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ijircce@gmail.com



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IOT Based Digital Notice Board

Pratibha Baban Taware¹, Neha Uddhav Jagadale², Payal Nitin More³, R.K.Gurav⁴

Bachelor of Engineering Student, Department of Electronics & Telecommunication Engineering, Dr.Daulatrao Aher College of Engineering Karad, Maharashtra, India¹

Bachelor of Engineering Student, Department of Electronics & Telecommunication Engineering, Dr.Daulatrao Aher College of Engineering Karad, Maharashtra, India²

Bachelor of Engineering Student, Department of Electronics & Telecommunication Engineering, Dr.Daulatrao Aher College of Engineering Karad, Maharashtra, India³

Assistant Professor, Department of Electronics & Telecommunication Engineering, Dr.Daulatrao Aher College of Engineering Karad, Maharashtra, India⁴

ABSTRACT: Nowadays smartphones can be used to control a host of electrical and electronic devices including motors, music systems and lights. Here we present an Arduino based sanitizer spraying and temperature checking robot, which can be controlled using an Android smartphone having ArduinoRC application installed in it. This bot receives commands from your smartphone with the help of a Bluetooth module.

Then user needs to turn on the bluetooth in the mobile. The wireless communication techniques used to control the robot is bluetooth technology. User can use various commands like move forward, reverse, stop move left, move right. These commands are sent from the Android mobile to the bluetooth receiver which is interfaced with the Arduino robot.

Android based robot has a HC-05 Bluetooth receiver unit which receives the commands and give it to the microcontroller circuit to control the motors. The microcontroller then transmits the signal to the motor driver IC's to operate the motors.

This robot consists temperature sensor which check the temperature of human between it's range and display it on LCD display for information. Infrared (IR) temperature sensors enable accurate non-contact temperature measurement in medical applications. The most common applications for this type of temperature sensor is measuring ear temperature, forehead temperature, or skin temperature.

The sanitizer spraying detects the near object or human being close to it or it's range define and it will start spraying sanitizer for some period of time

I. INTRODUCTION

This is a electronic notice board with GSM modem at receivers end. So if the user wants to display any message, he/she can send the information by SMS and thus update the scrolling LED display accordingly Examples Personal Digital Assistant and Mobile phones etc. Lower end embedded systems - Generally 8,16 Bit Controllers used with an minimal operating systems and hardware layout designed for the specific purpose An Embedded System is a combination of computer hardware and software, and additional mechanical or other parts, designed to perform a specific function. An embedded system is a microcontroller-based, software driven, reliable, real-time control system, autonomous, or human or network interactive, operating on diverse physical variables and in diverse environments and sold into a competitive and cost conscious market. An embedded system is not a computer system that is used primarily for processing, not a software system on PC or UNIX, not a traditional business or scientific application. High-end embedded & lower end embedded systems. High-end embedded system - Generally 32, 64 Bit Controllers used with OS. Examples Personal Digital Assistant and Mobile phones etc. operating systems and hardware layout designed for the specific purpose..

II. BLOCK DIAGRAM

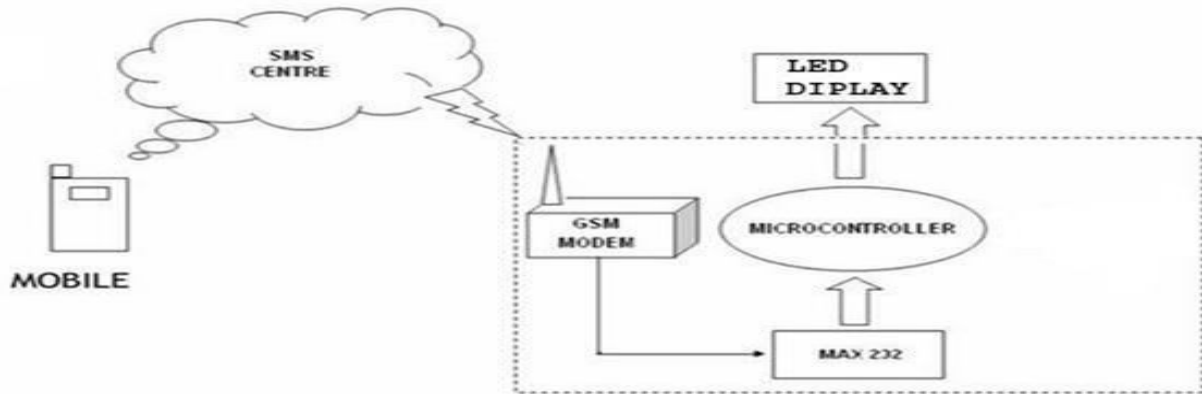


Fig1.block diagram

2.1 Block diagram description:

2.1.1 AVR -

AVR is the family of microcontroller which was developed by the ATMEL in the year 1996. These are the modified Harvard Architecture 8-bit RISC Single Microcontroller Chip. The architecture of AVR was developed Alf-Egil Bogen and Vegard Wollan. The name of the AVR is derived from the name of the people who developed it i.e. Alf-Egil Bogen Vegard Wollan RISC microcontroller, and is also known as "Advanced Virtual Risc".

2.1.2 GSM-

Early European analog cellular networks consisted of a mix of technologies and protocols that varied from country to country, meaning that phones did not necessarily work on different networks. In addition, manufacturers had to produce different equipment to meet various standards across the markets. Phase I of the GSM specifications were published in 1990. The world's first GSM call was made by the Finnish prime minister Harri Holkeri to Kaarina Suonio (mayor in city of Tampere) on 1 July 1991 on a network built by Telenokia and Siemens and operated by Radiolinja. The following year in 1992, the first short messaging service (SMS or "text message") message was sent and Vodafone UK and Telecom Finland signed the first international roaming agreement. The Global System for Mobile communication, usually called GSM, (ETSI) to describe protocols for 2G digital cellular networks used by mobile phones. GSM is a cellular network, which means that mobile phones connect to it by searching for cells in the immediate vicinity GSM is a digital mobile telephone system that is widely used in Europe and other parts of the world.



Fig2.GSM

2.1.3 Light Emitting Diode (LED) -

A light-emitting diode (LED) is a two-lead [semiconductor light source](#). It is a [pn-junction diode](#), which emits light when activated. When a suitable [voltage](#) is applied to the leads, [electrons](#) are able to recombine with [electron holes](#) within the device, releasing energy in the form of [photons](#). This effect is called [electroluminescence](#), and the color of the light (corresponding to the energy of the photon) is determined by the energy [band gap](#) of the semiconductor. An LED is often small in area (less than 1 mm²) and integrated optical components may be used to shape its [radiation pattern](#). Appearing as practical electronic components in 1962, the earliest LEDs emitted low-intensity infrared light. Infrared LEDs are still frequently used as transmitting elements in remote-control circuits, such as those in remote controls for a wide variety of consumer electronics. The first visible-light LEDs were also of low intensity, and limited to red. Modern LEDs are available across the [visible](#), [ultraviolet](#), and [infrared](#) wavelengths, with very high brightness. Early LEDs were.

2.1.4 MAX232IC

The MAX232 IC is used to convert the TTL/CMOS logic levels to RS232 logic levels during serial communication of microcontrollers with PC. The controller operates at TTL logic level (0-5V) whereas the serial communication in PC works on RS232 standards (-25 V to + 25V). This makes it difficult to establish a direct link between them to communicate with each other. The intermediate link is provided through MAX232. It is a dual driver/receiver that includes a capacitive voltage generator to supply RS232 voltage levels from a single 5V supply. Each receiver converts RS232 inputs to 5V TTL/CMOS levels. These receivers (R1 & R2) can accept ±30V inputs. The drivers (T1 & T2), also called transmitters, convert the TTL/CMOS input level into RS232 level.

The transmitters take input from controller' s serial transmission pin and send the output to RS232' s receiver. The receivers, on the othe transmission pin of RS232 serial port and give serial output to microcontroller' s receiver pin. MAX232 needs four external capacitors whose value ranges from 1µF to 22µF r hand, take input from transmission pin of RS232 serial port and give serial output tomicrocontroller' s receiver pin. MAX232 needs four external capacitors whose value ranges from 1µF to 22µF.

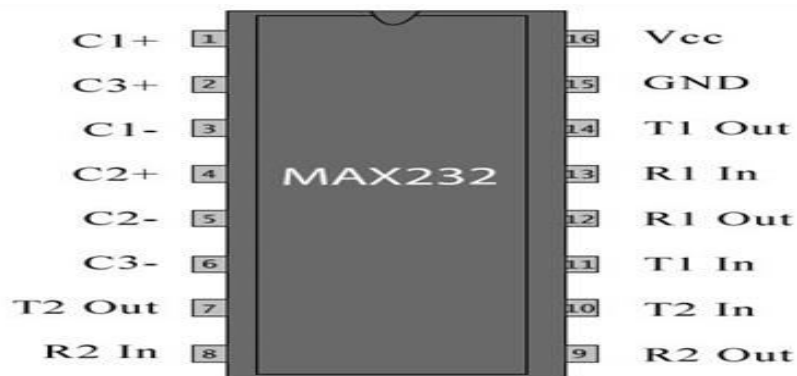


Fig 3. MAX232IC

2.1.5 MICROCONTROLLER(8051) -

8051 microcontroller is designed by Intel in 1981. It is an 8-bit microcontroller. It is built with 40 pins DIP (dual inline package), 4kb of ROM storage and 128 bytes of RAM storage, 2 16-bit timers. It consists of are four parallel 8-bit ports , which are programmable as well as addressable as per the requirement. An on-chip crystal oscillator is integrated in the microcontroller having crystal frequency of 12 MHz. Lets us now discuss the architecture of 8051 Microcontroller. In the following diagram, the system bus connects all the support devices to the CPU. The system bus consists of an 8-bit data bus, a 16-bit address bus and bus control signals. All other devices like program memory, ports, data memory, serial interface, interrupt control, timers, and the CPU are all interfaced together through the system bus.

2.1.6 POWER SUPPLY

A **power supply** is an electrical device that supplies **electric power** to an **electrical load**. The primary function of a power supply is to convert **electric current** from a source to the correct **voltage**, **current**, and **frequency** to power the load. As a result, power supplies are sometimes referred to as **electric power converters**. Some power supplies are separate standalone pieces of equipment, while others are built into the load appliances that they power. Examples of the latter include power supplies found in **desktop computers** and **consumer electronics** devices. Other functions that power supplies may perform include limiting the current drawn by the load to safe levels, shutting off the current in the event of an **electrical fault**, power conditioning to prevent **electronics noise** or **voltage surges** on the input f storing energy so it can continue to power the load in the event of a temporary interruption in the source power (**uninterruptible power supply**).

2.1.7 FLOW CHART -

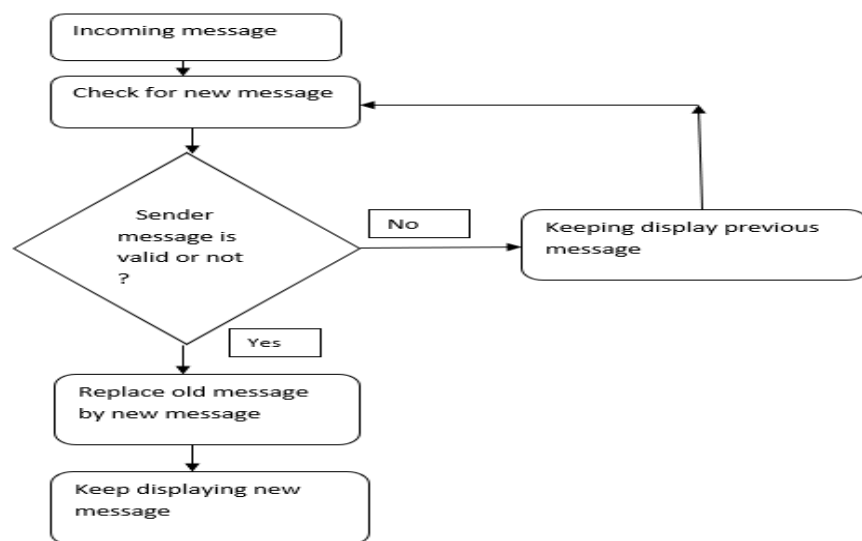


Fig.4 . Flow chart of digital notice board

III. WORKING

IOT based digital notice board is easy to install and use .speech controlled rolling display is really helpful for disable people or handicapped people. IOT connects things to the internet . so,we can access the digital display board from anywhere across the world through internet .IOT based digital display board overcome the disadvantages of existing noticing system .multiple users are authorized to update notice on the digital display board . save time ,energy and environment. LED display system is aimed at the college and universities for displaying day-to-day information continuously or at regular intervals during the working hours .being GSMbased system; it offers flexibility to display flash news or announcement faster than the programmable system. The LED display system mainly consists of a receiver and a display board which can be programmed from an arduino. It receives the message through serial port and display the desired information after necessary code conversion. It can serve as an electronic notice board and display the important notice without any delay thus avoiding the latency. The LED display is easy to expand and it allows the user to add more display at any time and at any location depending on the requirement .

IV. CONCLUSIONS

This paper gives a clear description of both hardware and software of IOT Based Digital Notice Board. Retrieving the advantages of Internet of Things (IOT), it is one of the useful technologized commodity. Digital Notice board is a systematic alignment of portraying desired information that directs through a proper channel, helps the user to reach their destinations that may be in any area .Designing of notice board may be a simple task but compiling it with a high-level language will charge a bit brilliance. With the help of Arduino Board a developed web application is provided with a well secured system. In thispaper we proposed modes which monitors the crowdiearea When compared to the past, where paper notices were crucial, we endowed this digital



notice board due to vexation of paper work. I surely expect that this kind of Display board rules the forward decades and keeps a good sound in technology.

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