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Metro Payment system with GSM

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ABSTRACT

Now a day, peoples have to pay different types of tax and bill payments in different places. To overcome this shortcoming of money transactions, we proposes the idea of using fingerprints of customers as login in place of traditional pin number. Here, if the fingerprint is recognized, then it display the multiple tax screen. Then we can choose the tax which we need to pay. The remaining feature are same as i.e., a reference fingerprint of the nominee or a close family member of the customer can be used if the customer is not available in case of emergencies. This proposed business model helps the society, mainly the rural people, by enhancing the security using Fingerprint recognition in Digital image processing. As the fingerprint of every person is unique and unchangeable, this biometric feature is used over the others

1. INTRODUCTION

A cashless payment is a new way in which all transactions are done through cards or digital means, UPI apps, etc. The main advantage of a cashless society is that it records all economic transactions which limit the growth of the black market. It also reduces the chances of tax avoidance. Besides this there are several advantages of a cashless economy such as, cashless societies are generally corruption free. There are lots of benefits for being cashless. The cost of handling cash is high; it is in the favour of economies to go cashless. After demonetization, Indian government starts to promote cashless transaction for different payments, but there are some problems associated with the implementation of secure cashless payment systems in the country from card thefts, internet fraud, and identity theft etc.

The main objective of this system is to develop an system, which is used for tax and bill paying applications. In these systems, government will collect the customer finger prints and while opening the accounts then customer only access paymentsystem. The working of these paymentsystem is when customer place finger on the finger print module. After that the system will check the finger print as valid one or not and allows the customer further access.

2. PROPOSED CONCEPT

Tax paying system is a desktop application where fingerprint of the user is used as an authentication. The finger print minutiae features are different for each human being so the user can be identified uniquely. Instead of using manual method Fingerprint based payment system is safer and secure. You just have to use your fingerprint in order to do any banking transaction. The user has to login using his fingerprint and he can pay the tax and bill from his account. The user must have

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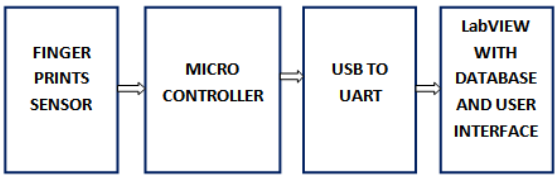
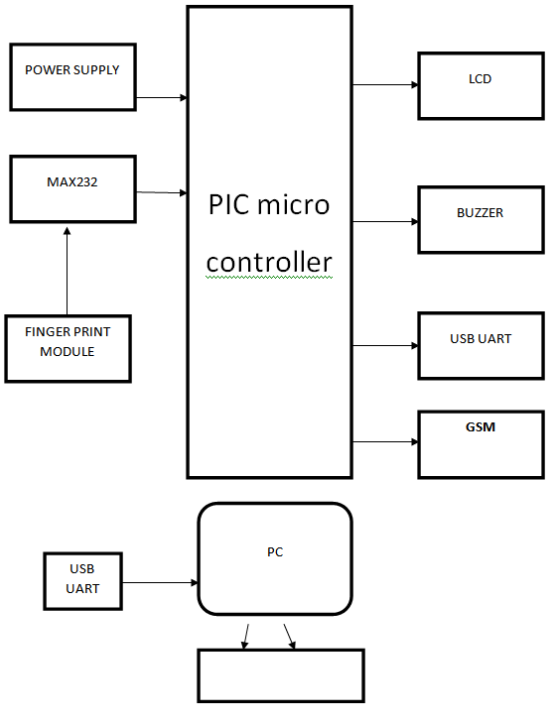
appropriate balance in his account to do transaction. If there is any mismatch the will intimate. The status is displayed in the LCD

3. BLOCK DIAGRAM



Block diagram of proposed system

HARDWARE DESIGN



Hardware design of proposed system

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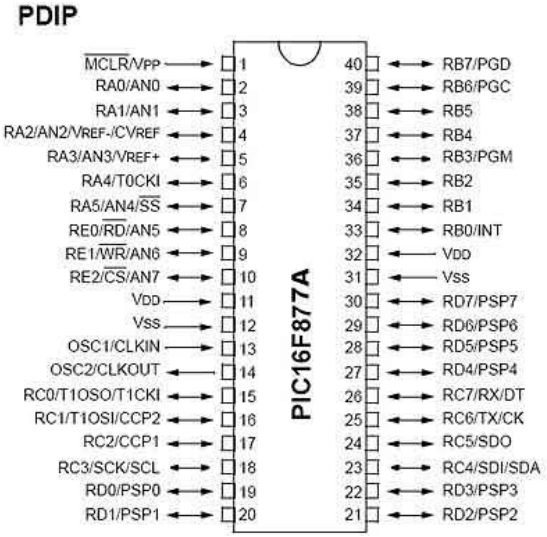
4. HARDWARE DESCRIPTION

PIC16F887 MICROCONTROLLER

The PIC16F887 is one of the latest products from Microchip. It features all the components which modern microcontrollers normally have. For its low price, wide range of application, high quality and easy availability, it is an ideal solution in applications such as: the control of different processes in industry, machine control devices, measurement of different values etc.



PIC pin diagram

Finger print sensor:

A fingerprint scanner is a type of technology that identifies and authenticates the fingerprints of an individual in order to grant or deny access to a computer system or a physical facility.

It is a type of biometric security technology that utilizes the combination of hardware and software techniques to identify the fingerprint scans of an individual

A fingerprint scanner typically works by first recording fingerprint scans of all authorized individuals for a particular system or facility. These scans are saved within a database. The user requiring access puts their finger on a hardware scanner, which scans and copies the input from the individual and looks for any similarity within the already-stored scans. If there is a positive match, the individual is granted access.Fingerprint scanners most commonly use an individual's thumbprint as identification.

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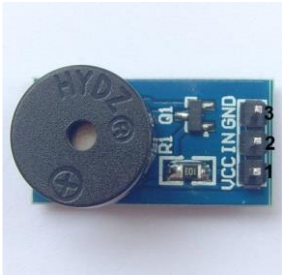
BUZZER:

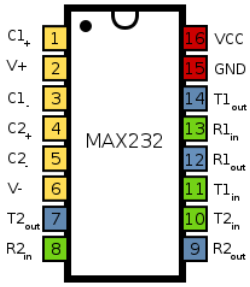
A buzzer or beeper is a signalling device, usually electronic, typically used in automobiles, household appliances such as a microwave oven, or game shows It most commonly consists of a number of switches or sensors connected to a control unit that determines if and which button was pushed or a preset time has lapsed, and usually illuminates a light on the appropriate button or control panel, and sounds a warning in the form of a continuous or intermittent buzzing or beeping sound.



BUZZER

MAX232

The MAX232 is an integrated circuit first created in 1987 by Maxim Integrated Products that converts signals from a TIA-232 (RS-232) serial port to signals suitable for use in TTL-compatible digital logic circuits. The MAX232 is a dual transmitter / dual receiver that typically is used to convert the RX, TX, CTS, RTS signals. The drivers provide TIA-232 voltage level outputs (about ±7.5 volts) from a single 5-volt supply by on-chip charge pumps and external capacitors. This makes it useful for implementing TIA-232 in devices that otherwise do not need any other voltages. The receivers reduce TIA-232 inputs, which may be as high as ±25 volts, to standard 5 volt TTL levels. These receivers have a typical threshold of 1.3 volts and a typical hysteresis of 0.5 volts. The MAX232 replaced an older pair of chips MC1488 and MC1489 that performed similar RS-232 translation. The MC1488 quad transmitter chip required 12 volt and -12 volt power,[1] and MC1489 quad receiver chip required 5 volt power.[2] The main disadvantages of this older solution was the +/- 12 volt power requirement, only supported 5 volt digital logic, and two chips instead of one.



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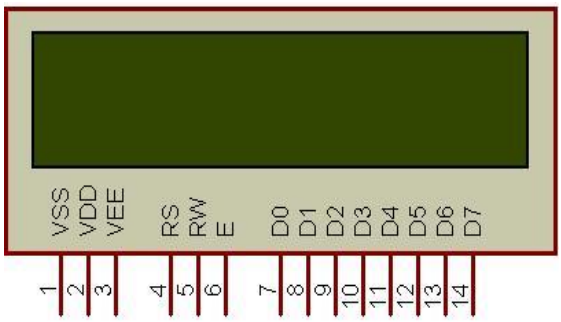
LIQUID CRYSTAL DISPLAY

LCD is used to display the results of the system operation such as sensed values, motor status etc…. A liquid-crystal display (LCD) is a flat panel display, electronic visual display, or video display that uses the light modulating properties of liquid crystals. Liquid crystals do not emit light directly. The LCD standard requires 3 control lines and 8 I/O lines for the data bus. The most commonly used Character based LCDs are based on Hitachi's HD44780 controller or other which are compatible with HD44580. In this tutorial, we will discuss about character based LCDs, their interfacing with various microcontrollers, various interfaces (8-bit/4-bit), programming, special stuff and tricks you can do with these simple looking LCDs which can give a new look to your application.



LCD

UART:

The UART that is going to transmit data receives the data from a data bus. The data bus is used to send data to the UART by another device like a CPU, memory, or microcontroller. Data is transferred from the data bus to the transmitting UART in parallel form. After the transmitting UART gets the parallel data from the data bus, it adds a start bit, a parity bit, and a stop bit, creating the data packet. Next, the data packet is output serially, bit by bit at the Tx pin. The receiving UART reads the data packet bit by bit at its Rx pin. The receiving UART then converts the data back into parallel form and removes the start bit, parity bit, and stop bits. Finally, the receiving UART transfers the data packet in parallel to the data bus on the receiving end: UART transmitted data is organized into *packets*. Each packet contains 1 start bit, 5 to 9 data bits (depending on the UART), an optional *parity* bit, and 1 or 2 stop bits:

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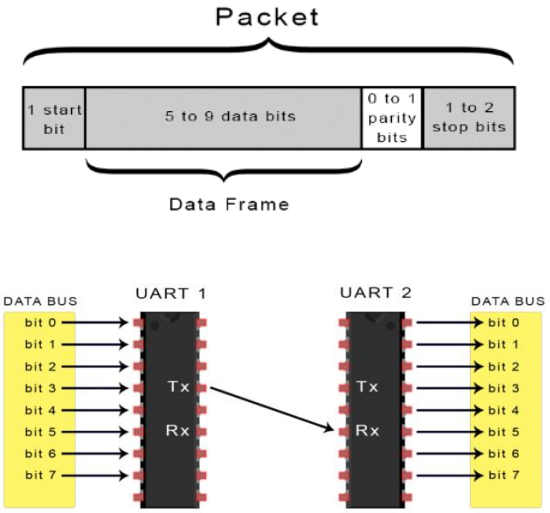

UART

GSM :

A GSM modem is a wireless modem that works with a GSM wireless network. A wireless modem behaves like a dial-up modem. The main difference between them is that a dial-up modem sends and receives data through a fixed telephone line while a wireless modem sends and receives data through radio waves.

5. SOFTWARE DESCRIPTION

EMBEDDED C

Embedded C is a set of language extensions for the C Programming language by the C Standards committee to address commonality issues that exist between C extensions for different embedded systems. Historically, embedded C programming requires nonstandard extensions to the C language in order to support exotic features such as fixed-point arithmetic, multiple distinct memory banks, and basic I/O operations.In 2008, the C Standards Committee extended the C language to address these issues by providing a common standard for all implementations to adhere to. It includes a number of features not available in normal C, such as, fixed-point arithmetic, named address spaces, and basic I/O hardware addressing.Embedded C uses most of the syntax and semantics of standard C, e.g., main() function, variable definition, datatype declaration, conditional statements (if, switch case), loops (while, for), functions, arrays and strings, structures and union, bit operations, macros, etc.

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LABVIEW:

LabVIEW (short for Laboratory Virtual Instrument Engineering Workbench) is a system-design platform and development environment for a visual programming language from National Instruments. LabVIEW offers a graphical programming approach that helps you visualize every aspect of your application, including hardware configuration, measurement data, and debugging. This visualization makes it simple to integrate measurement hardware from any vendor, represent complex logic on the diagram, develop data analysis algorithms, and design custom engineering user interfaces.

CONCLUSION

Biometrics is a means of verifying personal identity by measuring and analyzing unique physical or behavioral characteristics like fingerprints or voice patterns. The conclusion of this whole paper is that the card-less payment system should be replaced and there must be more easier, reliable, secure, cash free and tension free payment system, i-e biometric payment system in which no body have to take with dozens of cards for shopping, traveling, pass in office, university or bank as door lock. And he must have some secure codes to access as authorization and there is also one another disadvantage is that there may be stolen of cards or it can be losses at any time without any care. So to consider all these kinds of problems and disadvantages of card payment system the fingerprints payment system is suggested to be implemented because it is easier, reliable, feasible, secure and easily authorized to everyone. And there is no any worry that anyone can stolen my finger are can be loosed anywhere so other body can use it. In fingerprint payment system customer has to place his fingers on the finger-scanner and then scanner will recognize the account which belongs to that person and charge the bill. So it is easy for both customer and seller because there is no need to scratch the credit card and then enter code if code is forgot or if some time card cannot read and many more problems can occur in card payment system. And in biometric payment system no need to carry cash with them.

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