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BLOCKCHAN USING ETHEREUM – THE NEXT COMPUTING PARADIAGM SHIFT

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ABSTRACT

Blockchain technology has gained lot of importance in these upcoming years since people got to know that it solved most of the banking issues. This technology is entirely a new form of money called as 'crypto currency' or 'digital money'. We can do transactions of money from one individual to other individuals but without involving the third party (i.e. Bank, lawyer, notary).It is totally trusted and a decentralized database in a peer-to-peer network.

Since there exists Bitcoin blockchain and Ethereum blockchain, in our research paper we have given the information about 'Blockchain using Ethereal' because it has certain advantages over Bitcoin. Ethereum takes 14 seconds to perform single transactions while bitcoin takes 10 minutes. Ethereum has no limit in Megabytes and it also allows developers i.e. users to build their own DApps (Decentralized app) and ethereum is also an open source application. Security and performance wise ehereum is better platform for the number of users present in the network. Ethereum is the ongoing trend and most widely used in developed countries nowadays.

People are excited to work on ethereum in India because it sounds more interesting to do the transactions without involving third party. It is trusted using smart contract as intermediate. Smart contracts are nothing but because of the unique properties associated with smart contracts (secure, decentralized, speed, savings) as compared to hiring third party intermediaries, always backed up data.

Keywords: Block chain, Ethereum, Smart contracts, DApps(Decentralized Application), Bitcoin, Decentralized Authority(Third Party).

INTRODUCTION

Blockchain has a lot of buzz word these days. It's mainly because of the fact that the blockchain is the backbone behind one of the very famous crypto-currency network called the Bitcoin. The applications of block chains are much more beyond the crypto-currency application. Block chain is the algorithm behind distributed technology. This technology was well known in 2008 when it was invented by an 'Satoshi Nakamoto'. Since then the block chain has used as distributed network for crypto currency and bussiness network applications as well[1][2].

Applications are:Banking and financial sector, Real estate sector, Supply chain and logistics, Elections and surveys etc.

The major problem in digital transacton is “double spending problem”. This problem can be solved by blockchain technology. Miners have a method called “proof of work”. Proof of work means finding a hash value for a new block[3][4].
Money is most valuable thing in the world. People all over the world interact mostly with money, wherever and whenever they go. One of the new aspect of money are “crypto currency” also known “digital cash” or “internet currency”. Digital cash helps to make transactions without any interruption of central authority, Bank or Third Party.
Ex: bitcoin is one type of crypto currency.
There are two types of blockchain:

1) Public /Permission less block chains

Public block chains are the blockchains in which anyone present in the network can have access to them. They can share mining and consensus process. These blockchains use Proof Of Work(PoW) or Proof of Stake(PoS[5]

2) Private /Permissioned block chains

Private block chains are the block chains which are not open to everyone. These block chains are used for bussiness purpose. Private block chains have much value due to their rules and control during transactions[6].

ETHEREUM
Ethereum was started by a person named Vitalik Buterin. Buterin is a Russian-Canadian programmer and writer who is known for his work with Ethereum. He is also known as a co-founder of Bitcoin Magazine. As he involved in Bitcoin he is also known as a developer of a fork of bitcoins-lib as well as one of the developers behind Egora , a cryptocurrency market place. But Buterian became more popular and famous when he started Ethereum.

Buterian announced Ethereum at the North American Bitcoin Conference in Miami in January 2014. Ethereum is a decentralized platform that enables bussiness logic on the blockchain with aid of smart contracts. These contracts are executed on a decentralized computer called ethereum vitual machine which lies at the heart of the ethereum architecture. Here new etheres are mined by the miners to validate the transactions. To understand the history of Ethereum we need to know the story of DAO. DAO stands for “Decentralized Autonomous Organization”. It is the entity that runs on rules encoded on smart contracts. The DAO was founded in 2016 by Christoph Jentzsch.

Advantages of Ethereum:
→ immutable
→ secure
→transparent.

Disadvantages:
→Transactions on ethereum are not that fast.
→smart contract code is not perfect.
Ethereum can be used in: ICOs, Dapps, DAOs.

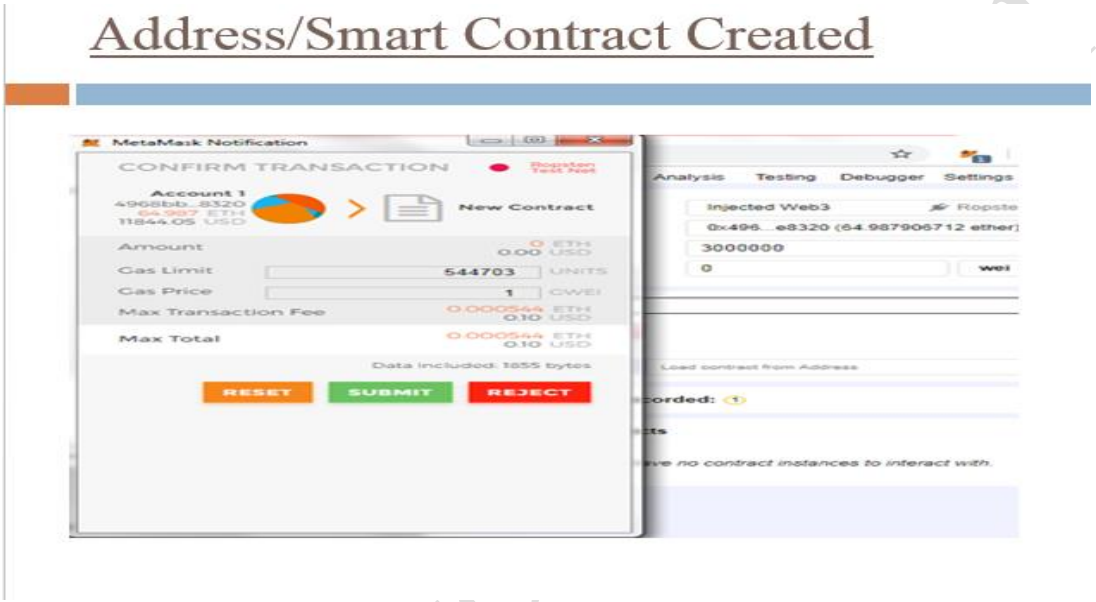
RESULTS AND DISCUSSION

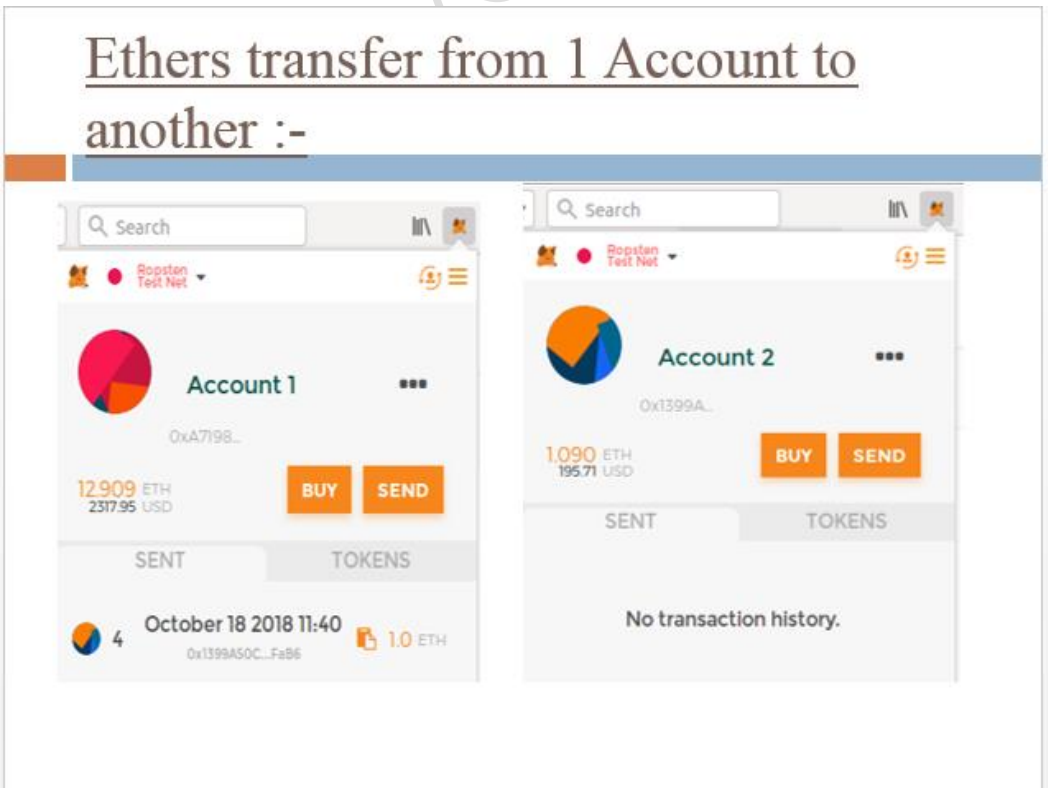
SMART CONTRACT
Smart contracts are self-executing contracts. They are used in transaction only if certain conditions are met. The ethereum block chain is currently using smart contracts. Smart contract is a code fragment that is executed by miners automatically. Nowadays more and more smart contracts are emerging and they can achieve more functionalities, because smart contracts run on the block chain, they run exactly as programmed without any possibility of censorship, downtime, fraud or third party interruption.

Smart contracts are programs that control the transfer of digital currencies between two sender and receiver, only if certain conditions are met.
To implement smart contract we use Solidity Code

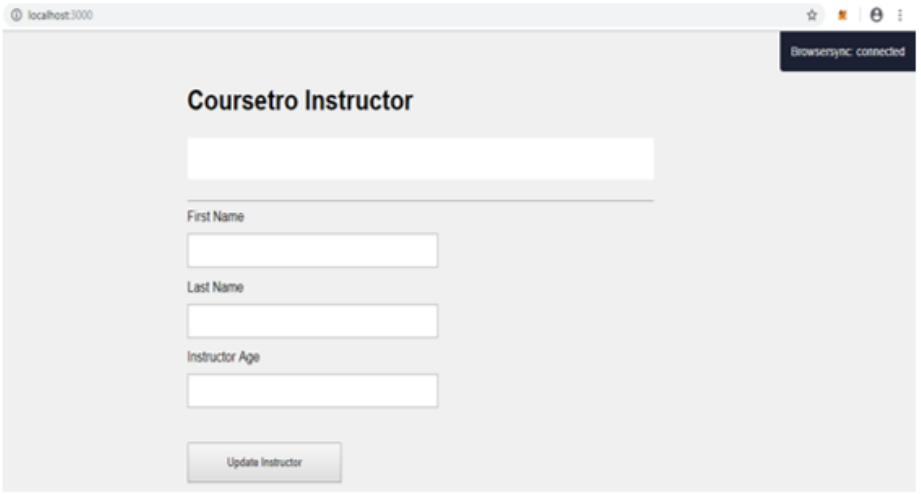
Solidity
Solidity is statistically typed i.e. the type of the variable must be defined before compile time, you must specify the type of variable. The main advantage of this is , all kind of checking can be done by the compiler and therefore a lot trivial bugs are caught at very early stage[8][9].
Solidity valuable and types

Remix IDE
Remix is a browser-based IDE built by ethereum development team. We can choose either to instant it locally through the repository at the GIT hub repository or simply visit the online version at http://remix.ethereum.org . So we are using online version. The motive of the remix IDE is that it allows developers to write and deploy solidity Dapps applcations.

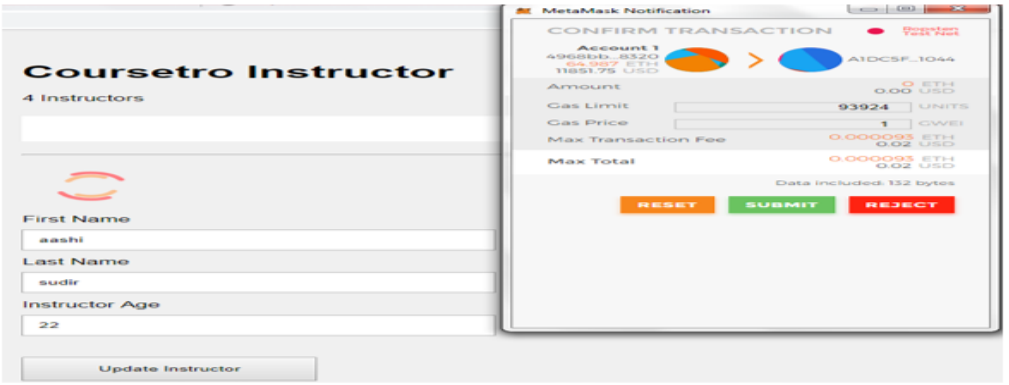




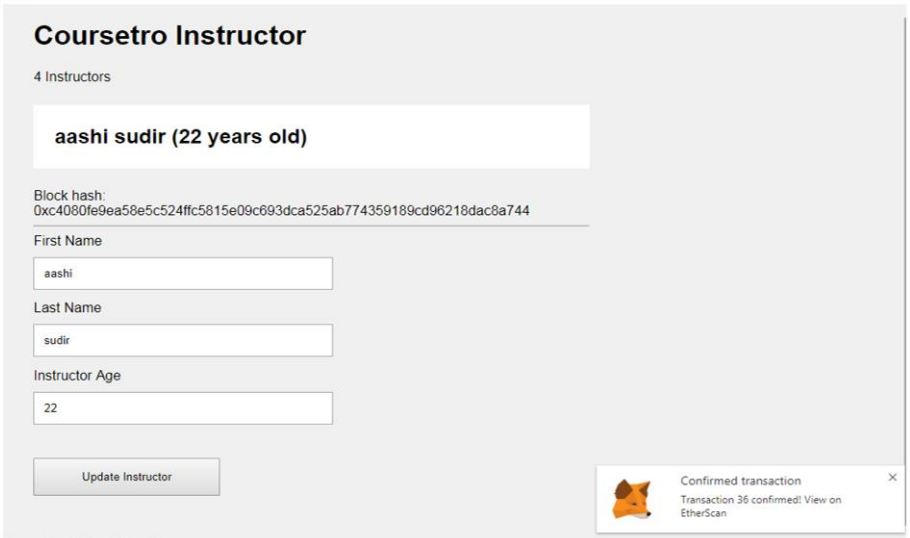
Final Output



Sending Transaction Details:-



Transaction Confirmed



CONCLUSION

The future of block chain technology is itself bright. It provides where multiple organizations can collaborate, exchange data and perform transactions in a secure and unchangeable fashion. The data that is stored on the network can be owned by all the parties in the network and cannot be modified by any party without knowledge of other nodes.

These days blockchain is trending since we are living in a digital world and we need something better for the future. An advantage of using the blockchain technology for transactions is that it allows for instant, decentralized and secure transactions, for which there is no need for intermediaries like brokers, agents, etc. Data stored on the blockchain is generally considered incorruptible.

Bank only certifies that the amount is transferred successfully, but here this work can be done by unique worldwide network i.e. block chain. So, basically a block is prepared for transaction. This block is updated with the details of transactions. Every transaction is connected with each other . In case, if anyone's block is affected then everyone present in the network will come to know that something wrong has happened to series of the block chain. Therefore block chain is safer than any other technique.

If the hacker wants to hack network and wants to make some changes in the series then he has to generate a series of block which is impossible for him. Block chain is open and distributed ledger. If hacker wants to hack one then he has to hack millions of computers which cannot be possible for him.

So the conclusion from above details is block chain is a technology which will surely work in future. We have to simplify the system to help more and more people understand this technology.

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