BUS TICKET AUTOMATION

Project Reference No.: 42S_BE_3000

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Keywords: Arduino Mega, RFID Card, IR Sensor, DC Motor, Motor Driving circuit.

Introduction:
Today, everything in the world is smart and digitalized. Public bus transport in India have always been an area where such new advances have turned their faces out. Moreover, it remains the major source of income in most of the developing countries like India.

There is a lot of confusion between the passengers regarding fares which lead to quarrel and chaos. Passenger safety, convenience and the need to improve the performance of existing public transportation is driving demand for intelligent transportation system in the market. The paper based ticket system for collecting the bus fare has been found to be a source of major financial loss in India. The main idea behind this project is to collect the fare automatically. The current system of taking bus tickets and applying or renewing for bus passes is a tedious process. It takes long time for taking bus tickets and for bus passes it involves a long queue in Depo and it is a time consuming process.

In the mega cities, the conventional system of public bus transport is based on paper tickets that ultimately lead to chaos among public, system loss, corruption is responsible for a huge wastage of time.

This automated system will have a higher authoritative inspection and reduce chaos and confusion during the journey. To avoid this risk and reduce manpower, we are developing this bus ticket automation system using RFID CARD.

Objectives:
Nowadays, Passenger safety, convenience and the need to improve the performance of existing public transportation is driving demand for intelligent transportation system in the market. Our main objective are:

- To eliminate inconvenience such as frauds which is done by the conductors.
- It is an invention towards digitalization.
- To develop an efficient system that will reduce manpower and errors.
- To provide location tracking, ease transaction and comfortable journey.
- To reduce the number of claims.
- To increase the operational efficiency, improves service planning and maintainence.

Methodology:
Each passenger carries one RFID card, which has a tag number. It includes the passenger’s details and balance which is used for bus ticketing. When the passenger wants to board the bus he will place the card on RFID card reader which is at the entry door. At the time of verification, the passenger’s details associated with the tag number will be verified with the data present in the Cloud. The minimum balance will be checked and if access is allowed, the commands are given from the Arduino Mega to open the Entry door. If access is denied then “Low Balance” is displayed on the LCD and buzzer tone indication is given.

The IR sensor is used at the entry and exit door of the bus configuration, so that only one passenger can enter inside at a time. When the passenger enters the bus, the Arduino Mega gives command to GPS module to turns ON and start tracking the location. Through GSM module the passenger will receive the boarding point message on the registered mobile number.

When the passenger reaches the destination, again he places the RFID card on the reader at the exit door. Arduino Mega will receive the command from the reader to turn OFF the GPS and the exit door opens. Therefore, the boarding and destination location will be retrieved from the cloud. The fare for the traveled distance along with the basic fare will be calculated and the amount will be deducted from the passenger’s account. The passenger will receive the transaction and destination details on the registered mobile number.

Components:

**RFID CARD**: Radio frequency identification (RFID) uses radio waves to read and capture information stored on a tag attached to an object. A tag can be read from up to several feet away and does not need to be within direct line-of-sight of the reader to be tracked.

**RFID CARD READER**: It is a device used to gather information from an RFID card, which is used to track individual objects.

**ARDUINO MEGA**: It is the heart of the system. It constantly monitors the motor driver and sends the message to LCD display. It also monitors all the sensors, DC motors integrated with it.

**LIQUID CRYSTAL DISPLAY**: 16x2 LCD is used to display the messages related to Bus Ticket Automation. LCD means it can display 16 characters per line and there are 2 such lines.

**MOTOR DRIVING CIRCUIT**: It is the device used to regulate current flowing through a circuit or to control other factors such as other components, some devices in the circuit.
**IR SENSOR:** It is the device used to detect presence of any obstacle in front of the sensor i.e., allow only one passenger to enter inside the bus.

**SERVO MOTOR:** The servo motor is specialized for high-response, high-precision positioning. It is capable of accurate rotation angle and speed control, it can be used for a variety of equipment.

**GPS MODULE:** It is a device that is capable of receiving information from GPS satellites and then to calculate the device’s geographical position.

**GSM MODULE:** GSM is a mobile communication modem. It is used for transmitting the detailed information about the passenger’s record.

**WI-FI MODULE:** The Wi-Fi Module is a self-contained SOC with integrated TCP/IP protocol stack that gives any microcontroller access to Wi-Fi network.

**BLUETOOTH:** HC-05 module is an easy to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup. It is used for the movement of our proposed model.

**ARDUINO IDE:** Its an editor and an on-premise application used to write the codes for the proper functioning for Bus Ticket Automation.

**THINGSPAKE CLOUD:** It is used to provide the real-time details about the passenger and configure the details with the third party.

**Results and Conclusion:**

The manual fare collection system has many issues which is eliminated by our proposed system. Automated fare collection system for public transport using GPS is an innovative idea which reduces man power. This project suggests a much more public friendly, automated system of ticketing with the use of RFID cards. This smart BUS TICKET AUTOMATION System can be implemented in the transport system, which will perform the fare collection automatically. This system is suitable for megacities where a large number of passengers avail public transport system daily.

**Scope for future Work :**
Technology is transforming the public transportation sector with the generation of intelligent transportation system that helps to optimize logistics and fleet management, goods and services, traffic management, driver assistance, etc. This proposed system brings out the smart way of transport and provides flexibility in operation. This innovation will also carry out desirable and economical platform for paperless ticket and cashless transaction which in turn supports Digital India Initiative. Moreover, in future Biometric system can be easily carried with the extension provided by our project.