

**National University of Computer & Emerging Sciences (FAST-NUCES)**

**FAST-COIN: Blockchian Based Regularized E-Currency Using Hyperledger Fabric**

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## **Chapter I - ABSTRACT**

**Abstract**

An online payment system is that in which people transfer digital currency from one account to another account. But here comes some security problems due to which people do not prefer to use online payment systems and use conventional payment systems. We are aiming to solve this trust issue by developing a project which will be able to provide a full trust worthy environment to the user and will encourage the users to use online payment systems rather than conventional systems. The project which we are developing is the “Regularized Digital Currency Using Blockchain With Hyperledger Technology”. This project is based on block chain which is used for providing the security to the payment system. Block chain is the chain of different blocks which are maintained in a distributed network due to which whenever a user makes online payment, which is called as transaction, a block is created for that transaction and the transaction is stored in block after it has been validated from all of the nodes in the network in this there is no chance of any fraud or any discrimination to occur and so it provides full secure environment. In our project we are going to develop a digital coin using this block chain network and a mobile application for the transactions of these coins.

## **Chapter II - INTRODUCTION**

**Introduction:**

The basic objective of this project is to maximize the use of online payment system by providing the maximum security to the users and eliminating the use of banks for the transfer of money. This project can play an important role in providing the end to end security to the online payment system. This system is very useful for the people who need instant transfer of money from one account to another account.

This system uses block chain network to provide security to the online payments. Whenever a user makes any transaction it is verified from all of the miners node in the block chain distributed network and when the transaction is approved by all of the miners then a block is generated and the transaction is stored in block and the block is attached in the block chain.

## **Chapter III – Literature Review**

**Literature Review:**

There are many other online payment systems and digital currencies already been developed like altcoin, Litecoin, ethereum and one of the most famous bitcoin. But as there are multiple advantages and good things about these currencies in a similar way there are several problems too with these digital currencies.

**Litecoin:**

Litecoin (**LTC** or **Ł**) is a peer-to-peer crypto currency and open-source software project released under the MIT/X11 License. Creation and transfer of coins is based on an open source cryptographic protocol and is not managed by any central authority. Litecoin was an early bitcoin spinoff or altcoin, starting in October 2011. In technical details, litecoin is nearly identical to Bitcoin.

**Ethereum:**

It is an open-source, public, blockchain-based distributed computing platform and operating system featuring smart contract(scripting) functionality. It supports a modified version of Nakamoto consensus via transaction-based state transitions.

**Altcoin:**

Altcoin (ALT) is a crypto currency token and operates on the omni platform.

**Bitcoin:**

It is a crypto curency, a form of electronic cash. It is a decentralized digital currency without a central bank or single administrator that can be sent from user to user on the peer-to-peer bitcoin network without the need for intermediaries.[[7]](https://en.wikipedia.org/wiki/Bitcoin" \l "cite_note-JSC-10)

Transactions are verified by network nodes through  [cryptography and recorded in a public distributed ledger called a blockchain. Bitcoin was invented by an unknown person or group of people using the name, Satoshi Nakamoto and released as open source software in 2009. Bitcoins are created as a reward for a process known as mining. They can be exchanged for other currencies, products, and services. Research produced by university of Cambridge estimates that in 2017, there were 2.9 to 5.8 million unique users using a crypto currency wallet, most of them using bitcoin](https://en.wikipedia.org/wiki/Cryptography).

All of these digital currencies are good for some reasons but all of these have one flaw due to which these digital currencies are illegal to use in Pakistan and the flaw is that these digital currencies are not regularized and they are not having one fixed value. The value of these currencies are continuously fluctuating which make these currencies illegal to use in Pakistan.

This problem has been solved by our project because we have kept a fixed value of our digital currency due to which our digital currency will be legal to use in Pakistan and will be regularized.

Beside this, there are many online payment systems are also available which are having many advantages, benefits to the users who are using those systems but there is one problem as well. The problem is that there is the involvement of a third party, which is bank, and the two parties who are transferring money to each other are transferring money through this third party so there is a risk of security and this third party will also charge some money due to which the person who is transferring money to someone will have to pay more. This problem has also been solved by our project because we have eliminated the middleware due to which two parties are able to exchange money directly without any security risk.

## **Chapter IV – Proposed Work**

**Proposed Work:**

**Application Work**

In our project we have developed a regularized digital currency which will be having a fixed value and will be legal to use in Pakistan.

Beside a digital currency, we have also developed e-wallets to store these digital currencies and for creating e-wallets we have developed android applications and web applications for users. In our applications we have also added a functionality of transferring coins from one customer to another customer. These transactions are same like people do transactions through online payment system but the only difference will be that there will no banking system involved and most importantly all the transactions will be secured.

For providing security to all the transactions made by the customers, we have developed a blockchain network. This network is a decentralized network with multiple nodes connected to each other. There will be miners in this network who will be verifying the transaction that if it is a valid transaction or not and once the transaction has been verified, customer will be able to transfer money successfully

**Blockchain Work**

Hyperledger Fabric is delivering a blockchain platform designed to allow the exchange of an asset or the state of an asset to be consented upon, maintained, and viewed by all parties in a permissioned group. A key characteristic of Hyperledger Fabric is that the asset is defined digitally, with all participants simply agreeing on its representation/characterization.

The technology is based on a standard blockchain concept - a shared, replicated ledger. However, Hyperledger Fabric is based on a [permissioned network](https://hyperledger-fabric.readthedocs.io/en/v1.0.5/glossary.md" \l "permissioned-network), meaning all participants are required to be authenticated in order to participate and transact on the blockchain. Moreover, these identities can be used to govern certain levels of access control (e.g. this user can read the ledger, but cannot exchange or transfer assets). This dependence on identity is a great advantage in that varying consensus algorithms (e.g. byzantine or crash fault tolerant) can be implemented in place of the more compute-intensive Proof-of-Work and Proof-of-Stake varieties. As a result, permissioned networks tend to provide higher transaction throughput rates and performance.

Once an organization is granted access to the [blockchain network](https://hyperledger-fabric.readthedocs.io/en/v1.0.5/glossary.md" \l "blockchain-network), it then has the ability to create and maintain a private [channel](https://hyperledger-fabric.readthedocs.io/en/v1.0.5/glossary.md" \l "channel) with other specified members. For example, let’s assume there are four organizations trading coins. They may decide to use Hyperledger Fabric because they trust each other, but not to an unconditional extent. They can all agree on the business logic for trading the coins, and can all maintain a global ledger to view the current state of their coins market (call this the consortium channel). Additionally, two or more of these organizations might decide to form an alternate private blockchain for a certain exchange that they want to keep confidential (e.g. price X for quantity Y of asset Z). They can perform this trade without affecting their broader consortium channel, or, if desired, this private channel can broadcast some level of reference data to their consortium channel.

**Chapter V – Experimental Setup**

**Experimental Setup:**

Following are the tools we used for developing our project;

* Android studio has been used for developing mobile applications
* Html, CSS and javascript have been used for developing the web applications for the users.
* Firebase has been used as a database of our project.
* Hyperledger fabric has been used for creating a blockchain network.

## **Chapter VI - Results**

**RESULTS:**

We have developed a coin which has a same concept of de-centralization as of bitcoin named Fast-Coin, i.e. no intermediaries or third party will be in control of our crypto currency (Fast-Coin), e.g.: like maintaining the user's account or transaction through the centralized authority or online payment system like Paypal or Banks, Changes to public blockchains are publicly viewable by all parties creating transparency, and all transactions are immutable, meaning they cannot be altered or deleted. Traditional banking systems can be slow, as they require a lot of settlement time which usually takes days to proceed. This is also one of the main reason why these banking institutes need to upgrade their banking systems. This problem can be solved by the means of blockchain technology. Therefore Fast-Coin will provide faster payment mechanism using blockchain platform as compared to traditional payment systems. but the main differences between and bitcoin and Fast-coin are that, Fast-coin will be regularized under the state's banking system while the bitcoin does not possesses this characteristics. Also the bitcoin possess a versatile behavior  which made it's value to fluctuate over time, but the Fast-Coin will have a fixed rate i.e one Fast-Coin will be equal to one rupee in value. Our project is based on the Go-App which will be connected to the Hyperledger Platform at the back-end in which first the user(customer) or I.C.O will register through our app on blockchain network and then can perform transaction through our app on blockchain network.

## **Chapter VII - Conclusion**

**CONCLUSION:**

Our project will be based on regularized digital currency. We will be creating our own digital currency which will have a fixed rate .It can be legalized with the approval of State Bank of Pakistan and higher government officials. The users who will own the digital currency will be assured that they cannot occur any lost.

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