

Blockchain Technology & Cryptocurrencies

Objectives:

- Define blockchain and cryptocurrency.
- Explain how blockchain works.
- Identify advantages and disadvantages.
- Discuss real-world applications.

1. What is Blockchain Technology?

Blockchain is a digital, decentralized ledger that records transactions across many computers. Each block contains transaction data, a timestamp, and a cryptographic hash.

2. How Does Blockchain Work?

- 1 A transaction is requested.
- 2 The transaction is broadcast to a network of computers (nodes).
- 3 The network validates the transaction.
- 4 The transaction is grouped into a block.
- 5 The block is added to the chain permanently.

3. What Are Cryptocurrencies?

A cryptocurrency is a digital or virtual currency secured by cryptography and built on blockchain technology. Examples include Bitcoin, Ethereum, Binance Coin, and Ripple (XRP).

4. Advantages

- Fast international payments
- Lower transaction costs
- No need for banks
- High security

- Transparency

5. Disadvantages

- Price volatility
- Regulatory uncertainty
- Risk of hacking
- High energy consumption

6. Real-World Applications

- Online payments
- Smart contracts
- Supply chain management
- Digital identity
- NFTs (Non-Fungible Tokens)

7. Important Vocabulary

Term	Meaning
Ledger	Record book of transactions
Node	Computer in the blockchain network
Mining	Process of validating transactions
Wallet	Digital tool to store crypto
Hash	Digital fingerprint of a block

8. Discussion Questions

- 1 Do you think cryptocurrencies will replace traditional money? Why or why not?
- 2 Is blockchain technology only useful for finance?
- 3 What risks do investors face in crypto markets?

9. Practice Activity

- 1. Blockchain is a _____ ledger.
- 2. Bitcoin was created in _____.
- 3. Mining is the process of _____ transactions.