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NAME: AFNAN ATTAR PRN: F19112003 CLASS:- BE COMP2 SUBJECT:- BT ASSIGNMENT No.:- 05

Q1) Outline the variety of possible solutions for problems you identified in your case study.

Ans I] Database Index Size:

- Bitcoin blockchain size including block headers and transactions without database indexes as of August 2019 has grown to over 220 GB.
- Ethereum introduced a concept called "pruning" to counter attack ever growing size; which required downloading only a certain number of blocks with fast sync mode in client app to become full node.

II] Transaction Speed:

- Due to the amount of network activity and transaction fees variations individual transaction verification times vary on Bitcoin and Ethereum making them difficult to use as stable mechanism.
- Bitcoin developer community has come up with two solutions - Segregated Witness and Lightning Network, allowing more transactions to be processed per block.

III] Control of decentralized blockchain networks:-

- "51%. attack" is such an issue on proof-of-work-based blockchains, which displays possibility to confirm blocks with incorrect transactions.
- Since it requires vast amount of computational power on a much established network, the feasibility of such attack is nearly impossible.

Q2 What are the challenges in applying block-chain to

existing real time application that you discussed?

Ans I] High Energy consumption :-
- Most of blockchain technology use proof-of-work as a consensus algorithm.
- However, proof-of-works ends up slaping a trade-off between energy consumption and security.

II] Slow speed :-
- Blockchain is a complex system, that is why it takes more time to process any transactions.
- Encryption of the system makes it even slower.

III] No Regulation :-
- Main challenge behind using blockchain in an organization.
- No one follows specific rules regarding it and there are many different competing standards.

Q3) Enlist the benefits of using block-chain technology for your case study real world application.

Ans 1) Better transparency :-
- With blockchain, an organization can go for a complete decentralized network where there is no need for a centralized authority, improving transparency.

2) Enhanced Security :-
- Security is enhanced by the fact that each node holds a copy of the transactions ever performed on the network.

3) Reduced costs :
- Cost associated with 3rd party vendors are reduced.

4) True traceability :
- Supply chain can be created that works with both

vendors and suppliers.

5] Improved speed and highly efficient:

- Automation using smart contract gives speed and efficency.

Q4) Is it permissioned or permission less block-chain application you discussed in your case study? Justify you answer.

Ans 1. The permissionless blockchain is diswssed in our case study.

2. These are also known as trustless or public blockchain are open in the network available to everyone to participate in the concensus process that blockchain use to valid transactions and data.

3. These are fully decentralized across unknown parties.

Q5) On which platform your blockchain application is build and why? (Ethereum, Hyperledger, Multichain, Quarum).

Ans 1. The application is built on the hyperledger platform.

2. Hyperledger platform provides the security and anonymity that requires for our application.

3. It also provides the immutable way in which data is stored.

4. It also provides the immutable way in which the data is stored.

5. It also gives good performance in terms of latency and transaction load.