GTU INNOVATION COUNCIL

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Seminar on 'Introduction to Blockchain'

Date: 12th April 2018

Time: 5:00 P.M. - 8:00 P.M.

Venue: Block 6, GTU Innovation Council, Ahmedabad

About the event

The seminar was a part of Regional Sectoral Innovation Sessions happening across the state, at multiple GTU-GIC regional centre's. The agenda of the program was to gather students, faculties and Blockchain enthusiasts from the Ahmedabad eco-system, sensitize them and understand the current scenario of students working in the Blockchain domain, and creating some traction if any.

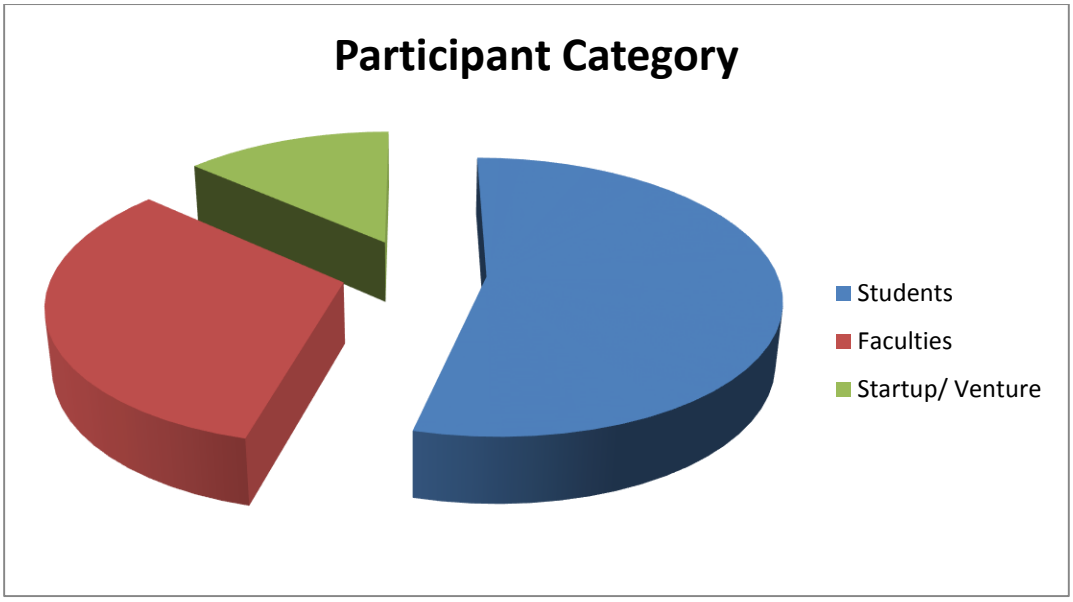
About the speakers

Dhruv Gupta, founder, Unway Research; the company is with vision of creating Centre of Excellence across Ahmedabad in the field of AI(Artificial Intelligence), ML(Machine Learning) and Blockchain. Their current products include Profiled Skin which is a B2B platform where people can be recommended the right fitting of clothes, they also developed Augmented/ Alternative Communication device designed for people that have lost their voice after an accident and also a memory optimized Blockchain structure.

Pravash Dey, founder, USIndia Blockchain Council; Pravash has formed multiple consortiums on collaborative Blockchain Council's involving Entrepreneurs, Innovators, Academic Researchers, Investors & Financial Institutions and Trading organization with Business enablers. Currently working upon building Blockchain as a Service(BaaS), along with Fintech and Media Tech ventures, namely VCFund India and Brand India Magazine. Pravash is also a Tech Startup enabler by providing support in the field of creating Business Model, Strategy and Brand Positioning

Highlights from the Session

The event began with a round of introduction and statistics suggested that around; 20 students, 12 faculties and 5 startup members were present in the session.



A good part of the audience was already connected with the Blockchain as they were well aware of the Crypto-currencies that have created the traction across the globe. But almost a very minimal audience was present that had idea upon the functioning of the Blockchain Technology and its possible implementation in the industries other than Crypto-currencies, and how using Blockchain a lot of problems could be solved.

The session was then initiated by Mr. Pravash Dey, who titled his presentation as "Internet of Trust", meaning a network of Computers that are secured and Trustable and the underlying technology being "Blockchain". The discussion initiated with the audience with the trending point Crypto- currency and reasons got discussed upon the stand of Government, RBI, and the banks on accepting the Crypto-currencies. The discussion proceeded with the Distributed Network concept, which is the strength of the Blockchain Technology. And how through a network of lakhs of computers around the globe, is a secure network for Blockchain is created.

Secondly, Blockchain eliminates the need of intermediaries (including Banks and intermediaries for Banks), that take care of our financial transaction. In real time these financial transactions take somewhere around 72 hours minimum to complete the transaction, and when the sender pays 100 Ruppes, the receiver receives only 96 Rupees of it, 4% is generally the processing cost that the Bank charges for the transaction. So this is where the disruption was required in the FinTech industry and with Blockchain it has been possible. Currently the time taken while transacting the crypto- currencies is somewhere around 10 minutes, so that's the level of disruption that is prevailing.

The other reason for the popularity of the Blockchain is the boom in the prices of the specific crypto-currency "**Bitcoin**", "There was a time when the price of 1 bitcoin was around 11 dollars which rose to the peak of about 17.9 grands, and currently at 6.2 grands. The Crypto-currency marketsize was around $10 millions in 2016, while it is speculated that currently the market is valuated at around $700 million in 2018" as per the statistics shared by Mr. Pravash.

Blockchain is all about a distributed(replica at multiple places) ledger system, which makes the system more secure, thinking about hacking into that network is pretty impossible with Blockchain, because Blockchain works on Consensus of system, thus you need to hack atleast 50% of the systems connected in the world, which makes the Blockchain network **"Immutable".** About the transactions happening over the blockchain system only the sending and the receiving end are the ones who are aware of the transactional details.

Applications: Then a brief upon the sectors in which the Blockchain can be implemented to solve global level problems were discussed, which included the implementation of Blockchain into the energy Sector, which included M2M(Machine-to-machine) solutions, i.e. smart gridds that can help in evaluating and distributing the electricity at the various nodes across the world, for effective and optimized consumption of the electricity. Next the Government sector where a HyperLedger can be formed which would focus more upon the problems of the citizens including Rural Development, Waste Management, eDistricts, etc. Even the solution of using Blockchain into the voting system also got discussed. (Currently India prefers to use the age old Secret Ballot System). Currently the countries that have

implemented the Blockchain for voting are; Texas, New York, United Kingdom, South Korea. Also the Blockchain can be utilized in the Land Registration and Machine Learning.

Merkle Tree, (Video Links: https://www.youtube.com/watch?v=t523Q-g22xw , https://www.youtube.com/watch?v=gUwXCt1qkBU)

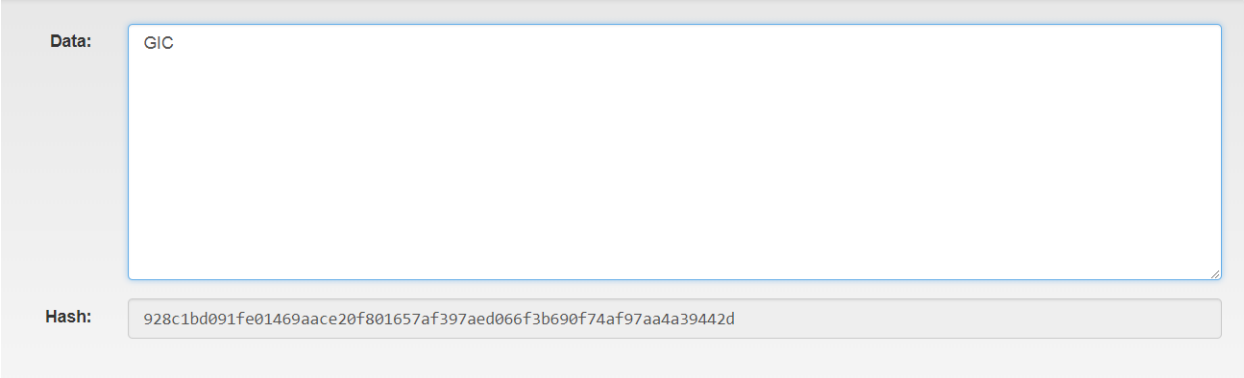
Link for the SHA256 blockchain demo: https://anders.com/blockchain/hash.html

The session was further taken up forwared by Mr. Dhruv Gupta. He initiated the discussion with the underlying meaning of Currency, and the purpose it is supposed to solve, which is assigning value to anything, it enables trade, enables trust. And the following question was who decided the currency. Thus Mr. Dhruv mentioned that Currency is setup mutually through a group of people, only appropriate question is that whether that currency would be legally accepted, pun intended.

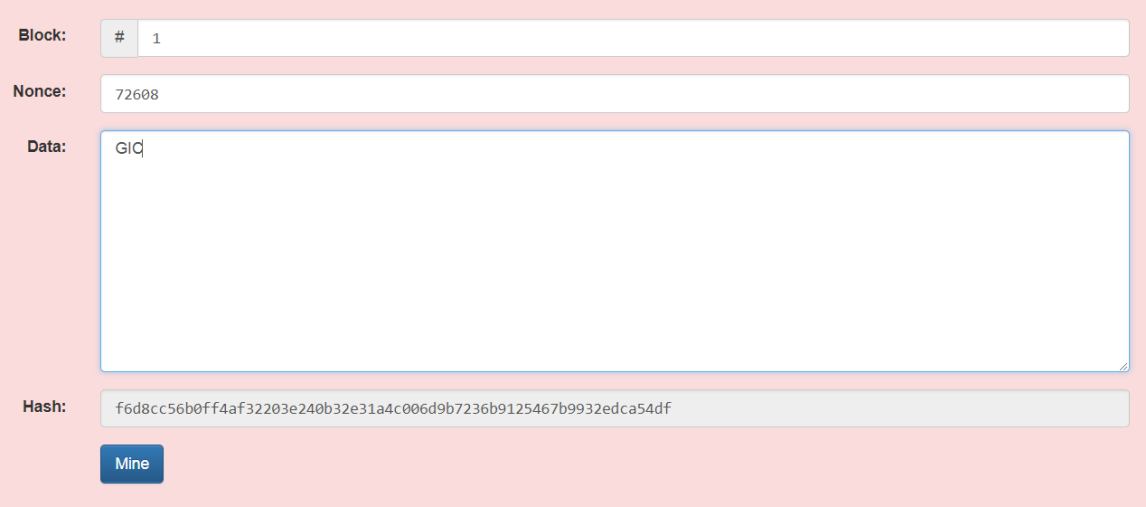
According to Mr. Dhruv, it isn't certain that every time using Blockchain we can reduce the time of the transaction, it has been a myth these days, because it is possible that there are numerous transaction in the same time frame, and because each block has only 8 MB space, it is possible that our transaction could be processed in the nth Block. And it takes around 10 minutes to process a block. So there is apparently a canvas through which we can find out whether it is optimum to solve a specific problem using Blockchain, or not. The speaker also showed the analogy of Blockchain model with GitHub.

Link for the Blockchain Canvas: https://blockchaincanvas.files.wordpress.com/2017/05/blockchain-canevas-ven-2016-sajida-zouarhi-cc-by-nc-sa-1-0.pdf

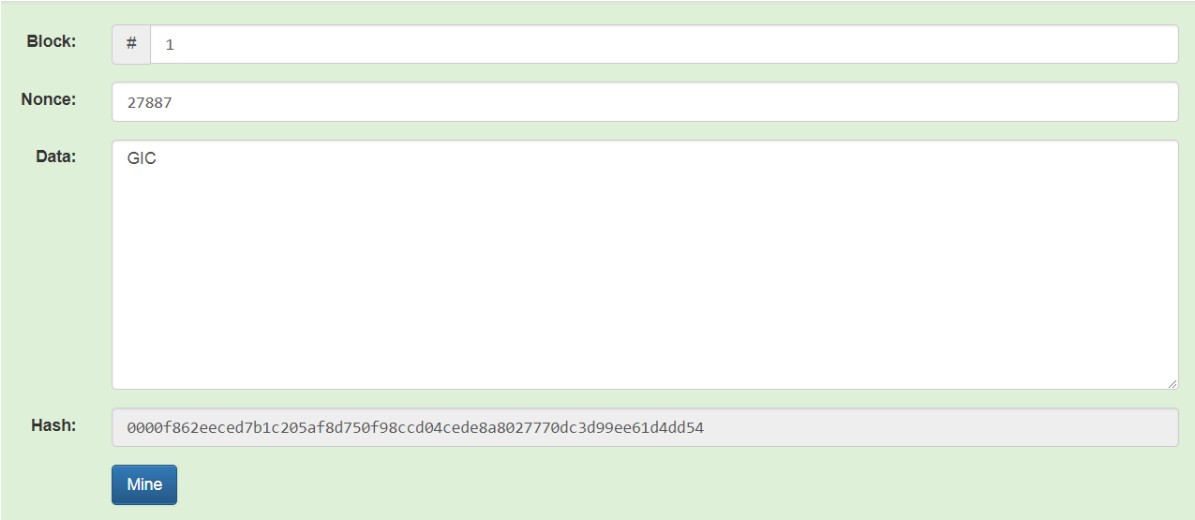
Further a demonstration was given that represented the working of Blockchain model, using the widely famous SHA-256 Cryptographic Hash Algorithm. SHA256 works in creating a unique signature



As described above for a specific string of Data, a 16 character Hash (unique signature) is created.

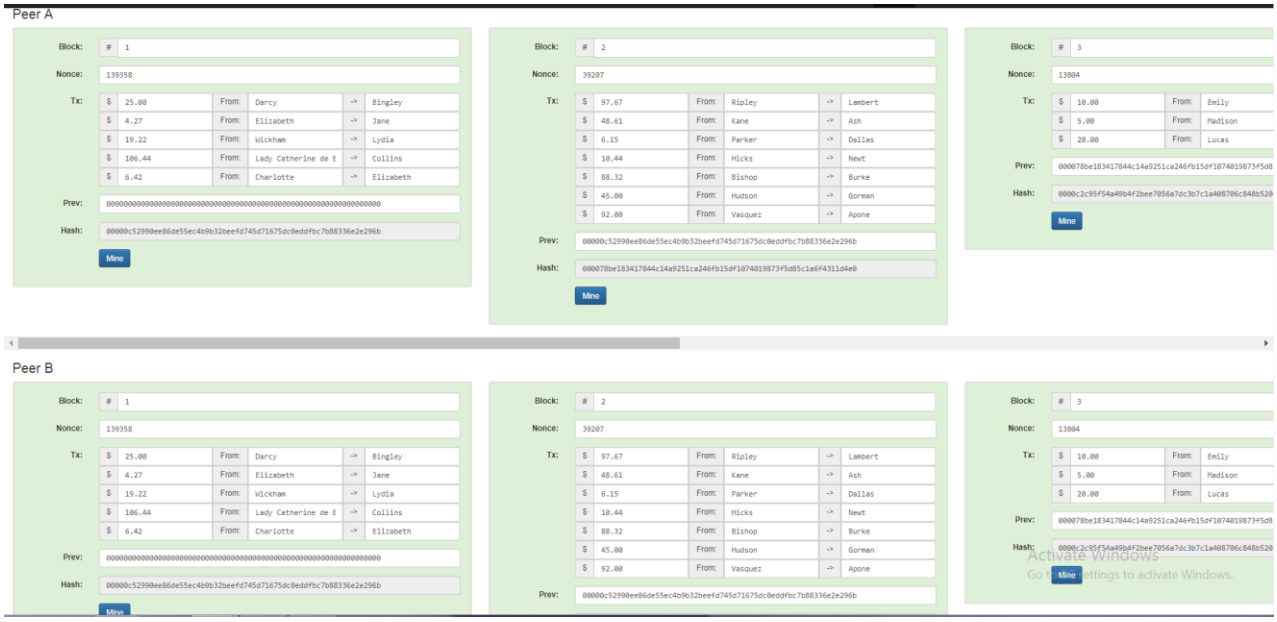


The above shown diagram is a block, which contains the Block Number, Nonce and Data, and to make the block valid, the first 4 characters of the Hash need to be zero, thus we need to change Nonce(comes once in the number system), to make the block valid, that can be done through Mining.



The above image is a valid Block. That was possible by just a mere mining process on the block and finding the right value of nonce, for the data set.

A blockchain is a chain of such individual blocks, if anyone tries to tamper with any block in the chain then the chain breaks, and all the following blocks become invalid. And mining each and every block in the chain could take numerous minutes, and blockchain system is such that it validates all the peers(devices) periodically every 10 minutes. So considering that it takes around 10 seconds to mine single block, and the chain is of 100 blocks and considering there are just a mere 10000 peers(devices) connected, thus similar mining/ changes need to be made in 5000 devices simultaneously, in the 10 minutes time frame, which makes the Blockchain technology Immutable. An example of what the tokenized crypto-currency model looks like,



The minimum peer/ devices that are required to create Blockchain are 3, because Blockchain works on consensus. "The longest chain wins", as quoted by Mr. Dhruv.

Currently banks in Andhra Pradesh have a private network of Blockchain which involves the Banks, investors, Government and other relevant stakeholders, which can be taken into consideration while analyzing the candidate maybe for investment, loans, or his profile needs to be analyzed by the Government in terms of their transactional history then that is enabled, also could be used to map current status of Mortgages even. The session conluding with the discussion upon the adaptation by Chicago that is "**Array of things**", just like the Internet of things, only difference is there they dont need Internet for the communicating between the devices. And through Machine Learning and AoT, Chicago is solving great number of problems, and Making the world a better place.

The session concluded with networking over snacks.

Feedback from the audience:

The event was awesome, we should have another Advanced Session for Implementation of Blockchain.

- Nilesh Thakkar

Professor, L.J. Polytechnic

Great practical session Blockchain, next time would wish to have an Hands-on session on Blockchain, would like to work on it.

-Krishna Kumar Kshatriya

Professor, ACET

Really liked the session, would like to have mining session for the next time.

-Ravi Chauhan

Professor, SSIT

The session was great, looking forward for AI and ML sessions at GIC, and would like to be a part of the GIC team.

- Jacob Joy

Student, LDCE

Looking forward on creating a Centre of Excellence in association with GTU/ GIC which would solely be facilitating Blockchain, AI and ML based ventures. The student teams would solve the industry problems, and for that a state of the art centre should be built.

-Dhruv Gupta (Speaker)

Founder, Unway Research

Glimpses from the event:


SHA256 Hash

Esteemed Speakers for the session:

Pravash Dey

USIndia Blockchain Council

Dhruv Gupta

Unway Research

Photography By: Pawan Mulchandani

Report Prepared by: Dhaval Kaku

GIC Team