IOT Based Virtual Banking

M. Varasundar & A. Praveen kumar

M.Tech Asst Professor Kasireddy Narayanreddy College of Engineering and Research.

M.Tech(Embedded systems) Kasireddy Narayanreddy College of Engineerig and Research

Email:m.varasundar@gmail.com; Email:Aruva.praveen@gmail.com

Abstract

Main aim of this project is designing and developing biometric based money payment and transaction system. As part of digital India transaction of liquid cash decreased usage of digital transactions are getting increased rapidly. Banks are using more technologies to do secure transactions. Using finger print based payment is more easy and secure.

Keywords: LCD (Liquid crystal display), GSM (Global system for mobile communication), RPS (Regulated power supply), LED (Light emitting diodes), Finger print module, Wi-Fi (Wireless Fidelity).

I. INTRODUCTION

Now a day's ATM's plays major role in our society. But sometimes we are facing lot of problems due to ATMs. If we lost the virtual cards there is a chance of misusing our ATMs by someone. Even if we forgot the password we cannot do transactions. To avoid these drawbacks here we are introducing a new technology that is "IOT BASED VIRTUAL BANKING". By using this technology we can withdraw, transfer and we can do payments without any virtual cards like credit cards and debit cards etc. No need to carry virtual cards along with us.   Fingerprint sensor that can capture the finger print information efficiently. It is used in this project to improve the security and easy to access banking. Along with finger print we can use password also it will more secure than other systems. In this system user need to keep finger on finger print sensor if finger print is valid it will ask password to verification itself each user has own password. If password is matched we have to enter amount to be transfer to other account.

On board system consist of GPIO pins the onboard system commonly called micro controller. The GPIO pins are connects to different modules depending on our requirement.

II. BLOCK DIAGRAMS

Regulated power supply:

It requires 5v dc supply.230v AC supply is converts into first stepped down to 12 volts AC by using stepped down transformer.12 v AC is converted into dc by using rectifier. Rectifier

On board system consist of GPIO pins the onboard system commonly called micro controller. The GPIO pins are connects to different modules depending on our requirement.
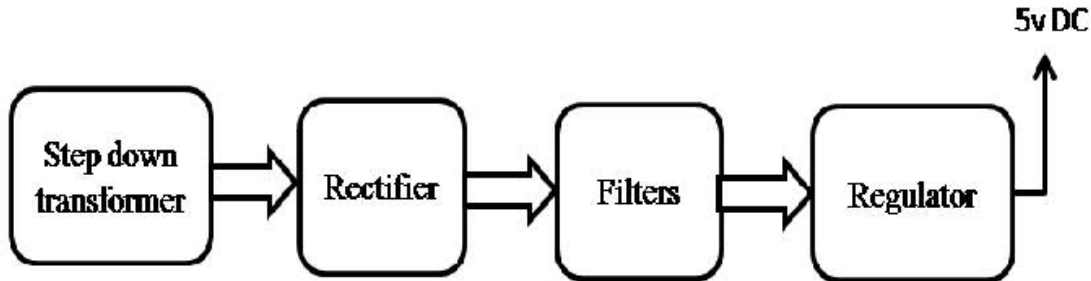
converts ac to pulsating dc. The pulsating dc voltage is passed through capacitive filter to removes

Ripples. Regulated power supply is used to provide constant 5vto circuit. Capacitive filter is used to convert pulsating dc to pure dc voltage. Micro controller takes input from finger print sensor and checks for authentication. If finger print is valid will ask password to verification itself each user has own password. If password is matched we have to enter amount how much to be transfer to others account. User registered mobile number gets message how much money transferred to particular account. GSM module is used to user get message.
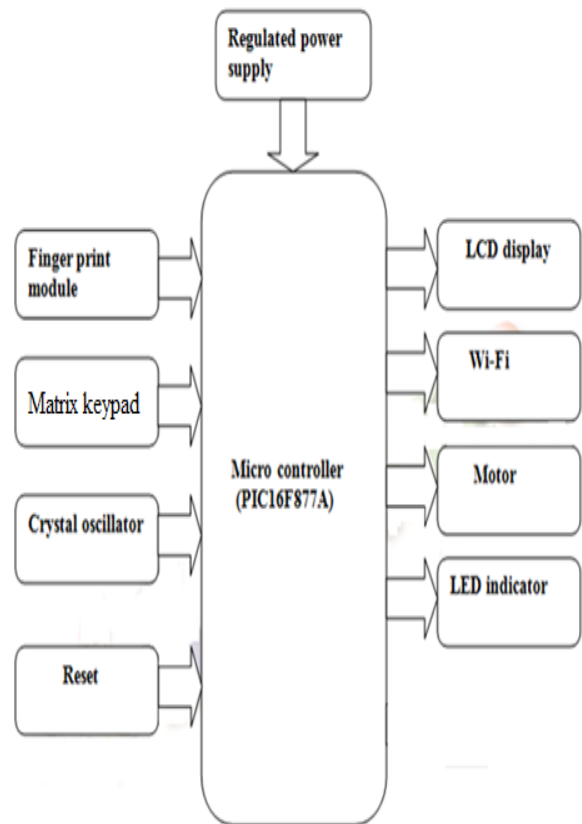
IV.HARDWARE DESIGN MODEL

1) HARDWARE DESCRIPTION

A) **Finger print module:** The ARA-EM01 is fingerprint module. It is a easy restructure, powerful functions, compatible with PC and multiple-functions with single module Fingerprint enrollment, image process, characters acquisition, fingerprint template creation, fingerprint template storage, fingerprint compare (1: 1, 1: N), fingerprint delete. This module can work with UART.

B) **GSM module:** GSM stands for Global System for Mobile communications, in any country for mobile communication use frequency range between 890Mhz to 915Mhz. Hence it is called Global System for Mobile Communication. Main elements in GSM is MS(mobile station), BTS(Base transiver system), BSC(Base station controller), MSC(mobile switching center), PSTN(public switched telephone network), HLR(home location register), and VLR(visitor location Register).

C) **Keypad:** 4X4 matrix keypad has total 16 keys arranged as 4 columns and 4 rows. 4cloums default value is 1 and 4 rows default value is 0 by pressing switch one of the column is 0 depends on the respective row, each row representing a low frequency, each column representing a high frequency. If we press single key then it will send sinusoidal signal for each of the frequencies. Every column connected to all rows through switch, the tones generated when the switch pressed that is decoded by the DTMF.

D) **LCD display:** The LCD has 3 control lines as well as 8 data lines some applications use only 4 data lines. We need to select operate with 4 data lines or 8 data lines. The three control lines are **EN**, **RS**, and **RW**. If a 4-bit data bus is used the LCD will require a total of 7 lines controller pins always 3 (3 control lines plus the 4 lines for the data bus). For 8-

Bit data total of 11 data lines (3 control lines plus the 8 lines for the data bus).The **EN** line is called "Enable." To send data to the LCD we need apply logic low to EN pin. EN pin is active low pin. RS pin is active high, RS stands for "Register Select" which is used to know sent data is data or command, if rs=0 then data on data pins is commands or special instructions, if rs=1 then data present on the data pins is treated as data only. Commands are use to clear screen, and set the char print location on screen.

E) **Reset:** Reset button is used to reset total system operation. When reset button is pressed registers stores with default values.

F) **Wi-Fi:** ESP8266 is a Wi-Fi networking solution, allowing it to either host the application or to offload all Wi-Fi networking functions from another application processor. It has integrated cache to improve the performance of the system in such applications, and to minimize

the memory requirements. Wi-Fi is working through network layer of OSI 7 layers.

2) SOFTWARE DESCRIPTION

A) PIC Compiler: PIC compiler is software used where the machine language code is written and compiled. After compilation, the machine source code is converted into hex code which is to be dumped into the microcontroller for further processing. PIC compiler also supports C language code.

are using different modules they are LCD, GSM, Keypad, Wi-Fi, Finger print module and LED, DC motor, Crystal oscillator. Here 230v AC converts into 5V DC by using transformer and maintained constant 5V by RPS.DC 5V given to micro controller 11 And 32 pins, shown in figure. Finger print module is connected to port a of micro controller .port A pins are analog input pins. Pin 2 connected to Transmitter pin of finger print module. Micro controller verifies the
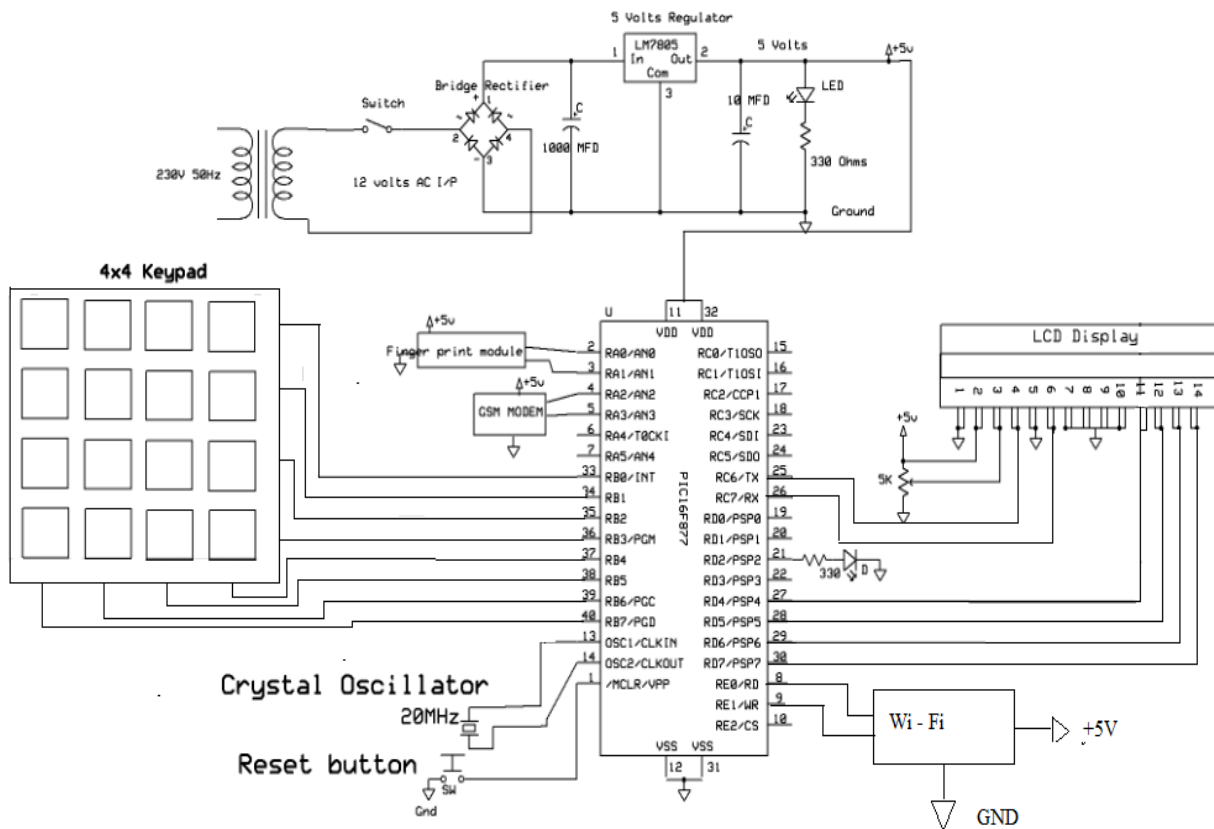
IV.METHOD

The below figure shows the schematic diagram of IOT based virtual banking here we

authentication if valid then it will ask password. Pin no 33 to 40 (Port B) pin of micro controller connected to matrix keypad. If user id and

password is matched we have to enter amount to be transfer. LCD is connected to c6, c7 and D4-D7 (data) Pins of micro controller here LCD is used to display the messages which is given by micro controller. If transaction is completed successfully user gets message to registered mobile number Through GSM. GSM module is connected to pin no 4 & 5 of micro controller. User transaction details are stored in banking server through Wi-Fi .Wi-Fi is connected to pin number 8 & 9 of controller.

V.APPLICATIONS

1. Shopping malls.
2. Bus/Train ticketing system.
3. Fee payments at various educational institutions.
4. Any other payments (alternative to cash payment)

VI. CONCLUSION

Our paper "IOT BASED VIRTUAL BANKING "is mainly intended to banking applications like payments and transfer of money with more secure without any virtual cards.

VII. FUTURE SCOPE

We can extend as ATM machines without using any virtual cards money

withdrawal and transfer and also add feature eye retina scanning for more secure.

REFERENCES

[1]. Micro controller architecture, programming, interfacing,and system design-By Raj Kamal-2009.

[2]. PIC Microcontroller and Embedded systems-By Mazidi Muhammad Ali Mazidi, Rolin D. McKinley, Danny Causey-2008.

[3]. Printed circuit Board –Design, Fabrication , assembly and testing-By R. S. Khandpur-2005

[4]. PIC Micro controller manual - Microchip.

[5]. PIC Microcontroller: An Introduction to Software and Hardware Interfacing-By Han-Way Huang-2005

[6]. Embedded C – By Michael.J.Pont – 1st edition-2002.

[7]. Getting started with the Internet of Things-Connecting Sensors and Microcontrollers to the Cloud-By Cuno pfister-24 May 2011

[8]. Internet of Things: A Hands-On Approach-By Arsheep Bahga and Vijay Madisetti-9th August 2014.

[9]. Microcontroller Based DC Motors-By Lakshminarayana Gadupudi and Heena Chandwani-3rd September 2012.

[10]. PIC Micro controller projects in c-By Dorgan Ibrahim-Second Edition-16 April 2014.

[11]. Internet of Things with ESP8266-By Marco Schwartz-29 july 2016.

Author:

M. Varasundar

M.Tech Asst Professor Kasireddy Narayanreddy College of Engineering and Research.

Email:m.varasundar@gmail.com

A. Praveen kumar

M.Tech(Embedded systems)Kasireddy Narayanreddy College of Engineerig and Research

Email:Aruva.praveen@gmail.com