve the existing technology to something more impactful. This chapter will give the result about how Self Admission Gate work, the process and response from community about this project. This project also have obtained the objective of Self Admission Gate.

Testing and analysis are needed to make sure the product function well and as desired. For SAG, the barrier gate must be maintained to operate properly at 90 degrees and move according to the instructions or data provided. Special applications used by both visitors and owners should ensure that they work properly and are user friendly. Moreover, to ensure that this product is safe for use by anyone of all ages, this is just a prototype. Even the usability of this prototype will give users confidence and positive react in this product's credibility. Therefore, surveys are required to ascertain the requirements and characteristics of the product features that users want. It also helps to improve this product and is therefore in line with users' preferences and can be used safely in a residential setting.

## 4.2 PROCEDURE

### DESIGN CIRCUIT

#### PCB Layout

A printed circuit board (PCB) mechanically supports and electrically connects electronic components using conductive tracks, pads and other features etched from copper sheets laminated onto a non-conductive substrate. Components (e.g. capacitors, resistors or active devices) are generally soldered on the PCB. Advanced PCBs may contain components embedded in the substrate.

PCBs can be *single sided* (one copper layer), *double sided* (two copper layers) or *multi-layer* (outer and inner layers). Conductors on different layers are connected with via. Multi-layer PCBs allow for much higher component density.

Printed circuit boards are used in all but the simplest electronic products. Alternatives to PCBs include wire wrap and point-to-point construction. PCBs require the additional design effort to lay out the circuit, but manufacturing and assembly can be automated. Manufacturing circuits with PCBs is cheaper and faster than with other wiring methods as components are mounted and wired with one single part.

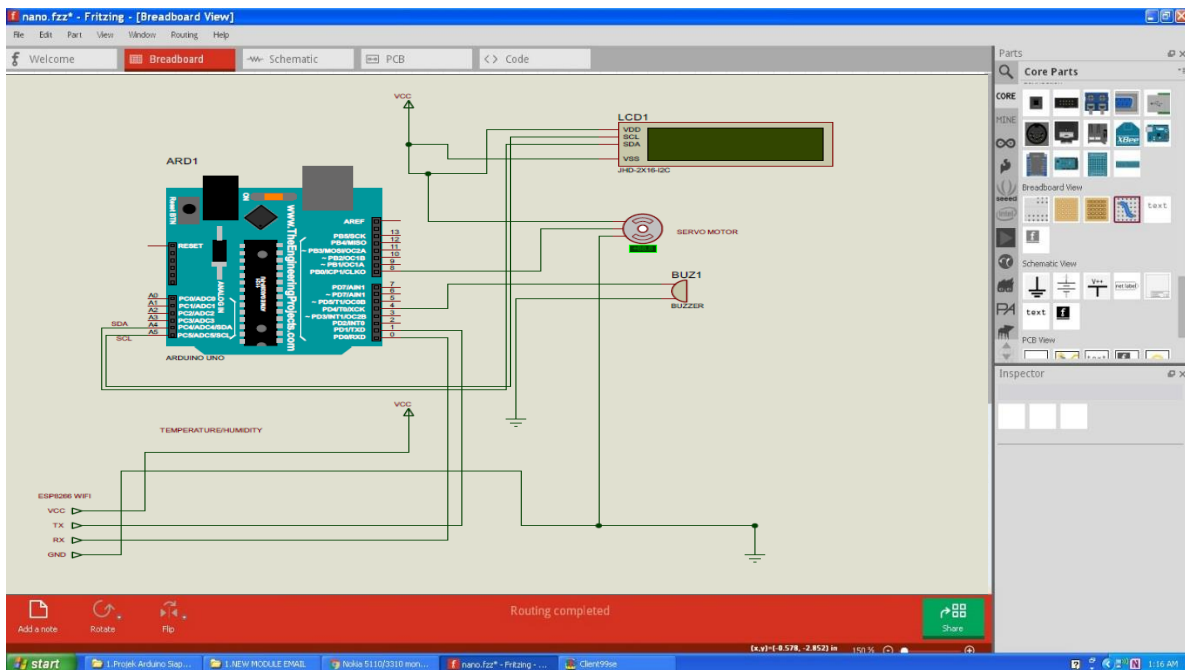


Figure 4.1: Images of Circuit Design



## 4.4 SOFTWARE DEVELOPMENT

By using this MIT aps inventory, a custom application will be used by the owner to allow the owner to get notifications about his or her visitors and then decide whether to accept or reject the visitor. In the first view, there is a display where the owner is required to sign up for the first time and then after signing up, log in to enable the owner to use the SAG service.

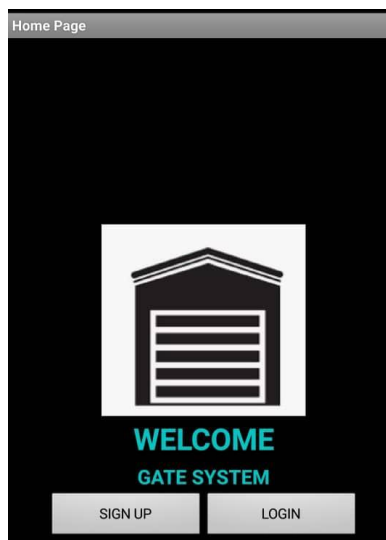


Figure 4.2: Images of Gate System Apps

Once logged in, a second display will appear after the username and 6- digit password are entered. The owner will be taken into their account and the owner will then have the choice of 'OPEN' or 'CLOSE'. But every time after use, the account will log out on its own, so the owner will have to log in every time they want to use it. This is for security reasons to prevent anyone from misusing the owner's account.

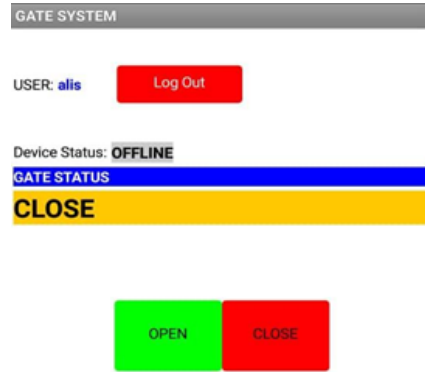


Figure 4.3: Images of User's Account

#### 4.5 RESULT GAIN

Even though is just a prototype but testing is still the important thing to do after making process of Self Admission Gate done and completed. First, testing gate need to be done to make sure the barrier arm can function well and operates based on the order or data that owner send. This prototype needs electricity source so first plugs in USB port that connecting circuit to electricity sources. For this servo motor its operating voltages is 4.8 V to 6 V, so the resources must be at that amount to make sure servo motor can operates and also LCD screen can display it command so visitor can be aware about it.



Figure 4.4: LCD Screen shown Testing Gate Command.

Using application that are specialist for this project, if the owner allowed the visitor to come in by select ‘ACCEPT’ option then the barrier gate will be open. In LCD screen, word ‘ACCEPTED’ will be display to visitor as the sign that they are allowed to enter. This thing will be put at the entrance of barrier gate to visitor use it and look at it.

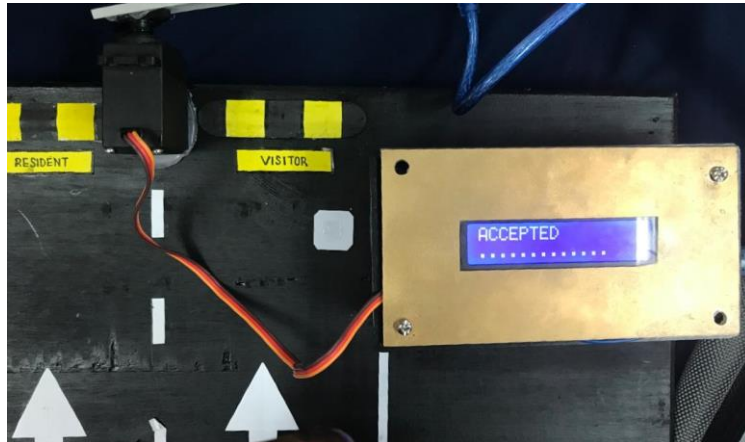


Figure 4.5: Images of ‘ACCEPTED’ Screen Display.

Then, if the owner didn’t accept or did not allowed the visitor to enter, at the screen word ‘ACCES DENIED’ will display as the sign to visitor. But, to make sure the visitor more alert about it, buzzer will produce sound for 4 second to be hear by the visitor. By then, visitor will not get permission to enter and the barrier gate will not open.



Figure 4.6: Images of ‘ACCESS DENIED’ Screen Display

#### 4.6 THE FINISHING PRODUCT

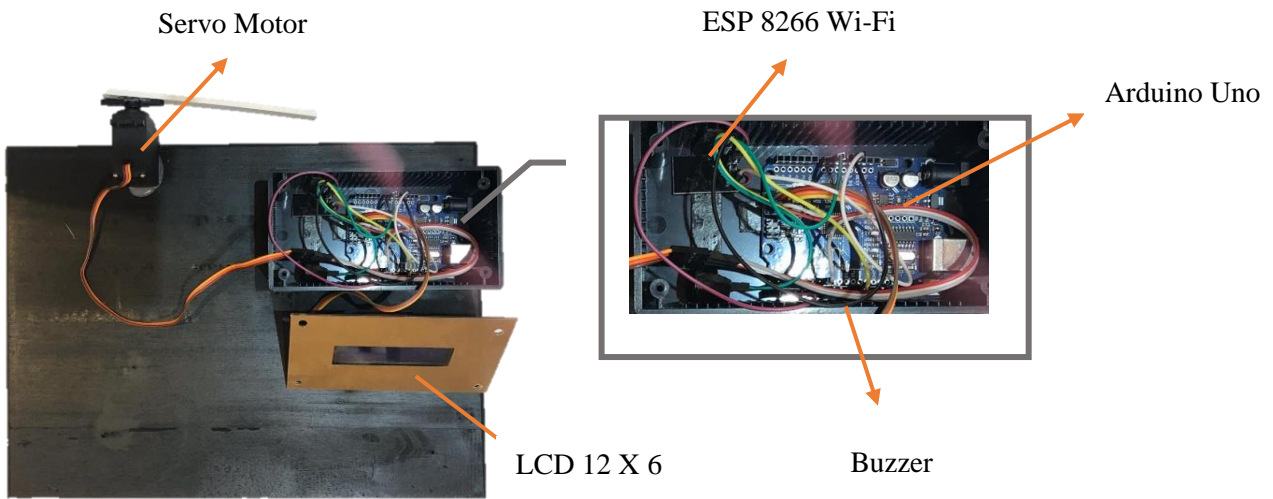


Figure 4.7: Images of Components in SAG

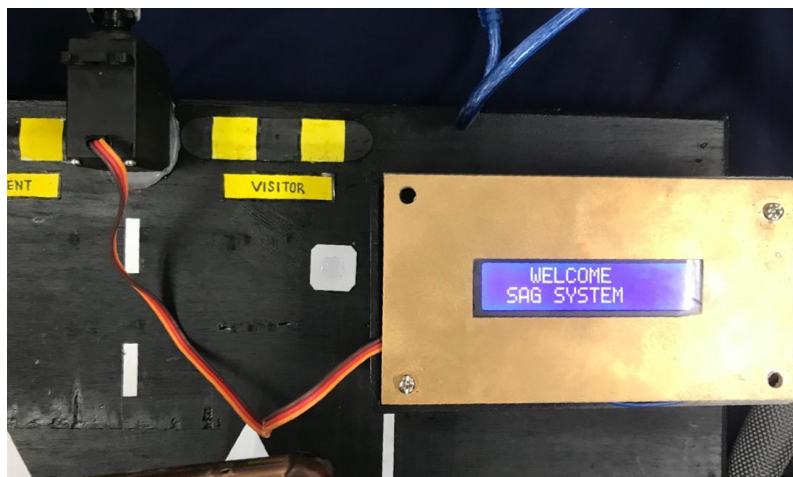


Figure 4.8: Images of Self Admission Gate

## 4.7 RESULT OF SURVEY

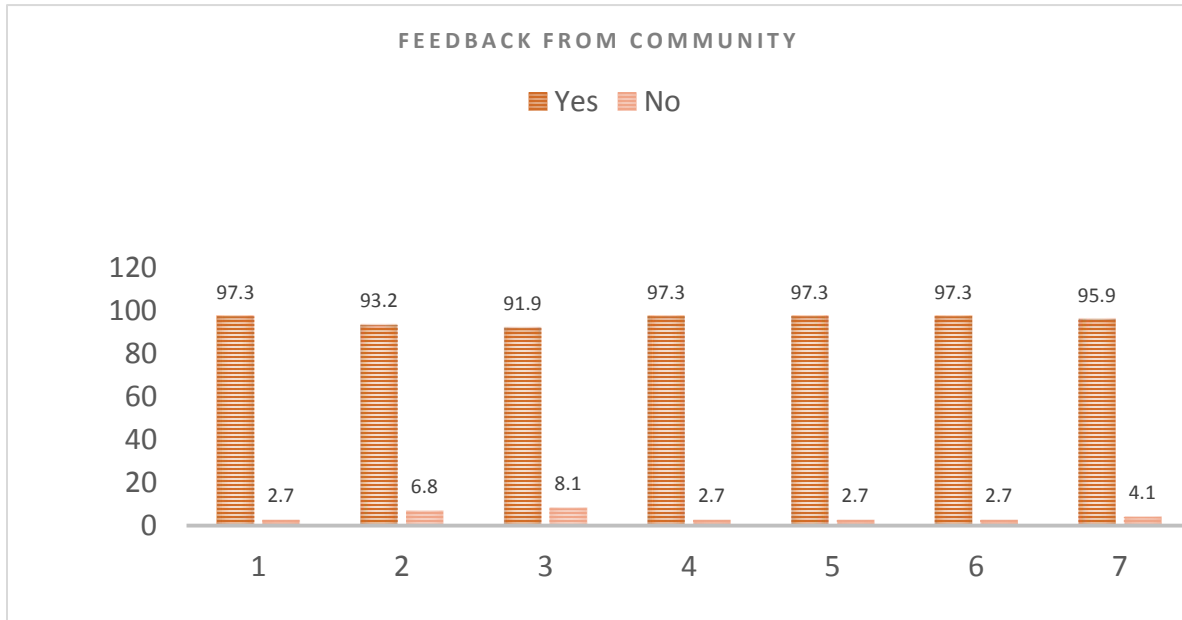


Figure 4.9: Feedback Graph from Community

In this survey, there are 74 respondent participants to give out their answer to 7 questions that been asked and also opinions about this project. For the first question been ask is whether respondent is satisfied with this product and 97.3% say that they are satisfied with it while 2.7% did not satisfied with it. Then 93.2% respondent said that this product easy to use in their daily life but 6.8% didn't think so. This shown that this product user friendly and easy to use and also to learn about it usage. This product also helped community to overcome their problems because 91.9% agree with it and only 8.1% not agree with it. That means the problem that always encounter between the owner, visitor and the guard can be solved through this product. Moreover, this product also makes user life more convenient because this product can save time and energy result from 97.3% respondent agree with it. But, 2.7% of respondent didn't think so maybe because they had another problem that requires another solution.



With this product misunderstanding between the owner, visitor and the guards that always happened can be settled down by using this product because 97.3% respondent says so and only 2.7% of respondent do not think so. Furthermore, this product also helps 97.3% respondent to easily get a permission to entry from the owner directly and no need to wait for a long time to get an entry permission from owner. From survey result, there are 95.9% respondent that say they will recommend this product to other because of above factors where this product easy to use and convenient because it can save up time and energy.

#### **4.7 SUMMARY OF CHAPTER**

From the testing result, we know that the SAG has a very good function to reduce problems that often occur to visitor when their want to visit their friend and also when they try to get entry permission. With the result that be collected shows a positive from respondent. If this product can be promoting and be used to all residential areas, it can be more benefit to all parties.

Besides that, the use of this product provides many benefits to community especially visitor who want to get into residential areas. The impact can be seen when the time taken for visitor to get a permission from owner in a short time. And also, owner can give a direct permission the visitor and didn't need go to outside of their house. Visitor also no need to face problem and difficulty with the security guard because this need the services from security guard. This product is efficiency to use and also save time.

## **CHAPTER 5**

### **DISCUSSION AND CONCLUSION**

#### **5.1 INTRODUCTION**

Discussion is analyzed the strength and weakness of the project. In this process, discussion is about the strength and the weakness of the project (SAG) and the improvement need to be made to the project. Improvement is important for the project to increase the market value and become one of the best tools needed by community at the same time.

During this process, difficulties have been found that a long time taken to visitor get entry permission and also difficulty when communicate with security guard. So, the conclusion is Self Admission Gate use a direct communication between the owner and also the visitor. This system also guards less because this system can be used by visitor on their own so the problem between visitor and security guard can be solved.

## 5.2 DISSCUSSION

The mobile application is used to control the motor. The tasks are accomplished by the user gives the command to open/close the barrier via internet, Arduino Uno receives internet signal and sends an electrical signal to the motor attached to the barrier system and then the DC motor rotates with the particular time delay to achieve the fully open barrier through the gear shift.

There are several advantages of the Self Admission Gate which can be identified such as the results of the testing and analysis showed that the system is good enough to require the safety of the facility from the strangers. Next, mostly big queues can be formed at the entrance of car parking. To avoid waiting a long time before driving in, the user can use his/her entrance key (mobile app) to easily and quickly enter inside. Self Admission Gate can be used for minimum 2 person per house. They can easily install at App store or Apple store. Thus, the private homeowner or business owners can use this system.

Thus, the system can last long even under winter temperature below 0 °C. Also, there are some limitations of the system. The critical challenge of the developed automatic barrier system was the sufficient power supply to the motor. It was due to the motor shield used in the project which can only supply a maximum of 6V which was insufficient for the system. The implementation of the more powerful motor is more suitable for the system so that it can carry a bigger load. To sum up, this prototype worked well and can be implemented in the real-life to solve the problem during the harsh weather. So that is how the mobile application, electrical and hardware components of the system are connected with each other. By evaluating the testing results, it can be stated that the automatic barrier system showed very positive results.

The response time of the system to the command sent from the mobile application was very small. Couple of seconds were needed to start the movement of the barrier arm. Less than a minute was spent to open the barrier and at the same time was required to close it once the vehicle passed through the barrier system. The response time of the barrier system can take longer with the increment of the weight of the barrier arm in case of the implementation. In such situation, a high-speed motor with the required torque solves the problem.

### 5.3 CONCLUSION

After using the period of almost one year to complete the research and survey. The project we build depends on the objective and the research is “Self Admission Gate” and we have successfully completed the task on time depend on the Gantt chart we planned at the first week. Along the process of creation, we have learned a lot of useful knowledge and experienced the process of find problem in the project and the solution to solve it. The knowledge learned will very useful in the future when we are start working.

The problem we have faced was how to do the time management, research for the information related to the project, how to use assembly the circuit, know the software needed.

Besides, when during the assembly of this project, we learn about the function of each components. This is something new because assembly circuit is part of electronic and as mechanical student, we need a lot of instruction but still this is something fun to learn. Through the project can show the application of the knowledge had been learned at previous semester.

Discussing about the problem faces by the tools designed to solve the problem statement of reduced time taken for visitor to get an entry permission. And also, to improve security system in residential area to more optimist and impactful. Besides, find out the challenges that might be happen in the future also is the factor why need to do discussion after the project done. The result during discussing this chapter is have found that the challenging will be face in future.

The challenges have found during discussion is if the result of the barrier gate operate same as the command and the delayed happen during the testing time. This problem needs to be solved to make sure this product can be used by everyone and also convenience to use.

## 5.4 SUGGESTION

Along the discussion that have be done, this product can operate very well and didn't encounter any problems. But, the result of discussion come out with a new challenge will be faced by the project in the future.

Even though the product is working well and running as well like what has be expected, it is still need to be upgrade to more impactful product. One of the additions is that when a homeowner goes through an event or ceremony in a residential area, the owner can set a setting where which house number that will have an event so each time a visitor comes in and chooses a house number, the barrier gate will open automatically without the owner's consent. This is to facilitate the work of the owner where the owner does not have to constantly open the application to give each visitor a confirmation. It will only make matters difficult for the owner and it will take time for the owner to give each visitor permission. So, the owner can do they matter without worrying about their visitor. However, visitors should always include personal information for security reasons as well as for monitoring purposes so that no unwanted cases occur.

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## APPENDIX A

# Kes pecah rumah meningkat

SRS giat buat rondaan bantu kekang kegiatan jenayah

[HTTP://INFO-JENAYAH-KEMALANGAN.BLOGSPOT.COM/](http://info-jenayah-kemalangan.blogspot.com)

ASYRAF MUHAMMAD

**KELANA JAYA** - Kawasan Rukun Tetangga (KRT) SS4A akan meningkatkan rondaan dan pemantauan di kawasan berkenaan dalam usaha mengurangkan kes pecah rumah yang dilihat semakin meningkat sejak awal Ramadan lalu.

Pengerusi Skim Rondaan Sokatreda (SRS), Kamialin Yahya berkata, beberapa kes pecah rumah dilaporkan berlaku sejak kebelakangan ini dan keadaan tersebut menimbulkan kekusaran dalam kalangan penduduk memandangkan sambutan hari raya yang bakal disambut tidak lama lagi.

"Sejak bermula awal

pehak tidak bertanggungjawab ini.

"Sebelum ini, kes pecah rumah tidak begitu membimbangkan, namun sejak kehadiran Ramadan ini, kegiatan itu dilihat semakin menjadi-jadi," katanya.

Menurutnya, rondaan dan pemantauan yang dijalankan pihak SRS dilihat membantu dalam mengurangkan kadar kes pecah rumah di kawasan ini.

"Kita akan mengetatkan kawalan keluar masuk di sini bagi mengawal kegiatan pecah rumah daripada terus berleluasa ditambah dengan kedatangan musim perayaan tidak lama lagi," katanya.



KAMIALIN

pemah dibuat sebelum ini dan tindakan undang-undang telah dikenakan ke atas pihak berkenaan.

"Saya juga berharap agar polis dapat bersama-sama menjalankan rondaan dan pemantauan di kawasan ini."



Pengarah syarikat kawalan keselamatan upah pekerja secara haram diberkas

# Pengawal asing: Majikan ditahan

Oleh SITI ROHAIZAH ZAINAL  
[pengarang@utusan.com.my](mailto:pengarang@utusan.com.my)

**KUALA LUMPUR** 7 Nov. - Seorang pengarah sebuah syarikat kawalan keselamatan menjadi majikan pertama ditahan hari ini dalam operasi pasukan khas ditubuhkan Imigresen sejak Jumaat lalu, bagi membantaras pengawal keselamatan warga asing yang bekerja secara haram.

Dalam operasi selama dua jam di sebuah pusat beli-belah terkemuka di sini bermula pukul 11 pagi, pasukan terbabit turut menahan 15 pengawal keselamatan yang bekerja secara haram.

Ketua Unit Tindakan Imigresen

Putrajaya, Abd. Malik Bujang berkata, pihaknya telah menjalankan risikan selama dua minggu dan mendapati pusat beli-belah tersebut melakukan kesalahan dengan menggaji pekerja warga asing sebagai pengawal keselamatan.

Menurut beliau, hasil serbuan tersebut seramai 31 pengawal keselamatan daripada empat syarikat kawalan keselamatan telah diperiksa dan menahan 14 lelaki dan seorang wanita berusia lingkungan 20 hingga 40 tahun warga Nepal, Indonesia, Pakistan dan Sri Lanka.

"Pemeriksaan mendapati hanya seorang daripada mereka mempunyai permit bekerja tetapi dalam sek-

tor peralangan manakala selebihnya tidak mempunyai permit kerja.

"Malah, kita turut menahan seorang pengarah daripada sebuah syarikat kawalan keselamatan berusia 28 tahun kerana menggaji dan melindungi pekerja asing," katanya ketika ditemui dalam operasi tersebut.

Operasi pemeriksaan pengawal keselamatan di pusat beli-belah terbabit melibatkan 16 anggota dan pegawai daripada Kementerian Dalam Negeri, Jabatan Imigresen dan Jabatan Pendaftaran Negara.

Abd. Malik seterusnya berkata, kebanyakan pemilik syarikat yang menggaji warga asing sebagai pengawal keselamatan memberi ala-

san individu terbabit rajin bekerja dan gaji yang diberikan lebih murah berbanding warga tempatan.

"Penubuhan pasukan petugas untuk memeriksa dokumen bagi setiap pengawal keselamatan ini telah bermula pada Jumaat lalu di seluruh negara dan memfokuskan kawasan pusat beli-belah, perumahan dan sekolah.

"Kita juga akan menjalankan pemeriksaan di sektor kerajaan jika terdapat laporan mengatakan lokasi berkenaan menggaji pekerja warga asing sebagai pengawal keselamatan tanpa permit yang sah," katanya.

Tambah beliau, kesemua warga asing yang ditahan selama 14 hari

itu disiasat mengikut Peraturan 39(B) Peraturan-Peraturan Akta Imigresen 1963 kerana menyalahgunakan pas dan dihantar ke Lokap Jabatan Imigresen Putrajaya dekat sini untuk siasatan sebelum diserahkan kepada Timbalan Pendakwa Raya untuk tindakan lanjut.

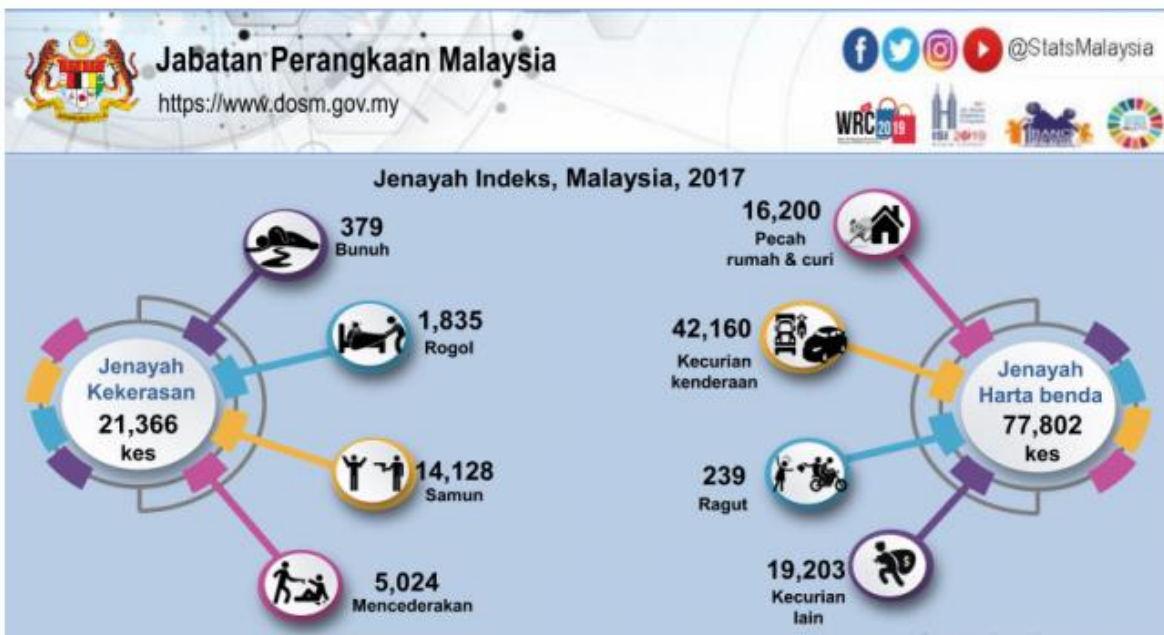
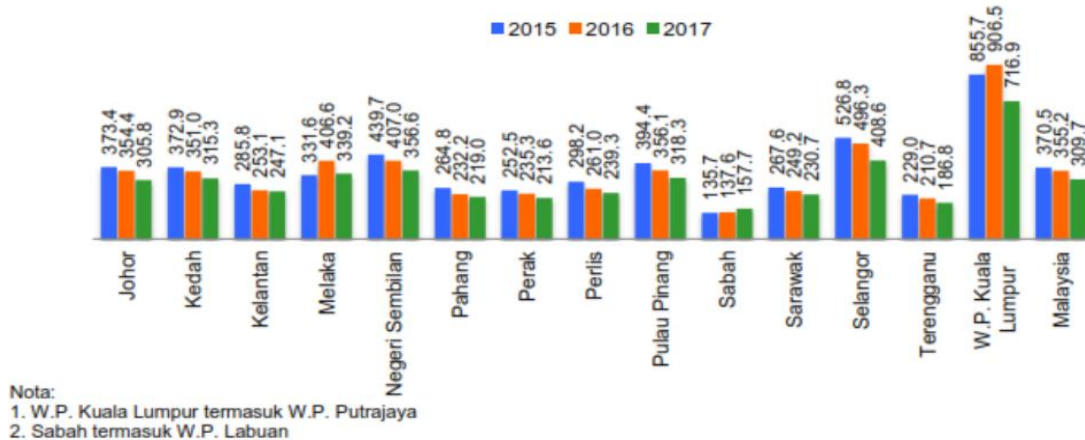
"Bagi pengarah syarikat kawalan keselamatan pula ditahan bagi tempoh 24 jam dan boleh dilanjutkan sehingga 14 hari dan disiasat di bawah Seksyen 55 (B) dan 56(1)(d) Akta Imigresen kerana menggaji dan melindungi yang membawa hukuman denda RM10,000 hingga RM50,000 bagi setiap pekerja atau hukuman penjara.



### Nisbah jenayah indeks bagi 100,000 penduduk

Nisbah jenayah indeks bagi 100,000 penduduk di Malaysia pada 2017 bertambah baik kepada 309.7 berbanding 2016 (355.2). Pada 2017, enam buah negeri merekodkan jenayah indeks yang melebihi paras nasional iaitu W.P. Kuala Lumpur (716.9), Selangor (408.6), Negeri Sembilan (356.6), Melaka (339.2), Pulau Pinang (318.3) dan Kedah (315.3). Sementara itu, Sabah merekodkan jenayah indeks terendah bagi tahun 2017 (157.7).

**Carta 1: Nisbah jenayah indeks bagi 100,000 penduduk mengikut negeri, Malaysia, 2015–2017**



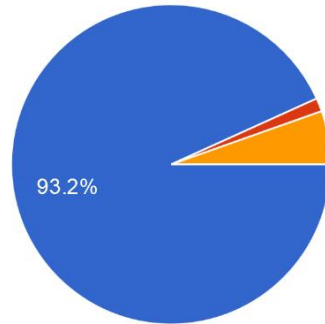


JAN - DIS 2008			+/-	% +/-
KESALAHAN	JEN. INDEK	KES PER 100,000 PENDUDUK		
CURI	41,215	149.38	-14.08	-8.61
CURI MOTOLORI/VAN	6,263	22.70	4.22	22.84
CURI MOTOKAR	15,198	55.08	9.58	21.06
CURI MOTOSIKAL	67,359	244.14	-3.39	-1.37
RAGUT	8,205	29.74	-10.92	-26.86
PECAH RUMAH SIANG	9,118	33.05	-0.49	-1.46
PECAH RUMAH MALAM	26,470	95.94	6.49	7.26
<b>JUMLAH</b>	<b>173,828</b>	<b>630.03</b>	<b>-8.58</b>	<b>-1.34</b>

## APPENDIX B

1. Does this product easy to use?

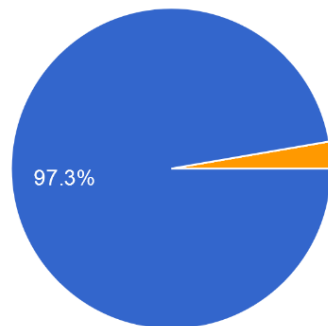
74 responses



● Yes  
● No  
● Maybe

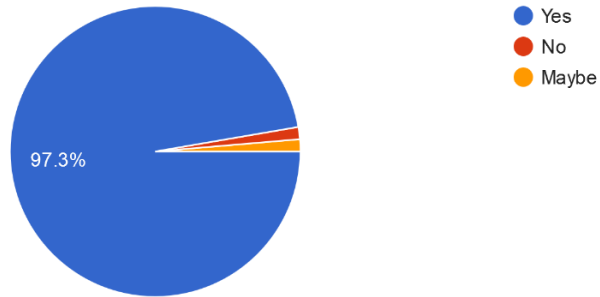
2. Does this product make your life more convenient?

74 responses

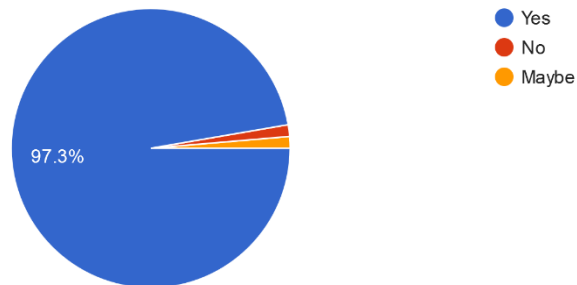


● Yes  
● No  
● Maybe

3. Does this product will avoid misunderstanding between the owner, the visitor and the guard?  
74 responses



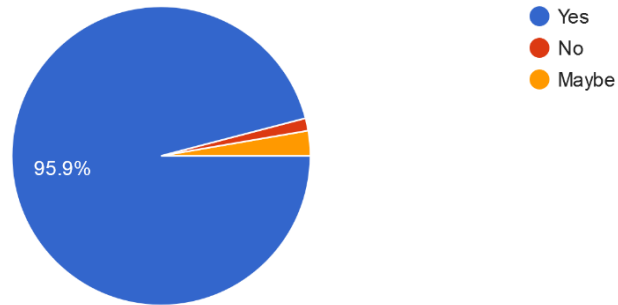
4. Does this product make you easy to get entry with the owner permission directly so you no need to wait for long time?  
74 responses



5.

Do you agree to recommend this product to others?

74 responses



No. Question	No. of Respondent	
	Yes	No
No 1	72	2
No 2	69	5
No 3	68	6
No 4	72	2
No 5	72	2
No 6	72	2
No 7	71	3

## APPENDIX C

BLYNK APP

```
//Working with ESP-01
#define BLYNK_PRINT Serial

#include <ESP8266WiFi.h>
#include <BlynkSimpleStream.h>
#include <Wire.h>

// Your WiFi credentials.
// Set password to "" for open networks.
const char* ssid = "barriergate";
const char* pass = "12345678";

// You should get Auth Token in the Blynk App.
// Go to the Project Settings (nut icon).
char auth[] = "knwkVXGkJHZsAOmVsCO-Gx0KmlhPeKAw";
char server[] = "139.59.206.133";

int H1,H2,H3,H4;
int Counterz=0;
String DATA="";
int P1=0, P2=0, P3=0, P4=0;
int Rly1=0, Rly2=0, Rly3=0, Rly4=0, Rly5=0;
int led1x=0,led2x=0,led3x=0,led4x=0;
int TotalUse=0;
int TotalAvai=0;
float Temp1=30.1423;
float PH=7;
float Temp2=30.2;
String Flat;
String Flon;
String Temp1x="";
String PHx="";
String Temp2x="";
String Temply="";
String PHy="";
String Temp2y="";
String Temp3y="";
String Temp3x="";
String Temp4y="";
String Temp4x="";
int Timer=0;
int Mode=0;
int DataIn=0;
int ALERT=0;
```

```

WiFiClient wifiClient;

// This function tries to connect to the cloud using TCP
bool connectBlynk()
{
  wifiClient.stop();
  // return wifiClient.connect(BLYNK_DEFAULT_DOMAIN, BLYNK_DEFAULT_PORT);
  return wifiClient.connect(server, BLYNK_DEFAULT_PORT);
}

// This function tries to connect to your WiFi network
void connectWiFi()
{
  Serial.print("Connecting to ");
  Serial.println(ssid);

  if (pass && strlen(pass)) {
    WiFi.begin((char*)ssid, (char*)pass);
  } else {
    WiFi.begin((char*)ssid);
  }

  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }
}

//-----Manage Virtual Pin-----
BLYNK_WRITE(V0)
{
  H1=param.asInt(); // assigning incoming value from pin V1 to a variable

  // process received value
}
BLYNK_WRITE(V1)
{
  H2=param.asInt(); // assigning incoming value from pin V1 to a variable

  // process received value
}
BLYNK_WRITE(V2)
{
  H3=param.asInt(); // assigning incoming value from pin V1 to a variable

  // process received value
}
BLYNK_WRITE(V3)
{
  H4=param.asInt(); // assigning incoming value from pin V1 to a variable

  // process received value
}
BLYNK_WRITE(V12)

```

```

{
  int pinValue3 = param.asInt(); // assigning incoming value from pin V1
  to a variable
  Rly3=pinValue3;
  // process received value
}

BLYNK_WRITE(V13)
{
  int pinValue4 = param.asInt(); // assigning incoming value from pin V1
  to a variable

  Rly4=pinValue4;
}
BLYNK_WRITE(V14)
{
  int pinValue5 = param.asInt(); // assigning incoming value from pin V1
  to a variable

  Rly5=pinValue5;
}

//-----

void setup()
{
  // Debug console

  Serial.begin(9600);

  connectWiFi();

  connectBlynk();

  Blynk.begin(wifiClient, auth);
}

void loop()
{
  //-----
  // Reconnect WiFi
  if (WiFi.status() != WL_CONNECTED) {
    connectWiFi();
    return;
  }

  // Reconnect to Blynk Cloud
  if (!wifiClient.connected()) {
    connectBlynk();
    return;
  }
}

```

```

    }

    Blynk.run();
    Timer++;

if (Timer > 2000){
    Blynk.syncVirtual(V0);
    Blynk.syncVirtual(V1);
    Blynk.syncVirtual(V2);
    Blynk.syncVirtual(V3);

        if (Rly3==1){

            Serial.println("a");
            delay(1000);

        }

    Timer=0;
}

while (Serial.available()) {
    // get the new byte:
    char inChar1 = (char)Serial.read();
    if (inChar1 == '*') {
        DataIn++;

    }

    while (DataIn > 0){
        while (Serial.available()) {
            // get the new byte:
            char inChar = (char)Serial.read();
            if (inChar == '*') {
                DataIn++;

            }
            if (inChar != '*' && inChar != '#' && DataIn==1) {
                Temp1x+=inChar;

            }
            if (inChar != '*' && inChar != '#' && DataIn==2) {
                Temp2x+=inChar;

            }
            if (inChar != '*' && inChar != '#' && DataIn==3) {
                Temp3x+=inChar;
            }
        }
    }
}

```



```

    }
    if (inChar != '*' && inChar != '#' && DataIn==4) {
        Temp4x+=inChar;
    }

    if (inChar == '#') {
        DataIn=0;
        Temp1y=Temp1x;   PHy=PHx;           Temp2y=Temp2x;   Temp3y=Temp3x;
Temp4y=Temp4x;
        Temp1x="";
        PHx="";   Temp2x="";   Temp3x="";

        /*
        Blynk.virtualWrite(V0, Temp1y);
        Blynk.virtualWrite(V1, Temp2y);
        Blynk.virtualWrite(V2, Temp3y);
        */

    }
}

//*****
*****

//*****
*****

}
}

```

LCD DISPLAY

```
#include <Wire.h> // Comes with Arduino IDE
#include <LiquidCrystal_I2C.h>
#include <Servo.h>

LiquidCrystal_I2C lcd(0x27, 2, 1, 0, 4, 5, 6, 7, 3, POSITIVE); // Set the
LCD I2C address
//LiquidCrystal_I2C lcd(0x3F, 2, 1, 0, 4, 5, 6, 7, 3, POSITIVE); //some
address is different

Servo myservo;

#define Buzz 11

int pos;
int MaxCount = 30;
int Counter=0;
int IR1Stat;
int IR2Stat;
float Speed=100;
float MaxCountx=10;
int PerSpd=0;

void setup() {
  pinMode(Buzz,OUTPUT);
  Serial.begin (9600);
  myservo.attach(7);

  //myservo.write(0);

  lcd.begin(16, 2);
  lcd.clear();
  lcd.setCursor(0, 0);
  lcd.print(" WELCOME");
  lcd.setCursor(0, 1);
  lcd.print(" SAG SYSTEM");

  delay(3000);

  lcd.clear();
  lcd.setCursor(0, 0);
  lcd.print(" WELCOME");
  lcd.setCursor(0, 1);
  lcd.print("TESTING GATE..");
```

```

    for (pos = 180; pos >= 90; pos -= 1) { // goes from 180 degrees to 0
degrees
    myservo.write(pos);           // tell servo to go to position in
variable 'pos'
    delay(15);                   // waits 15ms for the servo to reach
the position
    }
    for (pos = 90; pos <= 180; pos += 1) { // goes from 0 degrees to 180
degrees
    // in steps of 1 degree
    myservo.write(pos);           // tell servo to go to position in
variable 'pos'
    delay(15);                   // waits 15ms for the servo to reach
the position
    }
    analogWrite(Buzz,130);
    lcd.clear();
    lcd.setCursor(0, 0);
    lcd.print("  WELCOME");
    lcd.setCursor(0, 1);
    lcd.print(" SAG SYSTEM");
    delay(500);
    analogWrite(Buzz,0);
}

void loop() {

}

void serialEvent() {
    while (Serial.available()) {
        // get the new byte:
        char inChar = (char)Serial.read();
        // add it to the inputString:

        if (inChar == '1') {
            lcd.clear();
            lcd.setCursor(0, 0);
            lcd.print("ACCEPTED");
            lcd.setCursor(0, 1);
            lcd.print(".....");
            analogWrite(Buzz,80);
            delay(50);
            analogWrite(Buzz,135);
            delay(50);
            analogWrite(Buzz,190);
            delay(50);
            analogWrite(Buzz,0);
            delay(50);
            for (pos = 180; pos >= 90; pos -= 1) { // goes from 180 degrees to 0
degrees

```

```

    myservo.write(pos);          // tell servo to go to position in
variable 'pos'
    delay(15);
    } // waits 15ms for the servo to reach the position
    delay(4000);
    for (pos = 90; pos <= 180; pos += 1) { // goes from 0 degrees to 180
degrees
    // in steps of 1 degree
    myservo.write(pos);          // tell servo to go to position in
variable 'pos'
    delay(15);                    // waits 15ms for the servo to reach
the position
    }
    delay(2000);

    lcd.clear();
    lcd.setCursor(0, 0);
    lcd.print("  WELCOME");
    lcd.setCursor(0, 1);
    lcd.print(" SAG SYSTEM");
    }
    if (inChar == '2') {
        lcd.clear();
        lcd.setCursor(0, 0);
        lcd.print("REJECTED!!");
        analogWrite(Buzz,160);
        delay(50);
        analogWrite(Buzz,0);
        delay(50);
        analogWrite(Buzz,130);
        delay(50);
        analogWrite(Buzz,0);
        delay(50);
        analogWrite(Buzz,160);
        delay(50);
        analogWrite(Buzz,0);
        delay(50);
        analogWrite(Buzz,130);
        delay(50);
        analogWrite(Buzz,160);
        delay(50);
        analogWrite(Buzz,0);
        delay(50);
        analogWrite(Buzz,130);
        delay(50);
        analogWrite(Buzz,0);
        delay(50);
        analogWrite(Buzz,160);
        delay(50);
        analogWrite(Buzz,0);
        delay(50);
        analogWrite(Buzz,130);
        delay(50);
        analogWrite(Buzz,0);
    }

```

```
    delay(50);
    analogWrite(Buzz,160);
    delay(50);

    lcd.setCursor(0, 1);
delay(3000);
    lcd.clear();
    lcd.setCursor(0, 0);
    lcd.print("  WELCOME");
    lcd.setCursor(0, 1);
    lcd.print(" SAG SYSTEM");
    analogWrite(Buzz,0);

    }
}
}
```