Blockchain technology is a type of decentralized, distributed ledger that enables secure and transparent transactions without requiring intermediaries. One of its defining features is its decentralized architecture, which allows multiple nodes in the network to participate in validating transactions and adding new blocks to the chain.

To achieve consensus and validate transactions in a decentralized network, various consensus mechanisms have been developed. These include Proof of Work (PoW), Proof of Stake (PoS), and Delegated Proof of Stake (DPoS). Each mechanism has its own strengths and weaknesses, and is designed to promote a fair and secure environment for blockchain transactions.

Smart contracts are another key aspect of blockchain technology. They are self-executing digital contracts that are programmed to automatically execute the terms of the contract when specific conditions are met. Smart contracts are built using programming languages, such as Solidity, and are stored on the blockchain, ensuring that they cannot be altered or tampered with once deployed.

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