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Title : Development of E-voting Platform using Blockchain architecture.

Work : Design and Develop an E-voting platform based on the Blockchain technology and Implement using suitable open source tool.

Phases of work :

1. Study on Blockchain technology and Bitcoin cryptocurrency by downloading various papers from internet and make thorough understanding on this topic.
2. On or Before 25 Sep -Study on various Open source and public blockchain-based distributed platform , featuring smart contracts (scripting) functionality.
3. On or Before 15 Oct -Select an appropriate platform such as BigChainDB, Corda, Ethereum, Hyperledger Fabric, Multichain, Chain Core, Quorum, Stellar, and more.
4. On or Before 30 Oct -Understanding of working principle and methodologies of Decentralized applications (Dapp).
5. On or Before 25 Nov -Make a demonstration of your work .

Preliminaries :

Blockchain technology solves these problems by creating a network of computers (called nodes) which each store a copy of the database, and a set of rules (called the consensus protocol) which define the order in which nodes may take turns adding new changes to the database. In this way, all of the nodes agree as to the state of the database at any time, and no one node has the power to falsify the data or to censor changes. The blockchain further requires that an audit trail of all changes to the database is preserved, which allows anyone to audit that the database is correct at any time. This audit trail is composed to the individual changes to the database, which are called transactions. A group of transactions which were all added by a single node on its turn is called a block.

Blockchain based E-voting platform:

1. Requesting to vote: The user will have to log in to the voting system using his credentials-in this case, the e-voting system will use his Social Security Number, his address, and the voting confirmation number provided to registered voters by the local authorities .
2. Casting a vote: Voters will have to choose to either vote for one of the candidates or cast a protest vote. Casting the vote will be done through a friendly user interface . For each voter a token is generated known as Ethereum .
3 .Encrypting votes : After the user casts his vote, the system will generate an input that contains the voter identification number followed by the complete name of the voter as well as the hash of the previous vote. This way each input will be unique and ensure that the encrypted output will be unique as well.
4. Adding the vote to the Blockchain :After a block is created, and depending on the candidate selected, the information is recorded in the corresponding blockchain. Each block gets linked to the previously cast vote.

References :

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2. B. Dickson, Blockchain Tech Could Fight Voter Fraud—and These Countries Are Testing It, VentureBeat, Oct. 2016, [online] Available: https://venturebeat.com/2016/10/22/blockchain-tech-could-fight-voter-fraud-and-these-countries-are-testing-it.
3. Douglas W Jones, "Threats to voting systems", *NIST workshop on threats to voting systems*, 2005.
4. Yi Liu, Qi Wang, *An e-voting protocol based on blockchain*.
5. S. Nakamoto, *Bitcoin: a peer-to-peer electronic cash system*, [online] Available: https://bitcoin.org/bitcoin.pdf.
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9.Y. Wu, *An E-voting System based on Blockchain and Ring Signature (Thesis)*, 2017.