DESIGN AND IMPLEMENTATION OF UNIVERSAL CARD USING RFID, BIOMETRICAND GSM

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ABSTRACT

In our day to day life we carry many government identification cards such as voter id, driving licence, ration card etc. It is hectic process to carry multiple cards, in case of misplace or theft obtaining all the identification(ID) would demand lot of procedure and time.Rather one can possess a solitary one of a kind card which limits the risk. The proposed project explains the development of Universal card using biometric and Radio Frequency Identification(RFID) technology. Our key goal is to line-up multiple cards into a secure universal card which is compatible for accessing other cards. In this system, a RFID tag will furnish the specific user details. The user needs to speak with his/her RFID tag and after that needs to scan his/her biometric. On the off chance that the user is valid in the subsequent stage it will sit tight for specific segment like ID, Driving license(DL) and so forth and message is sent to the validated user through Global Systems for Mobile Communication(GSM). Mismatched fingerprint will deny the user access. All the required data is furnished inside a solitary card with different databases where all the essential administrations are incorporated.

Keywords: Biometric, DL, GSM, ID, RFID

I. INTRODUCTION

In India we have numerous cards to serve distinct purposes likedriving licence for private transportation,PAN card for Income tax department, Aadhar cardfor unique identification authority of India etc.These cards are used for making passport, which also act as address proof for the citizens of India. An alternative method for this tedious process of carrying numerous cards is to line- up all to a unique universal card that carry out the work of all the other cards. This card contains RFID, biometric, GSM which enhances the security, feasibility and accessibility. Through this universal card world gets highly networked and one can avoid many risks involved using multiple ID's like time consumption(getting multiple cards), cost and data disintegrity.

In our proposed system is based on RFID, biometrics and fingerprint. RFID method utilize radio waves , it consist of three components an RFID tag, an RFID reader and an antenna [1].The proposed work records the fingerprint into a database with the particular RFID tag. Only if the fingerprint is authenticated the access is

granted and the information is displayed on the LCD screen. Mismatch in the fingerprint will refuse the access. After the display of the information a SMS is sent to the user through GSM.

II. LITERATURE SURVEY

In the present system there are proposal of smart ration card [2-3], smart attendance monitoring system[4]which focuses on ensuring the security and transparency between the government and the user but the datadisintegrity is a major problem.Positioningdata in multiple cards will cause data redundancy. In our present system there is malpractice in every sector of obtaining government identification through the proposed work we can eliminate the malfunctioning of government sectors as it brings the transparency between government and the client.

Rather than setting same information in numerous cards one can have a solitary card that coordinates the information ideally. Focal point of our paper is to integrate information from different cards to a lone card.This lone card carries out all the functionalities of multiple cards.

III.PROPOSED WORK

In our proposed work, initially the user has to enrol all his details at government database. Record the fingerprint into a database with the particular RFID tag. The RFID reader will read from the RFID tag and demand for the user fingerprint. Fingerprint sensor confirms the furnished finger impression with the database; check whether the finger print is coordinated. If the finger print is matched, the name and the details of the user will be displayed on the LCD and the user can choose any of the cards such as voter Id, ration card, pan card, metro card etc. Once the card is chosen for specific application the card details are flourished and the SMS is sent through GSM for the authenticated number. If RFID tag or the fingerprint is defective one cannot retrieve any of the cards.

3.1 Methodology

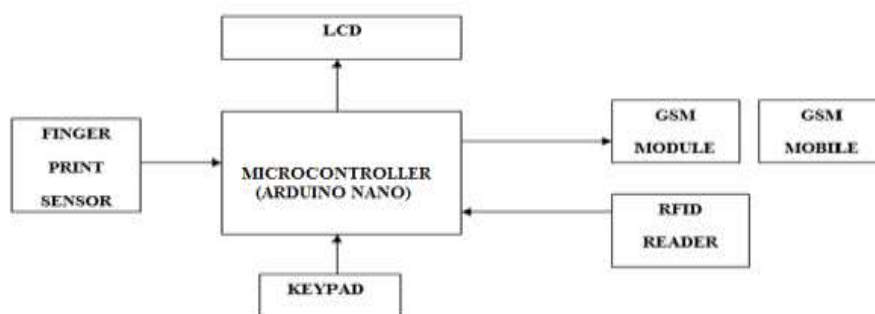The block diagram for the proposed system is depicted in Fig.1

Fig.1 Block diagram for design and implementation of Universal card using RFID, Biometrics and GSM.

The workingof universal card consists of 5 parts

3.1.1Database creation:

In RFID tag digital data is encoded. RFID systems consist of three components: an RFID tag or smart label, an RFID reader, and an antenna. RFID tags contain an integrated circuit and an antenna, which is used to transmit data to the RFID reader (also called an interrogator)[4-8]. The reader then converts the radio waves to a more usable form of data. Information collected from the tags is then transferred through a communications interface to a host computer system, where the data can be stored in a database and analysed at a later time.

These sorts of scanners utilize visible light to take a photograph of your fingerprints. In this, LEDs are utilized to enlighten a finger kept on a glass plate. The light reflected from the finger falls onto a Charged-Coupled Device (CCD) display in the scanner. A CCD likewise utilized as a part of camcorders and advanced cameras is fundamentally varieties of pixels which react to the falling light finished them and deliver corresponding electrical signs.

3.1.2 Input:

RFID label when swapped by RFID user, the data is transmitted to the microcontroller. Microcontroller is focus of the system to which different segments are associated. The system approaches the user for his/her fingerprint through fingerprint scanner, once the fingerprint is detected it is checked with the user database.

3.1.3 Processing:

Theinformation from user RFID tag and fingerprint are processed by Arduino nano processor Fig.1.Arduino is basically used in communications and in controlling or operating many devices. Arduino Nano is a function module which is very small and has a lot of advantages.The confirmation of the unique finger impression is checked.

3.1.4 Displaying system:

After the information is processed by the Arduino nano microcontroller, the relevant details are displayed on the output LCD screen; LCD is based on light modulating properties of liquid crystals for displaying information. LCD is seven segment display used to display digits, alphabets and special characters.

3.1.5 GSM module:

A GSM modem is a specific sort of modem which acknowledges a SIM card, and works over a membership to a portable administrator, much the same as a cell phone. Fundamentally, GSM modules are standard cell radios that can transmit IP information and SMS on the GSM cell. In the proposed system, after accessing the particular ID the message is sent to the user's number via GSM.

3.2 Flow chart

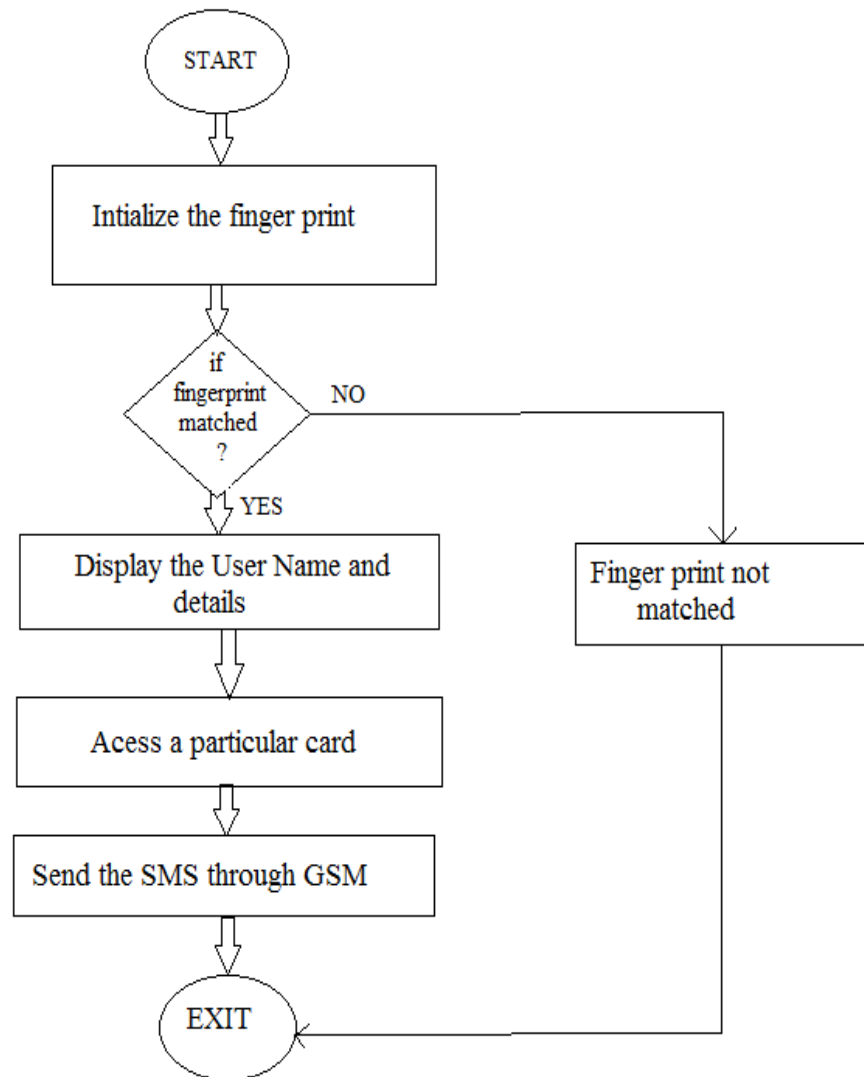The flowchart for the proposed paper is depicted in Fig.2

Fig.2 Flow chart for design and implementation of Universal card using RFID, Biometrics and GSM.

The flowchart Fig 2 describes the complete functioning of the project. Initially the RFID tag which contains electronically stored information is developed and provided to the applicant. The fingerprint database with the RFID tag is mandatory for the access. Initialize the fingerprint sensor if the fingerprint is matched then the applicant details appear on the screen. Depending on the application the particular card is viewed further which the SMS is sent to user through GSM. If the fingerprint gets mismatched, then the access is disabled

V. RESULTS

Multiple cards are incorporated into a single card through biometric and RFID which ensure security and reliability. The transparency between the government and user is obtained.

Fig.3 shows the designed Universal card(RFID tag) which contains information of other government ID cards.

Fig.3 Swiping of Universal Card

In Fig.4 we can note that if the card and fingerprint is found authentic the government ID can be accessed and SMS is sent to the registered number through GSM.
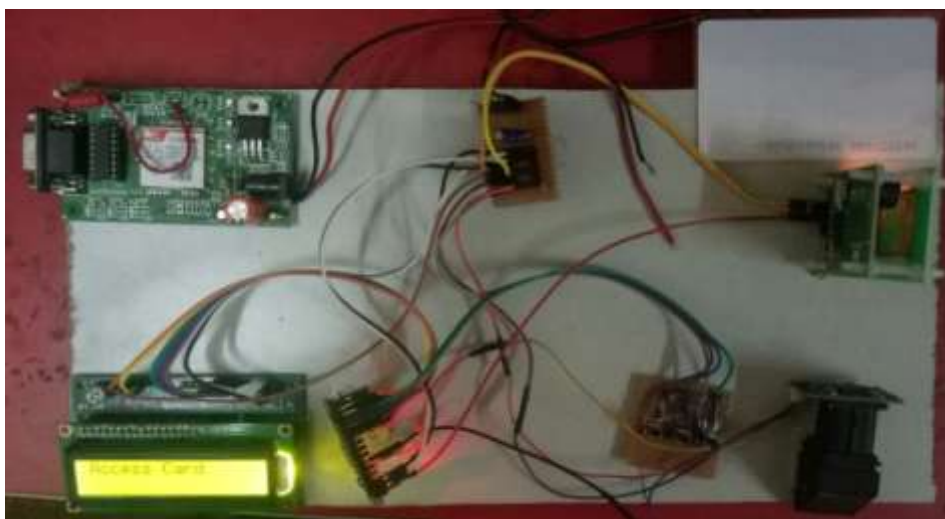

Fig.4 Accessing Universal card using RFID, Biometrics and GSM.

After the RFID tag is swipped and fingerprint is verified then the followinf output is seen in the LCD screen.

Fig.5 Display after authentication of RFID and Fingerprint.

VI.CONCLUSION

In this paper we have proposed "Implementation ofUniversal Card using Biometric, RFID and GSM". In the present framework there are couple of downsides in government Ids like forgery, information disintegrity, unwavering quality, security and ahead our proposed framework wipes out fraud, increment reliability, security and brings information integrity. As we are utilizing RFID card which contains detail data of client with his/her thumb impression along these lines there is less opportunities to abuse the card. Additionally, the framework will send transaction details to the user's registered mobile number through GSM thus transparency is maintained in the system.

The future work of this framework is to incorporate retina recognition for biometric recognizable proof which upgrades reliability

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