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Digital E-Wallet Wristband

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***Abstract*: The purpose of this smart wallet is to provide an easy and reliable platform to do money transactions. This wallet money transfer is developed in such a way that money can be transfer wirelessly without using internet via Bluetooth and having major advantage that server issues are eliminated. Using this method one can easily pay for goods and services.**

Keywords - Wireless, client-server client, Taxation, wallet

I. INTRODUCTION

In recent years, development in the field of mobile technology has been growing progressively. E-cash, credit/debit, and mobile payments have become feasible alternatives to physical cash. Mobile payment systems can augment convenience, and enhance payment security. This concept of payments is far superior compared to other modes of payment using this method one can easily pay for goods and services. Wireless Proximity technology provides a new way to implement the mobile payment system.

The potential for short-range wireless proximity technology such as Bluetooth is extensive and secure. Here, we are presenting a wristband that facilitates money transfer using Bluetooth. Using Bluetooth, the transaction happens directly from a client to a client without the intervention of a third-party service. The conventional system using the internet involves a transaction between client-server client server-client but using this Bluetooth technology the architecture reduces to the client-client model thereby eliminating server issues. This type of payment system is used in a dynamic environment to make transactions successful between customer and vendor. To ensure secure transactions, a fingerprint sensor is employed to authenticate the user and verify the identity while making a Payment.

This is an effective payment mode for point-to-point payments, vendor machines, exhibition, market places where transactions need to happen within a shorter range. [1]

IMPORTANCE OF CASHLESS TRANSACTION

A. Taxation: As there is less physical currency available at homes and more in banks, there is less opportunity for people to hide their income and evade paying taxes, which ultimately results in a reduced tax rate for the entire nation.

B. Accountability and Transparency: By recording every transaction with the buyer, seller, and regulatory agencies, the system becomes much more transparent and compliant, making it much easier to follow the movement of money. Long-term, the economy as a whole has improved commercial and investment opportunities According to the nation's monetary policy, holding more currency in the bank will result in increased liquidity and eventually lower interest rates as more money circulates all throughout the economy.

C. Reduced Red Tape and Bureaucracy: With cashless transactions made through electronic methods, wire transfers are monitored and recipients are held responsible, which lowers corruption and speeds up service.

D. Less Money is Available for Illegal Activities: When people are urged to become cashless, there is less money in circulation and no way to invest it in other enterprises to put it to use. The impact of a cashless economy would ultimately be felt most strongly by channels like hawala (illegal remittance).Simply utilizing mobile banking or carrying the required cards will suffice. An enhanced sense of security is provided by PIN-protected cards, etc. that can only be utilized with your own credentials. Unlike carrying cash and letting your standards slip, there is no risk of robbery everyone is informed that there might be something worthwhile.

E. Expense Tracking: Making decisions is made easier where and how much was spent. Smaller denominations of the exact amount can be used to pay. There is no need to pay a fee for noncash transactions. If the precise amount is not readily available, any one of the parties. An essential, even if seemingly.

II. LITERATURE SURVEY

Methods of exchanging value in the transfer for goods and services are continually changing and evolving. Payment methods and mechanisms started with trade by barter which was used by early man and has now evolved into money transfer systems like the one developed in this project that can be used in a modern society like ours. The informal money transfer system being created will be platform independent. Informal Money transfer systems have come into existence out of the need for people of a similar ethnic background looking for an efficient way to transfer money to each other. Money, which is simply a device which facilitates trade, represented an improvement over barter in that it reduced transactions costs and thus freed resources. Checks came into widespread usage because they offered considerable advantages over cash; they were easily transported in any amount, easily transferred between individuals, involved much less danger of loss than cash, and served as proof of payment. Checks thus reduced the transactions costs involved in making many types of money payments. There are still transaction costs are involved with the processing of these paper documents. The main problem with checks is the indirect nature of the check clearing process. These delays can be costly, especially in cases where large sums of money are involved. The next step in the evolution of payment mechanisms was wire transfers. Wire transfers involve banks sending electronic messages rather than paper documents to the extent that wire transfers reduce transaction costs and processing time they can be said to improve the efficiency of the payment's mechanism.

However, the use of wire transfers did not significantly reduce the vast flow of paper through the payments system. Electronic fund transfer is the latest step in both payment mechanisms and money transfer systems. Electronic funds transfer all started with the use of Automated Teller Machines. ATM machines can carry out account

Transfers account deposits and dispense cash in the mid 1960's.They use a magnetic stripe card and personal identification number. As the use of ATM machines have grown, the world commenced the electronic fund transfer age. The next step after this would be (POS) machines. POS machines are on line systems which allow customers to transfer funds in to make purchases. In more industrialized countries, electronic money is fast replacing the use of traditional cash and order checks. The increase in the use of electronic money was foreseen by 23 representatives from financial institutions Efficiency considerations have constituted the major driving force in the historical evolution of our payment's mechanism. If the EFTS is ultimately an efficient payments mechanism, it will become, sooner or later, an inseparable part of our life. Efficiency considerations will determine the final impact of the EFTS on the financial institutions, the households, the firms, the financial information availability, the instruments and the channels of influence of monetary policy. Electronic funds

transfer developments are proceeding in several directions, with a number of different systems in various phases of development or use. The common factor in these systems is that they speed the transfer of funds by communicating information relating to payments by electronic means rather than by use of paper instruments as is predominant today. Thus, EFT systems are designed to replace manual processes with electronic data processing and to speed the flow of funds through high-speed data transmission. [2]

- Types of Digital Payment Methods in India

Debit cards, Cheque, Smartphone wallets, UPI, demand draft, prepaid bank cards, POS, banking online, Banking on mobile.

III .DESIGN ASPECT / BLOCK SCHEMATIC

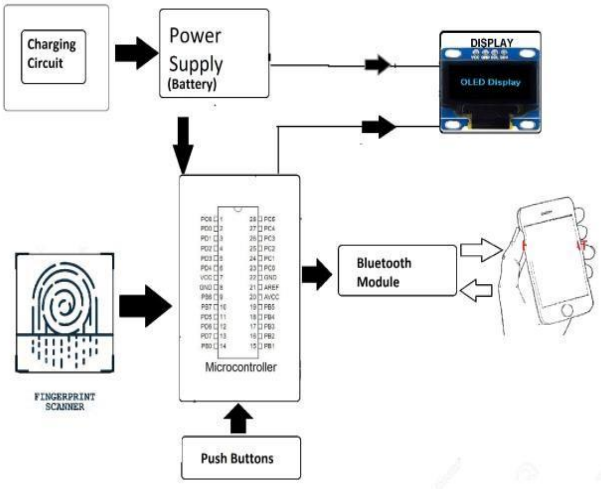

Fig. 1

The design comprises two major parts- the hardware and the software part. The hardware is designed according to the schematic diagram and the software module is developed using Arduino IDE, to display messages on the OLED. The fingerprint module, Bluetooth module and the OLED works together in tandem with the ATmega328P microcontroller. On turning the regulated power supply, the circuit gets a 5 volt connection. The wristband is powered "ON" and it indicates a message. The real time clock displays the date and time on the OLED and it keeps track of time even when the power if turned off. The fingerprint module triggers a response request to the OLED to scan the fingerprint for verifying the identity of the user. The user's fingerprint is stored and compared against the fingerprint used while making a transaction. This ensures a completely secure transaction.

VI. SYSTEM ARCHITECTURE:

1. EXISTING SYSTEM ARCHITECTURE (client- server- client model)

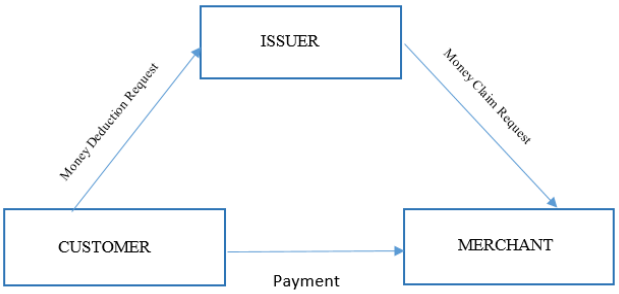

Fig. 2

In the existing mobile payment system, the model employed is a client-server-client based architecture. It is normally composed of Customer (the one who wants to buy), Issuer (Bank or Financial supporter) and Merchant (the one who wants to sell). In this model the client makes a request to the payment gateway to deduct money from the Customer's bank account.

The Merchant makes a money claim request to transfer money to his bank account. This model involves a third party intervention and without a stable internet the transaction fails

2. DIGITAL WRISTBAND ARCHITECTURE (Client - Client Model)

Fig .3

Our system is based on client – client architecture where direct transaction takes place between customer (sender) and merchant (receiver) without involving issuer .This transaction takes place from wallet to wallet which eliminates server issue

V. MECHANISUM OF WALLET

- Wallet-to-wallet transfers provide flexibility for how and when you access funds.
- A goods or services based platform is looking to allow immediate peer-to-peer payments. A company wants to make payouts and give their workers the option to choose their method of disbursement. A subscription based company has been accumulating payments over a period of time (day, week, etc.) before sending payouts to their employees' wallets.
- In the model, the architecture is reduced to client-to-client where the transactions happen directly from the customer to vendor. Here, a prototype of a wristband is designed and propounded for transferring money to the merchant through Bluetooth. The merchant should have a Bluetooth enabled device compatible application in order to receive money.
- The client initiates a connection request to the merchant i.e. pairing is done. After pairing successfully, the customer can enter the amount using the wristband and then send the amount to the merchant's account in the application.
- This model eliminates the third party intervention and there is no need of having a stable internet connection. This also serves as an effective model in remote areas or places where internet stability poses a major challenge when the transaction should happen within a shorter range.

VI. WRISTBAND MODEL

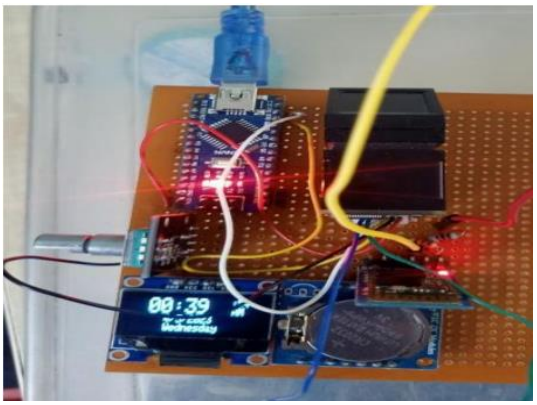

Fig.4

The purpose of this smart wallet is to provide an easy and reliable platform to do money transactions.

- This wallet money transfer is developed in such a way that we can transfer money wirelessly without any problem.
- It is small in size which is wearable and rechargeable for safety purposes. A fingerprint scanner is also included which will confirm the authorized user.
- After turning on the system it will get paired with Bluetooth, the device will get connected it will ask to register by taking the user's fingerprint.
- After successful registration, it will display the date and time. For transferring money, users need to press the mode switch which will on the transaction mode, further we will have to select an amount.
- After transferring money, it will display the remaining amount. To add money to the wallet user can use an android application to add money into the wallet.[3]

VII. SYSTEM OUTCOME

PURPOSE OF USING DIGITAL WRISTBAND:

- Recharge and Broadband top-ups
- Utility bill payments like electricity bill, water bill, gas charges, telephone bill etc. on a single click.
- It maintain strong security. It verify the transaction account properly
- The size of wrist band is less hence we can prefer it easily
- Easy for handling

CASHLESS PAYMENT TECHNOLOGY OFFERS MANY BENEFITS INCLUDING:

- Faster transaction times
- Reduced wait time and line-ups
- Super convenient; no need to carry wallets and fumble
- Efficient and saves time through Pre-Top Up and Auto-Top Up; no need to hit the ATM
- Safe and secure; no need to worry about getting your wallet lost or stolen
- Overall, an enhanced guest experience.

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