VOICE BOT FOR BIT

PROJECT REPORT

Submitted by

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In partial fulfilment for the award of the degree

Of

BACHELOR OF ENGINEERING in
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(An Autonomous Institution Affiliated to Anna University, Chennai)
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NOVEMBER 2022

BONAFIDE CERTIFICATE

Certified that this project report “**VOICE BOT FOR BIT** ” is the bonafide work of **“ SREE ARUN (191CS296) ”** who carried out the project work under my supervision.

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Submitted for Project Viva Voce examination held on ______________.

INTERNAL EXAMINER 1

INTERNAL EXAMINER 2

DECLARATION

We affirm that the project work titled **“VOICE BOT FOR BIT ”** being submitted in partial fulfilment for the award of the degree of **Bachelor of Engineering in Computer Science Engineering** is the record of original work done by us under the guidance of **Mrs. Dhivya P** Designation**,** Department of Computer Science engineering. It has not formed a part of any other project work(s) submitted for the award of any degree or diploma, either in this or any other University.

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I certify that the declaration made above by the candidates is true.

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Mrs.DHIVYA P

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ABSTRACT

The boom of applied sciences like Artificial Intelligence (AI), Big Data &amp; Internet of Effects (IoT),etc. has marked several developments in the technological world due to the fact that the remaining decade. These applied sciences have a huge variety of operations. One comparable operation is “Chatterbox or “Chatbot”. This science is a mixture of AI &amp; Natural Language Processing (NLP). Chatbots have been a phase of technological development as it eliminates the want of mortals &amp; automates boring tasks. Chatbots are used in colourful disciplines like education, healthcare, business, etc. In learning about acceptance, we reviewed quite a few papers &amp; bandied kinds of chatbots, their benefits &amp; disadvantages. The assessment cautioned that chatbots can be used everywhere due to the fact of its delicacy, lack of duty on mortal coffers &amp; 24x7 availability.

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TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

OVERVIEW

Artificial Genius (A.I.) has grown in fashion for bluffing exchanges between bots and humans, especially on cellular platforms. The performance of these chatbots tiers from utilitarian to entertainment, however the cost is regularly no longer effortlessly defined. The motive and want for these chatbots are regularly no longer without difficulty defined. Curiosity and activity may additionally spark an authentic commerce with a chatbot, however to add a similar fee to ongoing members of the family we have to discover a astronomically first rate section that has a described purpose. What a chatbot is, and how to use one effectively, are new generalities that several battle to define.

The comfort should be better if the gadget is now not solely textual content predicated however additionally voice- predicated &amp; voice trained. This is the hassle addressed through this paper. A dialogue is an assimilation of facts the place one creates variations and parallels for the duration of the length of a discussion. Depending on the role of the brain the journey would be fun and an actual emulation of a digital reality. The grade of brain is no longer the variety of right and unsuitable statements however the functionality to study and add to its understanding base. To produce a farther person available discourse system; a easier enter gadget the usage of voice is introduced; developing and feeding for a similarly precise and available ride.

CHAPTER 2

LITERATURE SURVEY

This challenge is by and large founded at faculties and hence the synchronization of all of the sparse and various records regarding the every day college schedules. Generally, university college students face troubles in getting correct notifications on the proper time, each and every so regularly quintessential notices like campus interviews, training and website online events, holidays, and special announcements. Smart Campus tries to bridge this gap amongst university students, instructors, and college administrators. Therefore in a honestly real-international scenario, like a university campus, the information internal the sort of notices, and auditory communication, are often at as soon as communicated through the android devices and can be made to be had for the scholars, and instructors at as soon as on their android devices and as a result the renovation of software program are much less hard in later future way to the employment of architectural MVC which separates the most imperative works internal the enchancment of an software program like information management, phone software program exhibit and web service which can also be the controller to form sure for on the spot and inexperienced renovation of the applying.

[1] Smart Answering Chatbot supported OCR and Over producing Transformations and Ranking S. Jayalakshmi, Dr.Ananthi Sheshasaayee 978-1-5090-5960-7/17 2017 IEEE 2017 an automatic answering Chatbot machine to reply to User's question the use of textual content material article from the digital file file.

[2] Artificial Intelligence Technologies for Personnel Learning Management Systems Nayden Nenkov, Yuriy Dyachenko IEEE eighth International Conference on Intelligent Systems 2016 These entrepreneurs in the kind of chatbots desire to automate the interaction amongst the student and moreover the coach in the frames of Moodle getting to know manipulate device.

[3] Chatbot the use of a Knowledge in Database Human-to-Machine Conversation Modeling Bayu Setiaji, Ferry Wahyu Wibowo 2166-0670/sixteen

2016 IEEE 2016 The device has been embedded records to discover the sentences and makes a wish itself as a response to reply a matter.

[4] Towards an inexperienced voice-primarily primarily based completely chatbot J. Quintero Student Member IEEE, and R. Asprilla, Member, IEEE 2015 IEEE THIRTY FIFTH CENTRAL AMERICAN AND PANAMA CONVENTION 2015 the event and integration of technological know-how employed in an experimental natural verbal trade machine designed to run on a humanoid robot.

[5] Schantz, Herbert F, The archives of OCR, optical man or lady recognition, Recognition Technologies Users Association, Manchester Center, VT,1982.

[6] AI BASED CHATBOT ProfNikita Hatwar1, Ashwini Patil2, Diksha Gondane3 123 (Information Technology, Priyadarshini College of Engineering, Nagpur/ RTMNU, India)International Journal of Emerging Trends in Engineering and Basic Sciences (IJEEBS) ISSN (Online) 2349-6967 Volume 3, Issue two (March-April 2016).

[7] S. Jayalakshmi and Dr.Ananthi Sheshasaayee Automated Question Answering System Using Ontology and participant function International Conference on Innovative Mechanisms for Industry Applications (ICIMIA 2017).

CHAPTER 3

PROJECT DESCRIPTION

3.1 EXISTING SYSTEM

A home appliance is a device or instrument designed to perform a specific function, especially an electrical device, such as a refrigerator, for household use. The words appliance and devices are used interchangeably. Automation is today’s fact, where things are being controlled automatically, usually the basic tasks of turning ON/OFF certain devices and beyond, either remotely or in close proximity.But the fact is monitoring less devices and safety is less.more power consumption. So we have to use automation with less power. Here we proposed a system.That consists of a computer server with internet connection, an IOT Ethernet shield used to connect the server to the external network, There an Arduino microcontroller with a hardwired application connected to the devices. The prototype system supports two-level devices that only need to be switched on or off. An IOT based home automation system focuses on controlling home electronic devices whether you are inside or outside your home.Save the electric power and human energy

3.2 PROPOSED SYSTEM

These applied sciences have a huge vary of operations. One comparable operation is “Chatterbox or “Chatbot”. This science is a mixture of AI &amp; Natural Language Processing (NLP). Chatbots have been a phase of technological development as it eliminates the want of mortal &amp; automates boring tasks. Chatbots are used in colorful disciplines like education, healthcare, business, etc

3.2.1 PROPOSED SYSTEM BLOCK DIAGRAM

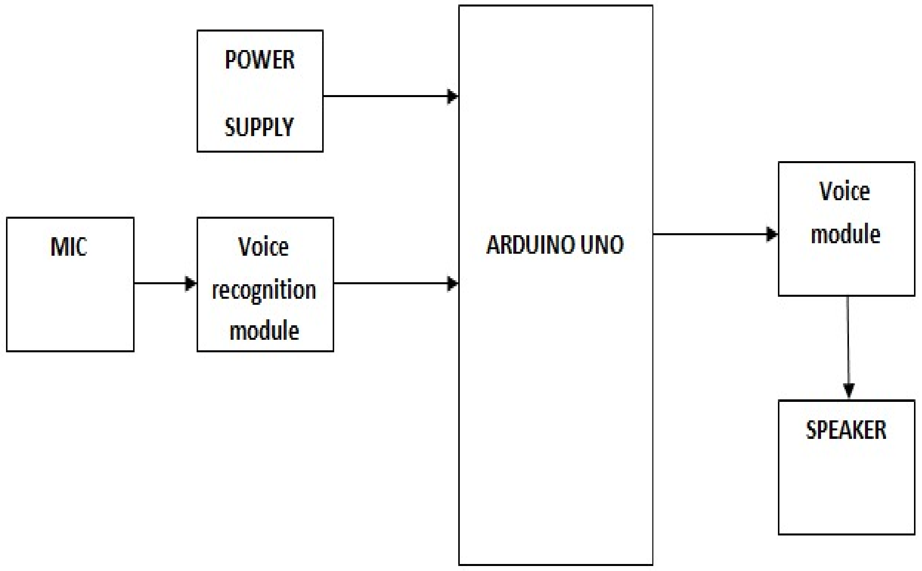


Figure 3.2Block Diagram of Proposed System

3.3 SYSTEM MODELS

3.3.1 HARDWARE REQUIREMENTS

- Power supply
- Arduino
- Voice recognition module
- Voice processor
- Speaker
- Mic

3.3.2 SOFTWARE REQUIREMENTS

- Arduino IDE
- Embedded C
- Proteus

CHAPTER 4

HARDWARE DESCRIPTION

4.1 ARDUINO

An Arduino is actually a microcontroller based kit which can be either used directly by purchasing from the vendor or can be made at home using the components, owing to its open source hardware feature. It is basically used in communications and in controlling or operating many devices.

The Arduino Uno is a microcontroller board based on the ATmega328. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, 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 a AC-to-DC adapter or battery to get started. The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega8U2 programmed as a USB-to-serial converter. "Uno" means one in Italian and is named to mark the upcoming release of Arduino 1.0. The Uno and version 1.0 will be the reference versions of Arduino, moving forward. The Uno is the latest in a series of USB Arduino boards, and the reference model for the Arduino platform, for a comparison with previous versions.

4.1.1 Arduino Architecture

Arduino's processor basically uses the Harvard architecture where the program code and program data have separate memory. It consists of two memories- Program memory and the data memory.The code is stored in the flash program memory, whereas the data is stored in the data memory. The Atmega328 has 32 KB of flash memory for storing code (of which 0.5 KB is used for the bootloader), 2 KB of SRAM and 1 KB of EEPROM and operates with a clock speed of 16MHz.

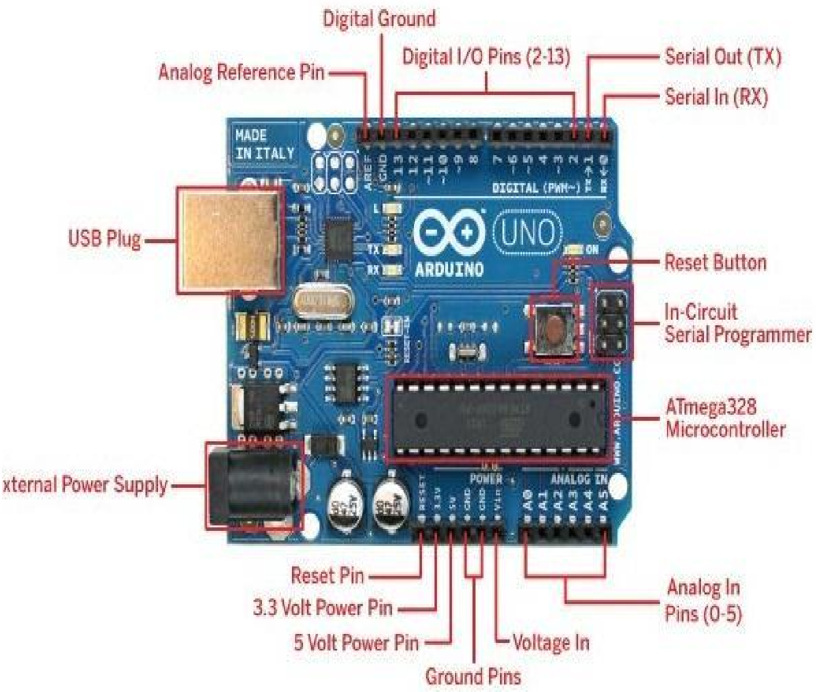


Figure 4.1 Arduino Board

The most important advantage with Arduino is the programs can be directly loaded to the device without requiring any hardware programmer to burn the program. This is done because of the presence of the 0.5KB of Bootloader which allows the program to be burned into the circuit. All we have to do is to download the Arduino software and writing the code.

4.1.2 Arduino ATMega328 Pin Description

ATMega328 is a 28 pin chip as shown in pin diagram above. Many pins of the chip here have more than one function. We will describe functions of each pin below.

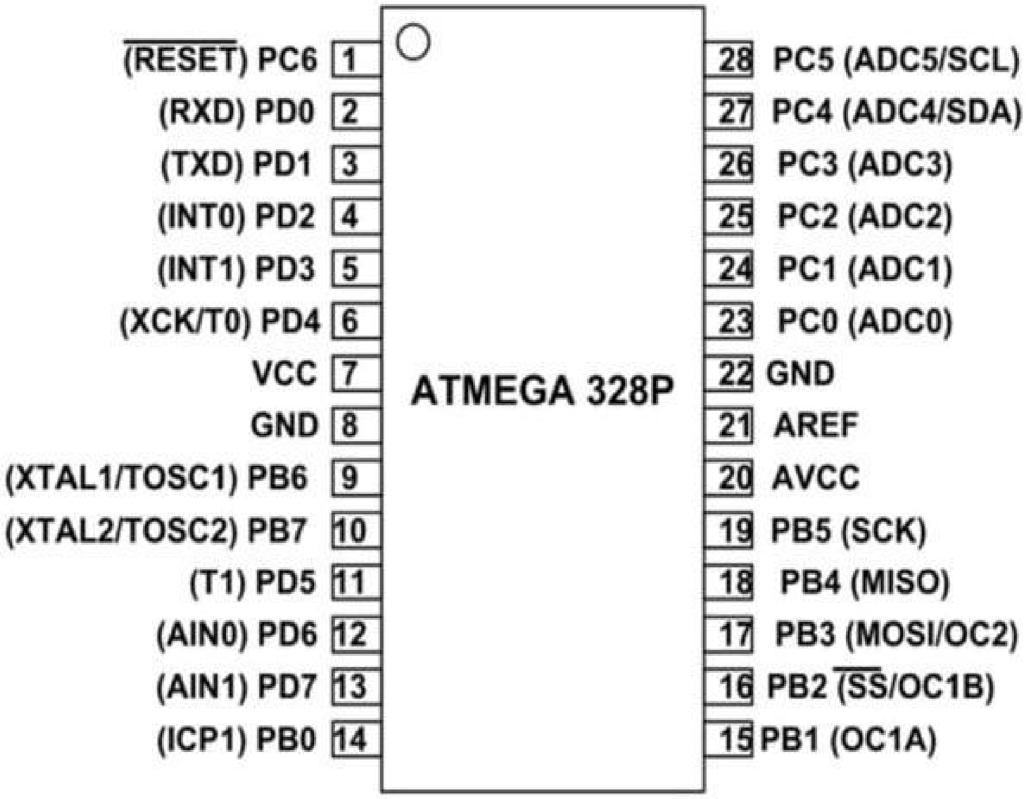


Figure 4.2 Arduino ATMega328

1. VCC

Digital supply voltage.

2.GND

Ground

3.Port B (PB[7:0]) XTAL1/XTAL2/TOSC1/TOSC2

Port B is an 8-bit bi-directional I/O port with internal pull-up resistors (selected for each bit). The Port B output buffers have symmetrical drive characteristics with both high sink and source capability. As inputs, Port B pins that are externally pulled low will source current if the pull-up resistors are activated. The Port B pins are tri-stated when a reset condition becomes active, even if the clock is not running. Depending on the clock selection fuse settings, PB6 can be used as input to the inverting Oscillator amplifier and input to the internal clock operating circuit. Depending on the clock selection fuse settings, PB7 can be used as output from the inverting Oscillator amplifier. If the Internal Calibrated RC Oscillator is used as chip clock source, PB[7:6] is used as TOSC[2:1] input for the Asynchronous Timer/Counter2 if the AS2 bit in ASSR is set.

4.Port C (PC[5:0])

Port C is a 7-bit bi-directional I/O port with internal pull-up resistors(selected for each bit). The PC[5:0] output buffers have symmetrical drive characteristics with both high sink and source capability. As inputs, Port C pins that are externally pulled low will source current if the pull-up resistors are activated. The Port C pins are tri-stated when a reset condition becomes active, even if the clock is not running.

5.PC6/RESET

If the RSTDISBL Fuse is programmed, PC6 is used as an I/O pin. Note that the electrical characteristics of PC6 differ from those of the other pins of Port C. If the RSTDISBL Fuse is unprogrammed, PC6 is used as a Reset input. A low level on this pin for longer than the minimum pulse length will generate a Reset, even if the clock is not running. Shorter pulses are not guaranteed to generate a Reset. The various special features of Port Care elaborated in the Alternate Functions of Port C section.

6.Port D (PD[7:0])

Port D is an 8-bit bi-directional I/O port with internal pull-up resistors (selected for each bit). The Port D output buffers have symmetrical drive characteristics with both high sink and source capability. As inputs, Port D pins that are externally pulled low will source current if the pull-up resistors are activated. The Port D pins are tri-stated when a reset condition becomes active, even if the clock is not running.

7.AVCC

AVCC is the supply voltage pin for the A/D Converter, PC[3:0], and PE[3:2]. It should be externally connected to VCC, even if the ADC is not used. If the ADC is used, it should be connected to VCC through a low-pass filter. Note that PC[6:4] use digital supply voltage, VCC.

8.AREF

AREF is the analog reference pin for the A/D Converter.

9.ADC[7:6] (TQFP and VFQFN Package Only)

In the TQFP and VFQFN package, ADC[7:6] serve as analog inputs to the A/D converter. These pins arepowered from the analog supply and serve as10-bit ADC channels.

4.1.3 Features of Arduino UNO

- Microcontroller –Atmega328P – 8 bit AVR family microcontroller
- Operating Voltage – 5V
- Analog Input Pins – 6 (A0 – A5)
- Digital I/O Pins – 14 pins
- Flash Memory – 32 KB (0.5 KB is used for Bootloader)
- SRAM – 2 KB

4.2POWER SUPPLY UNIT

Power supply is a reference to a source of electrical power. A device or system that supplies electrical or other types of energy to an output load or group of loads is called a power supply unit or PSU. The term is most commonly applied to electrical energy supplies, less often to mechanical ones, and rarely to others.

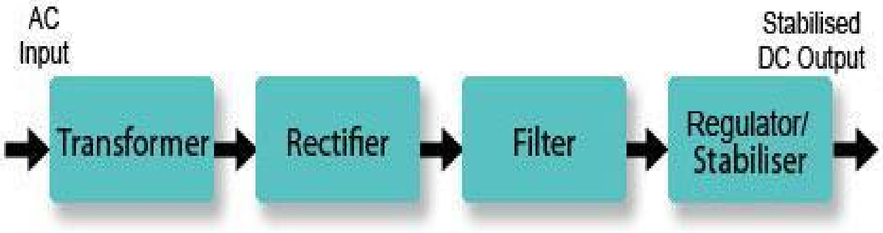


Figure 4.3 Power Supply unit

4.2.1 Step Down Transformer

Basic power supply the input power transformer has its primary winding connected to the mains (line) supply. A secondary winding, electro-magnetically coupled but electrically isolated from the primary is used to obtain an AC voltage of suitable amplitude, and after further processing by the PSU, to drive the electronics circuit it is to supply.

The transformer stage must be able to supply the current needed. If too small a transformer is used, it is likely that the power supply's ability to maintain full output voltage at full output current will be impaired. With too small a transformer, the losses will increase dramatically as full load is placed on the transformer.As the transformer is likely to be the most costly item in the power supply unit, careful consideration must be given to balancing cost with likely current requirement. There may also be a need for safety devices such as thermal fuses to disconnect the transformer if overheating occurs, and electrical isolation between primary and secondary windings, for electrical safety.

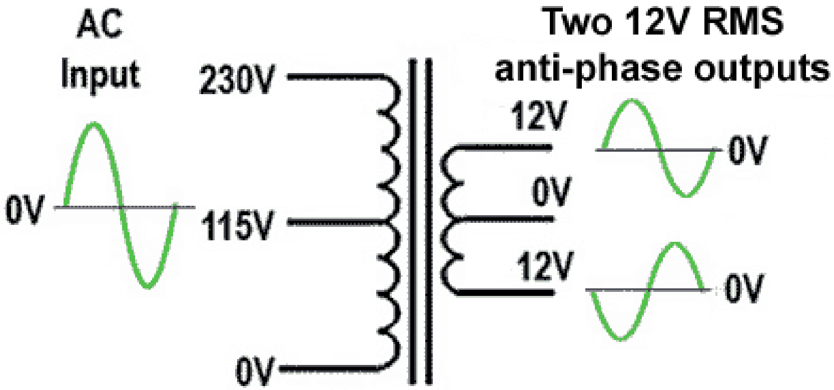


Figure 4.4 Step down Transformer

4.2.2 Rectifier Stage

Rectifier circuit is used to convert the AC input is converted to DC. The full wave bridge rectifier uses four diodes arranged in a bridge circuit to give full wave rectification without the need for a centre-tapped transformer. An additional advantage is that, as two diodes are conducting at any one time, the diodes need only half the reverse breakdown voltage capability of diodes used for half and conventional full wave rectification. The bridge rectifier can be built from separate diodes or a combined bridge rectifier can be used.

It can be seen that on each half cycle, opposite pairs of diodes conduct, but the current through the load remains in the same polarity for both half cycles.

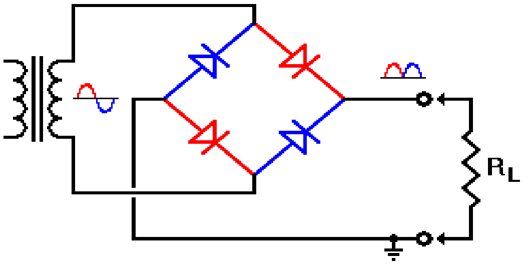


Figure 4.5 Bridge Rectifier

4.2.3Filter

A typical power supply filter circuit can be best understood by dividing the circuit into two parts, the reservoir capacitor and the low pass filter. Each of these parts contributes to removing the remaining AC pulses, but in different ways.

Electrolytic capacitor used as a reservoir capacitor, so called because it acts as a temporary storage for the power supply output current. The rectifier diode supplies current to charge a reservoir capacitor on each cycle of the input wave. The reservoir capacitor is large electrolytic, usually of several hundred or even a thousand or more microfarads, especially in mains frequency PSUs. This very large value of capacitance is required because the reservoir capacitor, when charged, must provide enough DC to maintain a steady PSU output in the absence of an input current; i.e. during the gaps between the positive half cycles when the rectifier is not conducting.The action of the reservoir capacitor on a half wave rectified sine wave.

During each cycle, the rectifier anode AC voltage increases towards Vpk. At some point close to Vpk the anode voltage exceeds the cathode voltage, the rectifier conducts and a pulse of current flows, charging the reservoir capacitor to the value of Vpk.Once the input wave passes Vpk the rectifier anode falls below the capacitor voltage, the rectifier becomes reverse biased and conduction stops. The load circuit is now supplied by the reservoir capacitor alone.Of course, even though the reservoir capacitor has large value, it discharges as it supplies the load, and its voltage falls, but not by very much. At some point during the next cycle of the mains input, the rectifier input voltage rises above the voltage on the partly discharged capacitor and the reservoir is re-charged to the peak value Vpk again.

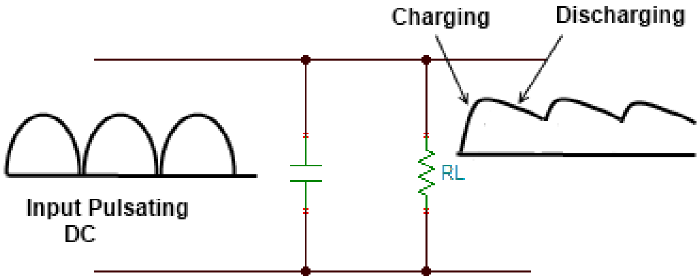


Figure 4.6 Filter Circuit

4.2.4 Voltage Regulator

Voltage regulator Ic are available with fixed or variable output voltages. They are also rated by the maximum current they can pass. Negative voltage regulators are available, mainly for use in dual supplies. Most regulators include some automatic protection from excessive current and overheating.

The LM78XX series of three terminal regulators is available with several fixed output voltages making them useful in a wide range of applications. One of these is local on card regulation, eliminating the distribution problems associated with single point regulation. The voltages available allow these regulators to be used in logic systems, instrumentation, Hi-Fi, and other solid state electronic equipment. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages and current.It regulates the negative voltage. The regulated DC output is very smooth with no ripple. It is suitable for all electronic circuits.

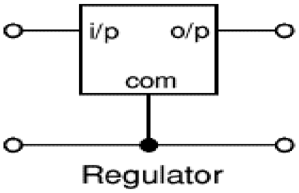


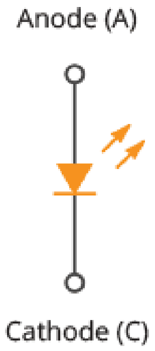
Figure 4.7 Regulator Circuit

4.2.5 Light Emitting Diode (LED)

LEDs are everywhere – in our phones, in our cars, and even in our homes. Whenever an electronic device lights up, there is a good chance that an LED is behind it.

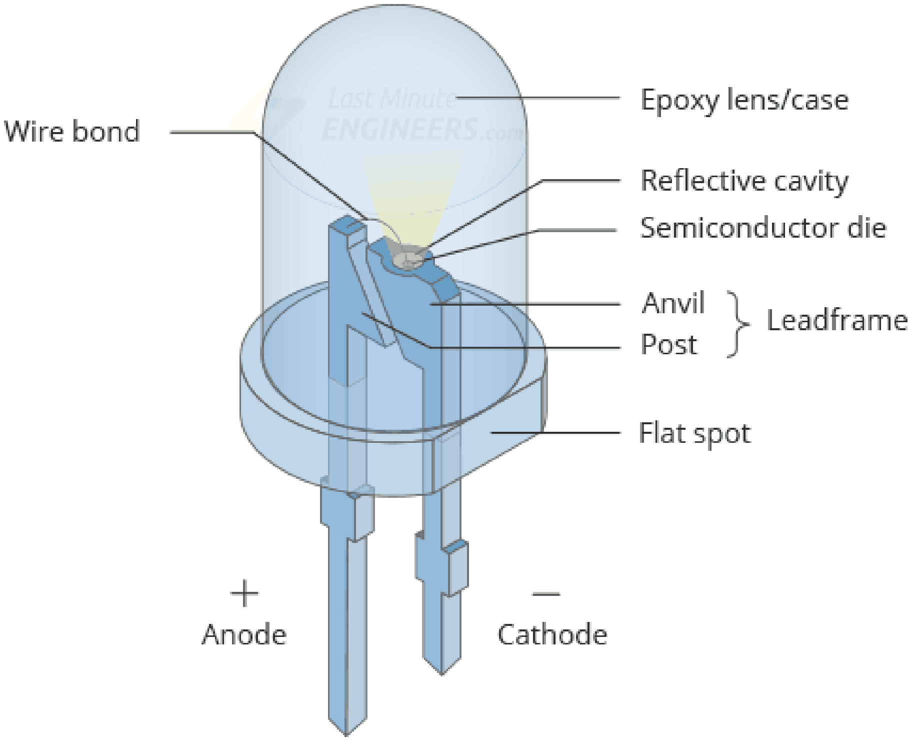
LEDs are like tiny lightbulbs. Low energy consumption, small size, rapid switching and long lifespan makes them ideal for mobile devices and other low-power applications.

LED stands for Light Emitting Diode. They are a special type of diode that convert electrical energy into light. They have very similar electrical characteristics to a normal PN junction diode. That's why the symbol of LED is similar to the normal PN junction diode except that it contains arrows pointing away from the diode indicating that light is being emitted by the diode.



LED Construction

LEDs are so common, they come in a huge variety of shapes, sizes and colors. The LEDs you are most likely to use are the standard through hole LEDs with two legs. Following figure shows the parts of it.

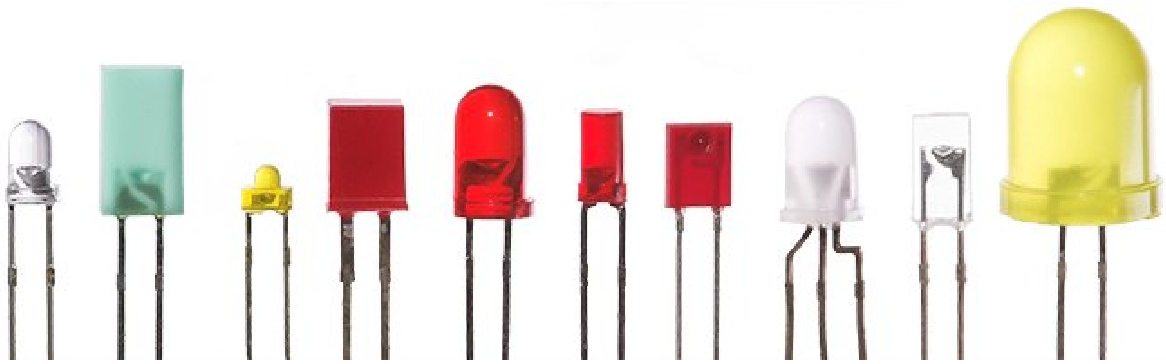


The construction of an LED is very different from an ordinary diode. The PN junction of an LED is surrounded by a transparent, rigid plastic epoxy resin shell.

The shell is constructed in such a way that photons of light emitted by the junction are focused upward through the domed top of the LED, which itself acts like a lens. This is why the emitted light appears brightest on top of the LED.

Just as in an ordinary diode, the positive side of the LED is called the **Anode**, while the negative side of the LED is called the **Cathode**. The cathode is usually indicated by having a shorter lead than the anode. Not only this, the outside of the plastic case typically has a flat spot or notch which can also indicate the cathode side of the LED.

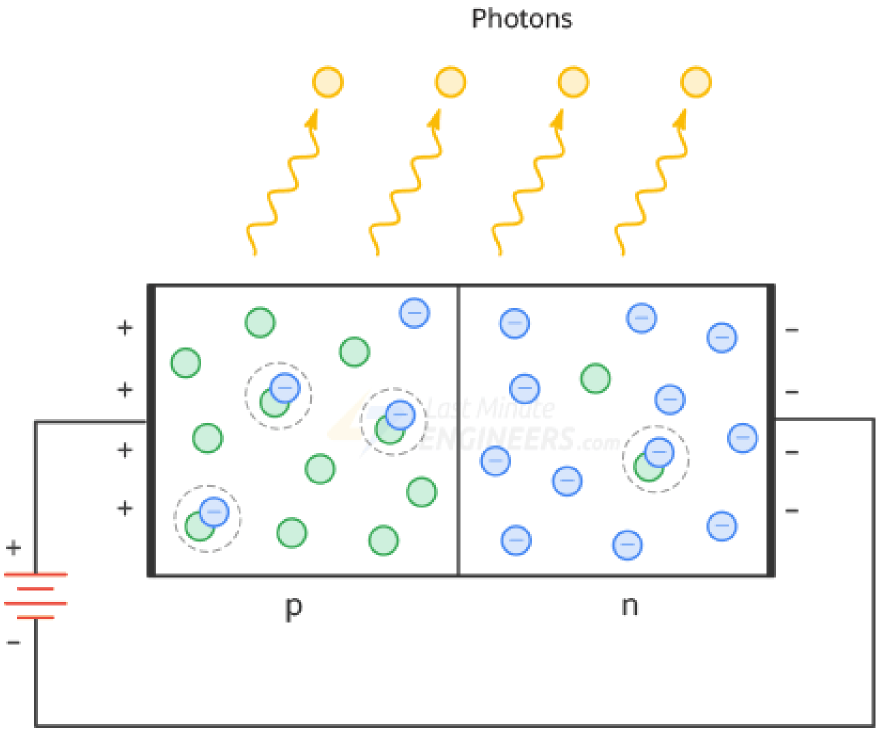
Not all LEDs are hemispherical in shape, some are rectangular while some are cylindrical, but they are mostly constructed in the same way.



LED Working

Like an ordinary diode, the LED operates only in forward bias condition. When the LED is forward biased, the free electrons cross the PN junction and recombine with holes. Since these electrons fall from a higher to a lower energy level, they radiate energy in the form of photons (light).

In ordinary diodes, this energy is radiated as heat while in an LED, energy is radiated as light. This effect is called **Electroluminescence**.



LED Colors

Light emitting diodes are available in a wide range of colors with the most common being red, green, yellow, blue, orange, white and infrared (invisible) light.

Unlike ordinary diodes that are made of germanium or silicon, LEDs are made of elements such as gallium, arsenic, and phosphorus. By mixing these elements together in different proportions, a manufacturer can produce LEDs that radiate different colors as shown in the table below.

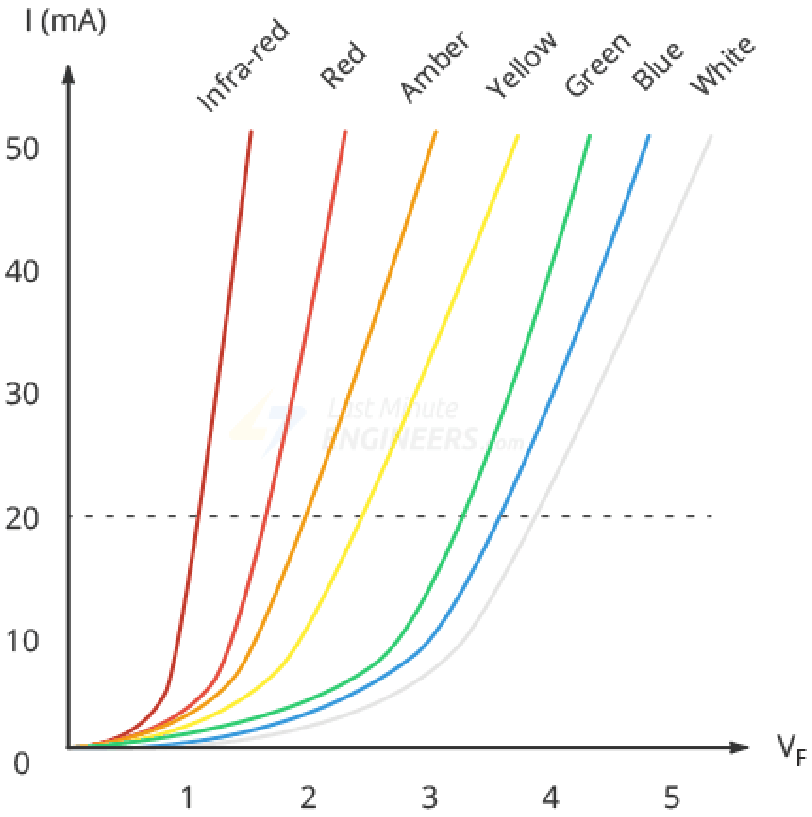
The actual color of an LED is determined by the wavelength of light emitted, which in turn is determined by the actual semiconductor material used to make the diode.

Therefore the color of the light emitted by an LED is NOT determined by the color of the body of the LED. It just enhances the light output and indicates its color when it is not illuminated.

LED Voltage and Current

For most low-power LEDs, the typical voltage drop is from 1.2V to 3.6V for currents between 10mA to 30mA. The exact voltage drop will of course depend upon the semiconductor material used, color, tolerance, along with other factors.

As the LED is basically a diode, its IV characteristics curves can be plotted for each color as shown below.



LED Brightness

The brightness of an LED depends directly on how much current it draws. The more current it draws, the brighter the LED will be.

You can control the brightness of an LED by controlling the amount of current through it.

The Current Limiting resistor

If you connect an LED directly to a battery or power supply it will try to dissipate as much power as possible, and, it will destroy itself almost instantly.

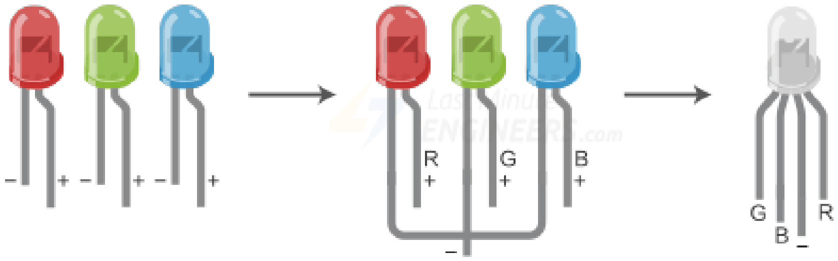
Therefore it is important to limit the amount of current flowing through the LED. For this, we use resistors. The resistor limits the flow of electrons in the circuit and prevents the LED from trying to draw too much current.

Multi-color LEDs

Most LEDs produce only one output of colored light. However, multi-color LEDs are now available that can produce a range of different colors from within a single device. These actually have several LEDs fabricated in a single package.

RGB LEDs

At first glance, RGB (Red, Green, Blue) LEDs look just like regular LEDs, however, inside the usual LED package, there are actually three LEDs, one red, one green and yes, one blue. By controlling the intensity of each of the individual LEDs you can mix pretty much any color you want.



A RGB LED (Common Cathode)

VOICE RECOGNITION

This Voice Recognition Module is a compact and easy-control speaking recognition board. This product is a speaker-dependent voice recognition module. It supports up to 80 voice commands in all. Max 7 voice commands could work at the same time. Any sound could be trained as command. Users need to train the module first before let it recognizing any voice command.

This board has 2 controlling ways: Serial Port (full function), General Input Pins (part of function). General Output Pins on the board could generate several kinds of waves while corresponding voice command was recognized.

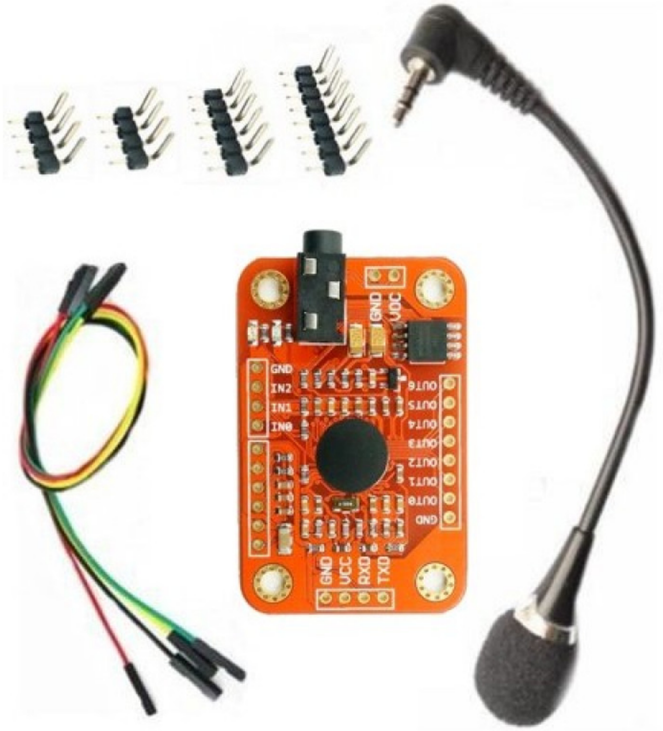
Features of Voice recognition Module:-

- Input Power supply- 12 Volt DC/2 Ampere
- TRAIN1 Switch for to Record First Group
- TRAIN2 Switch for to Record second Group
- Each Group Stores 7 Voices
- LOAD1 Switch to Load Trained First Group voices
- LOAD2 Switch to Load Trained Second Group voices
- PB2,PB3,PB4,PB5 PINS 4BIT DATA OUTPUT

Specifications of Voice recognition Module:-

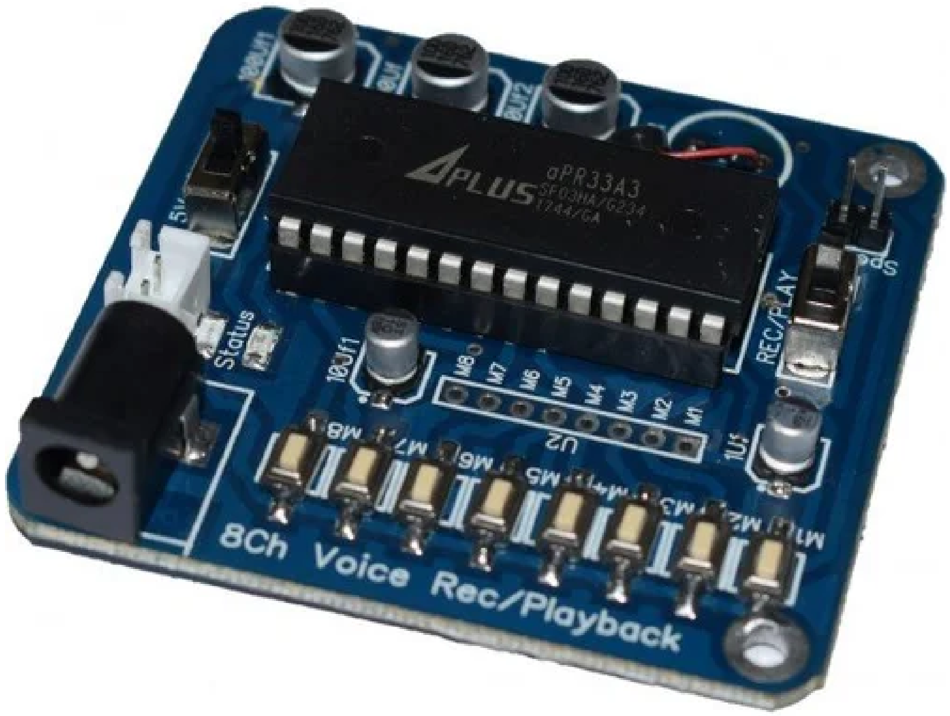
- Voltage: 4.5-5.5V
- Current: <40mA
- Digital Interface: 5V
- TTL level UART interface
- Analog Interface: 3.5mm mono-channel microphone connector + microphone pin interface

- Size: 30mm x 47.5mm



8 CHANNEL VOICE PLAY BACK

Operating Voltage Range: 3V ~ 6.5V ??Single Chip Solution with Minimum External Components. ??Easy Use without Development Systems Required ??340 ~ 680 sec. Voice Recording Length ?? Powerful 16-Bits Digital Audio Processor. ??Nonvolatile Flash Memory Technology without Battery Backup Required ??External Reset pin. ??Powerful Power Management Unit ??Very Low Standby Current: 1uA?? ?? ?? ?? ?? ??Low Power-Down Current: 15uA ?? Supports Power-Down Mode for Power Saving ??Built-in Audio-Recording Microphone Amplifier ??Configurable analog interface ??Differential??-ended MIC pre-amp for Low Noise?? ?? ?? ??High Quality Line Receiver ??High Quality 16 bits Audio Output Resolution



Condenser MIC

Condenser means capacitor, an electronic component which stores energy in the form of an electrostatic field. The term condenser is actually obsolete but has stuck as the name for this type of microphone, which uses a capacitor to convert acoustical energy into electrical energy. Condenser microphones require power from a battery or external source. The mic has capacitor. The capacitor is made of two plates with a voltage between them. One of these plates is thinner compared to the other, this plate called the diaphragm which vibrates because of sound waves. This causes variation in the voltage stored. Generally when the plates are close together the capacitance increases and when the plates are farther from each other the capacitance decreases. A voltage has to be applied across the capacitor for this to work. This voltage is supplied either by external power supply

CHAPTER 5

SOFTWARE DESCRIPTION

5.1 INTRODUCTION TO EMBEDDED 'C':

Embedded systems programming is different from developing applications on a desktop computer. Key characteristics of an embedded system, when compared to PCs, are as follows:

- Embedded devices have resource constraints (limited ROM, limited RAM, limited stack space, less processing power)
- Components used in embedded system and PCs are different; embedded systems typically use smaller, less power consuming components.

Two salient features of Embedded Programming are code speed and code size. Code speed is governed by the processing power, timing constraints, whereas code size is governed by available program memory and use of programming language. Goal of embedded system programming is to get maximum features in minimum space and minimum time.Embedded systems are programmed using different type of languages:

- Machine Code
- Low level language, i.e., assembly
- High level language like C, C++, Java, Ada, etc.
- Application level language like Visual Basic, scripts, Access, etc.

Assembly language maps mnemonic words with the binary machine codes that the processor uses to code the instructions. Assembly language seems to be an obvious choice for programming embedded devices. However, use of assembly language is restricted to developing efficient codes in terms of size and speed. Also, assembly codes lead to higher software development costs and code portability is not there. Developing small codes are not much of a problem, but large programs/projects become increasingly difficult to manage in assembly language. Finding good assembly programmers has also become difficult nowadays. Hence high-level languages are preferred for embedded systems programming.

Use of C in embedded systems is driven by following advantages

- It is small and reasonably simpler to learn, understand, program and debug.
- C Compilers are available for almost all embedded devices in use today, and there is a large pool of experienced C programmers.
- Unlike assembly, C has the advantage of processor-independence and is not specific to any particular microprocessor/ microcontroller or any system. This makes it convenient for a user to develop programs that can run on most of the systems.
- As C combines functionality of assembly language and features of high level languages, C is treated as a ‘middle-level computer language’ or ‘high level assembly language’
- It is fairly efficient
- It supports access to I/O and provides ease of management of large embedded projects.

Many of these advantages are offered by other languages also, but what sets C apart from others like Pascal, FORTRAN, etc. is the fact that it is a middle level language; it provides direct hardware control without sacrificing benefits of high-level languages.Compared to other high-level languages, C offers more flexibility because C is relatively small, structured language; it supports low-level bit-wise data manipulation.Compared to assembly language, C Code written is more reliable and scalable, more portable between different platforms (with some changes). Moreover, programs developed in C are much easier to understand, maintain and debug. Also, as they can be developed more quickly, codes are written.

5.2 PROTEUS

Proteuswas initially created as a multi platform (DOS, Windows, Unix) system utility, to manipulate text and binary files and to create CGI scripts. The language was later focused on Windows, by adding hundreds of specialised functions for: network and serial communication, database interrogation, system service creation, console applications, keyboard emulation, ISAPI scripting (for IIS). Most of these additional functions are only available in the Windows flavour of the interpreter, even though a Linux version is still available.

Proteus was designed to be practical (easy to use, efficient, complete), readable and consistent.

- Its strongest points are
- powerful string manipulation
- comprehensibility of Proteus scripts
- availability of advanced data structures: arrays, queues (single or double), stacks, bit maps, sets, AVL trees
- The language can be extended by adding user functions written in Proteus or DLLs created in C/C++

5.2.1 LANGUAGE FEATURES

At first sight, Proteus may appear similar to Basic because of its straight syntax, but similarities are limited to the surface:

- Proteus has a fully functional, procedural approach;
- variables are untyped, do not need to be declared, can be local or public and can be passed by value or by reference;
- all the typical control structures are available (if-then-else; for-next; while-loop; repeat-until; switch-case);
- new functions can be defined and used as native functions.
- Proteus includes hundreds of functions for:

- accessing file system;
- sorting data;
- manipulating dates and strings;
- interacting with the user (console functions)
- calculating logical and mathematical expressions.
- Proteus supports associative arrays (called sets) and AVL trees, which are very useful and powerful to quickly sort and lookup values.

Two types of regular expressions are supported:

- extended (Unix like)
- basic (Dos like, having just the wildcards "?" and "*")

CHAPTER 6

METHODOLOGY

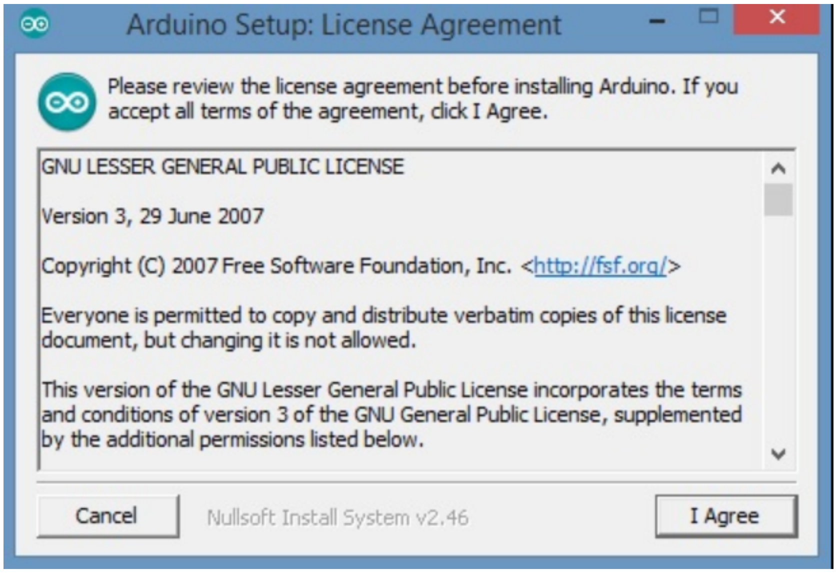
6.1ARDUINO C SOFTWARE INSTALLATION

Step 1: Visit http://www.arduino.cc/en/main/software to download the latestArduino IDE version for your computer's operating system.

Step 2: Save the .exe file to your hard drive.

Step 3: Open the .exe file.

Step 4: Click the button to agree to the licensing agreement.



Please review the license agreement before installing Arduino. If you accept all terms of the agreement, click I Agree.

GNU LESSER GENERAL PUBLIC LICENSE

Version 3, 29 June 2007

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Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

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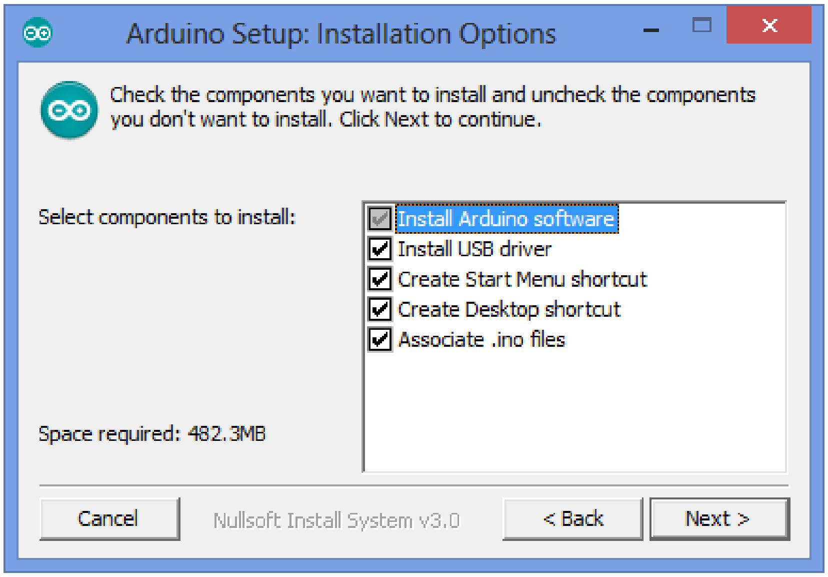
Figure 5.1 License Agreement

Step 5: Decide Which components to install, then click "Next".


Arduino Setup: Installation Options
Cancel
Nullsoft Install System v3.0
< Back
Next >

Check the components you want to install and uncheck the components you don't want to install. Click Next to continue.

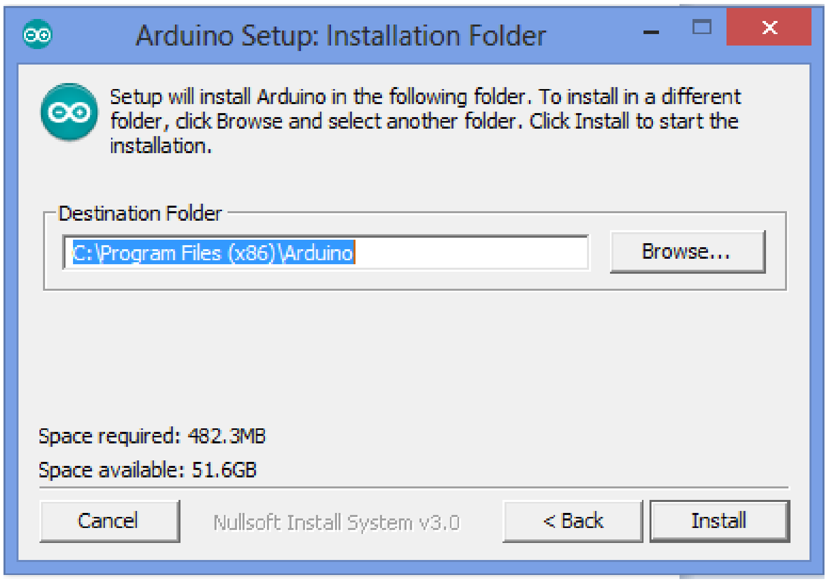
Select components to install:

☑ Install Arduino software
☑ Install USB driver
☑ Create Start Menu shortcut
☑ Create Desktop shortcut
☑ Associate .ino files

Space required: 482.3MB

Figure 5.2 Installation options

Step 6: Select which folder to install the program to, the click "Install".


Arduino Setup: Installation Folder
Browse...
Cancel
Nullsoft Install System v3.0
< Back
Install

Setup will install Arduino in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation.

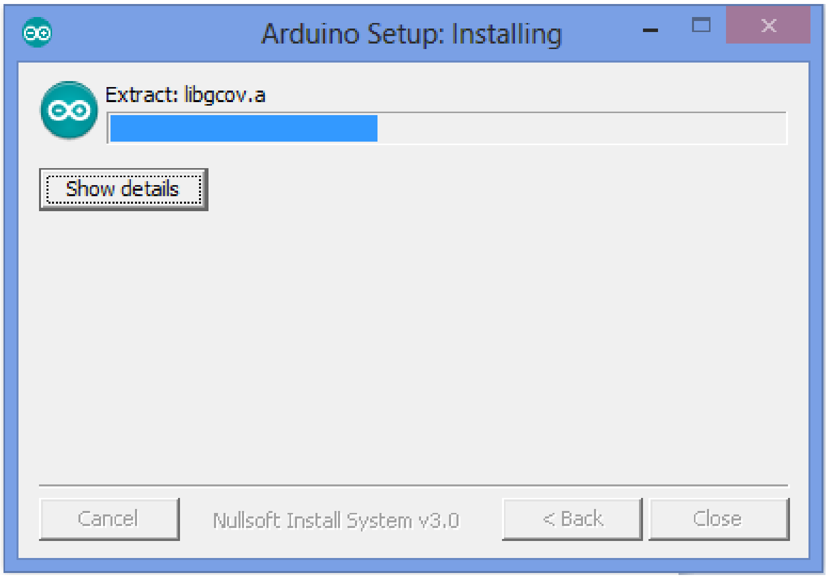
Destination Folder: C:\Program Files (x86)\Arduino

Space required: 482.3MB

Space available: 51.6GB

Figure 5.2 Installation folder

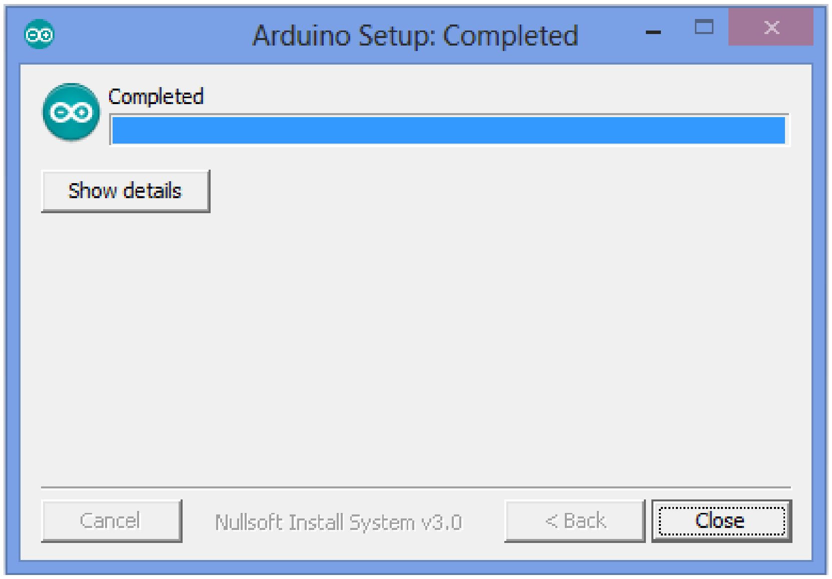
Step 7: Wait for the program to finish installing, then click "Close".



Arduino Setup: Installing

Extract: libgcov.a

Figure 5.4 Installing process

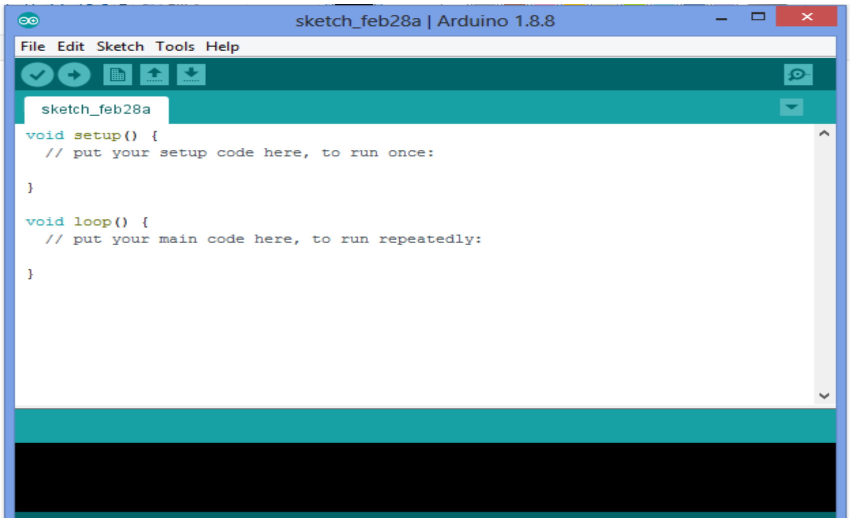


Arduino Setup: Completed

Completed

Figure 5.5 process completion

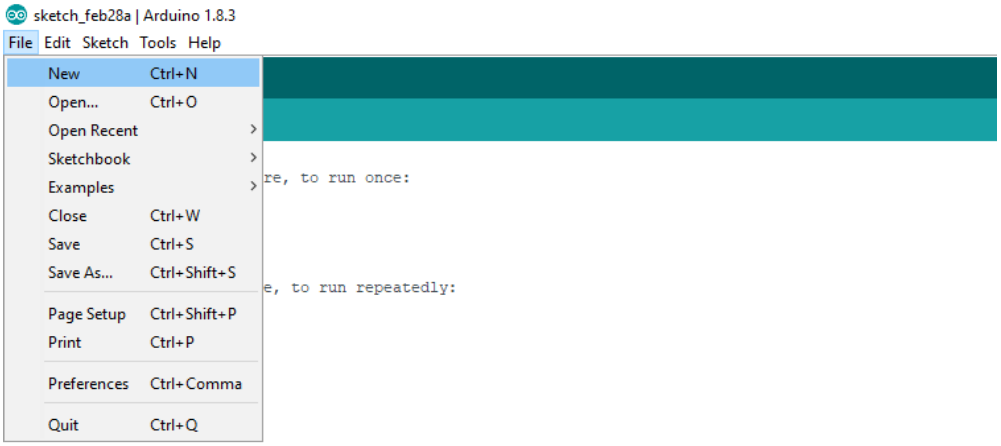
Step 8: Now find the Arduino shortcut on your Desktop and click on it. The IDEwill open up and you'll see the code editor.



```
void setup() {
  // put your setup code here, to run once:

}

void loop() {
  // put your main code here, to run repeatedly:

}
```

Figure 5.6 Arduino 1.8.8

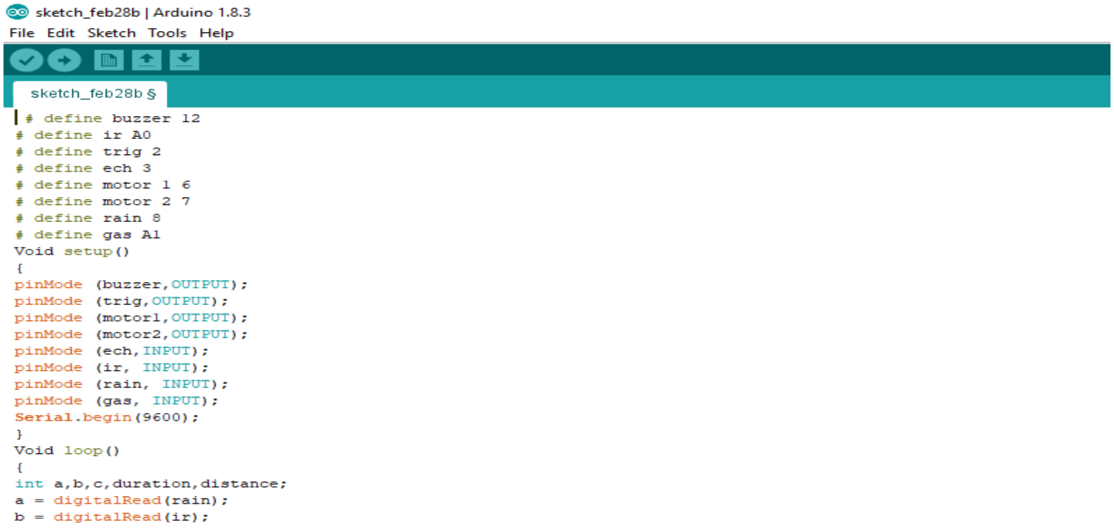
Step 9: Open new file



```
re, to run once:

e, to run repeatedly:
```

Figure 5.7. New File Creation.

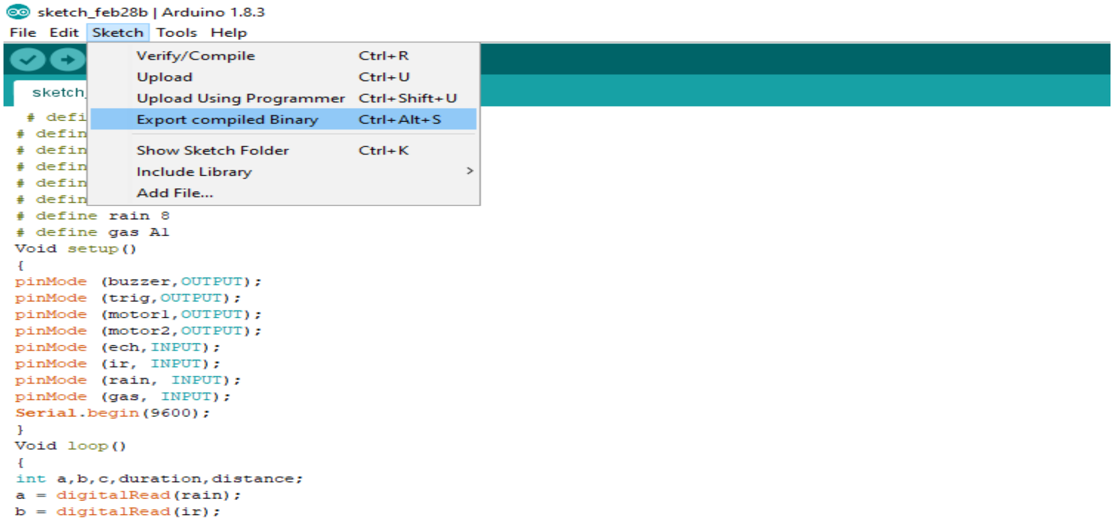
Step 10: Type the entire program on the new file then save the file in arduino extension.



```
# define buzzer 12
# define ir A0
# define trig 2
# define ech 3
# define motor 1 6
# define motor 2 7
# define rain 8
# define gas A1
Void setup()
{
pinMode (buzzer,OUTPUT);
pinMode (trig,OUTPUT);
pinMode (motor1,OUTPUT);
pinMode (motor2,OUTPUT);
pinMode (ech,INPUT);
pinMode (ir, INPUT);
pinMode (rain, INPUT);
pinMode (gas, INPUT);
Serial.begin(9600);
}
Void loop()
{
int a,b,c,duration,distance;
a = digitalRead(rain);
b = digitalRead(ir);
```

Figure 5.8. Saving Program.

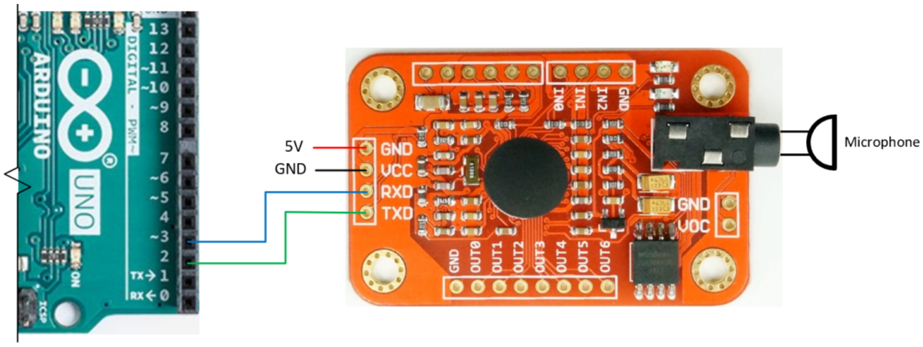
Step 11: Run the program and view the output details.


sketch_feb28b | Arduino 1.8.3
File Edit Sketch Tools Help
Verify/Compile Ctrl+R
Upload Ctrl+U
Upload Using Programmer Ctrl+Shift+U
Export compiled Binary Ctrl+Alt+S
Show Sketch Folder Ctrl+K
Include Library >
Add File...
sketch_

```
 # defi
# defin
# defin
# defin
# defin
# defin
# define rain 8
# define gas A1
Void setup()
{
pinMode (buzzer,OUTPUT);
pinMode (trig,OUTPUT);
pinMode (motor1,OUTPUT);
pinMode (motor2,OUTPUT);
pinMode (ech,INPUT);
pinMode (ir, INPUT);
pinMode (rain, INPUT);
pinMode (gas, INPUT);
Serial.begin(9600);
}
Void loop()
{
int a,b,c,duration,distance;
a = digitalRead(rain);
b = digitalRead(ir);
```

Figure 5.9. Execution of Module.

6.2RESULT



CHAPTER 7

CONCLUSION AND FUTURE ENHANCEMENT

7.1 CONCLUSION

In this paper a noteworthy benefactions of methods which lead to improvement of Chabot’s which have now modified the day-to-day lives of mortal have been blanketed thru named set of papers which bandy the techniques and tactics and additionally the measures that are taken under the consideration Some of the enhancement and developments made on the previously developed chatbot structures have additionally been referred to and surveyed through this paper from colorful reference papers and news composition bringing in to the mild the behind approaches concerned for making the same. The structures of Chatbot configuration areas but an difficulty for badinage and no normal method has but been honored. Judges have so a ways labored in disentangled conditions with a hesitance to expose any enhanced

Procedures they've plant, therefore, backing off the enhancements to Chatbots. General- motive Chatbots want developments by using designing similarly complete know-how bases. Every specialist needs to forcefully library any fruitful developments to allow the mortal PC speak collaboration to concurrence to a frequent approach. This will dependably be inconsistent with commercial enterprise contemplations..

APPENDIX

```
const char* ssid     = "12345678";   //your network SSID

const char* password = "12345678";   //your network password



String                          myToken                          =
"5309457293:AAHcyyIZaOlnRiCLRgbVGcBquXa_lyp1obY";   // Create your
bot and get the token -> https://telegram.me/fatherbot

String   myChatId   =   "5034626087";          //   Get   chat_id   ->
https://telegram.me/userinfobot



#include <WiFi.h>

#include <WiFiClientSecure.h>



//ESP32-CAM 安信可模組腳位設定

#define PWDN_GPIO_NUM     32

#define RESET_GPIO_NUM    -1

#define XCLK_GPIO_NUM      0

#define SIOD_GPIO_NUM     26

#define SIOC_GPIO_NUM     27



#define Y9_GPIO_NUM       35
```

```
#define Y8_GPIO_NUM       34
#define Y7_GPIO_NUM       39
#define Y6_GPIO_NUM       36
#define Y5_GPIO_NUM       21
#define Y4_GPIO_NUM       19
#define Y3_GPIO_NUM       18
#define Y2_GPIO_NUM        5
#define VSYNC_GPIO_NUM    25
#define HREF_GPIO_NUM     23
#define PCLK_GPIO_NUM     22


void setup()
{
  WRITE_PERI_REG(RTC_CNTL_BROWN_OUT_REG, 0);


  Serial.begin(115200);
  Serial.setDebugOutput(true
  Serial.println();
```

https://github.com/espressif/esp32-camera/blob/master/driver/include/esp_camera.h

```
camera_config_t config;
config.ledc_channel = LEDC_CHANNEL_0;
config.ledc_timer = LEDC_TIMER_0;
config.pin_d0 = Y2_GPIO_NUM;
config.pin_d1 = Y3_GPIO_NUM;
config.pin_d2 = Y4_GPIO_NUM;
config.pin_d3 = Y5_GPIO_NUM;
config.pin_d4 = Y6_GPIO_NUM;
config.pin_d5 = Y7_GPIO_NUM;
config.pin_d6 = Y8_GPIO_NUM;
config.pin_d7 = Y9_GPIO_NUM;
config.pin_xclk = XCLK_GPIO_NUM;
config.pin_pclk = PCLK_GPIO_NUM;
config.pin_vsync = VSYNC_GPIO_NUM;
config.pin_href = HREF_GPIO_NUM;
config.pin_sscb_sda = SIOD_GPIO_NUM;
config.pin_sscb_scl = SIOC_GPIO_NUM;
config.pin_pwdn = PWDN_GPIO_NUM;
config.pin_reset = RESET_GPIO_NUM;
config.xclk_freq_hz = 20000000;
```

```
  config.pixel_format = PIXFORMAT_JPEG;


  //
   // WARNING!!! PSRAM IC required for UXGA resolution and high JPEG
quality
   //                   Ensure ESP32 Wrover Module or other board with PSRAM is
selected
  //            Partial images will be transmitted if image exceeds buffer size
  //
  // if PSRAM IC present, init with UXGA resolution and higher JPEG quality
  //                      for larger pre-allocated frame buffer.
    config.frame_size = FRAMESIZE_UXGA;
    config.jpeg_quality = 10;
    config.fb_count = 2;
  } else {
    config.frame_size = FRAMESIZE_SVGA;
    config.jpeg_quality = 12;
    config.fb_count = 1;
  }


  esp_err_t err = esp_camera_init(&config);
  if (err != ESP_OK) {
    Serial.printf("Camera init failed with error 0x%x", err);
    ESP.restart();
  }

  sensor_t * s = esp_camera_sensor_get();
  // initial sensors are flipped vertically and colors are a bit saturated
  if (s->id.PID == OV3660_PID) {
    s->set_vflip(s, 1); // flip it back
    s->set_brightness(s, 1); // up the brightness just a bit
    s->set_saturation(s, -2); // lower the saturation
  }
  // drop down frame size for higher initial
UXGA(1600x1200), SXGA(1280x1024), XGA(1024x768), SVGA(800x600),
VGA(640x480), CIF(400x296), QVGA(320x240), HQVGA(240x176),
QQVGA(160x120), QXGA(2048x1564 for OV3660)


  //閃光燈(GPIO4)
  ledcAttachPin(4, 4);
  ledcSetup(4, 5000, 8);
```

```
        WiFi.mode(WIFI_AP_STA);         //其他模式    WiFi.mode(WIFI_AP);
WiFi.mode(WIFI_STA);


  //WiFi.config(IPAddress(192, 168, 201, 100), IPAddress(192, 168, 201, 2),
IPAddress(255, 255, 255, 0));


 for (int i=0;i<2;i++) {
   WiFi.begin(ssid, password);    /


   delay(1000);
   Serial.println("");
   Serial.print("Connecting to ");
   Serial.println(ssid);


   long int StartTime=millis();
   while (WiFi.status() != WL_CONNECTED) {
      delay(500);
      if ((StartTime+5000) < millis()) break;
   }
  if (WiFi.status() == WL_CONNECTED)

    Serial.println("");

    Serial.println("STAIP address: ");

    Serial.println(WiFi.localIP());

    Serial.println("");


    for (int i=0;i<5;i++)

      ledcWrite(4,10);

      delay(200);

      ledcWrite(4,0);

      delay(200);

    }

    break;

  }

}


if (WiFi.status() != WL_CONNECTED)

  for (int i=0;i<2;i++) {    /

    ledcWrite(4,10);

    delay(1000);
```

```
      ledcWrite(4,0);
      delay(1000);
    }
    ESP.restart();
  }

  pinMode(4, OUTPUT);
  digitalWrite(4, LOW);

    sendMessage2Telegram(myToken,   myChatId,   "Hello   Taiwan.\nHow   are
you?");
  sendCapturedImage2Telegram(myToken, myChatId);
}

void loop()
{
  /*
  int gpioPIR = 13;   //PIR Motion Sensor
  pinMode(gpioPIR, INPUT_PULLUP);
  int v = digitalRead(gpioPIR);
  Serial.println(v);
  if (v==1) {
    sendCapturedImage2Telegram(token, chat_id);
    delay(10000);
  }
  delay(1000);
  */
}


String sendCapturedImage2Telegram(String token, String chat_id) {
  const char* myDomain = "api.telegram.org";
  String getAll="", getBody = "";


  camera_fb_t * fb = NULL;
  fb = esp_camera_fb_get();
  if(!fb) {
    Serial.println("Camera capture failed");
    delay(1000);
    ESP.restart();
    return "Camera capture failed";
  }
  Serial.println("Connect to " + String(myDomain));

  WiFiClientSecure client_tcp;
  client_tcp.setInsecure();   //run version 1.0.5 or above

  if (client_tcp.connect(myDomain, 443)) {
    Serial.println("Connection successful");

    String head = "--Taiwan\r\nContent-Disposition: form-data; name=\"chat_id\"; \r\n\r\n" + chat_id + "\r\n--Taiwan\r\nContent-Disposition: form-data; name=\"photo\"; filename=\"esp32-cam.jpg\"\r\nContent-Type: image/jpeg\r\n\r\n";
    String tail = "\r\n--Taiwan--\r\n";

    uint16_t imageLen = fb->len;
    uint16_t extraLen = head.length() + tail.length();
    uint16_t totalLen = imageLen + extraLen;

    client_tcp.println("POST /bot"+token+"/sendPhoto HTTP/1.1");
    client_tcp.println("Host: " + String(myDomain));
```

```
client_tcp.println("Content-Length: " + String(totalLen));

client_tcp.println("Content-Type: multipart/form-data; boundary=Taiwan");

client_tcp.println();

client_tcp.print(head);



uint8_t *fbBuf = fb->buf;

size_t fbLen = fb->len;

for (size_t n=0;n<fbLen;n=n+1024) {

  if (n+1024<fbLen) {

    client_tcp.write(fbBuf, 1024);

    fbBuf += 1024;

  } else if (fbLen%1024>0) {

    size_t remainder = fbLen%1024;

    client_tcp.write(fbBuf, remainder);

  }

}



client_tcp.print(tail);



esp_camera_fb_return(fb);
```

```
int waitTime = 10000;   // timeout 10 seconds

long startTime = millis();

boolean state = false;


while ((startTime + waitTime) > millis()) {

  Serial.print(".");

  delay(100);

  while (client_tcp.available()) {

      char c = client_tcp.read();

      if (state==true) getBody += String(c);

      if (c == '\n') {

        if (getAll.length()==0) state=true;

        getAll = "";

      }

      else if (c != '\r')

        getAll += String(c);

      startTime = millis();

   }

   if (getBody.length()>0) break;
```

```
    }
    client_tcp.stop();
    Serial.println();
    Serial.println(getBody);
  } else {
    getBody="Connected to api.telegram.org failed.";
    Serial.println("Connected to api.telegram.org failed.");
  }

  return getBody;
}

String sendMessage2Telegram(String token, String chat_id, String text) {
  const char* myDomain = "api.telegram.org";
  String getAll="", getBody = "";

  Serial.println("Connect to " + String(myDomain));

  WiFiClientSecure client_tcp;
  client_tcp.setInsecure();   //run version 1.0.5 or above
```

```
if (client_tcp.connect(myDomain, 443)) {
  Serial.println("Connection successful");

  String message = "chat_id="+chat_id+"&text="+text;
  client_tcp.println("POST /bot"+token+"/sendMessage HTTP/1.1");
  client_tcp.println("Host: " + String(myDomain));
  client_tcp.println("Content-Length: " + String(message.length()));
  client_tcp.println("Content-Type: application/x-www-form-urlencoded");
  client_tcp.println();
  client_tcp.print(message);

  int waitTime = 10000;   // timeout 10 seconds
  long startTime = millis();
  boolean state = false;

  while ((startTime + waitTime) > millis()) {
    Serial.print(".");
    delay(100);
    while (client_tcp.available()) {
        char c = client_tcp.read();
        if (state==true) getBody += String(c);
        if (c == '\n') {
          if (getAll.length()==0) state=true;
          getAll = "";
        }
        else if (c != '\r')
          getAll += String(c);
        startTime = millis();
      }
      if (getBody.length()>0) break;
    }
  client_tcp.stop();
  Serial.println();
  Serial.println(getBody);
} else {
  getBody="Connected to api.telegram.org failed.";
  Serial.println("Connected to api.telegram.org failed.");
}
```

```
  return getBody;

}
```

7.2 REFERENCES

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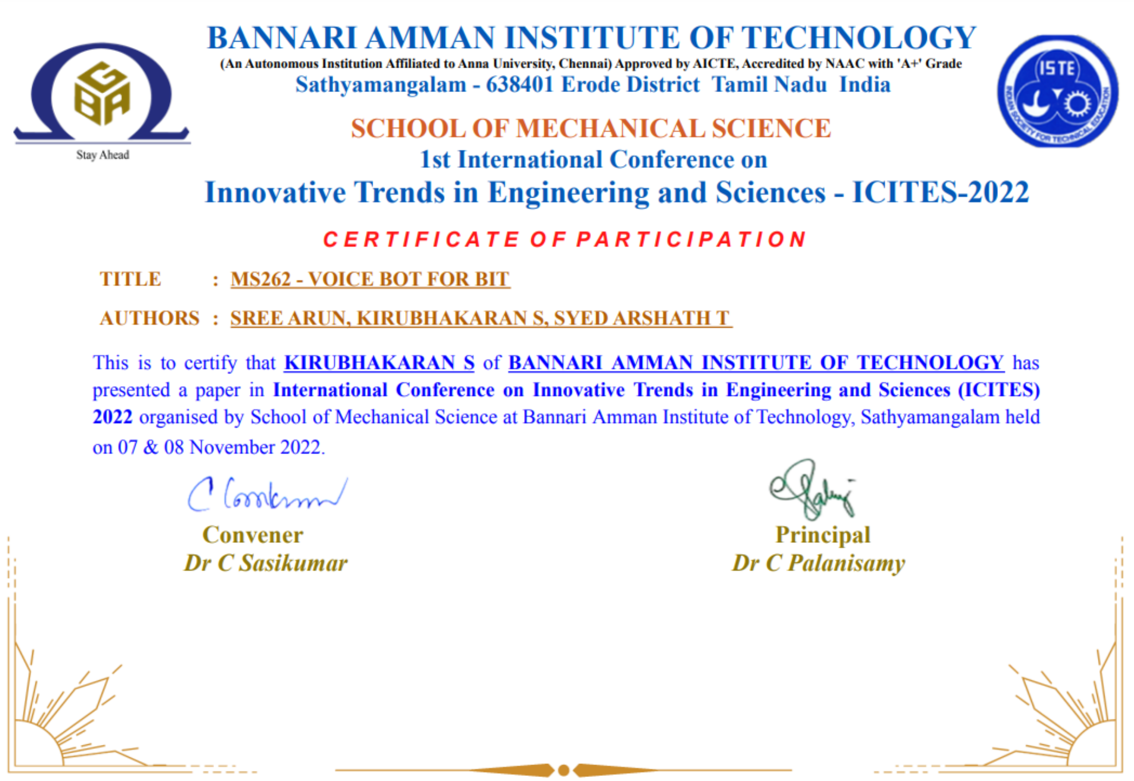
CONFERENCE CERTIFICATE



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SCHOOL OF MECHANICAL SCIENCE

1st International Conference on

Innovative Trends in Engineering and Sciences - ICITES-2022

CERTIFICATE OF PARTICIPATION

TITLE : MS262 - VOICE BOT FOR BIT

AUTHORS : SREE ARUN, KIRUBHAKARAN S, SYED ARSHATH T

This is to certify that **KIRUBHAKARAN S** of **BANNARI AMMAN INSTITUTE OF TECHNOLOGY** has presented a paper in **International Conference on Innovative Trends in Engineering and Sciences (ICITES) 2022** organised by School of Mechanical Science at Bannari Amman Institute of Technology, Sathyamangalam held on 07 & 08 November 2022.

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