SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

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DEPARTMENT OF COMPUTER SCIENCE AND TECHNOLOGY

COURSE NAME: 19CS622-Blockchain Technology

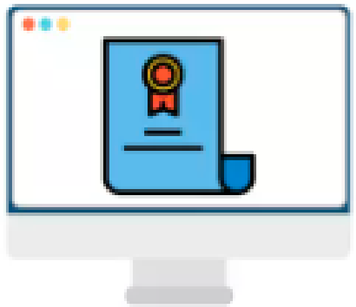
III YEAR /VI SEMESTER

Unit 2- CRYPTOCURRENCY

Topic : Smart contracts

SMART CONTRACTS

The terms and conditions of an agreement is written in code



These agreements facilitate the exchange of money, shares, property etc.

It executes in blockchain's decentralized platform

Smart contracts in blockchain are digital contracts that are stored on a blockchain and run after meeting certain pre-established conditions.

SMART CONTRACTS

- Smart contracts are computer programs or protocols for automated transactions that are stored on a block chain and run in response to meeting certain conditions.
- A smart contract is a self-executing contract with the terms of the agreement between buyer and seller being directly written into lines of code.
- The code and the agreements contained therein exist across a distributed, decentralized block chain network.
- The code controls the execution, and transactions are trackable and irreversible.

Smart contracts in blockchain are digital contracts that are stored on a blockchain and run after meeting certain pre-established conditions.

SMART CONTRACTS

Smart contracts characteristics	• They are self-sufficient when the rules are followed at all stages; • They are protected from unauthorized access because no one can change the contract after it has been initialized; • They do not care about the mathematical complexity of the transaction; • They do not need intermediaries and guarantors; • They are self-checking.

SMART CONTRACTS

Smart contracts functions	• Automation of typical processes; • Ensuring contract security; • Reducing the impact of trust when selecting a counterparty; • Supporting multi-signature accounts to distribute control to all stakeholders; • Providing utility to other contracts; • Storing information about the application.

SMART CONTRACTS

Smart contracts employment	• Financial operations; • Automation of typical business processes; • Supply chain management and logistics; • Registration of real estate, licenses, and copyrights; • Democratic, decentralized management; • Dispute resolution (arbitration); • Other.

SMART CONTRACTS TYPES

- Smart Legal Contracts
- Decentralized Autonomous Organizations (DAO)
- Application logic contracts

SMART CONTRACTS TYPES

- **Smart Legal Contracts**
  These contracts are legally enforceable and require the parties to satisfy their contractual obligations.
  Parties may face strict legal actions if they fail to comply.

  They follow the pattern of legal contracts: "if this happens, then this will happen."

SMALL CONTRACTS TYPES

- **Decentralized Autonomous Organizations (DAO)**
  The contract is bound to specific rules that are coded into blockchain contracts blended with governance mechanisms.

  by collaborative decisions of shareholders or people setting up DAO.

  DAOs are open-source and transparency , depends on the number of stakeholders.

SMALL CONTRACTS TYPES

- **Application logic contracts**

- Communication between smart devices can be done using smart contracts. Such smart contracts are called **application logic contracts**.

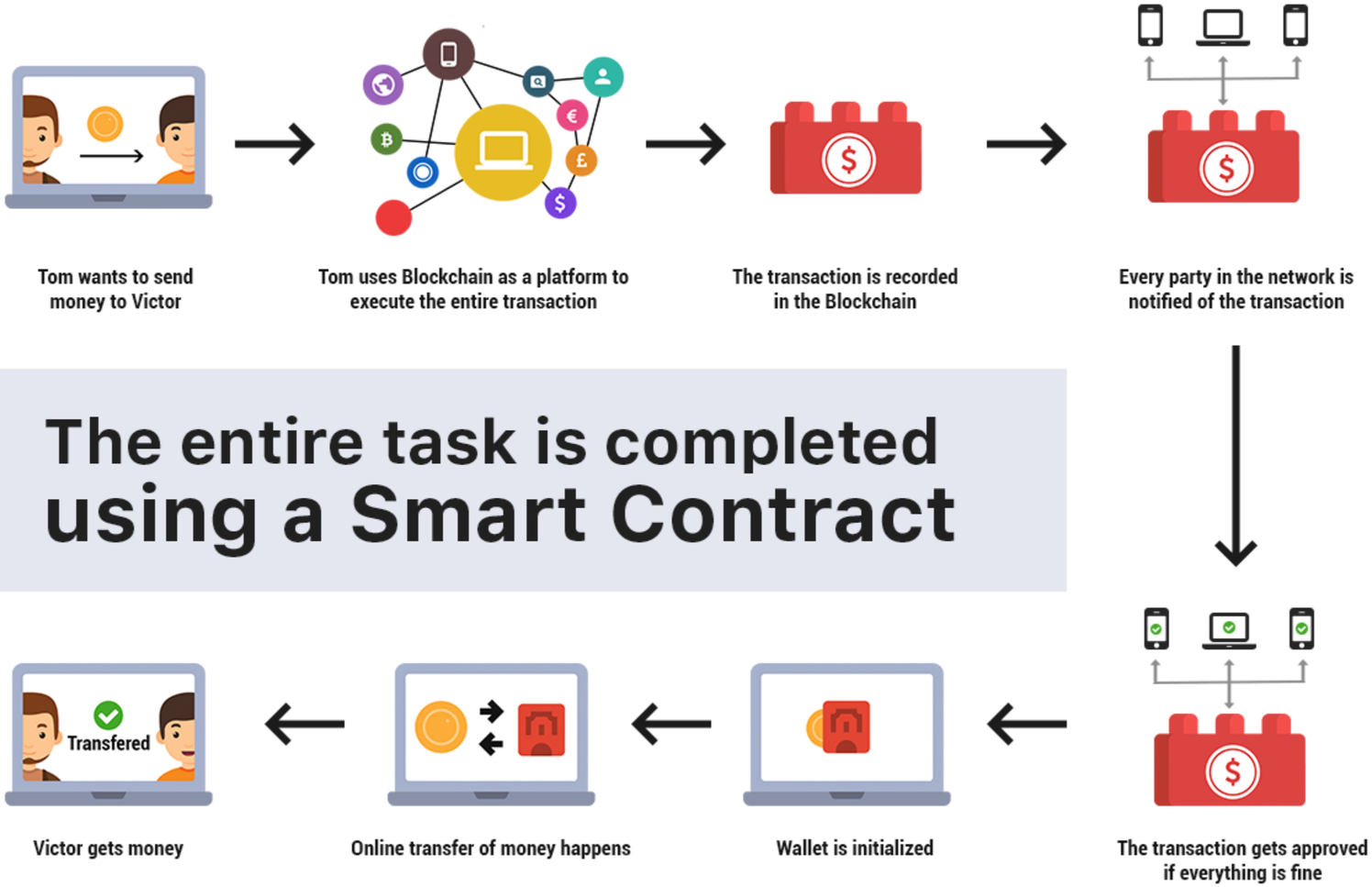
Working of Smart Contracts

Working of Smart Contracts

let's proceed step by step to understand the working of smart contracts.

- Two or more parties interested in entering into a contract for anything (i.e., buying & selling)
- These parties enter into a digital contract containing the business's terms and conditions in the form of computer code.
- These parties must agree to the terms and conditions of that contract.
- When they decide, the contract starts.
- The smart contract automatically enforces action or performs transactions when the defined terms are met.

SMART CONTRACTS



Smart Contracts transactions

The operation of a smart contract is similar to other **blockchain** transfers.

These are the necessary steps:

1. A user initiates a transaction from their **blockchain** wallet.
2. The transaction arrives at the distributed **database,** where the identity is confirmed.
3. The transaction, which may be a **transfer** of funds, is approved.
4. The transaction includes the **code** that defines what type of transaction is to be executed.
5. The transactions are added as a **block** within the blockchain.
6. Any change in **contract** status follows the same process to be updated.

Advantages of Smart contracts

No intermediaries

The process executes without the need of a third party

Automated

They are automated with the code which eliminates manual effort for execution

High Speed

Since smart contracts run on programming code, the speed of its execution is higher than the traditional contract

Secure

As data is stored in the decentralized system, the chances of modifying data is difficult

Accuracy

Based on the requirements, terms and conditions of a contract is recorded accurately

Use Cases of Smart Contracts

- Banking
- insurance
- energy
- e-government,
- telecommunications,
- the music business,
- art,
- mobility,
- education, and many other industries have use cases.

References

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Thank You