Cashless Society: Managing Privacy and Security

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Abstract

A cashless society is an economic state which handles financial transactions not in the form of traditional mediums of currency, such as cash or coins, but by transferring digital data between participating parties. Balancing both the individual privacy along with data security is vital in the information age. In order to increase privacy in a cashless society, a new kind of banking service that assigns randomized numbers to credit cards, and the usage of blockchain to monitor all transactions from individuals, and a campaign to educate and inform key stakeholders about security and privacy risks to provide the necessary tools and interaction with a foreign entity or other third parties. Blockchain and card randomization are both susceptible to zero-day errors, bugs and varied levels of social acceptance. This study provides critical and crucial steps to prevent the loss of privacy of an individual in a cashless system.

Keywords: *Blockchain, Randomized numbers, Privacy, Transactions.*

1. Introduction

Money lending, borrowing, depositing and withdrawing became the necessary or frequent task. People can be seen performing the above-mentioned tasks every day. As the economy system has been growing enormously the tasks related to the economy has also been expanding and up surging. Due to increase in these tasks it has become more hectic to maintain the data and provide service efficiently.

Cashless society has been developed to overcome the limitations of the traditional system. In cashless society the financial transactions are handled in different way compared to the traditional medium. In traditional medium the financial transactions are made using the currency, cash or coins. Cashless society uses digital or virtual platform to make transactions. Digital transactions are where the money lending, borrowing, depositing and withdrawing can be done using online platform like web browsers, mobile applications.

Digital transactions have become more easier to perform and increased in enormous range. User's have been finding the digital transactions more convenient than the traditional way. Even the data maintenance has become easier and more efficient in the cashless society. Both user's and the admin or authorities found it more efficient to maintain, store, delete, update, insert the data. As the system increased the security of the data has become a major issue.

The data stored to perform the digital transactions are being disclosed to the third parties or hackers. The disclosure of data to other entities raised security and privacy issues in the digital transactions. To overcome these issues in our project we have introduced few security mechanisms or technologies. Introduction to random number generation for card number and usage of blockchain technology for the user's data provides the data security and privacy. The main issue in the digital transactions can be solved by using these techniques. The random number generator assigns a random number to card numbers for every transaction in order to maintain the data security. Second Blockchain technology encrypts the data which can protect the data from the third parties or foreign entities thus, ensures the data privacy.

2. Cashless Society: Managing Privacy and Security:

Cashless society primarily focuses on maintaining privacy and security. The traditional system has failed in providing the security and privacy of the user's data. The system uses strong data security technologies like random number generation, blockchain. The random number generator algorithm generates a random number and assigns it to the card number. So, whenever the user makes any payments or transactions using the card number a random number is generated. This random number is used instead of the card number while performing the transactions. Thus, the card number is unknown to the third parties involving in the transactions. These increases the system's security. In the same way to maintain privacy while performing the online transactions we use Blockchain. The Blockchain technology encrypts the user's personal data like name, password etc., Blockchain uses cryptography techniques along with encryption keys. As a result, it ensures that only the individuals for whom the transaction or transaction data is intended can obtain, read and process the transaction and verify the authenticity of participants.

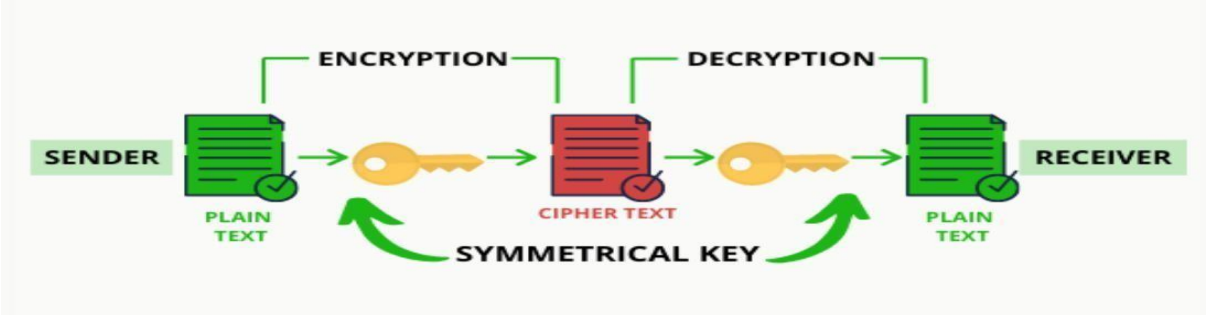

Fig 2.1. Process of Encryption and Decryption.

Characteristics of Cashless Society:

- Uses random number generator to assign a random number to the card number.
- Uses Blockchain technology to encrypt the data.
- Secured and efficient digital transactions can be done.

Advantages of using Cashless Transactions:

- It provides more efficiency and robustness to the system.
- Disclosure of user's data to third parties is decreased in the proposed system.
- Fraud users can also be reduced due to the presence of Blockchain.

3. Proposed Method

In order to increase the privacy in cashless society, a few courses of actions can be combined to produce a lasting and desirable results for users. A new kind of banking service that assigns randomized numbers to card numbers, the use of blockchain to provide privacy to the user's data from the foreign entities or third parties. The introduction of randomized number of card number and blockchain has made the proposed system more secure and efficient.

Advantages:

- The system is more effective since, the idea of a cashless society includes using digitally based technology.
- The system is more efficient due to the introduction of random number generation.
- The system is more secured since the system is implemented by randomized credit card numbers.

4. System Architecture

A randomized credit card system will help prevent unwanted parties from collecting sensitive and personal information. Block chain will prove to be a powerful authentication tool. Security will be drastically improved through the introduction of these two approaches.

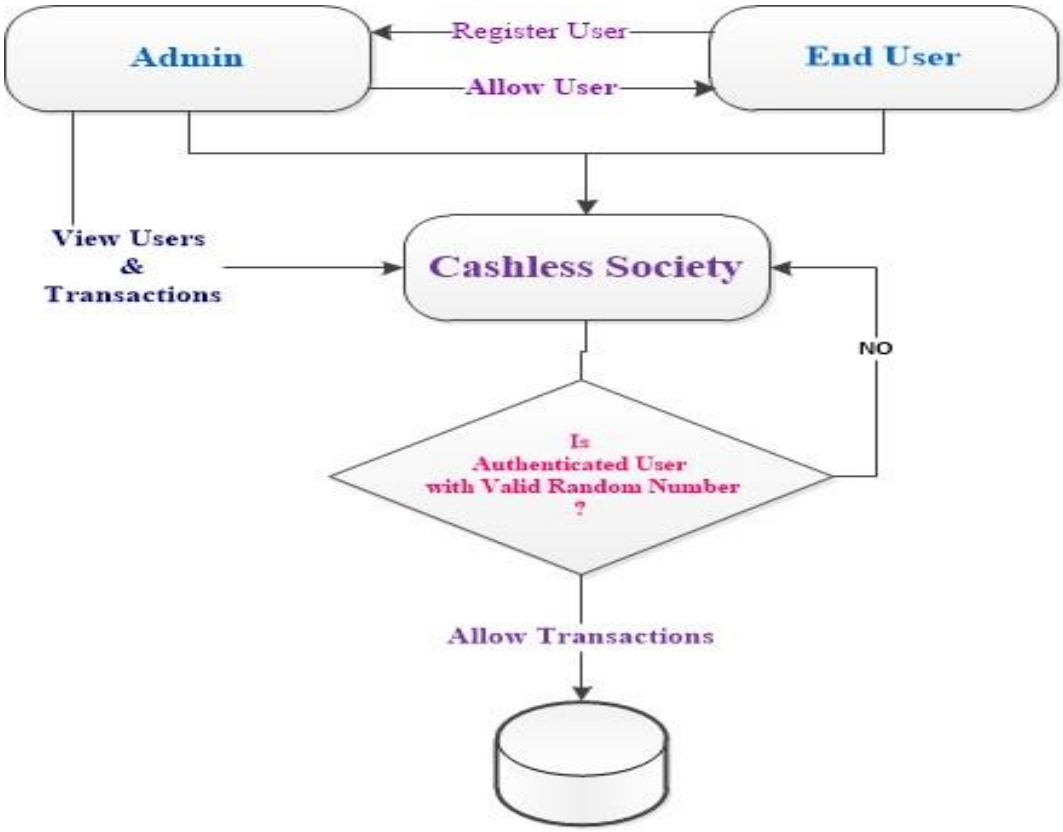

Fig 4.1 System Architecture of Cashless Society: Managing Privacy and Security

5. Implementation

1. Data Privacy and Security

Many applications utilized user data send to third party unauthorized organization. So to overcome the data security problems, in this module we provide data privacy and security.

- **Data Privacy**

Data privacy can be maintained by hiding credentials and other unique details. The system will reveal or disclose only limited details to purchase applications. So in this way we maintain privacy for user data.

- **Data Security**

Data security is essential for user transactions. In this application we can provide security for complete data which provided by user. In module denied un-authorized access by using session security mechanism.

2. Random Number Generation

- Here randomized credit card system will consist of a primary account number which is linked to randomized card numbers that are linked to individual transactions.
- So the random number generation system will be helpful to users in predicting unauthorized access. The secret key which is generated by random number system will change dynamically for every transaction.

3. Block Chain

- The blockchain is blueprint for a new economy. Blockchain operates as a public ledger of all transactions
- The blockchain will have complete information related to each transaction and the data of each person involved in the transaction. Such technology is more secure than other record-keeping systems.

With a blockchain network, there would exist secure, encrypted confirmations of money-flow. There would be no worry of intrusion, due to the level of security in place, combining manpower and machine.

- **Administrator:**

  This will enable all the administrative tasks of the portal such as management of user's data, assigning random number to user's card number for every transaction, encrypting user's data for every transaction.

- **User:**

  This enables all the user tasks, where user makes transactions or payments using the system.

6. Results

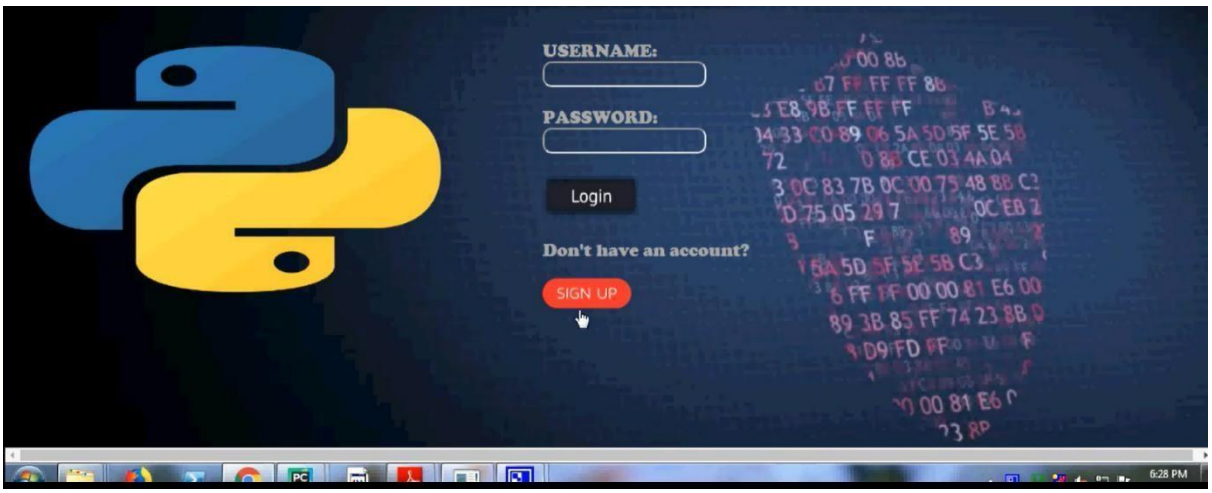

Fig.6.1. Cashless Society User Login/Sign Up page

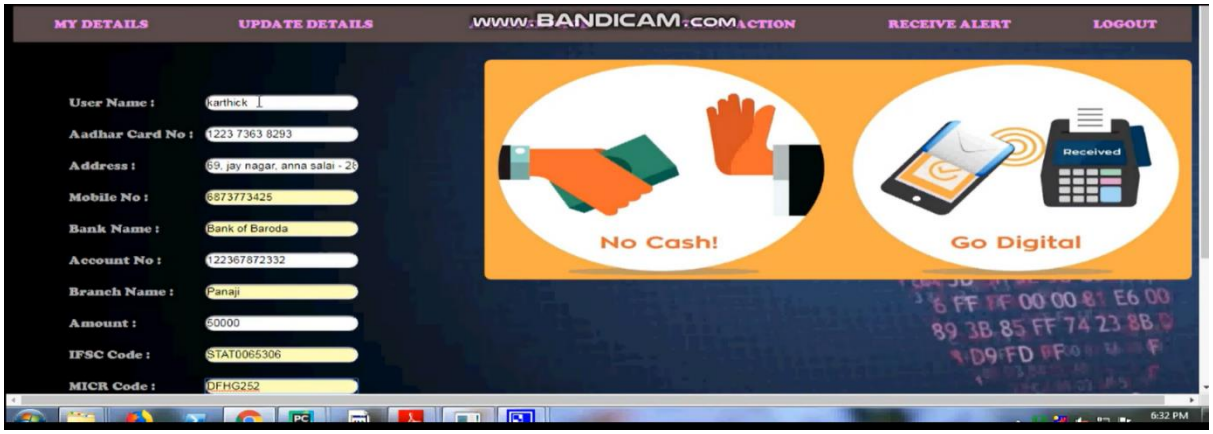

Fig .6.2. User's Bank Account details page

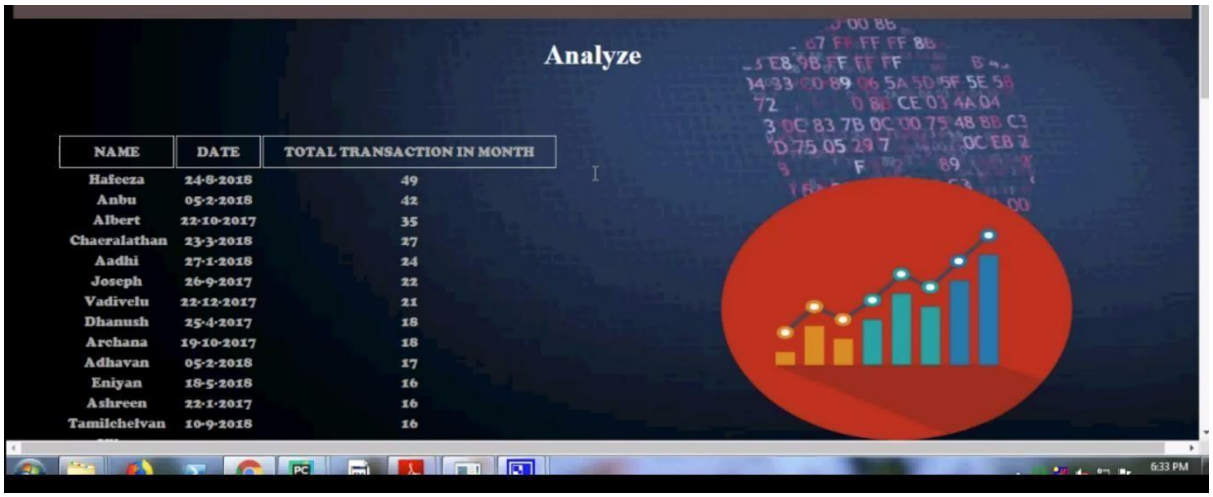

Fig.6.3. Different Users transactions Analyse page

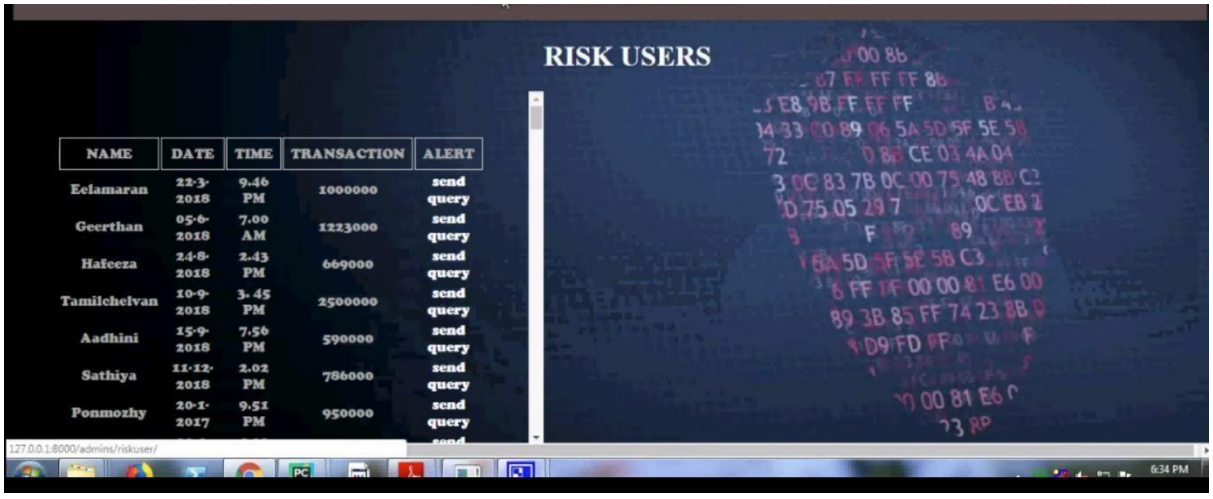

Fig .6.4. Risk Users display page

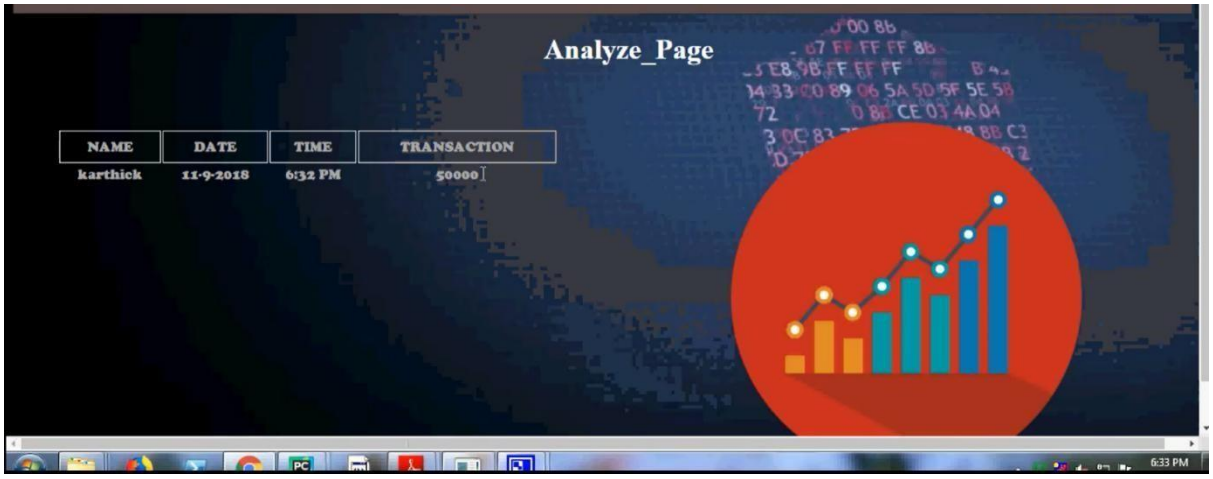

Fig .6.5 User transactions Analyse page

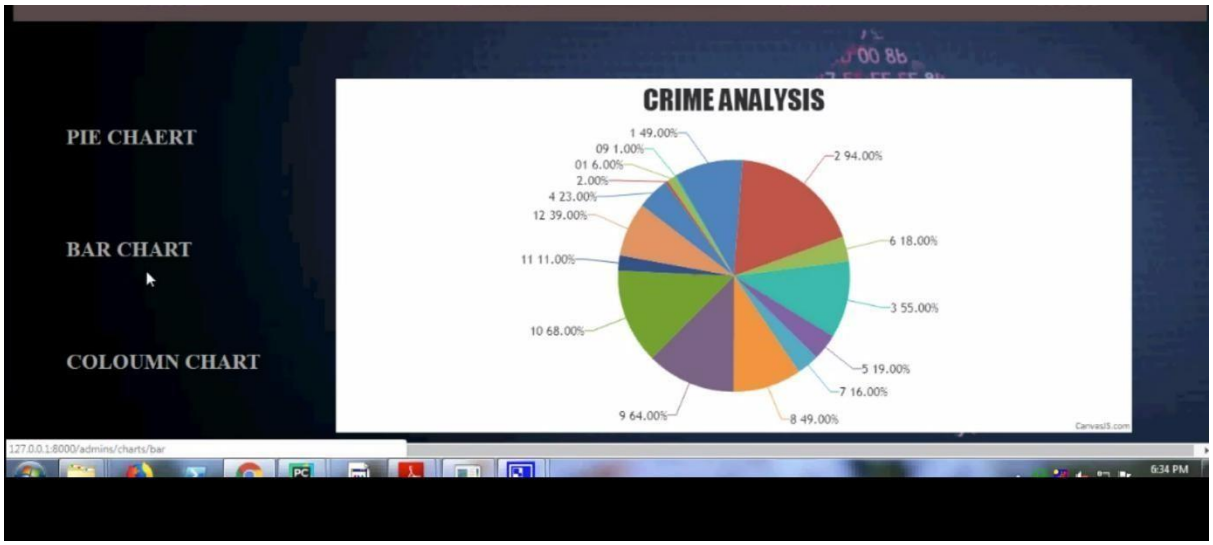

Fig .6.6 Pie chart representation for crime analysis

7. Conclusion

A cashless society poses risks for its members because data about their transactions are being collected and used. Our group has found the idea of a cashless society to involve many systematic complexities. Within the complex system, opportunities arise to implement solutions to privacy and security problems. Sometimes the best solution to a problem is the culmination of multiple approaches. Blockchain helps promote privacy and security through its authentication process. Randomized credit cards help users keep their account numbers private. These two approaches are effective ways of adapting to a dynamic currency system.

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