DETECTION OF COUNTERFEIT MONEY USING NFC CHIP

P.JOHN THANGAVEL[1]
G.PREETHI[2] , D.SNEHA PRIYA[3]

[1]*Asst.Prof,Department Of Electronics And Communication Engineering,*
[2,3]*Student,Department Of Electronics And Communication Engineering,*
JEPPIAAR SRR Engineering College,Padur,Ch-603 103.,

Abstract:*Money is the vital key factor that plays an essential role in day to day life of every individual. In the current scenario, it has become very much clear that the survival of a man in the society is very difficult without money. But the negative fact is that counterfeiting of money has become an enormous problem throughout the world. People are unable to find the difference between fake money and the original money. The counterfeiters make money similar to that of the original money. So, both the original money and its imitation are in circulation in the market. Even though there are certain devices to detect the counterfeit currency notes, the fake currencies are not completely eradicate.Traditional security features on currency notes are easy targets for counterfeiters, and they can easily imitate the original currency notes with fake ones. Conventional methods for validating currency require devices for the authentication of currency notes. However, cost and lack of mobility of sophisticated currency note validation devices are big problems for general consumers. Modern digital solutions are attempting to complement the traditional security features through embedding NFC chips in the currency notes, by using this system the original notes can be automatically detected.*

*Keywords:*NFC (Near Field Communication).

I. INTRODUCTION

The study of payment process using NFC chip and QR code scanning was done in [1]. The secured transaction using NFC Chip is discussed in [2]. The overview of counterfeit money detection is explained in [3] and [4] . [3] and [4] are focused on the detection of fake currency using mobile application of an easily available devices.This applications can be used on day-to-day basis for identifying fraudulent currency then and there.In future this system is used to eradicate the circulation of counterfeit money.
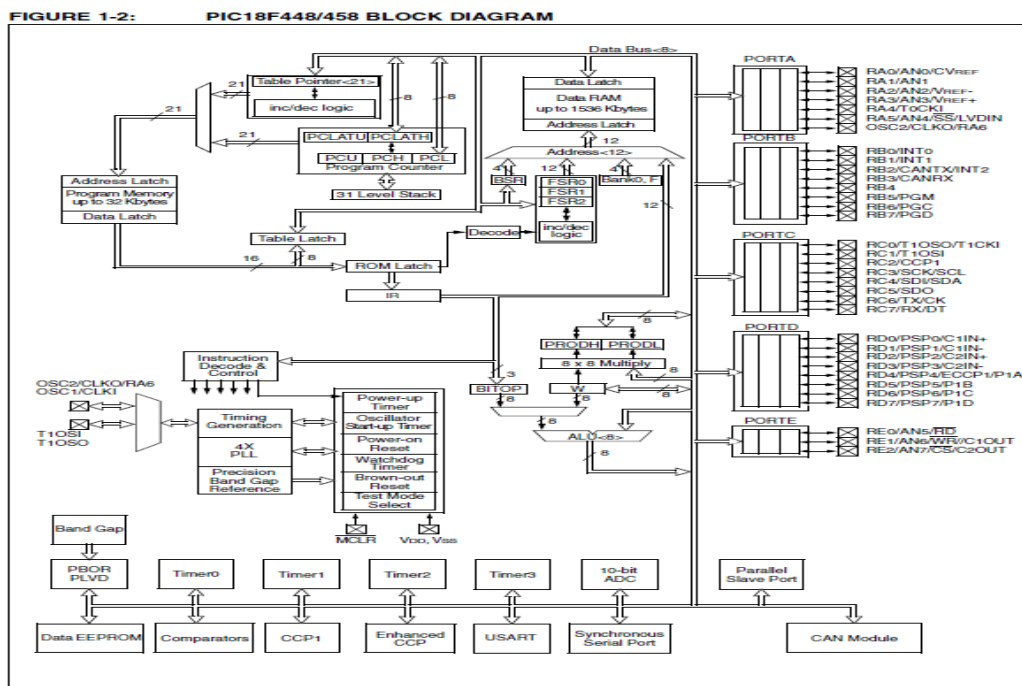
II. ARCHITECTURE OF PIC18F448

Fig 1.Architecture of PIC18F448

Features:

- High current sink and source is 25 mA.
- There are three external interrupt pins.
- Timer0 module:8 bit timer and 16 bit counter with 8 bit programmable prescaler.
- Timer1 module:16 bit timer and 16 bit counter.
- Timer2 module:8 bit timer and 8 bit counter with 8 bit period register.
- Timer3 module:16 bit timer and 16 bit counter.
- Timer1 and Timer3 have secondary oscillator clock option.
- Capture/Compare/PWM(CCP) modules:
    1.Capture input : Maximum resolution is 6.25ns
    2.Compare   : Maximum resolution 100ns(TCY)
    3.PWM output : PWM resolution is 1 to 10 bit.
- 1,2 and 4 are PWM outputs.
- MSSP(Master Synchronous Serial Port) consists of two modes of operation:
    1.All the 4 SPI modes are supported by 3-wire SPI$^{TM.}$
    2.12C^{TM} acts as Master mode and Slave mode.
- Addressable USART module supports interrupt-on-address bit.

PIN DESCRIPTION:

| Pin No	Function	Name
1	Ground (0V)	Ground
2	Supply voltage; 5V (4.7V – 5.3V)	Vcc
3	Contrast adjustment; through a variable resistor	VEE
4	Selects command register when low; and data register when high	Register Select
5	Low to write to the register; High to read from the register	Read/write
6	Sends data to data pins when a high to low pulse is given	Enable
7	8-bit data pins	DB0
8		DB1
9		DB2
10		DB3
11		DB4
12		DB5
13		DB6
14		DB7
15	Backlight VCC (5V)	Led+
16	Backlight Ground (0V)	Led-

III. BLOCK DIAGRAM
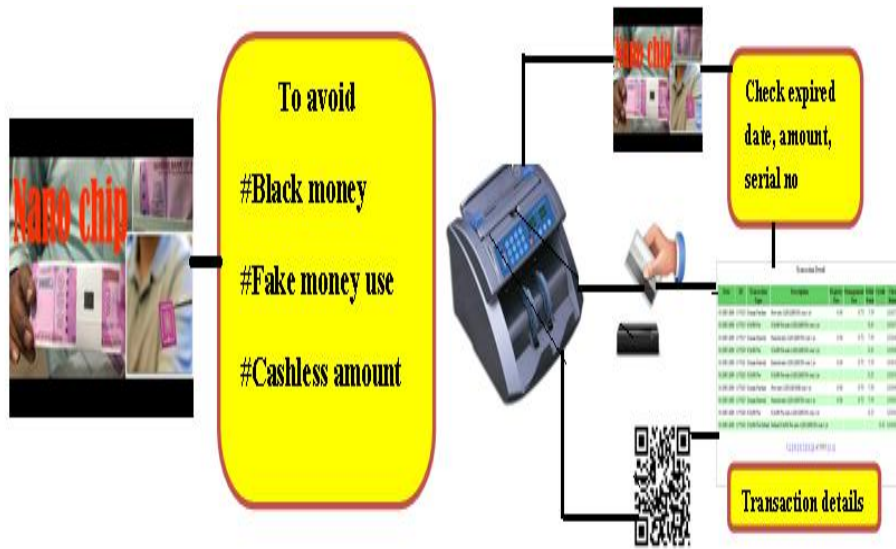
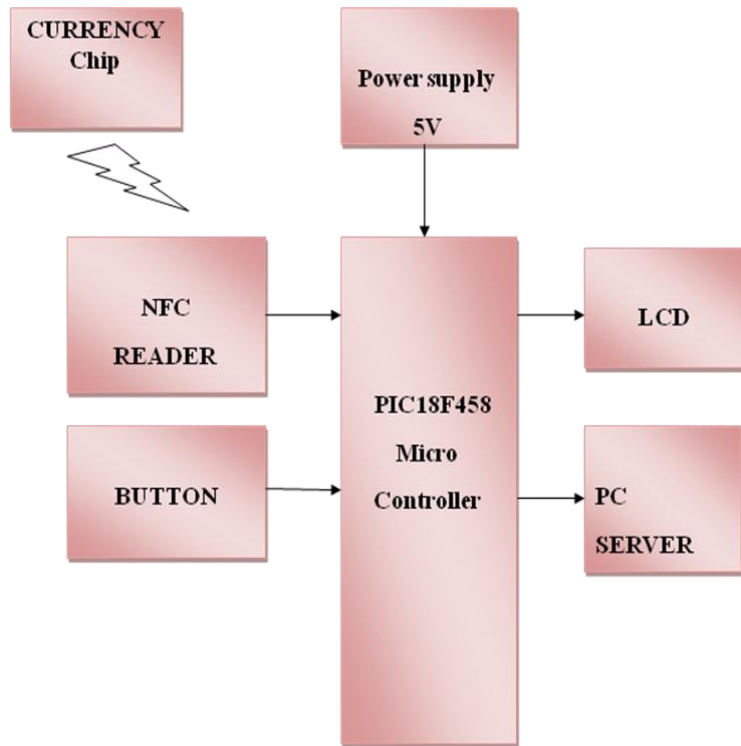Fig 2.Overview Of Effective Identification Of Counterfeit Money Using NFC
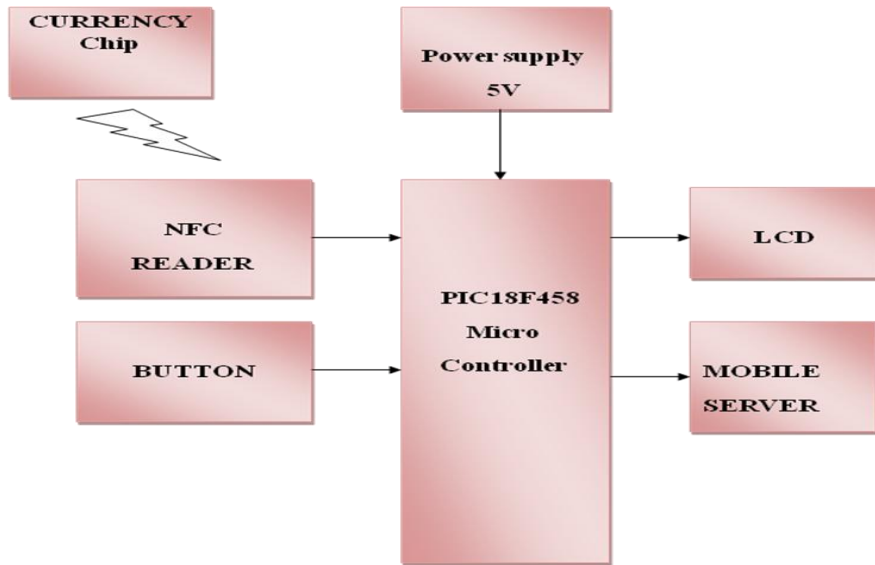

Fig 3.Block Diagram Of PC Server

Fig 4.Block Diagram Of Mobile Server

IV.BLOCK DIAGRAM DESCRIPTION

*4.1.*NFC(Near Field Communication)

Fig 5.NFC Chip

Near Field Communication chip is a communication protocol that is used to communicate between two electronic devices,one of which is a portable device.It communicates within a short range of 5 cm or less.
Mobiles are the main devices used for this technology.NFC tags securely stores the personal data and so it is used for social networking,sharing photos,videos or files.
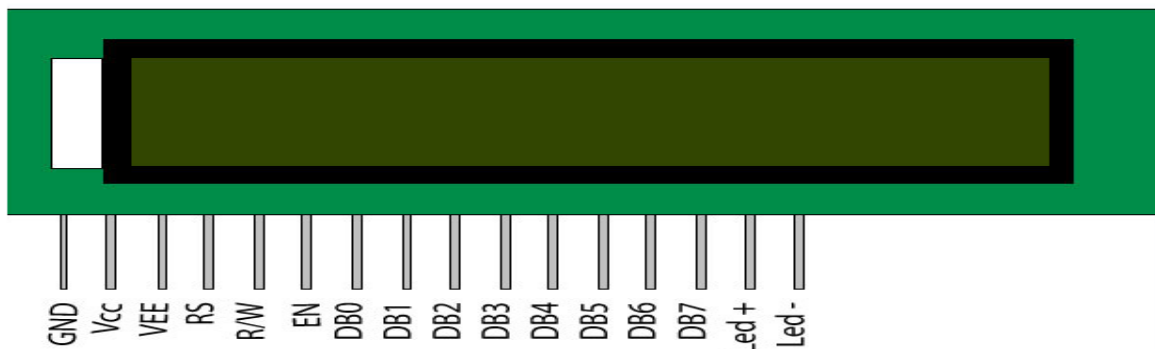
*4.2.*LCD(Liquid Crystal Display)

Fig 6.Pin Diagram of LCD Display

Liquid Crystal Display is an electronic display module. A 16x2 LCD display is a basic module and it is commonly used in various devices. LCD module is preferred over seven segment LEDs. These LCDs are economical,easily programmable and do not have limitation of displaying special and even custom characters
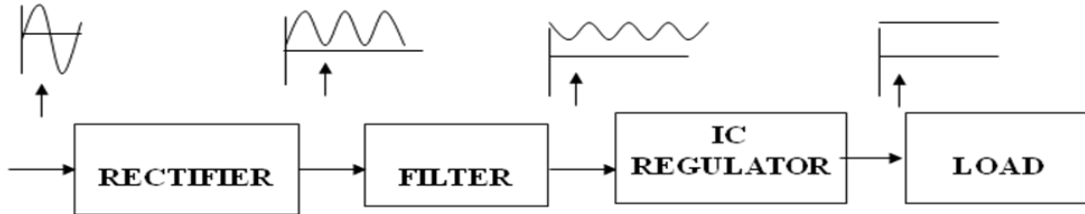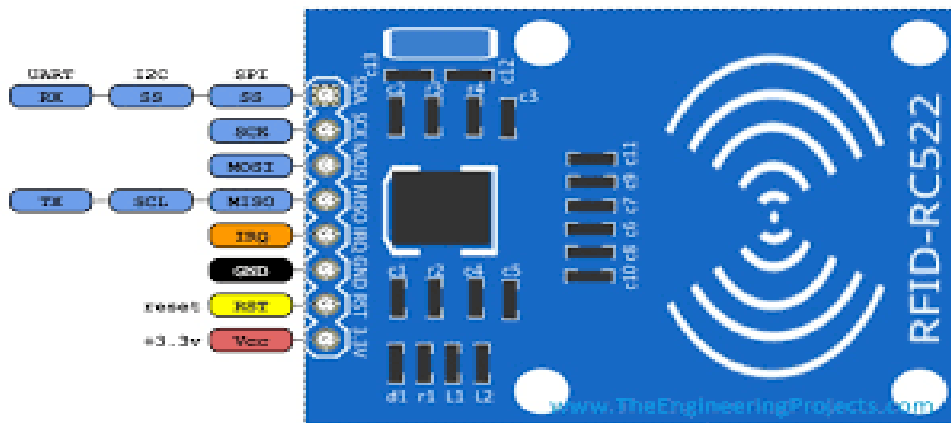This LCD displays each character in 5x7 pixel matrix

*4.3.*Power supply

Fig 7.Block Diagram of Power Supply

- 1A output current is given.
- Output Voltages are of 5, 6, 8, 9, 10, 12, 15, 18, 24V.
- Thermal Overload Protection.
- Output Transistor is the Safe Operating Area.

*4.4.*RFID-RC522

A radio frequency identification reader(RFID reader) is a device that is used to collect the information from the tags of RFID which is used for tracking purposes.In this process radio waves are used for transferring data from the tag to the reader.

V.WORKING PROCESS

The working process is explained in the figure.2 showing the overview of effective identification of counterfeit money using NFC chip.This figure gives a detailed description of the process.The NFC chip is embedded in the currency notes.NFC chip is the Near Field Communication chip,it can be used only within a distance of 5cm or less.The NFC chip is updated with certain information about the currency note, which includes expiry,serial number,and the value of the money.The money transaction is carried out in three ways,
1) by cash payment,2)by online payment,3)by using debit or credit cards.In the first case,the currency note containing the NFC chip is used in which the device detects whether the note is original, fake or expired .In the second case,the money is transacted through online payment.QR code is generated and the generated QR code is scanned using an android mobile phone and the transaction is carried out safely.Finally, in the last case, the transaction can be made using debit or credit cards.Using these three techniques the transaction made by an individual is tracked.These three methods are used to avoid black money circulations,illegal transactions,fake money usage and cashless illegal money transactions and to carryout safe and legalized money transactions.

VI.RESULT

The results obtained by executing the simulation are as follows.
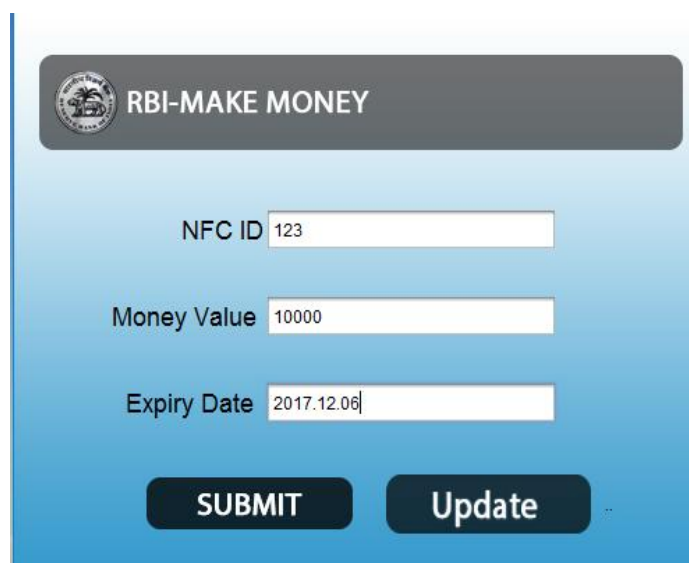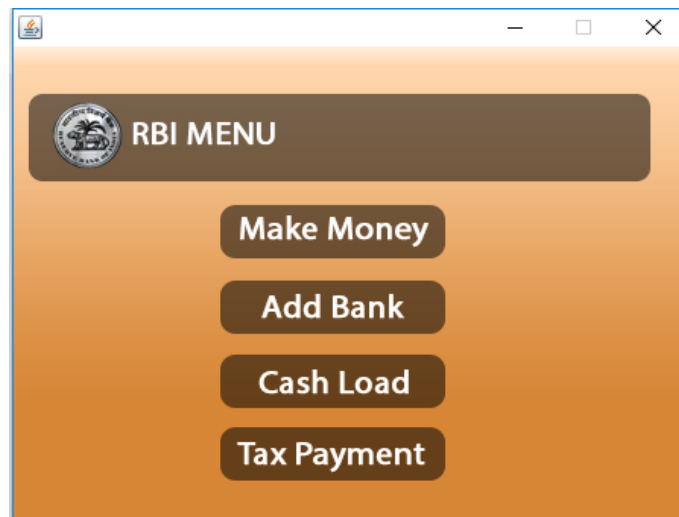
VII.REFERENCE

[1] S. Rios, J.A. Morente and J. Pascual , IEEE LATIN AMERICA TRANSACTIONS"An Evolved Secure AnonymousAssessment Information System Using NFC AndQR Technologies" Vol. 14, No. 6, June 2016.

[2] Sung-Wook, Park, Im-Yeong, Lee,"Transaction Authentication Scheme based on Enhanced Signature RTD for NFC Payment Service Environments",IEEE 2016.

[3] Anand Pardeshi, Department of Information Technology , FCRIT Institute of Technology, Vashi, Sinhgad Institute of Management and Computer Application (SIMCA)"Design of Counterfeit: Currency Detector"NCI2TM2014.

[4] Rinki Rathee M.Tech, Department of Computer Science & Information Technology, Bhagat Phool Singh Mahila Vishwavidyalaya, Khanpur, Sonepat, Haryana, India"Design of HSV Mechanism for Detection of Fake Currency" Volume 6, Issue 7, July 2016.