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A Scrutiny Of Blockchain Technology And Its Utilization

Sangeetha R[1], Krishnamoorthi M[2], Poonguzhali S[3],Divakar R[4]

[1]PG Scholar, Dr.N.G.P Institute Of Technology, Coimbatore
[2]Associate Professor, Dr.N.G.P Institute Of Technology, Coimbatore
[3]PG Scholar, Dr.N.G.P Institute Of Technology, Coimbatore
[4]PG Scholar, Dr.N.G.P Institute Of Technology, Coimbatore

Email: Sangitaramar5698@Gmail.Com[1]

Abstract. In The Bounteous Technological Development World, The Blockchain Is A Radical Emerging Technology Which Is The Root Of The Most Materializing Cryp-Tocurrencies Such As Bitcoin, Litecoin And Abounding Cryptocurrencies. Ethereum Is A Blockchain Based Distributed Computing Platform Which Uses Smart Contracts For The Transaction Of Bitcoins. Smart Contracts Allow The People To Perform The Transactions Of The Bitcoins Without Any Third-Party Hindrance. Such Transactions Are Irreparable Transactions. The Ethereum Platform Is An Open Source Platform Which Produces The Decentralized Virtual Machine Called EVM (Ethereum Virtual Machine). This Research Is Meant To Give An Overview On The Development Of The Application Using The Smart Contract In Blockchain Ethereum Technology.

Keywords: Blockchain, Ethereum, Smart Contract, Security, EVM.

1. INTRODUCTION

The Blockchain Is A Flourishing Catalog Of Ledger, Which Consists Of Blocks In A Decen- Tralized Manner. Each Block Is Incorporated With A Hash Function, Which Is Used In The Cryptographic Process Of The Previous Block Of Data Or A Transaction. In A Blockchain Method Of Transaction, The Modification Of The Data Is Contrary. As It Is Distributed Rec- Ords, When One Party Needs To Make A Transaction To The Other Party, Then The Transaction Between Them Will Be Efficient And Verifiable Even If It Is A Transparent Transaction, No Other Third Party Can Interfere Within The Transaction [1].
In The On Growing Technical World, Huge Companies Started To Use The Blockchain For Secured Transactions. The Decentralized Blocks In The Blockchain, Which Are Of Batches, Contain The Details Of The Transactions Such As The Hash Functions, Which Are Mapped In A "Merkle Tree". In These Transactions, There Is No Need Of The Approval From The Third Party When The Transaction Is Held. All The Information Regarding The Hashing Data And Information Are Kept In Each Device Which Is Connected Through The Transaction In A Decentralized Manner. In This Research Paper We Will Discuss The Techniques And The Methods Used For The Development Of The Decentralized Applications. Here The Records Of Health Details Of The Patients Are Stored In The Blockchain Using The Ethereum Smart Contracts Which Encrypts The Data Using The SHA256 Algorithm And Stores The Encrypted 256 Bits Key In A Decentralized Block

Storage.

1. *Architecture Of A Blockchain Ethereum System*

Ethereum Blockchain Network Is A Combination Of Multiple Ethereum Virtual Machines (EVM), In Which Each Ethereum Virtual Machine Act As An Individual Node, That Is Con- Nected With All Other Ethereum Virtual Machines And Making A Mesh Network [8]. Each Individual Node Contains A Replicated Copy Of The Entire Blockchain And Runs The Overall Blockchain System Data. This Is Shown In Figure 1.

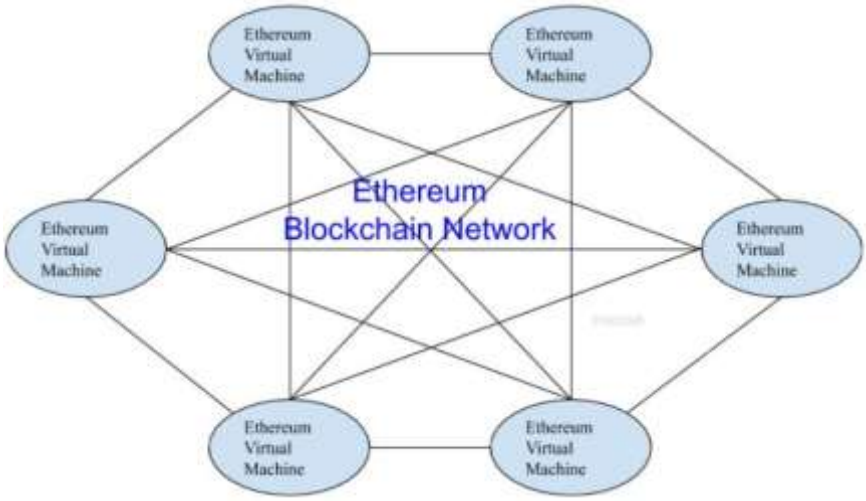

Fig. 1. Ethereum Blockchain Network

Ethereum Uses A Hashing Algorithm Such As 'Proof Of Work', 'SHA-3' Called Ethash For The Mining Of A Block Transaction, Where Bitcoins Use The Encryption Algorithm 'SHA-256'. In A Bitcoin Network, Each Node Is A Software Program Which Is Used To Validate And Store The Transaction, But In The Ethereum Virtual Machines, Which Are Pro- Ficient In Running Scripts Of Peculiar Algorithmic Intricacies.

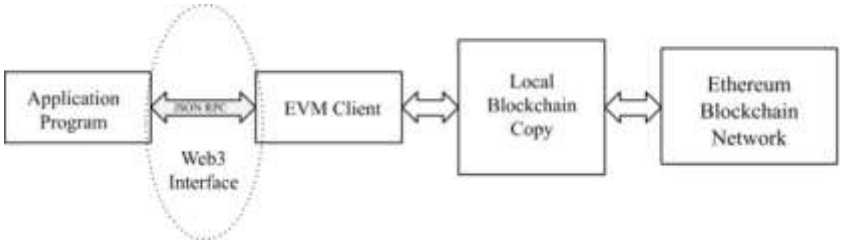

Fig. 2. Effective Functioning Of Ethereum

In The Above Figure 2, The Web3 Interface Communicates With The Ethereum Block- Chain Using The JSON RPC Which Is "Remote Procedure Call" Protocol. The Nodes In A Peer-To-Peer Ethereum Distributed Network Aggregates A Replicated Copy Of The Code And Data On The Blockchain. The Web3 Interface Provides Access To Read Or Write On

Data That Are Stored In Blockchain Networks By Making JSON RPC Requests To All The Indi- Vidual Ethereum Nodes.
The Blockchain Technology Came To Widely Used Technique As A Result Of Its Influence In The Financial Organizations, Healthcare Organizations, Scholarly Institutions, Etc. [2]. This Blockchain Platform Consisting Of Different Layers Such As Data Layer, Business Layer, Application Plus Presentation Layers. In The Data Tier, The Info Which Are Kept In A Database Are Collected And Uploaded To The Blocks Of The Blockchain System, Where These Data Are Converted Into Encrypted Data Using Blockchain Encryption Algorithm, Merkle Tree Data Structure, And Some Of The Hash Algorithms To Ensure The Safety Of The Data [2].

1. Blockchain Conservancy Conveniences

Fundamentally, Blockchain Makes An Essential Framework To Manage The Ledger Of Large Database In A Distributed Decentralized Aspect Of Maintaining The Records. A Multiple Information Is Stored In The Form Of Blocks In In This Blockchain Structure. These Data Are Combined With Each Other Blocks Which Are Affiliated To Other Blocks In The Block- Chain Framework To Make Relevant Transactions Between Them. Here Some Of The Preser- Vation Benefits Of Blockchain Technology Are As Follows.

1.1 Trustworthiness

In A Blockchain System, Once The Transaction Is Allocated To One Particular Block, That Particular Block Will Be Habitual Blocks. Those Blocks Are Restricted To Store Any Other Data Further. So That, The Alteration Of The Existing Data Or The Deletion Of The Extant Data Are Exceedingly Challenging Function. That Drives The Blockchain As An Enormous Sci- Ence To Stock Commercial Transcripts And More Dossiers. All These Changes And The Rec- Ords Stored Are Monitored, Followed And Enduringly Registered At The Decentralized Dis- Persed Ledgers [10].
Nowadays An Enterprise Corporation Uses The Blockchain Technology From The Decep- Tive Demeanor Of The Workers. Hence The Most Confidential Data Such As Commercial Transactions Of The Organization Are Kept Secured, Which Help To Reduce The Doubtful Transactions Of An Employee.

1.2 Securing Transactions

In A Conventional Transaction, When One Party Needs To Make Transaction To Other, Then There Will Be More Third Parties With Those Two Parties. So That, The Transaction May Not Be Confidential, Where The Transaction Can Be Viewed By Other Third Parties, Who Are The Stakeholders Involved In That System [9]. But In This Blockchain Technology It Provides The Secured Transaction Between Only Two Parties, They Are Sender And The Receiver. Here Third Parties Don't Have Access To View The Transaction As It Is Encrypted Using The Hash

Key [4]. For Example, If A Person A Wants To Make A Transaction To B, Then The Emissary Stakeholders Such As Corresponding Company Or The Other Authorities Of The Organization Can't Able To View The Details Of The Transaction.

1.3 Secrecy Conservation

Every Data In The Decentralized Dispersed Blocks Are Encrypted With The Encryption Al- Gorithm, Which Are Then Stocked In The Blocks Of The System. Every User Can Access

To The Data Stored In The Blocks According To The Hash Key They Have. The User Can View Only The Data In The Blocks By Using The Public Key, And They Can Able To See The Private Information Only With The Help Of The Private Key [2]. To Maintain The Trustworthy Trans- Actions The Blockchain Uses Smart Contracts, Which Helps To Maintain The Confidentiality Of The Personal Information Of The Users. Furthermore, The Key Which Are Generated For The Security Are Determined And Acts As A Sign Of A Person [1]. These Public Keys Are Not Related To The Identification Of Corresponding Person, Where This Key Maintains All The Personal Information Secure. Even If Third Party Wants To Find Out The Key, It Is Not Possible To Find The Hash Key Using Their Known Information As It Is Highly Secured.

1 Objections In The Blockchain Technology

The Blockchain Technology Plays Important Role In This On Growing Technical World, Where All The Transactions Have Started To Use The Blockchain Technology Because Of Its Secured Platform. But There Are Few Challenges Faced In These Kinds Of Transactions, Such As Latency Of The Transaction, Content Of The Data To Be Stored In The Blocks, Security Of The Blockchain Technology And The Expenditure To Use The Blockchain Technology [3]. The Major Objection With The Blockchain Technology Is Poverty Of Consciousness Of The Technology, Chiefly The People In The Different Organizations Except Those In The Banking Are Less Likely To Know About The Process Of Blockchain Technology[13]. As The Blockchain Be Able To Assassinate Peer-To-Peer Transaction, It Makes Immense Expense.

2 Blockchain Implementation In Healthcare System

In This Contemporary Period Of World, There Are Monumental Expansion In The Healthcare System, Because Of The Multiple Healthcare Organizations With Multiple Specialization According To The Contaminations. Hence Maintaining Of These Details Become More Dis- Pute To The Hospitals To Assure The Safety And The Security Of The Data Of The Patients. From The View Of The Patient [4][5]. In A Conventional Health Record System, All The Rec- Ords The Patients Have Been Kept In The Form Of Paper-Based Records Of The Patients Like Medical Reports, Test Results Such As Scan Reports Along With The Doctor's Commands, And The Prescriptions To Be Followed. Nevertheless, It Is Very Complex To Share These Paper- Based Data From One Medical Organization To Other Organization. These Can Be Solved By Using The Blockchain Technology [6].
As The Blockchain Works As A Distributed Ledger For A Decentralized Data Storing Da-Tabase, It Keeps All The Transactions Which Are Held By The Transaction Parties In The

Blocks Of The Blockchain System. In This Case, When The Patient Records Of One Medical Organization Is Stored Across Blocks Of Blockchain System, It Will Be Convenient For The Doctors As Well As For The Patients To Access And Track The Details Of The Medical Records [7].
All The Medical Data The Patients Are Uploaded By The Authorized Doctors In Charge, To The Blockchain System, Where The Patient's Details Can Be Securely Stored In The Blocks Which Are Immutable And Away From The Third Parties. Even These Details Can Be Used When The Patient Needs To Go To Other Hospitals By Logging In To Blockchain System With The Verification Of Their Identity.

Proposed Work

In This Proposed Research Work, We Described How The Ethereum Blockchain Technol- Ogy Works, And How The Transaction Of The Data Is Executed Among The Blocks In A De- Centralized Distributed Data Storage[11]. We Develop A Distributed Data Storage System For The Healthcare System To Store And Retrieve The Patient's Records In The Blockchain Sys- Tem. For The Security Purpose Of Data Storing We Plan To Develop With Two-Step Verifi- Cation Of The Patients And The Doctors In Which Each Will Be Given With Particular Key Directed Towards The Encryption Of The Data Along With Their Confidential Key. Our Pro- Posed System Would Provide More Confidentiality For The Records Of The Patients, In Which Only Authorized Persons Can Access And View The Data Of The Blocks Using Their Individual Keys. The Proposed System Will Be Reliable To The User, Which Is Secured From The Deceptive Acts Of The Attackers In The Thought Of Misusing The Details.

2. DISCUSSION AND RESULTS

On This Flourishing Technical World Of Medical System, The Storing And Maintenance Of The Medical Records Plays Important Role For The Future Generations[12]. For The Secured Data Transactions There Are Multiple Type Of Data Storage And Transaction. When Comparing With All Of Them The Blockchain Technology Plays Vital Role As It Provides Transparency Of The Data As Well As The Confidentiality Of The Data From The View Of Third Party By Encrypting The Data Using The Ethereum Blockchain Technology. The Limitation Of This Proposed Research Is That Once The Data Is Uploaded Such As Medical Report By The Doctor, It Can't Be Altered Again. Hence, When The Ethereum Blockchain Methodology Used In The Healthcare Organization, The Records Remain Secured, Confidential From Third Party Accesses Such As Man In The Middle Attacks.

3. CONCLUSION

Nowadays The Security Of Personal Important In Essential, In Which Blockchain Provides More Than Expected To Secure The Data Of The User. The Secured Transaction Helps The User To Get A Problem Free Transaction. In This Research Article The Overview Of The Block- Chain Architecture Are Represented, Which Shows That How The Ethereum Blockchain Framework Works To Build Secured Blockchain System. Some Of The Advantages Of Using The Blockchain Technology Is Summarized To Ensure The Security Of The Transaction. This Gives The Direction To Perform Further Moves In The Blockchain Technology. How The Blockchain Technology Is Implemented In The Health Record Storage System Are Described To Present A Secured Data Maintenance Of The Patients.

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