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## Modern Public Transport System

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**Abstract:** *Take friend solution mainly proposed to overcome problems in traditional ticketing method like transferring tickets from one person to another, sharing of tickets, to avoid confirmation i.e. mesh between the supervisors and passengers and safer handling of data. This system introduces smart card technology which entirely eliminates the need of paper tickets. Ticket friendly machine holds the details the details about the events provided by promoters so that consumer can purchase tickets in their personal account using smart cards, time and money are precious every time we strive to find the best way to avoid issues. When incomes to travel by bus without carrying change, this proposed technique need only one identification card. In transportation, smart cards would become the next fare payment media replacing or supplementing cash, tokens, and passes. Smart cards or touch and go cards is a chip card that contains an embedded computerized chip which is either a memory or microprocessor that stores and transfer data which improve the convenience and security of any transaction and provides proof storage of user and account identity. Once if the passenger inserts the smart card into tickets friend machine the smart card reader is smart card contains pay model terms, which check from the amount in the account. Bus announcement system will be as per railway transport system. In the bus we are going to install RF transmitter which will transmit a signal to the RF Receiver. The RF receivers receive the signal & announce the bus distance from bus stop.*

**Keywords:** *Bus Transport, E-Ticket, Smart Card Etc.*

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### INTRODUCTION

This research paper is based on the concept of automatic ticket vending machine by using a smart card reader. In order to ensure the passenger journey with no quarrels and mesh we employ this ticket friend solution that replaces the traditional paper ticketing by smart card reader tickets and vouchers vended through automated machine using smart cards, which improves the vantage and security of the transaction. We replace the traditional ticket system by a smart card that contains all details of the user including bank account information which is similar to the ATM card. This automatic ticket vending machine consists of the display which shows the availability of buses for all destinations. The person can find out the destination place by pressing the buttons available on that machine with the help of keypad. If the location is selected then the availability of buses along with the time is displayed. By using this we can minimize manpower in buses along with the time is displayed. By using this we can minimize manpower in buses and ticket counters predetermining of the bus can be done to find the destination exactly safe journey can be assured without any disturbance and system based booking for easy usage. On Arrival of the bus in the stop, an announcement of that stop name is done automatically. This is helpful fir bind and illiterate people also for a person who is new in the city. Bus announcement system will be as per railway transport system. In the bus we are going to install RF transmitter which will transmit a signal to the RF Receiver.

### LITERATURE SURVEY

The research "K. Bhaskar" have suggested in International Journal of Professional Engineering Studies that by this paper proposes the solution for improving the services provided by the transport. The research M.Bhuvaneshwari<sup>1</sup>, S.Sukhumar<sup>2</sup>, N.Divya<sup>3</sup>, S.Kalpanadevi<sup>4</sup> N.SuthanthiraVanitha<sup>5</sup> Student, Department of Electrical & Electronics Engineering, Knowledge Institute of Technology, Salem, India Student, Department of Electrical & Electronics Engineering, Knowledge Institute of Technology, Salem, India Assistant Professor, Department of Electrical & Electronics Engineering, Knowledge Institute of Technology, Salem India<sup>3</sup> Associate Professor Department of Electrical & Electronics Engineering, Knowledge Institute of

Technology Salem India4 Professor & Head Department of Electrical & Electronics Engineering Knowledge Institute of Technology Salem India have suggested in their paper “Embedded System Based Automatic Ticket Vending Machine for Modern Transport System” that by this research paper is based on the concept of automatic ticket vending machine by using RFID and Zigbee technique. In order to ensure the passenger journey with no quarrels and mesh we employ this ticket friend solution that replaces the traditional paper ticketing by RFID tickets and vouchers vended through automated machine using smart cards which improve the convenience and security of the transaction. In this automated system, we replace the traditional ticket system by a smart card that contains all details of the user including bank account information. Which is similar to the ATM card. This automatic ticket vending machine consists of the display which shows the availability of buses for all destinations. The person can find out the destination place by pressing the buttons available on that machine with the help of zigbee. If the people confirm to go in a certain bus, by using the smart card the person can receive the tickets employing GSM technique for that PIC micro-controller is already per-programmed to do the operations. We can minimize manpower in Pune 70.12% & Nasik 45%.

## METHODOLOGY

### Module 1

#### Block Diagram:

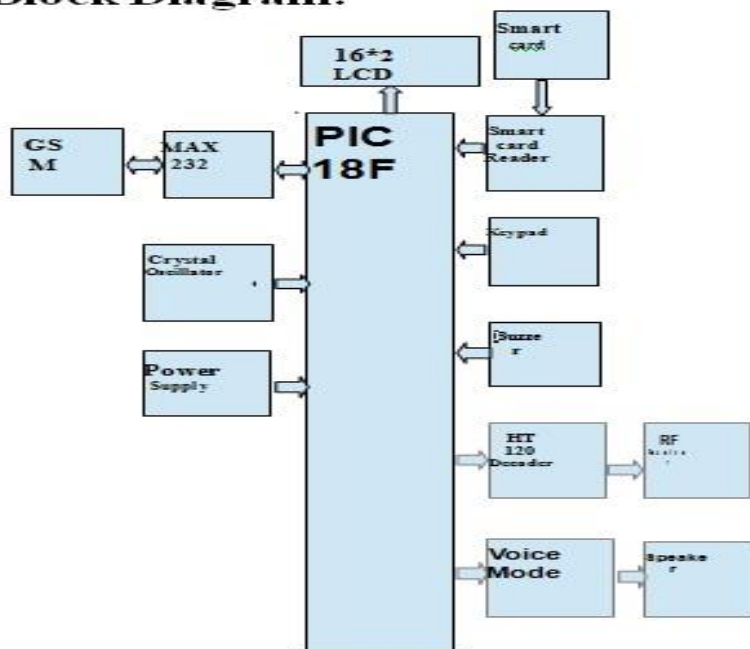


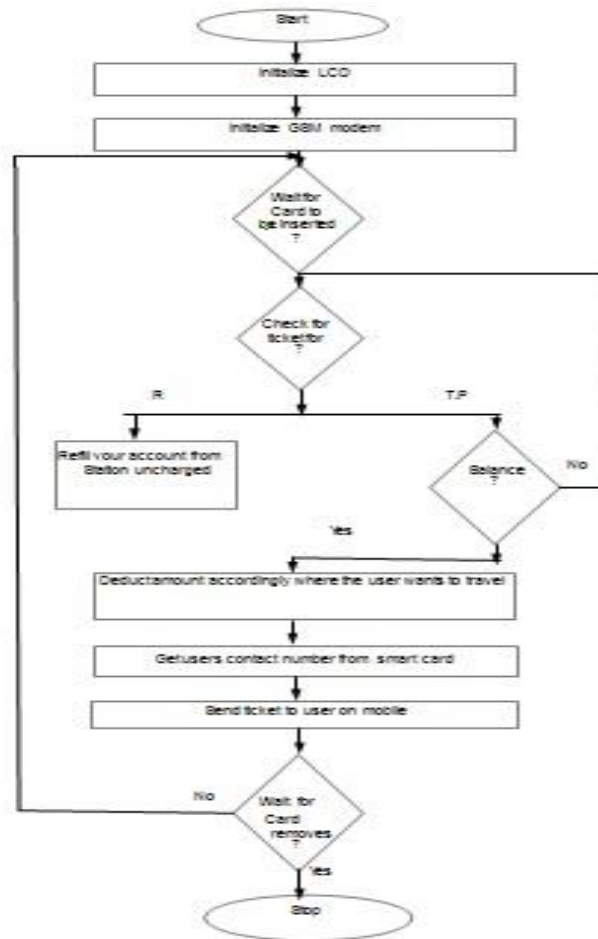
Fig1: Ticket vending machine

### Algorithm

Go for ticketing system:

1. Start
2. Initialize LCD
3. Initialize GSM Modem
4. Wait for card to be inserted
5. Get card number & amount
6. Display details on LCD
7. Get destination from the user
8. Deduct amount accordingly to where the user has to travel
9. Get users contact number from the smart card
10. Send ticket (SMS) to the user on the mobile
11. Wait for card to be removed
12. Go to step 4
13. stop

**Flow Chart**



**Module 2**

**Block Diagram:**

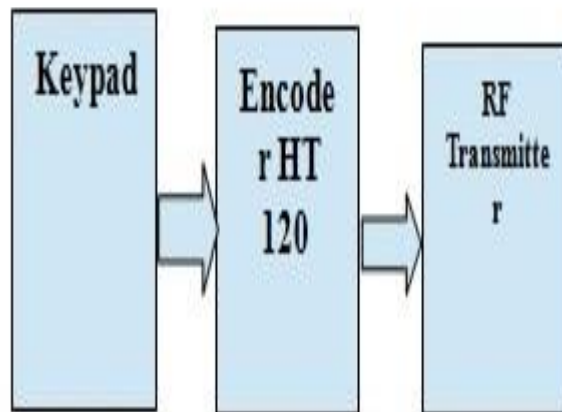


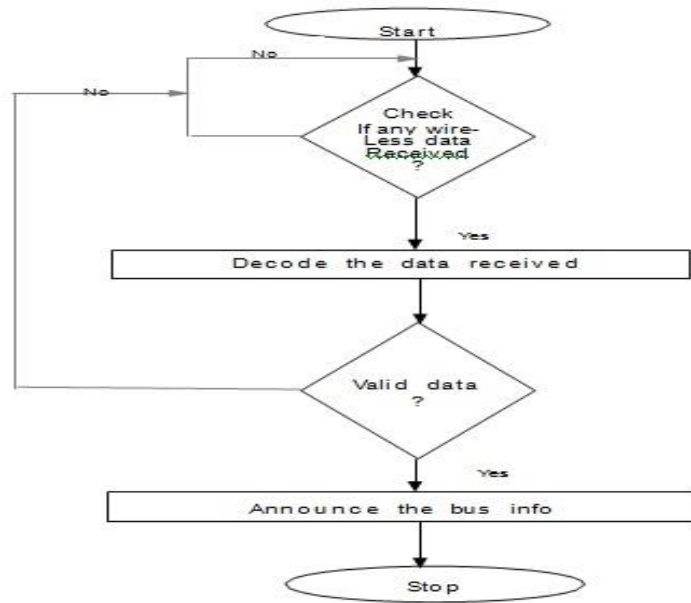
Fig.2 BUS announcement in BUS

**Algorithm:**

Go for announcement

1. Start
2. Check if any wireless data received.
3. If no data received then go to step 3.
4. Decode the data received.
5. If no data valid data then go to 3.
6. Announce the bus information.
7. Go to step 3.
8. Stop.

## Flow Chart



### Hardware specification

The following hardware components are used in building the entire system.

#### A. Micro-controller :( PIC18F)

Features of the PIC18 microcontroller

- 8-bit CPU
- 2 MB program memory space
- 256 bytes to 1KB of data EEPROM
- Up to 3968 bytes of on-chip SRAM
- 4 KB to 128KB flash program memory

PWM, real-time interrupt, and watchdog timer

- Serial communication interfaces: SPI, I2C, and CAN
- Background debug mode (BDM)
- 10-bit A/D converter
- Memory protection capability
- Instruction pipelining
- Operate at up to 40 MHz crystal oscillator.

#### B. GSM Module

GSM/GPRS TTL -Modem is SIM900 Quad-band GSM / GPRS device works on frequencies 850MHZ, 900MHZ, 1800MHZ, and 1900MHZ. It is very compact in size and easy to use as plug-in GSM Modem. The Modem is designed with 3V3 and 5V DC TTL interfacing circuitry which allows User to directly interface with 5V Microcontrollers as well as 3V3 Micro-controllers the baud rate can be configurable from 9600-115200 bps through AT commands. This GSM/GPRS TTL Modem has internal TCP/IP stack to enable User to connect to the internet through GPRS feature. The modem can be an interface with a Micro-controller using USART feature (serial communication).

Features

1. Quad Band GSM: 850 / 900 / 1800 / 1900 MHz
2. Built in RS232 to TTL or vice versa Logic Converter (MAX232)
3. Configurable Baud Rate
4. SMA (Sub Miniature version A) connector with GSM L Type Antenna
5. Built in SIM (Subscriber Identity Module) Card holder
6. Built in Network Status LED
7. Inbuilt Powerful TCP / IP (Transfer Control Protocol / Internet Protocol) stack for internet data transfer through GPRS (General Packet Radio Service)
8. Audio Interface Connectors (Audio in and Audio out)
9. Most Status and Controlling pins are available
10. Normal Operation Temperature : -20 °C to +55 °C
11. Input Voltage : 5V to 12V DC

### **C. SMART CARD**

The smart card is one of the latest additions to the world of information technology. The smart card has a microprocessor or memory chip embedded. The chip stores electronic data and programs that are protected by advanced security features. Coupled with a reader, the smart card has the processing power to serve many different applications. Smart cards currently are used in transportation, banking, and healthcare transactions and soon to be used in Internet applications. Smart cards are already being used in Japan and Europe and are gaining popularity in the U.S. In fact, the development of the smart card industry is very fast. The references listed at the end are important for this paper to the same extent. For further details, please refer to the corresponding reference. A smart card is a credit card size plastic card with an embedded microchip. There are two basic types of smart cards: contact and contact-less. Contact cards have a one-centimetre diameter gold plated pad that has 8 contacts on it. These contacts are in turn wired to a microchip underneath the pad. The microchip can be a memory only chip or a microprocessor chip containing memory and a CPU. Memory cards are used mostly as telephone cards whereas microprocessor cards can be used for multiple applications on the same card. Although both cards can have stored value and stored data areas the microprocessor card can in addition process the data since it contains a CPU, RAM and in Reading Only Memory (ROM)

Features:

- Build-in PKI for remote management
- Key backup, restore and migration
- Up to 2048 bit RSA and 320
- Public Key Authentication
- Support for embedded systems (IoT)
- Secure messaging with asymmetric Authentication
- Common Criteria certified cryptography
- Open Source middleware and tools
- n-of-m Threshold Authentication

### **D. MAX232**

The MAX232 is an integrated circuit first created in 1987 by Maxim integrated Products that converts signals from a TIA-232 (RS-232) serial port to signals suitable for use in TTL-compatible digital logic circuits. The MAX232 is a dual transmitter/receiver that typically is used to convert the RX, TX, CTS, and RTS signals. The drivers provide TIA-232 voltage level outputs from a single 5-volt supply by on-chip charge pumps and external capacitors. This makes it useful for implementing TIA-232 in devices that otherwise do not need any other voltages. The receivers reduce TIA-232 inputs, which may be as high as  $\pm 25$  volts, to standard 5 volt TTL levels.

The MAX232 replaced an older pair of chips MC1488 and MC1489 that performed the similar RS-232 translation. The MC1488 transmitter chip required 12 volts and -12-volt power, and MC1489 quad receiver chip required 5-volt power. The main disadvantages of this older solution were the  $\pm 12$ -volt power requirement, only supported 5-volt digital logic, two chips instead of one.

### **E. LCD DISPLAY**

LCD (Liquid Crystal Display) is screen AN electronic display module and find a wide range of applications. A 16x2 LCD display is very commonly used in various devices and circuits. These modules are preferred seven segment display and other multi-segment LEDs. The reasons being LCD is economical, easily programmable no limitation a 16x2 LCD means it can display 16 characters per line and there are 2 such lines. This LCD has two registers Command and Data. Command register store the command instructions given to the LCD. A command register is an instruction given to LCD to do a predefined task like initializing it clearing its screen, setting the cursor position and controlling display. The data register stores the data to be displayed on the LCD. The data register is the ASCII value of the character to be displayed on the LCD.

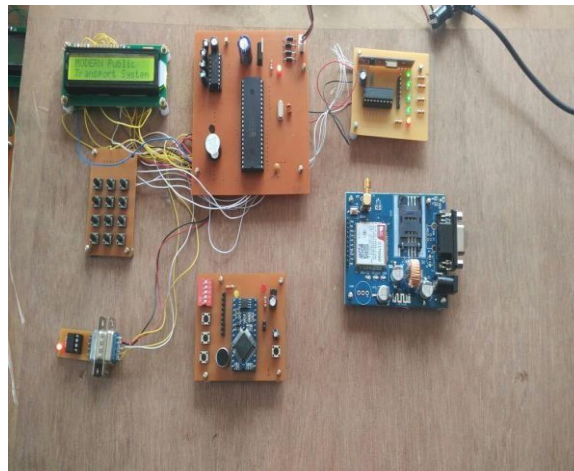
### **F. Buzzer**

A buzzer is a signaling device. Uses of buzzers and beepers include alarm devices, timers, and confirmation of user input. It most commonly consists of a number of switches or sensors connected to a control unit that determines if and which button was pushed or a p reset time, and usually illuminates a light on the appropriate button or control panel and sounds a warning in the form of a continuous or intermittent buzzing or beeping sound. This device was based on an electromechanical system which was identical to an electric bell without the metal gong. These units were anchored to a wall or ceiling and used the ceiling or wall as a sounding board. Another implementation with some implements a circuit to make the A current into a noise loud enough to drive a loudspeaker and hook this circuit up to a cheap speaker. Nowadays, it is more popular to use a ceramic-based

piezoelectric sounder like an on alert which makes a high pitched tone. Usually, these were hooked up to driver & circuits which varied the pitch of the sound or pulsed the sound on and off.

### PERFORMANCE ANALYSIS

In this result, we are going to show the module and the information shown on LCD display. In this result, we are also going to show voice module that will perform announcement of the bus.



### CONCLUSION

In this paper, the transport management, designed and developed a low-cost system based on the integration of GSM and SMART CARD data is described. The system consists of the different module which is linked wirelessly with GSM modem. Cost effective SMS service of GSM network is used for the transfer of data between the modules. A new service to facilitate the people who use public transport for traveling is introduced inside the cities. The service provides the user with current destination and ticket information of desired buses based on which the user can adjust his schedule accordingly. The service therefore completely minimizes the need of waiting for the buses thus saving lot of time. For the passengers, those who are not utilizing the service display are installed at the bus stop to let them know the bus destination coming towards that stop. The system is efficient in handling the emergency situation in case some kind of technical fault occurred in the bus the operator at bus terminal is informed and the departure time between the buses is reduced.

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