

AUTOMATIC ELECTRONIC LUGGAGE LOCKER

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ABSTRACT

Today 's developments in technological world can helps to reduce all human work, in that Security is the supreme apprehensive for everyone. Anybody needs to them carry their luggage secure and safe against various occasions, such as robbery and struggles to hang around with luggage. The Global System for Mobile communication (GSM) oriented luggage locker is a security system that enables the consumer to lock and unlocking their belongings without conventional key is used. Conventional locking method of key mechanism have few more drawbacks. Reducing vulnerability and making this system robust this locker was established. This helps the user to program a key code to open the door. If entered key was wrong this system alerts the user through buzzer and send message to the current user. This system installed with the load cell for measuring luggage load level. According to the luggage's weight and size the load will be calculated. Here RFID technology is implemented for making easy payment to this locker system. With the aid of the new technologies, this smart locker is built to solve the problems of missing and losing the luggage in airports, shopping malls, bus stand and temples. The locker Works on Embedded Systems with Control Unit interface, GSM modules, RFID Cards, LED's, Control device, charging cell etc. A significant function of this method is the password entry with using GSM modules. A secured OTP send to the mobile phone to access the locker to keep your luggage. Keypad is used control every process in the locker and the RFID technology, along with several other specially built technologies, aids in digital payment and verification.

Keywords: Embedded system, Arduino UNO, GSM, RFID Reader, Touch Sensor.

I. INTRODUCTION

Currently many technologies can support all human job, Therefore the job will be better if infrastructure exists that can Many problems with the work can be solved by technology, because there are still errors human beings can have hindered themself. Throughout today's environment we have exposure to state-of-the-art surveillance devices. Digital keys are among the new developments in protection systems. Such wireless protected lockers are Digital security locking systems that work according to the signals provided through the input keyboards. We are deceptive testimony, which provide the consumer with several protection choices. Electronic entry lock for keypads offers a number of benefits.

We use physical key in conventional locking device to open any locker or gate. In the following situations the traditional system fails many times:

When we lose out on the main outside.

- Multiple people can use one key. The other people can eventually make usage of that too.
- Metal erosion can occur as key in physical and composed of metal.
- There are several unauthenticated forms on the market to create a duplicate key.
- Unless the key is missing, opening lock may trigger an annoyance.

There is a solution to this problem, namely Automatic Luggage Locking System. This Locking system is a locker which protects any items are kept in the locker, this locker often notifies the actual user(owners) of the locker via the android program if the things are not kept out. Smart lockers use RFID sensors and GSM make safer and more secure the system.

II. EXISTING SYSTEM

The existing system has been introduced in current device based biometric authentication. The locker program with Aadhaar card database management in cloud storage, smartphone device and website, ensuring a person's personal and sensitive belongings are covered. We used R305 fingerprint module in this device for biometric protection that is allowed by IOT using module Bluetooth HC05. When entering the correct fingerprint or pin the safe lock unlocks itself using the servomotor. The smartphone android program is used to run the device, which also has a QR code sensor that checks the user's Aadhaar card and stores the details in a Google sheet that can be accessed from anywhere with the right username and password. The website explains many of the system's main features and incentives, which provides an in-depth video of the system's service. This web page can also be viewed via the smartphone. This is also a user-friendly and user-friendly biometric locker device in which an interface and a website contain both the details and functionality of the device. This system requires the biometric sensors for user verification. But its Implementation cost is high, to overcome this disadvantage, we go for a GSM based and latest technology.

III. SYSTEM ANALYSIS

We define the issue they encountered by reviewing the previous paper. We are giving our project a solution for that.

Issues occur in the existing system:

- Peoples facing a many difficulty to store their personal thing, Documents, Files, Luggage and Mobile phones in Working places and while travelling.
- Also, Users paying in higher payments for their minimum luggage storing in airports, Public lockers, Super markets and in various places.
- During payment the user finding difficult issues to pay money.
- Forgot the password. It is recommended that you use a random password to optimize your protection, as it is simpler to guess repeated numbers or important dates.
- Electric Problems.
- Password length up to 10 digits.
- Implementation cost is high.

SUPER MARKETS - While entering into an super markets luggage is not allowed inside, at that time Automatic E-luggage locker helps the user to store the things, mobile phone, luggage easily and for lesser payment.

OFFICE - Our Automatic E-luggage the storage lockers do not take up too much room but provide more storage space for objects. Through keeping your workplace, house, and personal things in lockers, you can be amazed by how much room you can save. If you are an employee at the workplace who work with several paper papers, lockers are helpful for keeping the workplace records securely who carefully. And the payment is lesser than biometric lockers.

IV. PROPOSED SYSTEM MODEL

4.1. General Description of the System

We've used an Arduino board device in this research to combine different aspects of a protection device. The system consists of a keypad, an LCD monitor, a lock and GSM function. As it is a multi-user authentication device, the user has to enter the corresponding password when requested. On the LCD (User Interface) panel the device shows a notification for the customer. Lock authentication is provided only if user enters right code. The interface consists of a GSM module that is connected with it, allowing the user to attach his / her mobile and use the keypad to enter the password. A data log is kept to preserve track of user data accessed at a specified date, at a given time. Both these data are transmitted directly to the administrator via a message when the lock is opened.

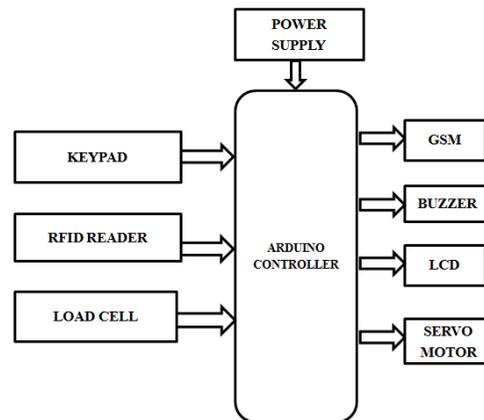


Figure 4.1. Block Diagram for Automatic luggage locking locker

An electronic lock (or electric lock) is a system of locking controlled by electricity. Electrical locks are mostly stand-alone, with an electrical control panel mounted directly on the lock. Electrical locks can be attached to an access control device, the benefits of which include: key management, where key may be inserted and removed without re-keeping the lock cylinder; fine access control, where time and location are factors; and transaction tracking, where operation is registered. You can also monitor and then control the electronic locks remotely, both to lock and unlock. This lock has been built using keypad to reduce weakness and render the device stable. It lets the consumer program a key code that unlocks the door in the smart locker. If entered key was wrong this system alert the user through buzzer. This system installed with the load cell for measuring luggage load level. A load condition details are displayed on LCD. Here RFID technology is implemented for making easy payment to this locker system.

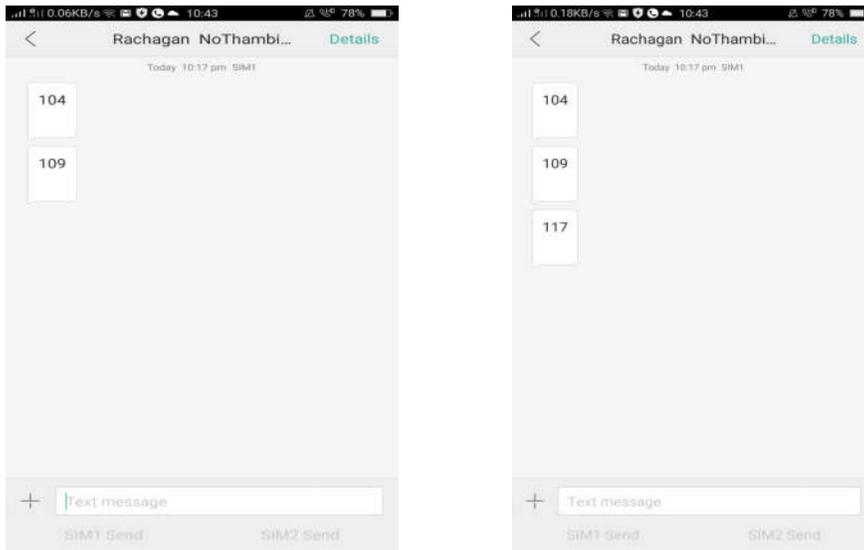


Figure 4.2. SMS notification for E-locker

4.2. System Workflow

The workflow on the Automatic E-luggage locking locker can be explained. From the process of the User arrived to use the lock to until the user taking his/her luggage back is explained in several stages as follows:

- First of all, the user is getting ready to use the Automatic luggage Locking Locker.
- With the help of the keypad, the user is going to type their mobile number, then GSM module is generating the 3- digit OTP and then the generated OTP send to the user's mobile.
- After receiving the OTP user can type the OTP using keypad. The microcontroller checking the entered OTP is correct for the respective user or not
- Then verified the OTP number by microcontroller, the locker is getting open by using the servo motor in the system. If OTP is Wrong the buzzer sounds immediately. Again, entering the OTP till it is correct.
- After door opens user placed their luggage inside the locker and then leave to their work.
- After sometimes, user back to recollect their luggage. At the moment, with the help of keypad already generated OTP is entered by user. If it is correct then Payment option is enabled and then RFID reader helps the user to make their payments.
- if the OTP is wrong immediately buzzer sounds and parallely alert message sent to the corresponding user of that locker and admin.

V. COMPONENTS USED

Hardware modules form the foundation of our framework.

5.1. ARDUINO UNO

The Arduino UNO is an open-source microcontroller board created by Arduino.cc and built on the Microchip ATmega328P microcontroller. The board is fitted with collections of optical and analog input / output (I / O) pins that can be interfaced with other boards (shields) for extension and other circuits. The board has 14 digital pins, 6 analog pins and is programmable with a type B USB cable with the Arduino IDE (Integrated Production Environment). It can be operated by either a USB cable or an external 9-volt battery, but it allows voltages of 7 to 20 volts. It's close with Arduino Nano and Leonardo, too. Distributed under a Creative Commons Attribution Share-Alike 2.5 license, the hardware reference design is accessible on the Arduino website.



Figure 5.1. Arduino Uno Board

5.2. TOUCH SENSOR

Often called contact sensors are tactile sensors that are sensitive to touch, impact or vibration. They are one of the sensors which is easiest and most effective. A touch sensor functions closely to a basic click. When communication is made with the touch sensor surface, the circuit within the sensor is closed, and a current flow occurs. The circuit is activated when the touch is removed, and no current flows.

A touch sensor operates mainly when an entity or person comes into close contact with it. Contact sensors are more sensitive than a button or other more manual operation and will also respond differently to various contact styles, such as clicking, swiping and pinching. Market tech gadgets such as smartphones and notebook system utilize contact sensors. Touch controls were usually used as a path to capture user feedback. Any physical stroke registered by a touch sensor is sent to a device / processing device that processes it as needed. Touch sensor for example detects the user gestures or load pressure exerted to our device when operating a mobile or utilizing an application. User behavior through the screen may have a different interpretation for both the computer and the program.

5.3. LIQUID CRYSTAL DISPLAY

A Liquid Crystal Display (LCD) is a flat panel monitor, computer visual display or video display that utilizes the properties of liquid crystals to modulate light.

Not specifically releasing light from liquid crystals. LCDs are suitable for showing random images (as in a general-purpose computer display) or specified items that can be shown or obscured like in a digital clock, such as preset terms, numbers, and 7-segment displays. They use the same simple hardware, except that a huge number of tiny pixels make up random images, whereas some screens have larger components.



Figure 5.2. LCD Display

5.4. L293D –DC MOTOR DRIVER IC

We start on the L293D. L293D is a common Driving IC engine. It is an IC with 16 strings. The IC has eight sided pins. It has 2 allow pins, one VSS pin, one VS pin, four ground pins, four input pins and four output pins. While not needed here but if you want to learn how to communicate with a microcontroller with L293D.

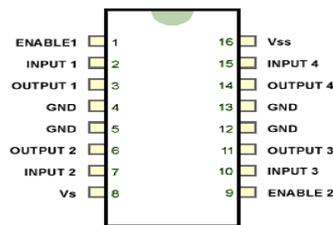


Figure5.3. L293D –DC Motor drive IC

5.5. SERVO MOTOR

A servo motor is an electric system that can precisely drive or rotate an entity. If you choose to rotate the entity at a certain angle or size, then you are using servo motor. It's just a small motor that runs via the system of the servo.



Figure5.4. Servo motor

5.6. POWER SUPPLY

Power supply is a connection to an electronic power source. A device or system that supplies an output loading or group of loads with electrical or other forms of energy is called a power supply

unit or PSU. The word is more widely used for the production of electrical resources, less often for mechanical equipment and seldom for others.

Electronic system power supplies may be commonly broken into linear power supplies and rotating power supplies. Linear supply is a reasonably easy design that becomes progressively voluminous and heavy for high-current devices; poor performance may result in voltage control in a linear supply. A switched-mode supply with the same rating as a linear supply would be smaller, is typically more effective, but more complicated.

5.7. GLOBAL SYSTEM FOR MOBILE COMMUNICATION (GSM):

GSM stands for Global Mobile Networking Scheme. It is a wireless telecommunications system that is used for mobile voice and data transmission services. The GSM idea originated in the early 1970s from a mobile radio device focused on cells at Bell Laboratories. GSM is the name of a standardization community founded in 1982 to define a common European standard for mobile telephones. GSM is the most commonly recognized telecommunications standard, and it is applied worldwide. GSM is a circuit-switched mechanism dividing into eight 25 kHz time-slots for each 200 kHz range. In certain areas of the world GSM runs on the 900 MHz and 1800 MHz cell radio frequencies. In the United States, GSM works in the 850 MHz and 1900 MHz bands.



Figure5.5. GSM

5.8. BUZZER

A buzzer or beeper is a signalling system, usually electrical, found in cars, home equipment such as a microwave oven, or game shows. It most generally consists of a variety of switches or sensors attached to a control device that decides whether and which button has been pressed or a predetermined time has passed, and typically illuminates a light on the relevant button or control panel, and a warning occurs in the form of a constant or sporadic ringing or beeping sound. This mechanism was originally based on an electromechanical framework that was similar to an electric bell without the metal gong (which allows the ringing sound). These devices were often attached to a wall or ceiling, and the ceiling or wall was used as a sounding board.



Figure5.5. Buzzer

VI. HARDWARE DESIGN AND FUNCTIONING

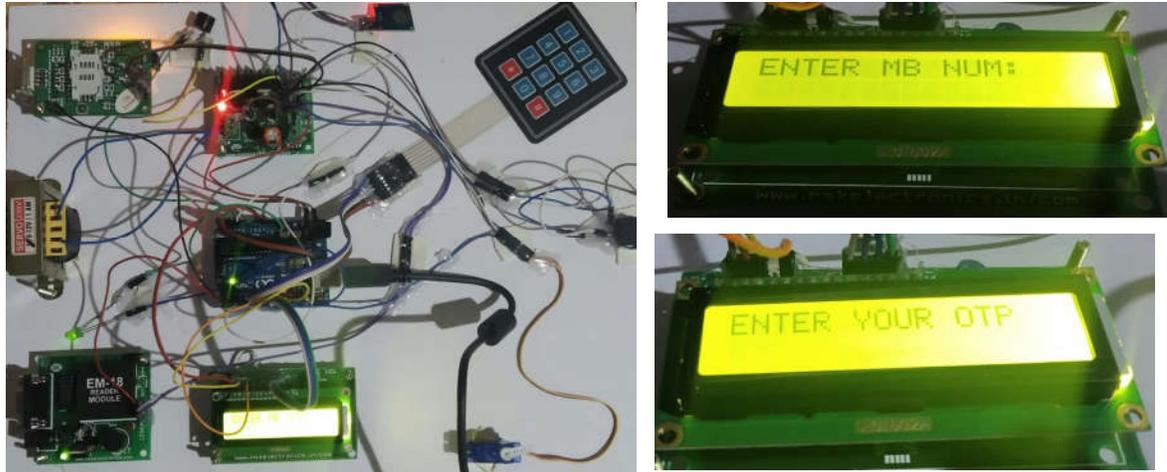


Figure6.51. Output Module

VII. CONCLUSION

The Automatic luggage locking system using Arduino UNO can be viewed as a module multitasker control process providing upgraded capabilities such as SMS notification and digital payments. This device be useful for control and manage protected access from a remote location to the lockers.

This design is well functioning keeping more safer user's luggage Who use the device under the principle of embedded system. The device is to submit the SMS message to the administrator. The method is quick enough to take a required one action including regards to unauthenticated apps. The machine runs on a set number of trials (three attempts). When 3rd party accesses the container, the device sends the alert notification immediately to the user.

This locker as planned; the most popular baggage loss issues encountered by passengers at the airports would be overcome. The monitoring and control of GSM would allow passengers to fly comfortably and easily without fear of loss of their baggage. This project will be of great value to and usage for the general public when built. GSM monitoring device together with reminders of the position. Loading any mobile equipment may be used. Luggage weight may be viewed with ease. Specific I'd to stop combining each shower. The locker is built to accompany the owner independently, without needing to pull it.

In the case of holding the actual key the device is reliable and convenient. Using the principle of digital locking mechanism, the drawbacks of holding physical key have been overcome.

VIII. REFERENCE

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