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TECHTREK

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**BLOCKCHAIN: YOUR
PATH TO A
DECENTRALIZED WORLD**

DEPARTMENT OF INFORMATION TECHNOLOGY
BUILDING THE FUTURE WITH TECH

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DEPARTMENT VISION

To nurture students to the global standards in quality of education, research and development in information technology by adapting to the rapid technological advancement & infusing moral values.

DEPARTMENT MISSION

1: To produce technologically competent and ethically responsible graduates

2: To take up researches in collaboration with professional societies to make the nation as a knowledge-power

3: To nurture extra-curricular skills and ethical values in students to meet the challenges of building a strong nation

PROGRAM EDUCATIONAL

PEO 1: To prepare our students to find suitable employment commensurate with their qualification.

PEO 2: To create good entrepreneurs who may contribute to the nation building and generate job opportunities for others.

PEO 3: To develop proficiency in students for higher studies and R & D for the solution of complex problems for betterment of the society.

PEO 4: To develop students as responsible citizens with high moral and ethical values who can become asset to a vibrant nation.

PROGRAM OUTCOMES

PO 1: ENGINEERING KNOWLEDGE: APPLY THE KNOWLEDGE OF MATHEMATICS, SCIENCE, ENGINEERING FUNDAMENTALS, AND AN ENGINEERING SPECIALIZATION TO THE SOLUTION OF COMPLEX ENGINEERING PROBLEMS.

PO 2: PROBLEM ANALYSIS: IDENTIFY, FORMULATE, REVIEW RESEARCH LITERATURE, AND ANALYZE COMPLEX ENGINEERING PROBLEMS REACHING SUBSTANTIATED CONCLUSIONS USING FIRST PRINCIPLES OF MATHEMATICS, NATURAL SCIENCES, AND ENGINEERING SCIENCES.

PO 3: DESIGN/DEVELOPMENT OF SOLUTIONS: DESIGN SOLUTIONS FOR COMPLEX ENGINEERING PROBLEMS AND DESIGN SYSTEM COMPONENTS OR PROCESSES THAT MEET THE SPECIFIED NEEDS WITH APPROPRIATE CONSIDERATION FOR THE PUBLIC HEALTH AND SAFETY, AND THE CULTURAL, SOCIETAL, AND ENVIRONMENTAL CONSIDERATIONS.

PO 4: CONDUCT INVESTIGATIONS OF COMPLEX PROBLEMS: USE RESEARCH-BASED KNOWLEDGE AND RESEARCH METHODS INCLUDING DESIGN OF EXPERIMENTS, ANALYSIS AND INTERPRETATION OF DATA, AND SYNTHESIS OF THE INFORMATION TO PROVIDE VALID CONCLUSIONS

PO 5: MODERN TOOL USAGE: CREATE, SELECT, AND APPLY APPROPRIATE TECHNIQUES, RESOURCES, AND MODERN ENGINEERING AND IT TOOLS INCLUDING PREDICTION AND MODELING TO COMPLEX ENGINEERING ACTIVITIES WITH AN UNDERSTANDING OF THE LIMITATIONS.

PO 6: THE ENGINEER AND SOCIETY: APPLY REASONING INFORMED BY THE CONTEXTUAL KNOWLEDGE TO ASSESS SOCIETAL, HEALTH, SAFETY, LEGAL AND CULTURAL ISSUES AND THE CONSEQUENT RESPONSIBILITIES RELEVANT TO THE PROFESSIONAL ENGINEERING PRACTICE.

PO 7: ENVIRONMENT AND SUSTAINABILITY: UNDERSTAND THE IMPACT OF THE PROFESSIONAL ENGINEERING SOLUTIONS IN SOCIETAL AND ENVIRONMENTAL CONTEXTS, AND DEMONSTRATE THE KNOWLEDGE OF, AND NEED FOR SUSTAINABLE DEVELOPMENT.

PO 8: ETHICS: APPLY ETHICAL PRINCIPLES AND COMMIT TO PROFESSIONAL ETHICS AND RESPONSIBILITIES AND NORMS OF THE ENGINEERING PRACTICE

PO 9: INDIVIDUAL AND TEAM WORK: FUNCTION EFFECTIVELY AS AN INDIVIDUAL, AND AS A MEMBER OR LEADER IN DIVERSE TEAMS, AND IN MULTIDISCIPLINARY SETTINGS.

PO 10: COMMUNICATION: COMMUNICATE EFFECTIVELY ON COMPLEX ENGINEERING ACTIVITIES WITH THE ENGINEERING COMMUNITY AND WITH SOCIETY AT LARGE, SUCH AS, BEING ABLE TO COMPREHEND AND WRITE EFFECTIVE REPORTS AND DESIGN DOCUMENTATION, MAKE EFFECTIVE PRESENTATIONS, AND GIVE AND RECEIVE CLEAR INSTRUCTIONS.

PO 11: PROJECT MANAGEMENT AND FINANCE: DEMONSTRATE KNOWLEDGE AND UNDERSTANDING OF THE ENGINEERING AND MANAGEMENT PRINCIPLES AND APPLY THESE TO ONE'S OWN WORK, AS A MEMBER AND LEADER IN A TEAM, TO MANAGE PROJECTS AND IN MULTIDISCIPLINARY ENVIRONMENTS.

PO 12: LIFE-LONG LEARNING: RECOGNIZE THE NEED FOR, AND HAVE THE PREPARATION AND ABILITY TO ENGAGE IN INDEPENDENT AND LIFE-LONG LEARNING IN THE BROADEST CONTEXT OF TECHNOLOGICAL CHANGE.

BLOCKCHAIN

A blockchain is a distributed database that is shared among the nodes of a computer network. As a database, a blockchain stores information electronically in digital format. Blockchains are best known for their crucial role in cryptocurrency systems, such as Bitcoin, for maintaining a secure and decentralized record of transactions.



The innovation with a blockchain is that it guarantees the fidelity and security of a record of data and generates trust without the need for a trusted third party.

A blockchain collects information together in groups, known as blocks, that hold sets of information. Blocks have certain storage capacities and, when filled, are closed and linked to the previously filled block, forming a chain of data known as the blockchain.

01

LEDGER

The technology uses an append only ledger to provide full transactional history. Unlike traditional databases, transactions and values in a blockchain are not overridden.

02

SECURE

Blockchains are cryptographically secure, ensuring that the data contained within the ledger has not been tampered with, and that the data within the ledger is attestable.

03

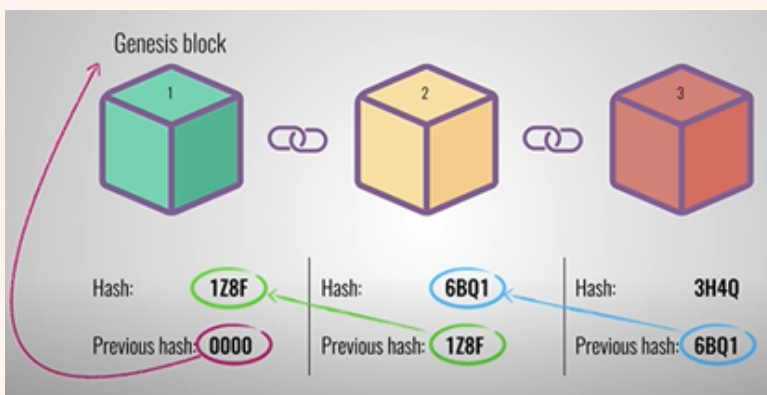
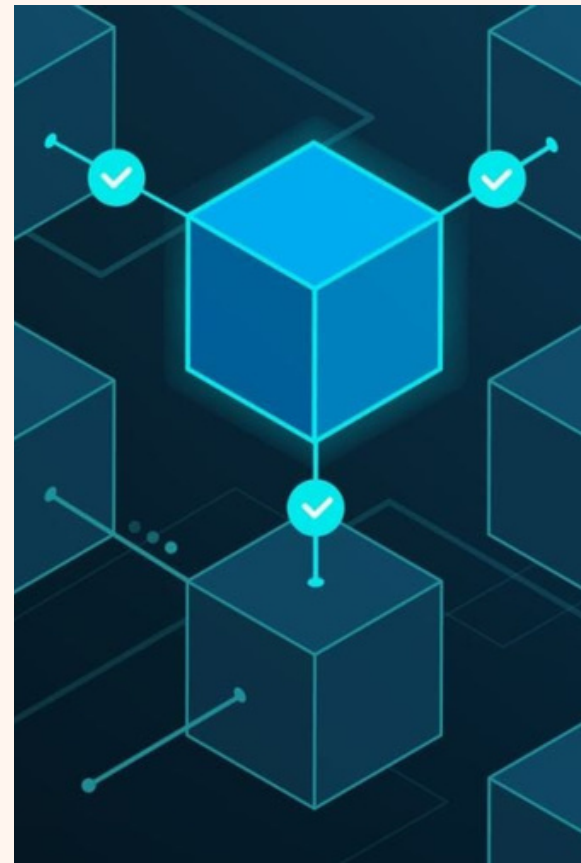
SHARED

The ledger is shared amongst multiple participants. This provides transparency across the node participants in the blockchain network.

04

DISTRIBUTED

The blockchain can be distributed. This allows for scaling the number of nodes of a blockchain network to make it more resilient to attacks by bad actors. By increasing the number of nodes, the ability of a bad actor to impact the consensus protocol used by the blockchain is reduced.



A database usually structures its data into tables, whereas a blockchain, like its name implies, structures its data into chunks (blocks) that are strung together.

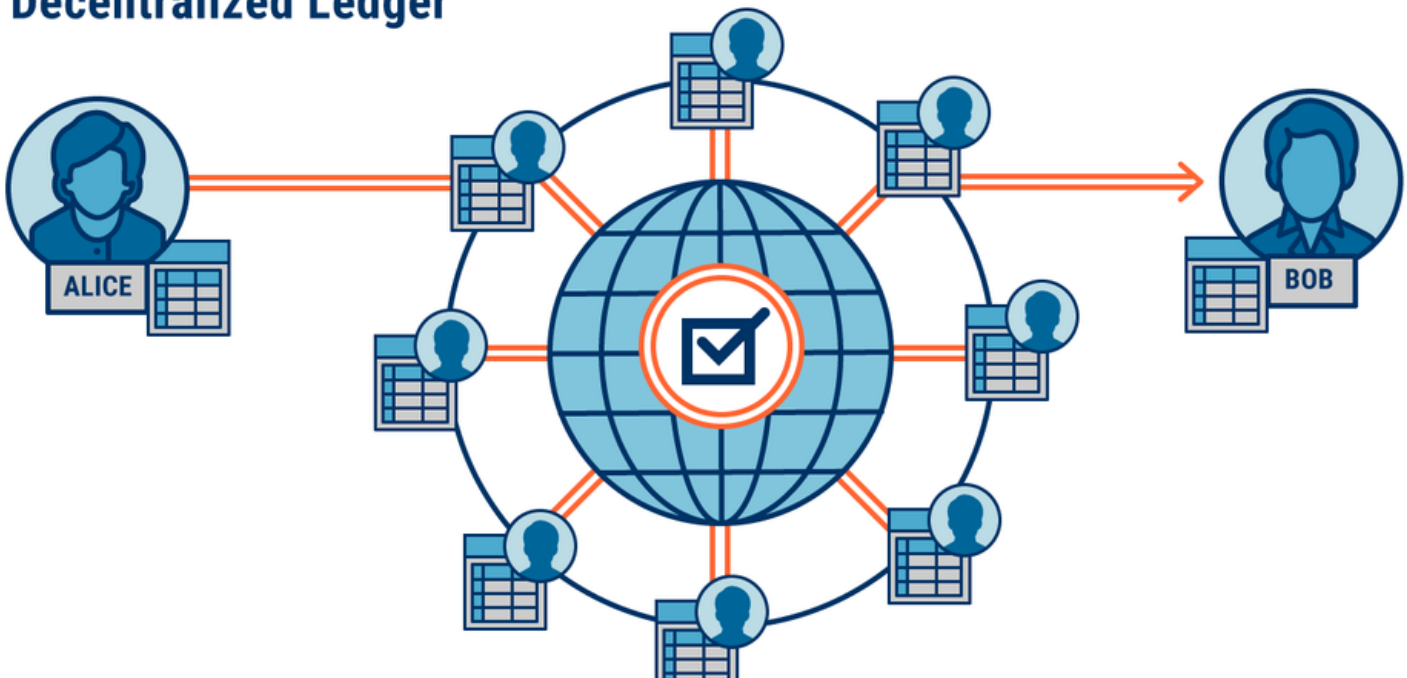
FINANCIAL APPLICATIONS

It is very expensive to take a company public. A syndicate of banks must work to underwrite the deal and attract investors. The stock exchanges list company shares for secondary market to function securely with trades settling and clearing in a timely manner.

It is now theoretically possible for companies to directly issue the shares via the blockchain. These shares can then be purchased and sold in a secondary market that sits on the top of the blockchain.

Medici is being developed as a securities exchange that uses the Counter party implementations of Bitcoin 2.0.

Decentralized Ledger





“

**NASDAQ
launched
its Private
Equity
Exchange
in 2014 .**

This is meant to provide the key functionalities like Cap table and investor relationship management for the pre-IPO or private companies.

The current process of trading stocks in this exchange is inefficient and slow due to involvement of multiple 3rd parties.

NASDAQ has joined hands with a San Francisco based Start-up called chain.com to implement private equity exchange on top of BlockChain.com is implementing BlockChain based smart contracts to implement exchange functionality.

NON-FINANCIAL APPLICATIONS:

Verifying authenticity of the document can be done using blockchain and eliminates the need for centralized authority. The document certification service helps in Proof of Ownership (who authored it), Proof of Existence (at a certain time) and Proof of Integrity (not tampered) of the documents.

Since it is counterfeit-proof and can be verified by independent third parties these services are legally binding.

Using blockchain for notarization secures the privacy of the document and those who seek certification. By publishing proof of publication using cryptographic hashes of files into block chain takes the notary timestamping to new level.

EDITORIAL TEAM

STUDENT COORDINATOR



AYUSH DEV



AKHILESH YADAV



MANISH

EDITORS MESSAGE

Blockchains are tamper evident and tamper resistant digital ledgers implemented in a distributed fashion (i.e., without a central repository) and usually without a central authority (i.e., a bank, company, or government). At their basic level, they enable a community of users to record transactions in a shared ledger within that community, such that under normal operation of the blockchain network no transaction can be changed once published. In 2008, the blockchain idea was combined with several other technologies and computing concepts to create modern cryptocurrencies: electronic cash protected through cryptographic mechanisms instead of a central repository or authority. The first such blockchain based cryptocurrency was Bitcoin. Within the Bitcoin blockchain, information representing electronic cash is attached to a digital address. Bitcoin users can digitally sign and transfer rights to that information to another user and the Bitcoin blockchain records this transfer publicly, allowing all participants of the network to independently verify the validity of the transactions. The Bitcoin blockchain is stored, maintained, and collaboratively managed by a distributed group of participants. This, along with certain cryptographic mechanisms, makes the blockchain resilient to attempts to alter the ledger later (modifying blocks or forging transactions). Because there are countless news articles and videos describing the “magic” of blockchain technology, this magazine aims to describe the method behind the magic (i.e., how blockchain technology works).. There is hype around the use of blockchain technology, yet the technology is not well understood. It is not magical; it will not solve all problems. As with all new technology, there is a tendency to want to apply it to every sector in every way imaginable. To help promote correct application, this document provides information necessary to develop a high-level understanding of the technology. Blockchain technology is the foundation of modern cryptocurrencies, so named because of the heavy usage of cryptographic functions. Users utilize public and private keys to digitally sign and securely transact within the system.