IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 8, May 2023

IVR System for Traffic Communication

Miss. Landge Sonali Ghansham, Miss. Jadhav Pratiksha Babasaheb, Miss. Pawar Mahima Manik, Miss. Hinge Kanchan Ramhari, Mr. Patil. P. C
Department of Electrical Engineering
Sir Visvesvaraya Institute of Technology, Nashik, India

Abstract: *In this project we are making proto type which will help citizen to know about traffic density on a particular road. We are Designing on INTERACTIVE VOICE RESPONSE SYSTEM to serve our purpose. IR sensors will be placed at the sides of the road to measure the distance from signal up to which vehicles are present*

Keywords: *Interactive Voice Response System.*

I. INTRODUCTION

1.1 Background

In this project we are making proto type which will help citizen to know about traffic density on a particular road. We are Designing on INTERACTIVE VOICE RESPONSE SYSTEM to serve our purpose. IR sensors will be placed at the sides of the road to measure the distance from signal up to which vehicles are present.

IVRS is an important development in the field of interactive communication which makes use of the most modern technology available today. IVRS is a unique blend of both the communication field and the software field, incorporating the best features of both these streams of technology. IVRS is an electronic device through which information is available related to any topic about a particular organization with the help of telephone lines anywhere in the world.

IVRS provides a friendly and faster self-service alternative to speaking with customer service agents. It finds a large-scale use in enquiry systems of railways, banks, universities, tourism, industry etc. It is the easiest and most flexible mode of interactive communication because pressing a few numbers on the telephone set provides the user with a wide range of information on the topic desired. IVRS reduces the cost of servicing customers.

Now a day's traffic management in modern cities play a very important role, traffic congestion is creating the huge number of accidents from this negative effect are more acute in developing countries, so the intelligent traffic management and better access to traffic information for commuters can help the traffic congestion issues. We have designed Interactive voice response system for traffic measurement. It will help the citizens to give the information about traffic as well as pollution density. On three levels viz. Low, Medium, High. To monitor the traffic density, we will keep the IR sensor besides the roads and depends the Cout from the Arduino. In this system we have try to avoid traffic congestion on a particular road. This system will be fixed a particular location on road that means its measures density.

1.2 Problem statement

In this proposed system, we try to avoid the traffic congestion by getting information of citizens as the number of passing vehicles on road, decide the density range of traffic Low, Medium & High as well as we will get information about Air pollution. We are designing on interactive voice response system to serve our purpose.

II. LITERATURE REVIEW

Affleck, G., Zautra, A., Tennen, H., & Armeli, S. (1999)-

The present studies were the first systematic evaluation of the feasibility of applying IVR technology to daily process research with children. Results demonstrated that children as young as 9 years readily embraced this new technology and reliably engaged in the daily data collection routine. Attrition over extended study periods as long as 8 weeks was low, and compliance with the daily response requirements was excellent. These results compare favorably with findings

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 8, May 2023

from similar studies using adult samples. Unlike in previous research with adults, the financial incentives offered in the present studies were modest, suggesting that investigations of larger samples are feasible with children and adolescents. In conclusion, there is no reason for further neglect of children in the application of computer-assisted methods to daily process designs. The advantages of this technology are well established, and the extended scope it affords in investigations of everyday processes affecting the health of our children opens promising avenues for further research.

Bedford J. "The Renaissance in IVR/IWR Systems" 2015 –
Pharma companies need to opt for emerging and innovative technologies in clinical research to compete in global competition to utilize maximum benefits for patent filed before its expiry. Implementation of IVRS into clinical studies can accelerate trial by remote recruitment, appropriate randomization, and automated product management. With evolving technologies, IVRS can be easily implemented into studies and can be accessed remotely through telecommunicating devices such as phone, mobile, and I Pad even from the areas where Un authorised republication, reproduction, distribution, dissemination and copying of this document in whole or in part is strictly prohibited. 124 internet facilities are not available. Hence, IVRS can become indistinct choice for most flexible, user-friendly, and robust tool for the pharma companies. IVRS has boomed pharma industry and clinical trials started implementing IVRS to large extent. IVRS service providers were dreaded by other technological innovations such as EDC systems which were likely to replace the IVRS. However, today we can see rapid growth in the use of IVRS in clinical trials.

Alan G. Smith, "Introduction to Arduino", Reference book, September 30, 2011-
By implementing "IVRS SYSTEM FOR TRAFFIC DENSITY" we try to avoid the traffic congestion. By getting information as the number of passing vehicles on road, decide the density range of traffic Low, Medium & High as well as we will get information about Air pollution by using CO2 sensor. This all system is control through the Arduino controller. Therefore this is suitable, beneficial system for citizens. ADVANTAGES: 1. Depending on the traffic density, route can be selected. It will help to avoid traffic congestions. 2. Ambulances can take low traffic routes depending on traffic density. 3. Use of low traffic roads will increase fuel efficiency of the vehicles and thus help nation's economy. 4. Increased fuel efficiency will also reduce pollution and thus help in protecting environment. ACKNOWLEDGEMENT I take this opportunity to express my profound gratitude and indebtedness to my project guide Prof. S. S. Pawar for his guidance, advice, constructive suggestions and helpful discussion throughout the project work. His guidance and support has enabled me to complete this project work successfully. Sincerely express our deep gratitude to for their valuable guidance, constructive suggestions and supervision throughout our this work.

Alan G. Smith, Introduction to Arduino, Referencebook, September 30, 2011-
By implementing IVRS SYSTEM FOR TRAFFICDENSITY we try to avoid the traffic congestion. By getting information as the number of passing vehicleson road, decide the density range of traffic Low, Medium & Highas well as we will get information about Air pollution by using CO2 sensor. This all system is control through the Arduino controller.

Santosh A. Kulkarni, Dr. A.R.Karwankar, August 2012.-
The application is successfully developed according to the tenant's requirement. The Call flow is tested using eyebeam soft phone. Multiple inputs were given to check the working flow of the call. The calls were routed to agents according to the option they choose. When wrong input or no input was fed to IVR, they were automatically routed to agents with default skills. When the call fails to transfer to an agent, another chance was given to the caller to get connected to the agent. Need of developing this tool is to provide good automated service to customers. Extracting work from manpower is a major problem for companies. So by using this type of Interactive Voice Response System Development 191 Published By: Blue Eyes Intelligence Engineering & Sciences Publication Retrieval Number: B10451282S18/18©BEIESP interactive software the query of customer will be solved efficiently with high performance. Time is also consumed for company employees. Only thing is the customer should have the knowledge of using this interactive response system. But by using one or two times the customers will also become well versed. Because satisfying customer is a major role to enhance the business. The existing IVR software include ringba,

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 8, May 2023

voiceblade, composer, Zeotel and many more. In Composer you cannot see the log files directly and the routing process is too complex. There are many blocks which demand high level of coding. It is very difficult to combine composer with gax. Designer overcomes all these problems. It is highly advanced and very easy to connect with gax. Only drag and drop of blocks is enough and very few block demand ECMA scripts.

III. METHODOLOGY

3.1 Introduction

Now a day's traffic management in modern cities play a very important role, traffic congestion is creating the huge number of accidents from these negative effect are more acute in developing countries, so the intelligent traffic management and better access to traffic information for commuters can help the traffic congestion issues. We have designed Interactive voice response system for traffic measurement. It will help the citizens to give the information about traffic as well as pollution density. On three levels viz. Low, Medium, High. To monitor the traffic density, we will keep the IR sensor besides the roads and depends the Cout from the Arduino. In this system we have try to avoid traffic congestion on a particular road. This system will be fixed a particular location on road that means its measures density. IVRS is an important development in the field of interactive communication which makes use of the most modern technology available today. IVRS is a unique blend of both the communication field and the software field, incorporating the best features of both these streams of technology. IVRS is an electronic device through which information is available related to any topic about a particular organization with the help of telephone lines anywhere in the world. IVRS provides a friendly and faster self-service alternative to speaking with customer service agents. It finds a large-scale use in enquiry systems of railways, banks, universities, tourism, industry etc. It is the easiest and most flexible mode of interactive communication because pressing a few numbers on the telephone set provides the user with a wide range of information on the topic desired. IVRS reduces the cost of servicing customers.

Now a day's traffic management in modern cities play a very important role, traffic congestion is creating the huge number of accidents from this negative effect are more acute in developing countries, so the intelligent traffic management and better access to traffic information for commuters can help the traffic congestion issues. We have designed Interactive voice response system for traffic measurement. It will help the citizens to give the information about traffic as well as pollution density. On three levels viz. Low, Medium, High. To monitor the traffic density, we will keep the IR sensor besides the roads and depends the Cout from the Arduino. In this system we have try to avoid traffic congestion on a particular road. This system will be fixed a particular location on road that means its measures density.

3.2 System Design

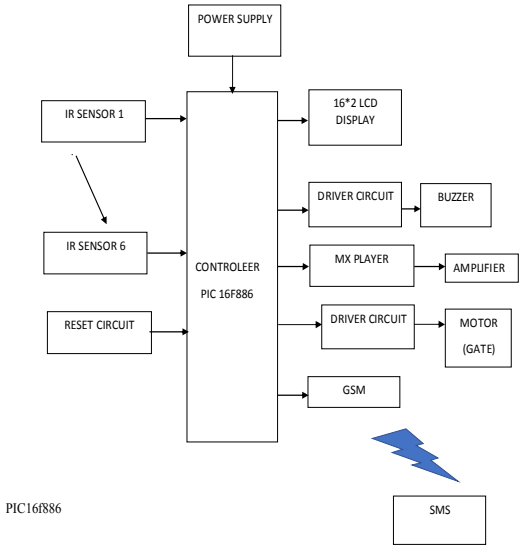


Fig 1: Block Diagram

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 8, May 2023

This powerful yet easy-to-program (only 35 single word instructions) CMOS FLASH-based 8-bit microcontroller packs Microchip's powerful PIC® architecture into a 28-pin package. The PIC16F886 features 256 bytes of EEPROM data memory, self-programming, an ICD, 2 Comparators, 11 channels of 10-bit Analog-to-Digital (A/D) converter, 1 capture/compare/PWM and 1 Enhanced capture/compare/PWM functions, a synchronous serial port that can be configured as either 3-wire Serial Peripheral Interface (SPI™) or the 2-wire Inter-Integrated Circuit (I²C™) bus and an Enhanced Universal Asynchronous Receiver Transmitter (EUSART). All of these features make it ideal for more advanced level A/D applications in automotive, industrial, appliances or consumer applications.

3.3 Working –

The user dials the phone number connected to the IVRS. The call is taken over by the IVRS after a delay of 12 seconds during which the call can be attended by the operator. After 12 seconds if the ring detector output is low, it is ensured that the phone has not been picked up by the operator. The microcontroller then switches the relay to the DTMF and sends a signal via RS 232 to the pc to run the wave file welcoming the user to the IVRS. The user is also informed of the various codes present in the system, which the user dial in order to access the necessary information. Thirty seconds are given to the user to press the codes, failure of which results in switch back of the relay. The DTMF decoder converts the codes pressed by the user to BCD. It is then pressed to the input pins of the microcontroller and is stored in the microcontroller memory. After these codes have been received, they are transmitted serially to the serial port of the PC via max232 IC. Any hardware failure in transmission falls in the lightning of a LED and the relay is switched back. The serial port of the PC is continually polled by the software used such as Visual Basics and Microsoft Agent program and the received code words are put in the text box from the input buffer. The received personal identification number (PIN) is compared with the stored data base to determine the result. The corresponding wave file is played by the sound blaster card. It is coupled to the telephone line through the Audio Amplifier, which is connected between the sound blaster and the telephone line to amplify the blaster output, drive the telephone line acts as the buffer for sound blaster.

Fig 2: microcontroller pin

Feature:

- Factory calibrated to ±1%
- Software selectable frequency range of 8 MHz to 32 kHz
- Software tunable
- Two-Speed Start-Up mode
- Fail-safe clock monitoring for critical applications
- Clock mode switching during operation for low-power operation
- Power-Saving Sleep mode
- Power-on Reset (POR)
- Selectable Brown-out Reset (BOR) voltage
- Extended Watchdog Timer (WDT) with its own on-chip RC oscillator for reliable operation
- In-Circuit Serial Programming™ (ICSP™) via two pins
- In-Circuit Debug (ICD) via two pins
- 100,000 erase/write cycle enhanced Flash program memory, typical
- 1,000,000 erase/write cycle data EEPROM memory, typical
- Data EEPROM retention > 40 years
- Self-reprogrammable under software control

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 8, May 2023

- Programmable code protection
- Peripheral Features: Device Features: 1 input only pin 25 I/O High sink/source current 25 mA Interrupt-on-pin change option
- 1 input only pin
- 25 I/O
- High sink/source current 25 mA
- Interrupt-on-pin change option
- TMR0: 8-bit timer/counter with 8-bit pre-scaler
- TMR1 enhanced: 16-bit timer/counter with pre-scaler, External Gate Input mode and dedicated low-power 32 kHz oscillator
- TMR2: 8-bit timer/counter with 8-bit period register, pre-scaler and post-scaler
- Capture/Compare/PWM (CCP) module
- Enhanced Capture/Compare/PWM (ECCP) module with auto-shutdown and PWM steering
- Master Synchronous Serial Port (MSSP) module SPI™ mode, I2C™ mode with address mask capability
- Supports RS-485, RS-232 and LIN compatibility.

3.4 Components

Microcontroller: we have studied the 8051 microcontrollers in our syllabus so we are using as a heart of this system. The Philips microcontroller division NAX has a P89V51RD2 is the 8051-family member with on-chip 64K Code Memory 256K Data ART, 2 X 16 bits timers & 6interrupts. This IC we are using in our project.

DTMF decoder: Dual tone multi-frequency signaling (DIMF) is used for telecommunication signaling over analog Telephonic lines in the voice-frequency band between telephone handsets and other Communication devices and the switching center. The version of DTMF that is used in push button telephones for tone dialing is known as touch tone. It was developed by western Electric and first used by bell system in commerce, using that name as a registered trademark.

DC Motor: A DC Motor mechanically commutated electric motor powered from direct current. The stator is stationary in space by definition and therefore the current in the rotor Switched by the commutator to also be stationary in space. This is how the relative angle between the stator and rotor magnetic flux is maintain near 90 degrees, which generates a maximum torque. Different connections of the field and armature winding provide different inherent speed torque regulation characteristics. The speed of a DC motor can be controlled by changing the voltage applied to the armature or by changing the field current. The introduction resistance in the armature circuit or field circuit allowed speed control. Modern DC motors are often controlled by power electronics systems called DC drives.

Voice IC: FEATURES –

- Embedded EPROM.
- Embedded 8-bit MCU.
- Use Can define higher sample rate or choose 5bit u-law or 8bit PCM tor better quantity, out duration will be shorter.
- Table entries are available for voice block combination.

LCD: To Display the current and predicted gear we have installed a lcd module. The module we are using is 16x2 LCD.

Power Supply: The microcontroller requires +5v supply and a GSM Module requires +12v supply so we take power form battery of the bike and regulate it to +5v using regulators 7805 and 7812 respectively.

3.5 Software Requirements

- MPLAB IDE 8.91
- EMBEDDED C LANGUAGE
- PIC KIT3 PROGRAMMER
- PCB WIZARD (LAYOUT)
- PROTEL SE 99 (CIRCUIT DIA.)

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 8, May 2023

3.5.1 Software development:

PIC is a family of microcontrollers manufactured by Microchip Technology Inc. PIC stands for Peripheral Interface Controller. It is also referred to as Programmable Interface Controller or Programmable Intelligent Computer. As all other microcontrollers PIC Microcontroller can be programmed using Assembly Language. As it is little bit difficult, we prefer High Level Languages. Many high-level language compilers are available for programming a PIC Microcontroller like MikroC, MPLAB XC8, Hi-Tech C, CCS C etc. In this tutorial we will use CCS C Compiler. CCS stands for Custom Computer Services, a Microchip PIC Microcontroller Tool Solutions company. Micro C and CCS C are the best compilers for beginners as they include a lot of built-in libraries which enable us to program a PIC Microcontroller without the deep knowledge of its internal architecture. I think CCS C is the best High Level Language Compiler for PIC Microcontroller as it is almost hardware independent. MPLAB X IDE is a software program that runs on a PC (Windows®, Mac OS®, Linux®) to develop applications for Microchip microcontrollers and digital signal controllers. It is called an Integrated Development Environment (IDE), because it provides a single integrated "environment" to develop code for embedded microcontrollers. MPLAB X Integrated Development Environment brings many changes to the PIC® microcontroller development tool chain. Unlike previous versions of the MPLAB IDE which were developed completely in-house, MPLAB X IDE is based on the open-source NetBeans IDE from Oracle. Taking this path has allowed us to add many frequently requested features very quickly and easily, while also providing us with a much more extensible architecture to bring you even more new features in the future.

Open MPLAB IDE v8.56
From the 'Projects' tab, select the first option 'Project Wizard'
Click on 'Next' in the welcome window that appears.
Select the desired PIC which you need to program or build your project on and click on 'Next'
Select the active tool suite you require; among the list of tool suites given (Usually the HI-TECH Universal tool suite is preferred, if installed)
Check if the Tool Suite contents listed contains a compiler suiting your programming needs ("HI-TECH ANSI C Compiler" in the case of a HI-TECH Universal tool suite) and click 'Next'
Create a new project file at your desired location in the desired name.
Take care that the project file is saved in the '*.map' format and click 'Next'
In the next window, add any files you desire to add to your new project, if required. else just skip this step by clicking 'Next'.
Now click 'finish' and your new project is created.
Now select the 'New' option from the 'File' tab's
Select 'Save as' option from the 'File' tab and save the new file in the same folder in which you have created the project by selecting a suitable option from 'save as type'(depending on which type of program you're doing) Go to the 'Project' tab and select the option 'Add Files to The Project' and add the file saved in the previous step you're doing programming in C
Assembly Source Files if you're doing programming in ASSEMBLY language etc...
Begin programming in the file.

3.5.2 Embedded C

Embedded C is a set of language extensions for the C Programming language by the C Standards committee to address commonality issues that exist between C extensions for different embedded systems. Historically, embedded C programming requires nonstandard extensions to the C language in order to support exotic features such as fixed-point arithmetic, multiple distinct memory banks, and basic I/O operations. Embedded C uses most of the syntax and semantics of standard C, e.g., main function, variable definition, datatype declaration, conditional statements (if, switch, case), loops (while, for), functions, arrays and strings, structures and union, bit operations, macros, etc.
Features: -
It is small and simpler to learn, understand, program and debug.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 8, May 2023

Compared to assembly language, C code written is more reliable and scalable, more portable between different platforms.
C compilers are available for almost all embedded devices in use today, and there is a large pool of experienced C programmers.
C has advantage of processor-independence and is not specific to any particular microprocessor/microcontroller or any system.
As C combines functionality of assembly language and features of high-level languages.
It is fairly efficient.
It supports access to I/O and provides ease of management of large embedded projects.

3.5.3 Audio Player - WAV Format - Micro SD Card: -

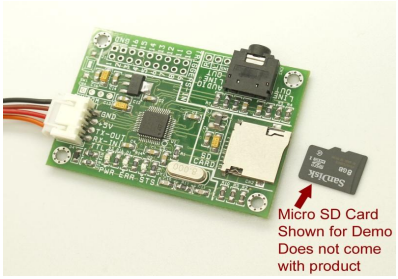


Fig 3: audio Player

Introduction
Board plays wav files from memory card giving high quality sound output. The board is controlled from an external microcontroller or PC which sends simple ASCII string telling board what to play. You can also give it external triggers if you want standalone operation.
The board is a tiny Audio-Sound module that can play back pre-stored audio files such as voice and music from a micro-SD memory card. The module supports various 8/16 bit stereo/mono uncompressed audio files having sampling rate from 8Khz to 48Khz. By using the free available software tool, any audio file (WAV, MP3, PCM, etc.) can be easily converted to supported format. The compact board takes minimal board space and is ideal for any application that required embedded audio. The board is controlled through simple serial commands. Board is a very flexible, compact and low-cost embedded audio solution for any applications. Accepts any micro-SD memory card from 128MB to 32GB. These memory cards are available at very low cost due to wide use in mobile phones.

Features

- Low-cost module for all embedded audio-sound applications
- Plays high quality audio
- Can interface with any microcontroller or PC Serial port
- Standalone operation with 16 external triggers or auto playback of file.
- Accepts any Micro SD Card from 128MB to 32GB which is FAT16 or FAT32 formatted
- Simple to use and low cost
- Indicating LEDs
- Compact size

Applications

- General purpose embedded audio and sound applications
- All voice annunciator systems.
- Automobile, Parking radar, GPS navigation systems
- Elevator, Security, Access-Control and Warning devices.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 8, May 2023

- Intelligent home automation and domestic applications
- Robotics and Industrial Control
- Traffic facilities: Toll gates, parking lots.
- Toys, learning tools, talking books and all gaming sound effects.
- MP3 player like simple devices.

3.5.4 Specifications-

- Parameter Value
- Working Voltage 5V DC regulated power supply
- Current Consumption 65 mA
- Serial Baud rate 9600 bps
- Baud rate format 8-N-1; 1 Start bit, 8 Data bits, 1 Stop Bits, No Parity
- On Board controller STM32F103C8 - 32bit ARM Cortex M3
- UART Interface Suitable for interfacing with microcontrollers UART pins operating
- at 5V or 3.3V. Note, do not connect directly to PC serial port which
- is at RS232 level, Add MAX232 for level conversion.
- Trigger Interface 16-Active low triggers with internal pull ups
- Audio Output Stereo
- Audio Resolution 16 bit
- Audio Output Level 5 mW
- Audio Sampling Rate 8 Khz to 48 Khz

Hardware Requirements –

3.6.1 Microcontroller (P89V51RD2) –

Fig 4 : microcontroller (P89V51RD2)

A microcontroller is embedded inside of a system to control a singular function in a device. It does this by interpreting data it receives from its I/O peripherals using its central processor. The temporary information that the microcontroller receives is stored in its data memory, where the processor accesses it and uses instructions stored in its program memory to decipher and apply the incoming data. It then uses its I/O peripherals to communicate and enact the appropriate action. Microcontroller features A microcontroller's processor will vary by application. Options range from the simple 4-bit, 8-bit or 16-bit processors to more complex 32-bit or 64-bit processors. Microcontrollers can use volatile memory types such as random access memory (RAM) and non-volatile memory types -- this includes flash memory, erasable programmable read-only memory (EPROM) and electrically erasable programmable read-only memory (EEPROM).

PCB -

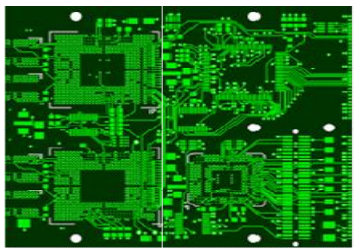


Fig 5: PCB

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 8, May 2023

A printed circuit board (PCB) mechanically supports and electrically connects electrical or electronic components using conductive tracks, pads and other features etched from one or more sheet layers of copper laminated onto and/or between sheet layers of a non-conductive substrate. Components are generally soldered onto the PCB to both electrically connect and mechanically fasten them to it.

GSM –

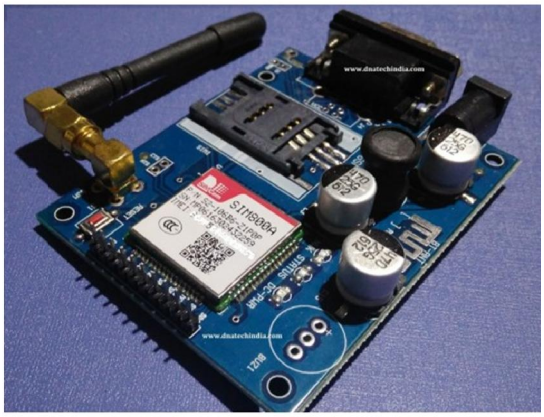


Fig 6 : Global system for mobile communication

This GSM modem has a SIM800A chip and RS232 interface while enables easy connection with the computer or laptop using the USB to Serial connector or to the microcontroller using the RS232 to TTL converter. Once you connect the SIM800 modem using the USB to RS232 connector, you need to find the correct COM port from the Device Manger of the USB to Serial Adapter. Then you can open Putty or any other terminal software and open an connection to that COM port at 9600 baud rate, which is the default baud rate of this modem.Once a serial connection is open through the computer or your microcontroller you can start sending the AT commands. When you send AT commands for example: "AT\r" you should receive back a reply from the SIM800 modem saying "OK" or other response depending on the command send. SIM800 is a complete Quad-band GSM/GPRS solution in a LGA type which can be embedded in the customer applications. SIM800H support Quad-band 850/900/1800/1900MHz, it can transmit Voice, SMS and data information with low power consumption. With tiny size of 15.8*17.8*2.4 mm, it can fit into slim and compact demands of customer design. Featuring and Embedded AT, it allows total cost savings and fast time-to-market for control application.

Features of SIM800A

- Bands: GSM 850MHz, EGSM 900MHz, DCS 1800MHz, PCS 1900MHz
- GPRS class 2/10
- Control via AT commands (3GPP TS 27.007, 27.005 and SIMCOM enhanced AT command set)
- Supply voltage 3.4-4.4V
- Coding schemes: CS-1, CS-2, CS-3, CS-4 Tx power: Class 4 (2W), Class 1 (1W)
- Small package: 23 * 23 * 3mm
- Low power: down to 1mA in sleep mode
- TCP/IP AT firmware
- Operating temperature: -40C to +85C
- Audio channels which include a microphone input and a receiver output.
- One SIM card interface.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 8, May 2023

Resistor –

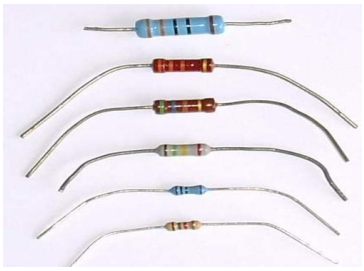


Fig 6: Resistor

Resistor is an electrical component that reduces the electric current. The resistor's ability to reduce the current is called resistance and is measured in units of ohms (symbol: Ω). If we make an analogy to water flow through pipes, the resistor is a thin pipe that reduces the water flow.

Capacitor -

Fig 7 : capacitor

Capacitor the capacitor is a component which has the ability or "capacity" to store energy in the form of an electrical charge producing a potential difference (Static Voltage) across its plates, much like a small rechargeable battery. There are many different kinds of capacitors available from very small capacitor beads used in resonance circuits to large power factor correction capacitors, but they all do the same thing, they store charge.

IR sensor –

Fig 8 : IR Sensor

IR sensor an infrared (IR) sensor is an electronic device that measures and detects infrared radiation in its surrounding environment. Infrared radiation was accidentally discovered by an astronomer named William Herchel in 1800. While measuring the temperature of each color of light (separated by a prism), he noticed that the temperature just beyond the red light was highest. IR is invisible to the human eye, as its wavelength is longer than that of visible light (though it is still on the same electromagnetic spectrum). Anything that emits heat (everything that has a temperature above around five degrees Kelvin) gives off infrared radiation.

LCD –

LCD (Liquid Crystal Display) is a type of flat panel display which uses liquid crystals in its primary form of operation. LEDs have a large and varying set of use cases for consumers and businesses, as they can be commonly found in smartphones, televisions, computer monitors and instrument panels.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 8, May 2023

Buzzer –

Fig 9 : Buzzer

Buzzer A buzzer is a small yet efficient component to add sound features to our project/system. It is very small and compact 2-pin structure hence can be easily used on breadboard, Perf Board and even on PCBs which makes this a widely used component in most electronic applications. There are two types are buzzers that are commonly available. The one shown here is a simple buzzer which when powered will make a Continuous sound, the other type is called a readymade buzzer which will look bulkier than this and will produce a Beep. Beep. Beep. Sound due to the internal oscillating circuit present inside it. But the one shown here is most widely used because it can be customized with help of other circuits to fit easily in our application.

Specifications
tone type: single
operating voltage: 3-6V DC
rated voltage: 5V DC
current consumption: 25mA
osc. frequency: 3.2kHz
sound level: 87dB
connector type: pcb
body color: gray

3.3.8 LM7805 PINOUT DIAGRAM-

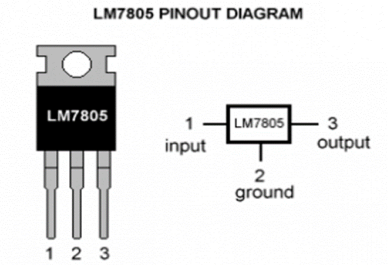


Fig 10 : LM7805 PINOUT DIAGRAM

LM7805:
Features

- Output Current up to 1A
- Output Voltages of 5, 6, 8, 9, 10, 12, 15, 18, 24V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection

Description

The MC78XX/LM78XX/MC78XXA series of three terminal positive regulators are available in theTO-220/D-PAK package and with several fixed output voltages, making them useful in a wide range of applications. Each type employs internal current limiting, thermal shut down and safe operating area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 1A output current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages and currents.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 8, May 2023

V. ADVANTAGES AND DISADVANTAGES

Advantages

- Saving of Time.
- Fuel is not waste.
- Depending on the traffic density, route can be selected.
- It will help to avoid traffic congestions.
- Ambulances can take low traffic routes depending on traffic density.
- Use of low traffic road will increase efficiency of the vehicles and thus help nation economy.
- increased fuel efficiency will also reduce pollution and thus help in protecting environment.

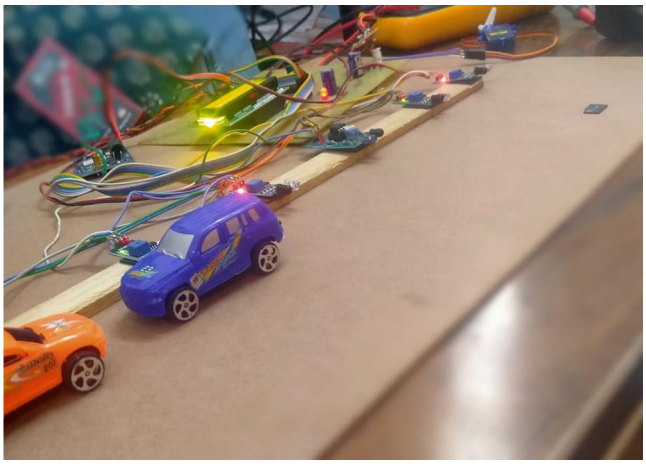
Disadvantages

- Initial investment is more.
- Separate unit required for each signal.
- Separate unit required for each signal.
- Initial investment is more.
- If a phone number for certain road is busy, than people will have to wait for call release.

VI. APPLICATION

- Tariff density management system.
- Car parking system.
- Travel Booking
- Banking trisection
- Insurance calming

VII. RESULT



VIII. CONCLUSION

By implementing IVRS SYSTEM FOR TRAFFIC DENSITY we try to avoid the traffic congestion. By getting information as the number of passing vehicles on road, decide the density range of traffic Low, Medium & High as well as we will get information about Air pollution by using CO2 sensor. This all system is control through the Arduino controller. Therefore, this is suitable, beneficial system for citizens.

REFERENCES

[1] Affleck, G., Zautra, A., Tennen, H., & Armeli, S. (1999). Multilevel daily process designs for consulting and clinical psychology: A preface for the perplexed. Journal of Consulting & Clinical Psychology, 67, 746-754

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 8, May 2023

[2] Bedford J. "The Renaissance in IVR/IWR Systems" 2015, September. Available from: http://www.almacgroup.com/wp
[3] Alan G. Smith, "Introduction to Arduino", Reference book, September 30, 2011, II Nd Edition, [CH1.1, 1.3, 4.2], pp.1-172.
[4] Alan G. Smith, Introduction to Arduino, Reference book, September 30, 2011, IInd Edition, [CH-1.1, 1.3, 4.2], pp.1-172
[5]0020Santosh A. Kulkarni, Dr. A.R.Karwankar, ―IVRS For college automation‖, International Journal of Advanced Research in Computer and Communication Engineering, Vol. 1, Issue 6, August 2012