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Smart Ration Card system using RFID & Raspberry pi

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ABSTRACT

This paper presents an advance model of a ration card system using RFID and Raspberry-pi. We present real time ration system, RFID reader module which scans the data from RFID card and serially sends data to the Raspberry-pi. The ration card which reduces black marketing such as most of ration dealers can make duplicate ration cards with them, due to this the consumer do not get their rights. The main focus of the project is to maintain clear process between consumer and government. A RFID card contains the details of families. After scanning RFID card all the details will be displayed on GUI screen, such as availability of items then consumer is eligible to take food after this transaction a message will get to consumer and Government web page using GSM. This project is part of Digital India.

Keywords: *GSM module, GUI screen, Raspberry-pi, RFID card, RFID reader.*

I. Introduction

Our Indian government provides food, oil, fuels to economically backward peoples at cheap rates which are distributed to public through ration shopes. Every month fresh stock arrives at these shops and that needs to be distributed to public. Current ration card system handles manually, the system has many drawbacks such as ration shopkeeper can create fake card manually, available food quantity can sold to the open market and it also time consuming. To remove previous drawbacks fraudulent actives this system is developed. When customer goes to ration shop he scan the RFID card through RFID reader. When unique code of that card matches with data stored in the database then information displays on GUI screen. Then shopkeeper gives input with keypad to raspberry pi and sends all the data for example 1 kg of rice is block etc. After that user is available to take food grains. By using GSM one message will be send to customers mobile number and information will update on government web page. This system helps to make digital India.

II.METHODOLOGY

The project consist main part of raspberry pi along with GSM module. where GSM antenna is used for receiving and transmitting information. GSM is used for sending data wirelessly ,such as user get transaction details on his mobile. Raspberry pi has high storage and speed ,so we decided to go with raspberry pi for controlling purpose. We studied various raspberry pi module before starting our project and chose suitable for our project .and next important component is RFID reader , which will scan the RFID card. We tried to collect all information about RFID device. RFID is uses an electromagnetic field to track and identify object. For our project first we wanted to use microcontroller but it has less storage and memory capacity therefore we decided to use raspberry pi3

module,which acts as mini computer. It has external memory capacity with audio video jack ,which will improve high security in this system.we have also searched more information of component which are used in our project.

III.WORKING PRINCIPLE

In many years, the ration card system is existed in our country. Now days, people require smart ration cards which is totally depends on RFID card. The smart card is modified as smart ration card by generating magnetic flux in RFID card .Each smart ration card contains unique code. We need to collect data form all the valid ration card holders and estimate the total number of smart ration cards to be created . All the user have to register for the ratio card. After the complete data has been collected a database is created, it contains seperate records for each family .Raspberry pi3 acts as main controller which is interfaced with GSM through USB. The user will having unique no & after scanning RFID card reader will identify it. The identified RFID number will be send to Raspberry pi. The raspberry pi takes sequential number from reader and access corresponding record in the database, then send data to server. RFID card has identification such as name,address,etc. When the unique code of the RFID card matches with stored data base then it displays that user is valid. After that user account will display with total quantity of food grains on screen. Shopkeeper can give input by using keyboard & enter items which he wants to buy.

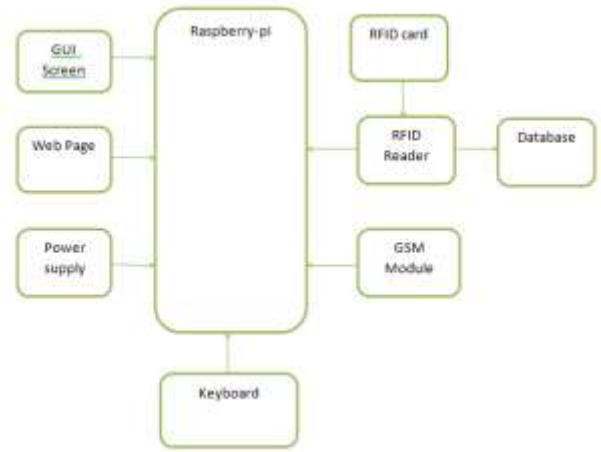


Fig . Block Diagram

Raspberry pi:

pi is low cost ,credit-card sized computer with external hard disc . SOC built for the Broadcom BCM2837 system-on-chip includes four high performance ARM Cortex-A53 processing cores running at 1.2GHz with 32kb level1 and 512kb level2 cache memory, VedioCore IV graphics processor, and it is linked to a 1GB LPDDR2 memory module on board.It has networking 10/100 Ethernet,2.4GHz 802.11n wireless. Bluetooth 4.1 Classic, Bluetooth Low Energy with microSD storage. GPIO 40 pin header, populated. Ports are HDMI,3.5mm analogue audiovideo jack,4xUSB 2.0,Ethernet,Camera serial Interface (CSI),display serial Interface(DSI) .

GSM Sim900A:

GSM/GPRS Modem RS232 is built with dual Band GSM/GPRS engine-SIM900A,works on freguencies 900/1800 MHz.the baud rate is configurable from 9600-115200 through AT command. modem is having internal TCP/IP stack to connect with internet .It is suitable for SMS, Voice as well as data transfer application in M2M interface.It has feature of sim card holder.Used for access control device.

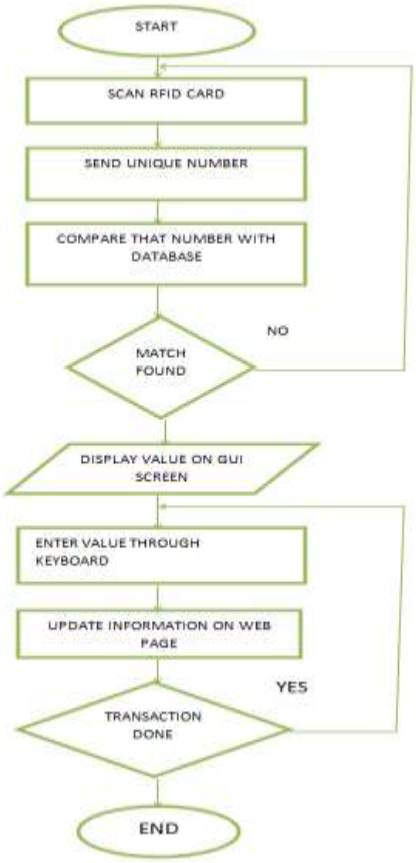
RFID card:

The RFID cards are two types active and passive.The rfid tags contains the one number which is there inside the card and it will have one magnetic coil in the card when we place the RFID tag on the reader it will generates a magnetic flux and reads the card number.In this project we used EM-18 module of RFID reader.with 125KHz frequency and 3cm to 10cm range.

POWER SUPPLY:

Power supply is a unit used for providing voltage to the raspberry pi.it needs 5V to12V power supply.

IV.Flow Chart



*V.*APPLICATION

Public space

It can be used as national identity.

It can be used as PAN card,passport,drivining licence etc.

College

Smart card system can be used at college account section to access student data and fees details.

In library smart can use for entry of books issue of student .

In canteen also student can make account with this smart card.

VI.FUTURE WORK:

Many projects are made by using microcontroller in ration card system.And corruption issue is always the main factor.In our project we tried to make cheap and reliable system .the main focus of our project is to make transparency between customer and government,and toavoid corruption. This system can be totally automatic ration distribution system. It can be used as Adhar card ,PAN card , passport, driving licence .

VII.CONCLUSION:

Its always a challenge for engineers to make the things simpler and cheaper . We tried to make the system digitized and that's why we can create a smart ration card system. now days, People uses paper cards for buying the food grains, but in this paper we are using the RFID cards to controls the corruption.we tried to make it more compatible for users. We can provide good quality of food grains , less expensive and time consuming.

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