Smart Safe Alert for Passengers Using IOT

A. Gokilavani[1], R.Atchaya[2], M. Logappriya[3], A. Priyanka[4], R. Sathish Kumar[5]

[1]*Associate Professor, Jai Shriram Engineering College, Tirppur, Tamil Nadu, India*
[2,3,4,5]*Student, Jai Shriram Engineering College, Tirppur, Tamil Nadu, India*

***Abstract*: "Smart Safe Alert for Passengers Using IOT" In India 10 million are depend only on public transport service to achieve effective utilization of resources in the transport service. we proposed a project to address the issues of public transport system. smart safe alert system is specially designed for the passengers using internet of things. It has an inbuilt application which provides emergency support to the passengers. Bus is traveled through a number of bus stops. Many times buses change their routes and new bus stop names need to be configured in RF tag. So here we propose a speaking bus stop indicator system using Arduino Uno .We use RF id based circuits which will be placed on bus stops. This system does not need any bus stop name or route names to be stored in the bus system. Each bus stop system has a code and our receiver circuitry can be fed with as well a edited of existing bus stop names using a RF tag (RF transmitter). Each RF tag constantly transmits a unique bus stop code. When the bus comes in range of a bus stop the code is picked up bus system and it automatically feeds in to controller. the controller process this information to find out the name of corresponding bus stop and speaker to provider an automated Arduino based speaking bus stop indicator system.**

I. INTRODUCTION

Government providing buses for the people but physically challenged (deaf) people cannot survive through these current system. So we introduce the bus stop remainder with digital board and speaker and major part of our project is the detection of drowsiness for the driver that makes the passengers secure. And the bus stops makes record by the bus depot if the driver got drowsy the latest stop will informed to depot and it will easy to detect then makes better alert for the transport corporation. With an involvement of accident alert system through press button for the emergency situation. Following specification involved in our project.

- Bus stop remains using LCD Display.
- Bus stop remains using Speaker.
- Emergency alert system.
- Drowsiness detection and alert system

II. HARDWARE AND SOFTWARE SPECIFICATIONS

2.1 Internet Of Things: The Internet of Things (IoT) is the network of physical objects-devices, instruments, vehicles, buildings and other items embedded with electronics, circuits, software, sensors and network connectivity that enables these objects to collect and exchange data. The Internet of Things allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency and accuracy. The concept of a network of smart devices was discussed as early as 1982, with a modified Coke machine at Carnegie Mellon University becoming the first internet-connected appliance, able to report its inventory and whether newly loaded drinks were cold. Kevin Ashton (born 1968) is a British technology pioneer who is known for inventing the term "the Internet of Things"to describe a system where the Internet is connected to the physical world via ubiquitous sensors.IoT is able to interact without human intervention. Some preliminary IoT applications have been already developed in healthcare, transportation, and automotive industries. IoT technologies are at their infant stages; however, many new developments have occurred in the integration of objects with sensors in the Internet. The objective of this paper is to give general concept of IOT, the architecture and layers in IOT, some basic terms associated with it and services provided.

2.2 Arduino Uno:

Arduino is an open-source electronics platform based on easy-to-use hardware and software.

2.2.1 Overview:

Arduino Uno is a microcontroller board based on 8-bit ATmega328P microcontroller. Along with ATmega328P, it consists other components such as crystal oscillator, serial communication, voltage regulator, etc. to support the microcontroller. Arduino Uno has 14 digital input/output pins (out of which 6 can be used as PWM outputs), 6 analog input pins, USB connection, A Power barrel jack, an ICSP header and a reset button.

*2.2.2 How to use Arduino Board***:**

The processor of the Arduino Board uses Harvard Architecture for which the program code and program data have separate memory. The memory of it is divided into two namely program memory and data memory. The data will be stored in the data memory whereas the program code will be stored in the flash program memory.

For ex; The Atmega328 microcontroller has 32kb of flash memory, 2kb of SRAM, 1kb of EPROM and operates at 16MHz clock speed. Some of the other basic functions of Arduino are:

- Digital read pin reads the digital value of the given pin.
- Digital write pin is used to write the digital value of the given pin.
- Pin mode pin is used to set the pin to I/O mode.
- Analog read pin reads and returns the value.
- Analog write pin writes the value of the pin.
- Serial. Begins pin sets the beginning of serial communication by setting the rate of bit.

8-bit AVR RISC-based microcontroller

- 32KB program flash memory
- 1KB EEPROM
- 2KB SRAM
- 20MHz max clock frequency
- 23 GPIO pins
- 32 general purpose registers
- 3 timers/counters
- Internal & external interrupts
- USUART
- 2-wire serial interface
- 6-channel 10-bit A2D

*UBI DOTS***:**

Turns sensor data into information that matters for bussiess-decisions. Machine-to-machine interactions educational reserch and economization of global resources.

2.3 LCD Working

Nowadays, we always use the devices which are made up of LCDs such as CD players, DVD players, digital watches, computers, etc. These are commonly used in the screen industries to replace the utilization of CRTs.

Cathode RayTubes use huge power when compared with LCDs, and CRTs heavier as well as bigger**.**

These devices are thinner as well power consumption is extremely less**.** The LCD 16×2 working principle is, it blocks the light rather than dissipate**.** This article discusses an overview of LCD 16X2, pin configuration and its working**.**

*What is a Liquid Crystal Display***:**

2.3.1 What is the LCD 16×2? **:**

The term LCD stands for liquid crystal display. It is one kind of electronic display module used in an extensive range of applications like various circuits & devices like mobile phones, calculators, computer TV sets, etc. These displays are mainly preferred for multi-segment light-emitting diodes and seven segments.

The main benefits of using this module are inexpensive; simply programmable, animations, and there are no limitations for displaying custom characters, special and even animations, etc.

*2.3.2 Registers of LCD***:**

A 16×2 LCD has two registers like data register and command register.

The RS **(**register select**)** is mainly used to change from one register to another**.** When the register set is **'**0**'**, then it is known as command register**.**Similarly, when the register set is **'**1**'**, then it is known as data register**.**

A. Command Register:

The main function of the command register is to store the instructions of command which are given to the display**.**

So that predefined tasks can be performed such as clearing the display, initializing, set the cursor place, and display control. Here commands processing can occur within the register.

B. Data Register:

The main function of the data register is to store the information which is to be exhibited on the LCD screen. Here, the ASCII value of the character is the information which is to be exhibited on the screen of LCD.

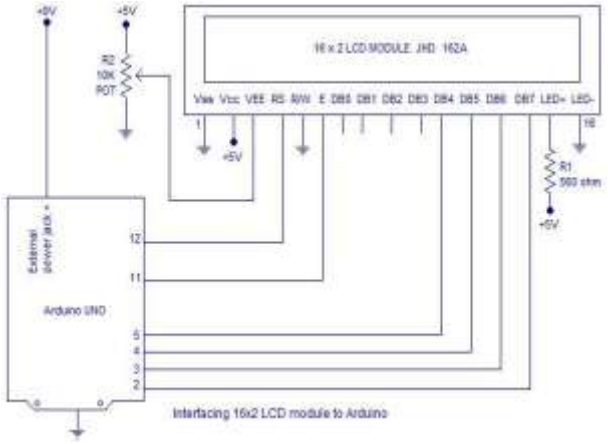
Whenever we send the information to LCD, it transmits to the data register, and then the process will be starting there. When register set =1, then the data register will be selected.

C.LCD Interfacing with the Arduino Module:

The following circuit diagram shows the liquid crystal display with the Arduino module. From the circuit diagram, we can observe that the RS pin of the LCD is connected to the pin 12 of the Arduino.

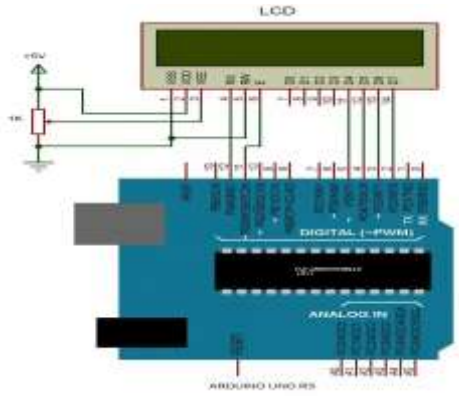
The LCD of R/W pin is connected to the ground.The pin 11 of the Arduino is connected to the enable signal pin of LCD module.

The LCD module & Arduino module are interfaced with the 4-bit mode in this project. Hence there are four input lines which are DB4 to DB7 of the LCD. This process very simple, it requires fewer connection cables and also we can utilize the most potential of the LCD module.



The digital input lines (DB4-DB7) are interfaced with the Arduino pins from 5-2. To adjust the contrast of the display here we are using a 10K potentiometer. The current through the back LED light is from the 560-ohm resistor.

The external power jack is provided by the board to the Arduino. Using the PC through the USB port the Arduino can power. Some parts of the circuit can require the +5V power supply it is taken from the 5V source on the Arduino board.



The use of Radio Frequency Identification (RFID) technologies is growing. Many different applications are implemented in various sectors, and used for very different purposes. RFID enables wireless data collection by readers from electronic tags attached to or embedded in objects, for identification and other purposes. This article describes the construction of a simple Arduino RFID Access control DIY (Do It Yourself) Project using Arduino UNO and a RFID reader module (EM-18) to control an LED and a Relay.

First of all upload this simple program to Arduino Uno using the IDE:

```
int count = 0;

void setup(){

Serial .begin(9600);}

void loop(){

if(Serial.available())

{count = 0; // Reset count to zero// Keep reading Byte by Byte from the Buffer till the Buffer is empty

{

char input = Serial.read();

Serial.print(input);

count++;delay(5); //

}

Serial.println();

Serial.print("Tag Length : ");

Serial.print(count);

Serial.println("Bytes");

}}
```

2.4 ESP8266WiFi library :

ESP8266 is all about Wi-Fi. If you are eager to connect your new ESP8266 module to a Wi-Fi network to start sending and receiving data, this is a good place to start. If you are looking for more in depth details of how to program specific Wi-Fi networking functionality, you are also in the right place.

The Wi-Fi library for ESP8266 has been developed based on ESP8266 SDK, using the naming conventions and overall functionality philosophy of the Arduino WiFi library. Over time, the wealth of Wi-Fi features ported from ESP9266 SDK to esp8266 / Arduino outgrew Arduino WiFi library and it became apparent that we would need to provide separate documentation on what is new and extra.

you are already familiar how to load the Blink.ino sketch to an ESP8266 module and get the LED blinking. If not, please use

this tutorial by Adafruit or another great tutorial developed by Sparkfun

2.4.1 Client **:**

The Client class creates clients that can access services provided by servers in order to send, receive and process data.

axTLS Client Secure - DEPRECATED

The following section details axTLS, the older TLS library used by the project. It is still supported, but additional fixes and documentation will generally not be undertaken. See the following section for the updated TLS client object.

*2.4.2 Server***:**

The Server Class creates servers that provide functionality to other programs or devices, called clients.Clients connect to sever to send and receive data and access provided functionality.

*2.5 5V RELAY***:**

*2.5.1 Equivalent Relays***:**

3V Relay, 12V Relay, 1-channel Relay module, 4-channel Relay Module.

*2.5.2 How to use a Relay***:**

Relays are most commonly used switching device in electronics. Let us learn how to use one in our circuits based on the requirement of our project.

Before we proceed with the circuit to drive the relay we have to consider two important parameter of the relay. Once is the **Trigger Voltage**, this is the voltage required to turn on the relay that is to change the contact from Common->NC to Common->NO. Our relay here has 5V trigger voltage, but you can also find relays of values 3V, 6V and even12V so select one based on the available voltage in your project. The other parameter is your **Load Voltage & Current**, this is the amount of voltage or current that the NC, NO or Common terminal of the relay could withstand, in our case for DC it is maximum of 30V and 10A. Make sure the load you are using falls into this range.You can also notice a diode connected across the coil of the relay, this diode is called the **Fly back Diode**. The purpose of the diode is to protect the switch from high voltage spike that can produced by the relay coil. As shown one end of the load can be connected to the Common pin and the other end is either connected to NO or NC. If connected to NO the load remains disconnected before trigger and if connected to NC the load remains connected before trigger.

*2.6 Emergency Module***:**

This module is the safest module in the bus. We use push button to be o request emergency assistance from local security(Near by police station) and emergency service.installed in buses tor property shared by all the independent products on which the prediction is to be done. Any attribute could be a feature, it is useful to the model.

*2.7 Accident Prevention***:**

Most of the drivers are unaware of driving the buses during travel time.This module is used to prevent accidents that occur when drivers drives the buses in sleep.While driving we can use eye sensor to capture and detect the drivers eyes to stop the bus.

III. CONCLUSION

Drivers should Monitering by the alertment of IOT system and also ensure the safety of the passengers by the safe alert system to the depot through the Up dation of last location and make it an immediate action.

IV. FURTHER ENHANCEMENT

- Location can be strengthened by the GPS system.
- Image processing verification can also be improved.
- Face reorganization can be used to verify the driver drowsing system**.**

REFERENCES

[1]. M. A. HANNAN, A. M. MUSTAPHA, A. HUSSAIN and H.BASRI,"Intelligent Bus Monitoring and Management System", WCECS 2012, October24-26, 2012, San Francisco, USA

[2]. Ben Ammar Hatem, Hamam Habib, "Bus Management System Using RFIDin WSN", European and Mediterranean Conference on Information Systems 2010

[3]. AkshaBal, "RFID BASED IDENTIFICATION SYSTEM", April 2009

[4]. LV ZHIAN HU HAN, "A Bus Management System Based on ZigBee and GSM/GPRS", 201O International Conference on Computer Application and System Modeling (ICCASM 2010)

[5]. Umar Farooq, Tanveer ul Haq, Senior Member IEEE, MuhammadAmar, Muhammad Usman Asad, Asim Iqbal, "GPS-GSM Integration for Enhancing Public Transportation

Management Services", 2010 Second International Conference on Computer Engineering and Applications

[6]. José I. San Jose, José M. Pastor, R. Zangróniz, Juan J. de Dios, "RFIDTracking for urban transportation using EPCGlobal-based WebServices", 2013 27th International Conference on Advanced Information Networking andApplications Workshops

[7]. Teki, Naga. Padmaja, Tejavath. Renuka, Anantha. Sushmitha. Srilakshmi,"Design of GSM Based Smoke Detection and Temperature Monitoring System",International Journal of Engineering Research & Technology (IJERT) Vol. 2Issue 4, April – 2013 ISSN: 2278-0181

[8]. Ding Yi, "Electronic Bus Stop Boards Promote the Intelligent Constructionof Urban Public Transportation", 2010 International Conference on ComputerDesign And Applications (ICCDA 2010)

[9]. Shing Tenqchen, Foun-Shea Chang, Yong-Chun, Lee, Ching-Hung Wang,Chao-Hao Lee, Shen-Lung Tung, "Helping to Collect Traffic Information Using

[10]. RFID Tag Implemented on Urban-bus for Traffic Information", Proceedings ofAsia-Pacific Microwave Conference 2006

[11]. Wiroon Sriborriruxl, Panuwat Danklangl and Nakorn Indra-Payoong, "TheDesign of RFID Sensor Network for Bus Fleet Monitoring"

[12]. ishah Mahani Mustapha, MA Hannan, Aini Hussain and Hassan Basri,"UKM Campus Bus Monitoring System Using RFID and GIS", 2010 6th International Colloquium on Signal Processing & Its Applications (CSPA)

[13]. ZhuY, Liu Yanjuan, "Intelligent Bus-Mounted System Based On RFID",2012 International Conference on Computer Science and Information Processing (CSIP)

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