

TECHYUVA

SHRI
JAIN VIDYA
PRASARAK MANDAL'S

RASIKLAL M. DHARIWAL
INSTITUTE OF
TECHNOLOGY

ACADEMIC YEAR:2023-24

Computer Engineering Department
& Artificial Intelligence &
Machine Learning Department

Year: 2nd Vol: 4th



ABOUT DEPARTMENT

Welcome to the Fourth issue of our newsletter "TechYuva". It is an opportunity for us to share relevant activities conducted by Computer Engineering Department of rmdiot. The "TechYuva" is distributed electronically through the electronic media (Institute Website, Facebook and WhatsApp). It will provide departmental news and activities

Shri Jain Vidya Prasarak Mandal's

Rasiklal M. Dhariwal Institute of Technology

Guru Fattechand Bhavan, Shri Fattechand Marg, Chinchwad, Pune - 411 033.

MESSAGE FROM PRINCIPAL DESK



In this global competitive world Excellence in Education & Research is our prime objective. To meet the need of Industries and IT sectors we have involved ourselves to build the carrier of our students through Industrial-Institute Interaction, Industrial visits & trainings, guest lectures from renowned personalities of various sectors. In addition to the theoretical knowledge to develop an ideal engineer is our main objective. Soft skill development, communication skill enhancement, training on extra-curricular courses is our pride. We expect that our students will develop an extra ordinary skills and confident personality. We committed ourselves to develop our student not only good engineers but also all-rounder good human being by arranging Meditation Camps, Cultural and Sports Activities.

Institute Vision and Mission

Vision

A lead provider of quality and affordable technical education to serve the Society समाजाची सेवा करण्यासाठी दर्जेदार आणि परवडणारे तांत्रिक शिक्षण देणारे आघाडीचे प्रदाता

Mission

MI: To Develop the ideal working attitude and values of the students. विद्यार्थ्यांची आदर्श कार्य वृत्ती आणि मूल्ये विकसित करणे

M2: To maintain the quality of Teaching learning Process शिकविण्याच्या व शिक्षण घेण्याच्या प्रक्रियेची गुणवत्ता राखणे

M3: To bridge the gap between industry and institute. उद्योग आणि संस्था यांच्यातील दरी कमी करणे.

M4: To enhance the multidisciplinary skills of the faculty and students. प्राध्यापक आणि विद्यार्थ्यांची बहु-विषय कौशल्ये वाढवणे

COMPUTER ENGINEERING DEPARTMENT

VISION:

IMPARTING BROAD-BASED TECHNOLOGIES FOR THE WELFARE SOCIETY

समाजाच्याकल्याणासाठी व्यापक आधारित तंत्रज्ञान प्रदान करणे

MISSION

MI: TO PROVIDE QUALITY ENGINEERING EDUCATION THROUGH STATE OF THE ART TECHNOLOGY

अत्याधुनिक तंत्रज्ञानाद्वारे दर्जेदार अभियांत्रिकी शिक्षण देणे

M2: TO CREATE LEARNING ENVIRONMENT THAT HELPS TO ENHANCE PROBLEM SOLVING SKILL IN PROFESSIONAL LIVES WITH ETHICS

शिकण्याचे वातावरण तयार करणे जे कौशल्यांसह व्यावसायिक जीवनातसमस्या सोडवण्याचे कौशल्य वाढवण्यास मदत करते

M3: TO ESTABLISH INDUSTRY AND INSTITUTE INTERACTION TO MAKE STUDENTS READY FOR THE INDUSTRIAL ENVIRONMENT

विद्यार्थ्यांना औद्योगिक वातावरणासाठी तयार करण्यासाठी उद्योग आणि संस्था परस्परसंवाद स्थापित करणे AREA OF

M4: TO PROVIDE EXPOSURE TO THE LATEST TOOLS AND TECHNOLOGIES IN THE AREA OF COMPUTER HARDWARE AND SOFTWARE.

संगणक हार्डवेअर आणि सॉफ्टवेअर क्षेत्रातील नवीनतम साधने आणि तंत्रज्ञान अवगतकरून देणे.

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING DEPARTMENT

VISION:

IMPARTING BROAD-BASED TECHNOLOGIES FOR THE WELFARE SOCIETY

समाजाच्याकल्याणासाठी व्यापक आधारित तंत्रज्ञान प्रदान करणे

MISSION

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INDUSTRIAL VISIT

- 12 JANUARY 24

SJVPM'S Rasiklal M Dhariwal Institute of Technology, Chinchwad have organised visits such as Pimpri Chinchwad science park, Jetking and I-MEDITA. These visits have taken place on 12th January 2024 . The objective of these visits is to provide the students an insight regarding the working environment of companies and upgrade their knowledge.



It provided students a chance to meet industry persons, professionals, Entrepreneurs, Policymakers, who share their wisdom, learning, and experiences. This experience can help students to provide information regarding the functioning of various industries. From these visits students get the information and practical knowledge about different departments/sectors of different Industries.



TECH MANIA 2023-24

- 29 JANUARY 2024



SJVPM'S Rasiklal M. Dhariwal Institute of Technology, Chinchwad have organised a state level Technical Event under TECH-MANIA which is a special gathering or competitions where students can show their technical skills and knowledge. This event took place on 29 January 2024. These events often focus on various fields like Computer Science, Mechanical Engineering, Artificial Intelligence Engineering and Automobile Engineering. There were various competition organized such as Paper Presentation, Ideathon (Poster presentation) Mini project competition which includes topics 5G Wireless Technology, Robotics, Go Green, etc. It gives a platform to young brains to showcase their innovative ideas, inculcate knowledge related to different technical topics. The objectives of this events is to boosts the confidence level of students, make them job-ready and also make them to communicate and interact with people. The program was made successful by the support of principal Mr. Anil Thite Sir and the efforts of Prof. Shriram Khadake, Prof. Ashish Jain, all department heads, teachers, and non-teaching staff of the institute.

SOCIAL ACTIVITY

- 14 APRIL 24

Shri Jain Vidya Prasarak Mandal's Rasiklal M. Dhariwal Institute of Technology, Chinchwad have organized the social activity on 14 March 2024 to old-age home to develop emotional intelligence. This activity was carried out by visiting Santa monibaba old-age home in Pimpri Chinchwad. The objective of this social activity is to develop empathy and compassion, and to understand the importance of caring for the elderly.

Our aim is to harness the enthusiasm, courage, and energy of youth towards meaningful causes, forming a community that advocates for inclusion, to provide a secure and comfortable living space for the elderly, ensuring their physical and emotional well-being.



we also conducted activities like indoor games, gardening, singing, dancing, etc. to keep the residents engaged and entertained. Such activities help break the monotony of life and build mutual trust and friendship among fellow residents. We also distributed some medicines, various food packets, fruits, clothes, etc. This visit also made the students understand the general morbidity conditions at the old age and way these morbidities are taken care of by an old age home. Overall, the social visit to the old-age home was a great learning experience for the RMDIOT students, as it provided them with a platform for interdisciplinary learning.

MEDICAL CAMP

- 06 FEBRUARY 24

Shri Jain Vidya Prasarak Mandal's Rasiklal M. Dhariwal Institute of Technology, Chinchwad, and Police Pravah have jointly organised a health check-up camp on 06th February 2024. The program was inaugurated by Principal Prof. Anil Thite Sir of the institute. Police Pravah shared information about the social work carried out by Police Pravah throughout the year.



Dr. S. K. Toke of Muktaai Specialty Clinic, Akurdi, explained the importance of the health check-up camp to the students. Dr. Shrikant Rao of Shri Dental Care, Nigdi, shared information on how doctors can balance their work and social work. Dr. Shrikant Kasar of Rainbow Clinic explained five rules for staying healthy to the students. In this health camp, doctors conducted tests such as lung function, blood pressure, dental check-ups, and others. Teachers and students also got their doubts clarified. More than 300 students and all the teachers and non-teaching staff benefited from this health check-up camp. The program was made successful by the efforts of Prof. Shiram Khadake, Prof. Ashish Jain, all department heads, teachers, and non-teaching staff of the institute.

WEAPON INFORMATION VISIT AT CHINCHWAD POLICE STATION ON THE OCCASION OF POLICE DAY.



On the occasion of police day the students of SJVPM'S Rasiklal M Dhariwal Institute of Technology visited the Chinchwad police station to gain the knowledge about weapons, including pistol, riffles and revolvers. They explained the features and usage of each weapon highlighting its significance in maintaining law and order. The police officer gave the demonstration about handling weapons, showing their rigorous training and dedication for public safety. The visit was a unique opportunity to appreciate the police department's Arsenal and their tireless efforts to protect and serve the community. The occasion of police day added a sense of pride and patriotism to the visit, making it a memorable experience.

SPORTS DAY 2023-24

- 27 JANUARY 2024



Pimpri-Chinchwad, Maharashtra, India

2/15-23, Ruston Colony, SKF Colony, Chinchwad, Pimpri-Chinchwad, Maharashtra 411033, India

Lat 18.632694°

Long 73.776432°

27/01/24 08:47 AM GMT +05:30



Google

GPS Map Camera



Pimpri-Chinchwad, Maharashtra, India

2/15-23, Ruston Colony, SKF Colony, Chinchwad, Pimpri-Chinchwad, Maharashtra 411033, India

Lat 18.632808°

Long 73.776465°

27/01/24 08:44 AM GMT +05:30

Google

GPS Map Camera

Shri Jain Vidya Prasarak Mandal's Rasiklal M. Dhariwal Institute of Technology, Chinchwad have organized the sports day on 27 January 2024, to recharge the students with energy and enthusiasm. It include indoor games varying from chess, carrom to outdoor games like cricket. The objective of the sports day is to enhance the personality of individuals by imparting various traits in them, also to boost alertness, discipline, team spirit, mental ability, trust, confidence and concentration and the skill of time management of a student. There are active participation by the students and teaching and non teaching staff

ALUMINI MEET

- 30 JANUARY 24



Pimpri-Chinchwad, Maharashtra, India
JQJH+M5Q, Pawana Nagar Housing Society, Chinchwad, Pimpri-Chinchwad,
Maharashtra 411033, India
Lat 18.631835°
Long 73.777982°
30/01/24 11:43 AM GMT +05:30



Pimpri-Chinchwad, Maharashtra, India
JQJH+M5Q, Pawana Nagar Housing Society, Chinchwad, Pimpri-Chinchwad,
Maharashtra 411033, India
Lat 18.631711°
Long 73.778033°
30/01/24 11:55 AM GMT +05:30



Pimpri Chinchwad, Maharashtra, India
6/1-C, Subhendu Nagar, Chinchwad, Pimpri Chinchwad, Pimpri-Chinchwad,
Maharashtra 411033, India
Lat 18.631953°
Long 73.777851°
30/01/24 11:52 AM GMT +05:30

SJVPM'S Rasiklal M. Dhariwal Institute of Technology, Chinchwad have conducted the Alumni meet on 30th January 2024 in this alumni meet , the ex-students of the college talk about their experience in the outside world and have they are managing their professional lives. This alumni meet provide students and institutions a variety of benefits and services. This meet gives ex-students the chance to gel with the people whom they have not met in years. This meets alumni make feel nostalgic, rekindle friendships, and foster a sense of community. It also helps them to share their experience and skills with current students. They can share their achievements and lessons learned in their careers and provide guidance for students. They also can also host alumni meetups to raise funds for your college making them beneficial for everyone involved. we also appreciate the students by giving bouquet and flowers for their achievements and contribution. The ultimate goal of our alumni association was to build a strong network that can support and complement the wider aims of institution. The Alumni meet was successful with the guidance and support of principle, HOD, and teaching and non-teaching staffs.

CULTURAL PROGRAM & NEWSLETTER INAUGURATION

- 03 FEBRUARY 2024



SJVPM'S Rasiklal M. Dhariwal Institute of Technology, Chinchwad have organized the cultural program and inauguration of newsletter on 03 February 2024 . Cultural programs was organised to promote and celebrate the arts, culture, and heritage of a community or organization. These programs included a wide range of activities such as instrumental music, flock arts and songs, dance performances, theater productions, fine arts, and drama. They provide opportunities for people to come together, share their experiences, and learn about different cultures. It also help them to understand, inculcate and share their skills among themselves, and boosts the confidence level of students, It also develop skills like presentation, leadership, and interpersonal communication, identify themselves, get refreshed , rejuvenate themselves and faculty members. The college inaugurated the third edition of its newsletter by the hands of Mr. Shantilalji Lunkard - chairman SJVPM, Adv. Mr. Rajendrakumarji Mutha - Honorable general secretary SJVPM, Mr. Rajendrakumarji Sakla - Joint secretary, SJVPM and Mr. K. B. Khilari - Development officer SJVP. The program was made successful by the support of principal Mr. Anil Thite Sir and the efforts of Prof. Shriram Khadake, all department heads, teachers, and non-teaching staff of the institute.

Result :- Summer-2024

First Year Computer

- 1] Atharva Babar- 87%
- 2] Komal Ghadage- 86%
- 3] Ayush Barane – 86.00%

Second Year Computer

- 1] Siddhi Sandip Bhoite -91.47%
- 2] Aakansha Jeevan Toke -89.73%
- 3] Vijeta Dharmopal Choudhary -88.80%

Third Year Computer

- 1] Dheeraj Patghar- 93.41%
- 2] Sneha Ghodke- 89.41%
- 3] Roshani Kumbhar- 88.82%

First Year AIML

- 1] Avani Jannawar -88.69%
- 2] Arya Jannawar- 88%
- 3] Ayush Sanklecha- 84.35%

Second year AIML

- 1] Tanisha Maher-81%
- 2] Arshin Tamboli- 80%
- 3] Chaitrali Rane- 78%

EDITOR BOARD

Editor In Chief
Mr.A.B.Thite
(Principal)

Executive Editor
Mrs.A.A.Deshpande
(Head of department)

Editor Committee Member
Mr.S.B.Khadke (lecturer)

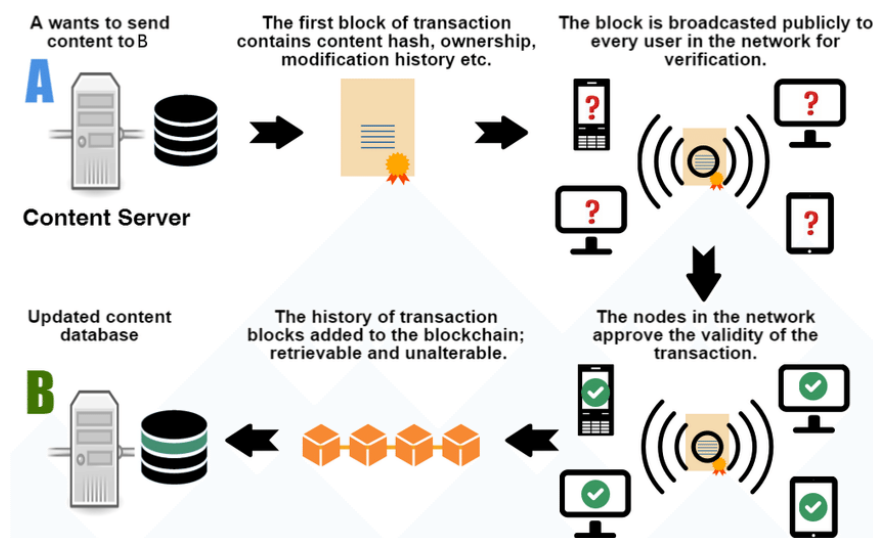
Student committee Members
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Arya Bhadgaonkar
Priyanka Pawar

Printing Committee
Harsh Chandan
Nikita Mahadik
Shreya Amble
Komal Ghadge

Blockchain Technology

Blockchain technology is a decentralized and distributed ledger system that enables secure and transparent record-keeping of transactions across a network of computers. It was originally designed to support cryptocurrencies like Bitcoin, but its applications have expanded far beyond digital currencies. Bitcoin's blockchain serves as a transparent and decentralized ledger for recording and verifying transactions. While Bitcoin is a cryptocurrency, the underlying blockchain technology has inspired the development of many other blockchain-based projects and platforms with diverse use cases, such as Ethereum (which supports smart contracts), Finance Smart Chain, and various enterprise blockchain solutions across different industries.

Working of blockchain



Here are some key concepts and features of blockchain technology:

1. Decentralization
2. Cryptographic security
3. Consensus Mechanism
4. Smart contracts
5. Immutability
6. Transparency
7. Use cases

* Challenges in the blockchain Technology:

1. Cryptocurrencies
2. Supply chain management
3. Cross border payments
4. Identity management
5. Voting system
6. Health care data management

* Advantages of blockchain Technology

Blockchain for business uses a shared and immutable ledger that can only be accessed by members with permission. This trust is built on blockchain's enhanced security, greater transparency, and instant traceability. Beyond matters of trust, blockchain delivers even more business benefits, including the cost savings from increased speed, efficiency, and automation. By greatly reducing paperwork and errors, blockchain significantly reduces overhead and transaction costs, and reduces or eliminates the need for third parties or middlemen to verify transactions.

*Future of blockchain technology

Blockchain technology has the potential to transform various industries, from finances to healthcare. However, concerns about its impact on the environment and sustainability have always been the topic of conversation, especially in the last couple of months. One example is healthcare which can use the technology to store and share patient information between different healthcare providers. The result can be reduced treatment costs and better overall outcomes for patients and the industry in general.

*Conclusion:

The demand for blockchain technology is not likely to slow down any time soon. It will increase even more soon. More businesses are realizing the benefits of blockchain and rapidly adopting it. The technology can only enhance the security and privacy of data but also streamline business operations and increase efficiency. It can benefit the industries such as finance, advertising, supply chain, cybersecurity, and more. Blockchain can even prove to be beneficial for government agencies.

Miss. Chetana Sanjay Chaudhary
Lecture, Computer Dept, RMDIOT, Pune

“Evolution of Blockchain Technology in New Era of Anthropocene”

Author's: Siddhi Sandip Bhoite¹, Arya Rajesh Bhadgaonkar²,

siddhibhoite31@gmail.com¹, aryabhadgaonkar@gmail.com²

Guide 1: Mrs. A.A.Deshpande

Guide 2: Mrs. N.R.Dangi

SJVPM's Rasiklal M. Dhariwal Institute of Technology, Chinchwad

ABSTRACT

A Blockchain Technology is a chained technology that is prominently used to store the data in the form of the blocks which are all linked together. Blockchain technology was introduced in 2008 by Satoshi Nakamoto through a paper that proposed Bitcoin, a digital currency that uses a blockchain to record transactions securely and transparently. In several upcoming years, Blockchain technology is expected to experience significant growth and transformation in the coming years. By 2030, the market is predicted to reach \$3.1 trillion, and by 2032, it's expected to grow to \$825.93 billion. So, in this paper we conducted the structured study about the evolution of Blockchain Technology in these human epoch. Moreover, this paper also points out the future directions in the Blockchain technology.

KEYWORDS

Blockchain technology, P2P, Cryptography, Hash, Hash Chain, Merkle Tree, Blockchain Framework, Timestamp Server, PoW.

1.Introduction

The idea of a secured chain of blocks has been around for a while, dating back to 1991 when Stuart Haber and his team introduced it as a way to digitally timestamp electronic documents and prevent tampering. Although it was initially proposed for document security, it gained widespread recognition

in recent years with its application in Blockchain technology, particularly in storing transactions of the cryptocurrency Bitcoin. Blockchain technology has radically transformed the way people exchange information directly with each other, by fusing cryptographic techniques with a decentralized, immutable, and transparent framework, thereby enabling secure, trustworthy, and open interactions. It also enables secure, transparent, and tamper-proof data storage and transfer, with beyond digital currencies.

How does it work?

Distributed ledgers eliminate the need for a central authority by employing a consensus protocol to validate transactions. This protocol ensures that each new block of transactions is securely linked to the previous one, creating an immutable record. As a result, all users agree on the ledger's state, enabling them to conduct new transactions with confidence.

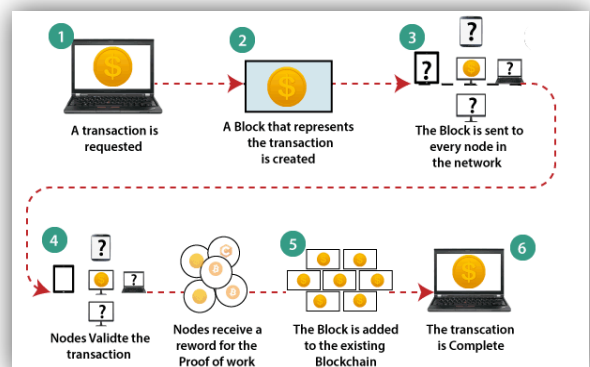


Figure 1. Working of Blockchain Technology

2. The term that plays the crucial role in Blockchain Technology

I. Peer-to Peer(P2P)

P2P network is a distributed network architecture to share resources among participants. The participants make their resources available to be shared with other participants. Each participant node (peer) in such network acts in roles of both (client and server). At one time, peer A (acting as client) can directly request services and/or contents from other peer B (acting as server) of the network without any intermediate entities. Later, peer A may act as a server for a content or service request from peer B acting as client[4].

II. Cryptography

The mathematical art of making communication secure is cryptography. It is commonly used in most modern security protocols[5].In cryptography, mathematical value called 'key' plays a central role. There are two types of modern cryptography:

- Symmetric key cryptography in which same key is used by sender and receiver for cryptographic operations.
- Asymmetric key cryptography in which, each communicating party has two different keys called public and private keys used for different cryptographic operations in different ways [5].

There are multiple operations performed in cryptography for provision of different security services like confidentiality (keeping information private to communicating parties), integrity (ensuring information remains in its original form), authentication (validating the identity of source) and non-repudiation (ensuring integrity and authentication) [5].

III. Hash

A hash in blockchain technology is a unique digital representation of a block of data or document, which facilitates the verification of its integrity and ensures that any alterations can be detected. When a new block of data is added to the blockchain, a fixed-length string of characters, known as hash, is generated. This hash serves as a digital summary of the block's transactions, as well as a reference to the hash of the preceding block, thereby creating a chain of interconnected blocks.

IV. Hash Chain

A hash chain in blockchain technology is a series of linked hash values created by applying a cryptographic hash function to a piece of data, and then repeating the process with the resulting hash value. This creates a chain of hashes, where each hash is connected to the previous one.

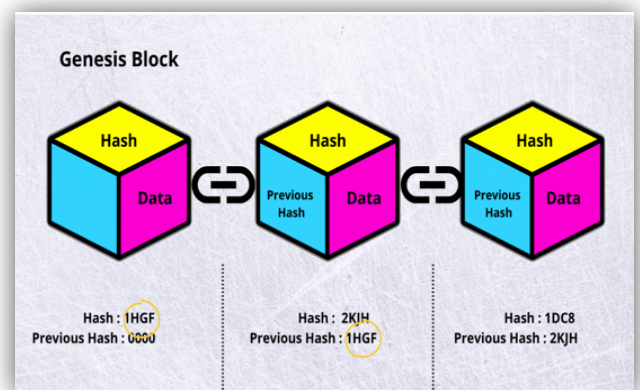


Figure 2. Illustration of Hash Chain

V. Merkle Tree

Merkle trees provide a robust and efficient mechanism for data verification, employing a tree-like structure to organize data and corresponding hash values.

The hierarchical structure consists of:-

- Leaf nodes, each labelled with the hash value of a specific data block (e.g., D1 and D2).
- Non-leaf nodes, containing the hash value of their child nodes, which are calculated by combining the hashes their respective child nodes (e.g., h1 and h2). This tree structure enables efficient verification of data integrity, as shown in Figure 3.

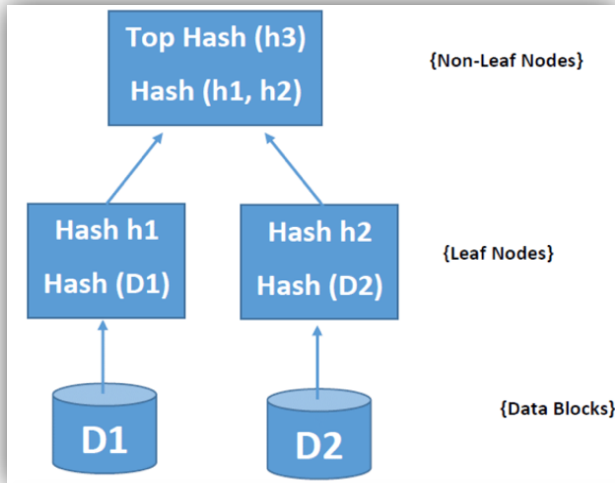


Figure 3. Merkle Tree Example

3. Framework of Blockchain

There are six layers in Blockchain Framework. So, it is shown in Figure 4.

- Data Layer: This layer encapsulates the chain structure of the underlying data block, and the related digital signature and time stamp technology, which is the most underlying data structure in the whole blockchain technology [2].
- Network Layer: The network layer enables communication between nodes, establishing and maintaining connectivity for a decentralized and distributed blockchain network. It also includes P2P network, communication and verification mechanism.
- Consensus Layer: The consensus layer serves as the foundation of a Blockchain network, enabling nodes to reach a collective agreement on the

Blockchain's true state. Without consensus, networks like Ethereum 2.0 would descend into chaos.

- Incentive Layer: Incentive layer is the mining mechanism. You can get as many rewards as you contribute to the blockchain system [2]
- Contract Layer: This layer encapsulates various script codes, algorithm mechanism, and intelligent contracts, which is based on the programmable characteristics of the blockchain.
- Application Layer: The application layer in blockchain technology provides a user-friendly interface for end-users to access and utilize the network, enabling the creation of decentralized applications and services.

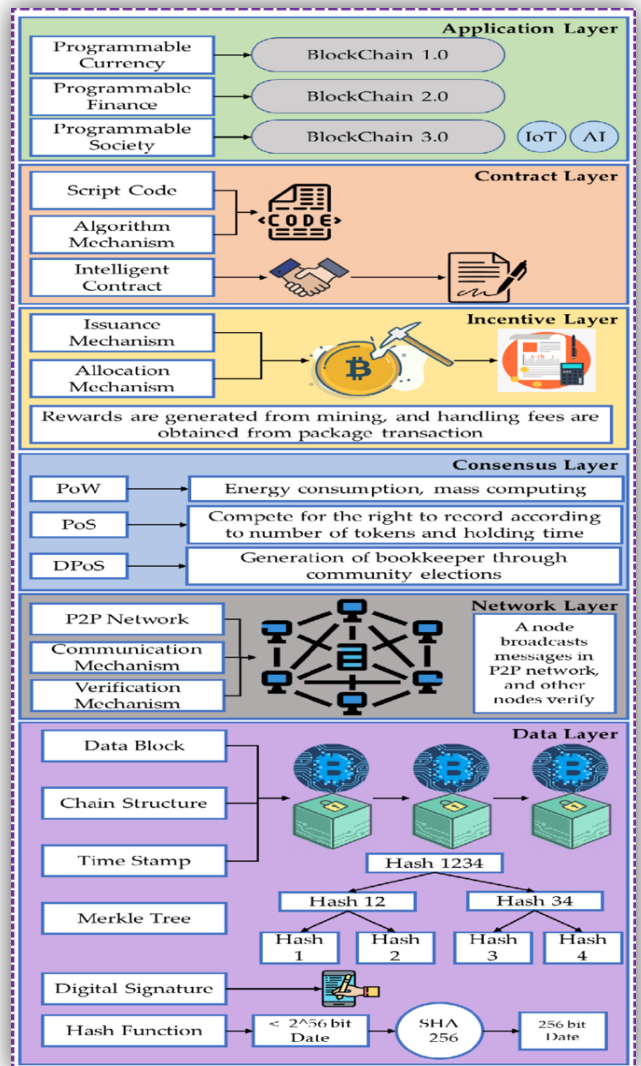


Figure 4. Blockchain Framework

4. Timestamp Server and Proof of Work (PoW)

Timestamp Server:- The solution we propose begins with a timestamp server. A timestamp server works by taking a hash of a block of items to be timestamped and widely publishing the hash, such as in a newspaper [6-9]. The timestamp proves that the data must have existed at the time, obviously, in order to get into the hash. Each timestamp includes the previous timestamp in its hash, forming a chain, with each additional timestamp reinforcing the ones before it[1].

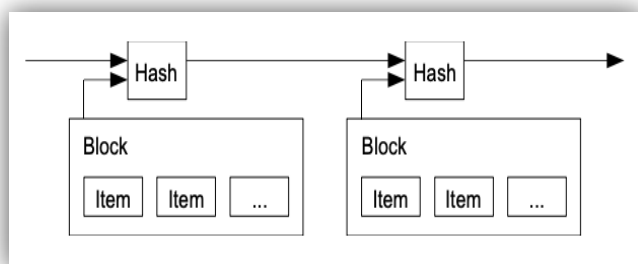


Figure 5. Timestamp Server

Proof of Work (PoW) Consensus mechanism:-

To implement a distributed timestamp server on a peer-to-peer basis, we will need to use a proof-of-work system, rather than newspaper. The proof-of-work mechanism solves the problem of representation in majority decision making by ensuring one-CPU-one-vote, where the longest chain with the greatest proof-of-work effort invested in it represents the majority decision.

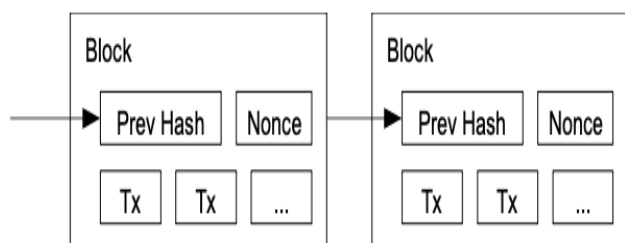


Figure 6. Proof of work (PoW)

5. Future Scope of Blockchain

The future scope of blockchain technology is vast and promising. It has the potential to transform

various industries, including healthcare, finance, food, manufacturing, and retail, among others.

6. Conclusion

Blockchain technology provides a secure and tamper-proof way to store and transfer data, ensuring the integrity of the information and preventing unauthorized modifications. Blockchain technology enables decentralized, peer-to-peer transactions, allowing for transparent interactions between parties due to which faster and more efficient transactions can be made.

Acknowledgement

We wish to thank all the people who gave us an unending support right from stage the idea was conceived. We would like to thank Mrs. N.R.Dangi, our project guide for their helpful comments and suggestions. We express our sincere and profound thanks to Mrs.A.A.Deshpande, who always stood as the helping and guiding support for us.

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