

SPPU

BLOCKCHAIN TECHNOLOGY

UNIT 4

Blockchain Platforms and Consensus in Blockchain

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INTRODUCTION

What is Cryptocurrency?

- A digital or virtual currency that uses cryptography for security.
- Works on blockchain technology, where every transaction is stored in a public, tamper-proof ledger.
- Decentralized: No central bank, no government control—managed by a distributed network of computers.
- Uses peer-to-peer transactions, meaning users can send money directly without middlemen.

Key Features

- Security: Protected by strong cryptographic algorithms.
- Transparency: All transactions are visible on the blockchain.
- Immutability: Once recorded, a transaction cannot be changed.
- Global Access: Anyone with internet can send/receive cryptocurrency.
- Low Transaction Fees compared to banks.
- Fast Transfers, even internationally.

INTRODUCTION

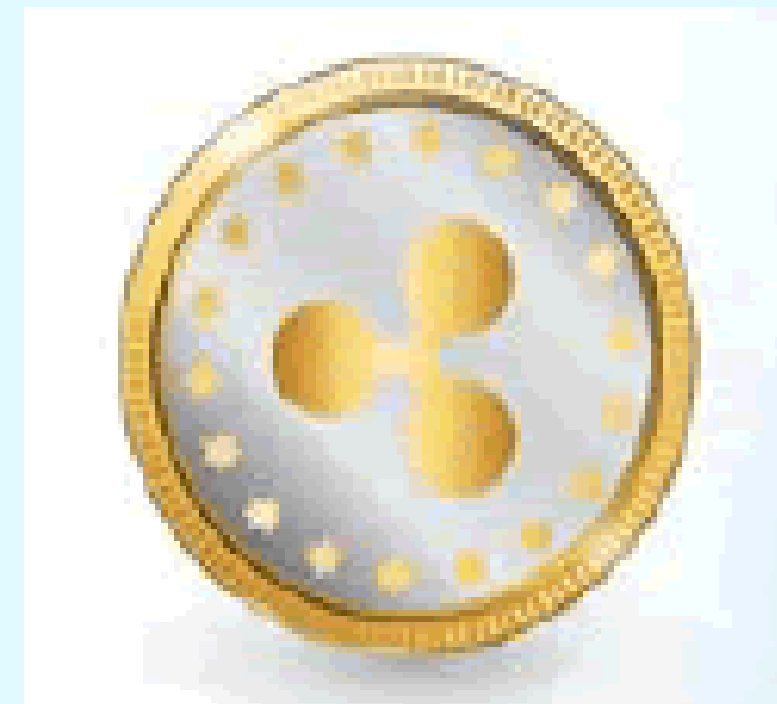
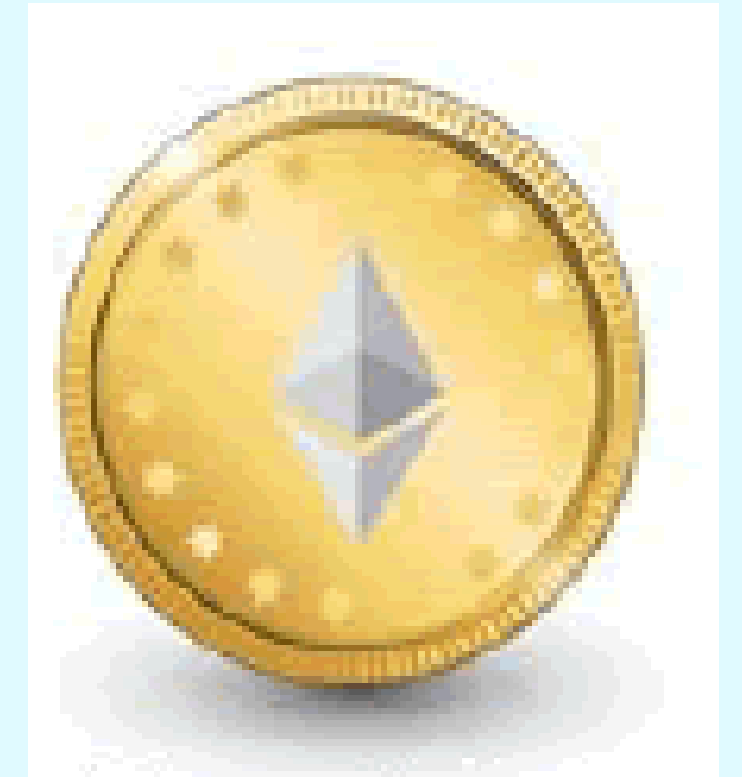
Why Cryptocurrencies Became Popular

- Rising need for digital payments and borderless money.
- High investment and trading potential.
- Freedom from central authorities.
- Innovation in DeFi, NFTs, smart contracts, and digital assets.



Examples of Cryptocurrencies

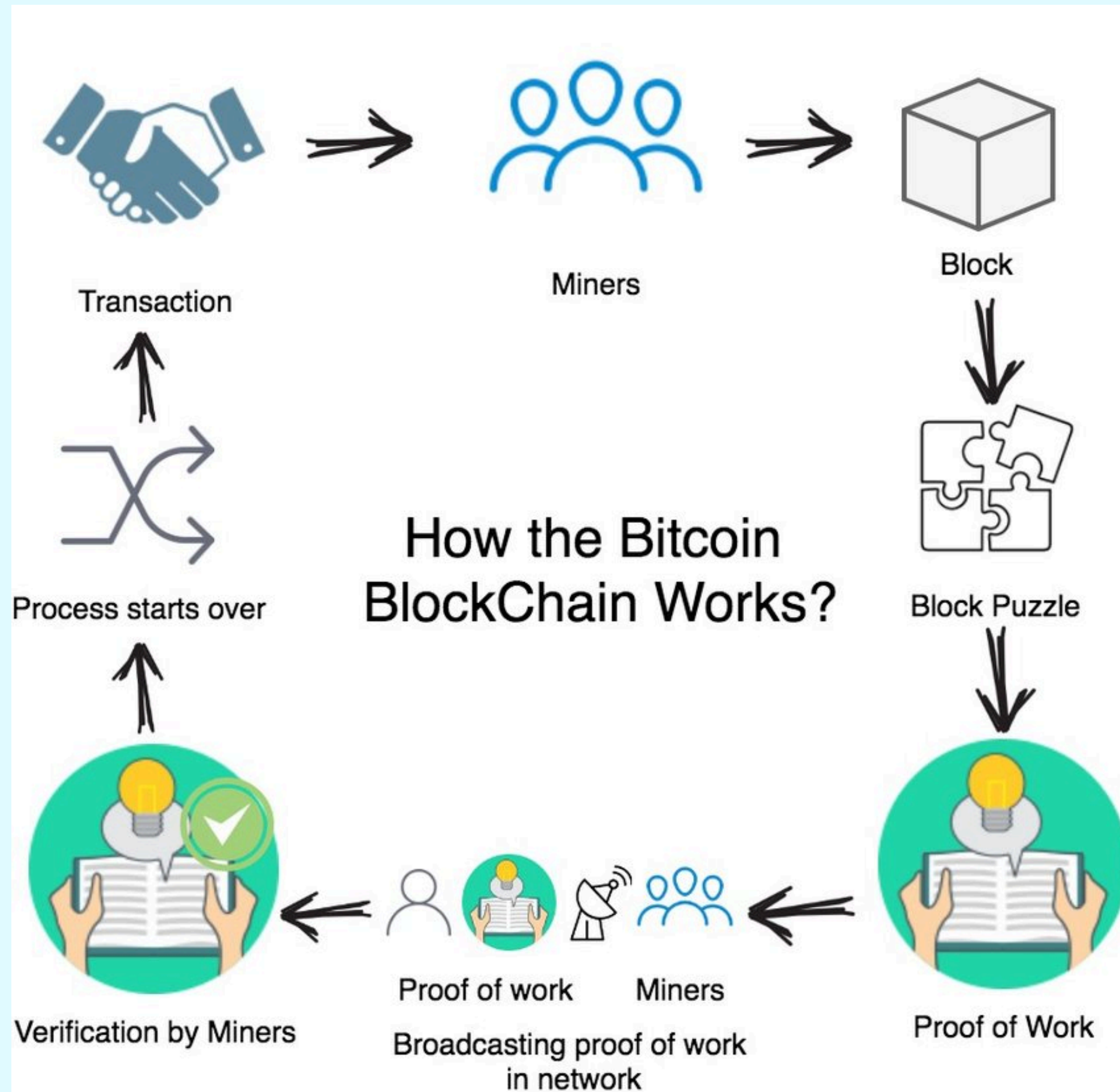
- Ethereum (ETH) – smart contracts
- Litecoin (LTC) – fast payments
- Ripple (XRP) – banking transactions
- Dogecoin (DOGE) – community coin
- Stablecoins (USDT, USDC) – stable value



BITCOIN

- Bitcoin is the world's first cryptocurrency, launched in 2009 by an anonymous creator using the name Satoshi Nakamoto.
- Designed to act as peer-to-peer electronic cash, enabling direct payments without a bank.
- Bitcoin works purely in digital form — no physical coins.
- It has a fixed supply of 21 million coins, which makes it scarce, similar to digital gold.
- Bitcoin's value is driven by supply and demand, adoption, and investor interest.

BITCOIN WORKING

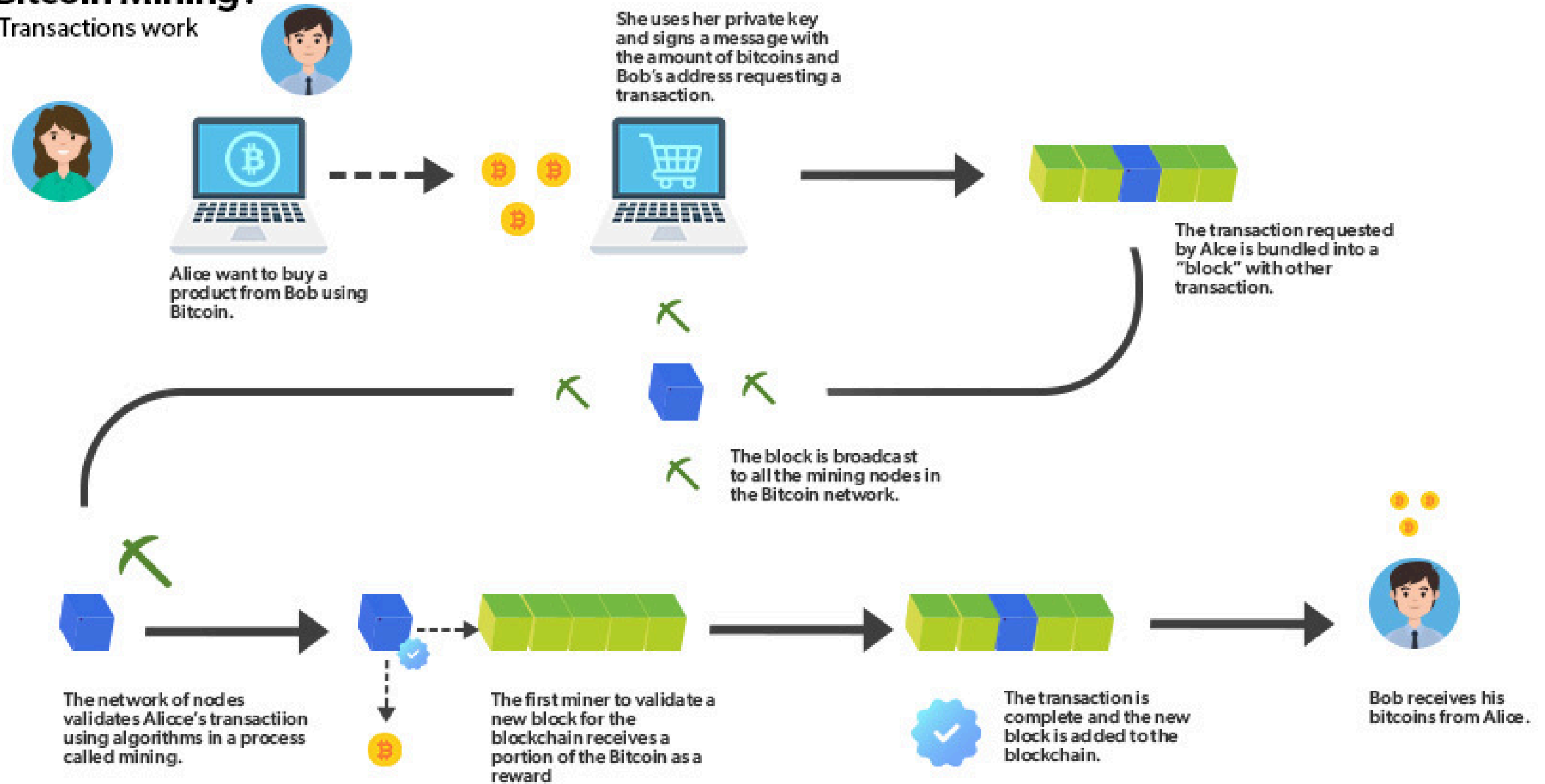


- Bitcoin operates on a decentralized blockchain, which is a network of thousands of nodes (computers) across the world.
- Each transaction is verified through a process called Proof-of-Work (PoW).
- Nodes validate and record transactions in blocks.
- Once a block is full, it is added to the chain, forming a secure and unchangeable ledger.
- No single entity controls the network — every node has a full copy of the blockchain.

BITCOIN MINING

What is Bitcoin Mining?

How Bitcoin Transactions work



Advantages of Bitcoin

- No need for banks or intermediaries — direct user-to-user transactions.
- Tamper-proof, thanks to blockchain immutability.
- Fast global transfers, often completed within minutes.
- Transparent public ledger, allowing anyone to verify transactions.
- Low transaction fees compared to traditional international transfers.

Limitations of Bitcoin

- Highly volatile — price can change dramatically in short periods.
- Network can become slow or expensive during heavy traffic.
- Mining consumes large amounts of electricity, raising environmental concerns.
- Regulatory uncertainty — different countries have different rules about Bitcoin.
- Transactions are irreversible, so mistakes or scams cannot be undone.

TYPES OF CRYPTOCURRENCIES

Bitcoin (BTC)

- First and most famous cryptocurrency created in 2009 by Satoshi Nakamoto.
- Works on a decentralized network with no central authority.
- Called "Digital Gold" because:
 - It has a limited supply of 21 million coins.
 - Acts as a store of value.
- Mostly used for investment and digital payments

Altcoins (Alternative Coins)

- Any crypto other than Bitcoin. Examples:
 - Ethereum (ETH) – smart contracts
 - Litecoin (LTC) – fast transactions
 - Ripple (XRP) – banking transfers

Stablecoins

- Cryptocurrencies whose value is pegged to stable real-world assets, like USD.
- Purpose: Remove volatility.
- Used for safe trading, transfers, and storing money in crypto.
- Examples:
 - USDT (Tether)
 - USDC (USD Coin)
 - BUSD (Binance USD)

TYPES OF CRYPTOCURRENCIES

Utility Tokens

- Provide access or special features inside a blockchain platform.
- They are not meant to replace money, but to serve a function.
- Examples:
- BNB (Binance Coin) – Used for paying trading fees, staking, and BNB Chain apps.
- Chainlink (LINK) – Powers the oracle network that connects smart contracts to real-world data.

Security Tokens

- These represent ownership of real-world assets in token form.
- Can represent shares, real estate, gold, or company equity.
- Regulated by financial authorities.
- Mainly used for investment and fundraising.

Meme Coins

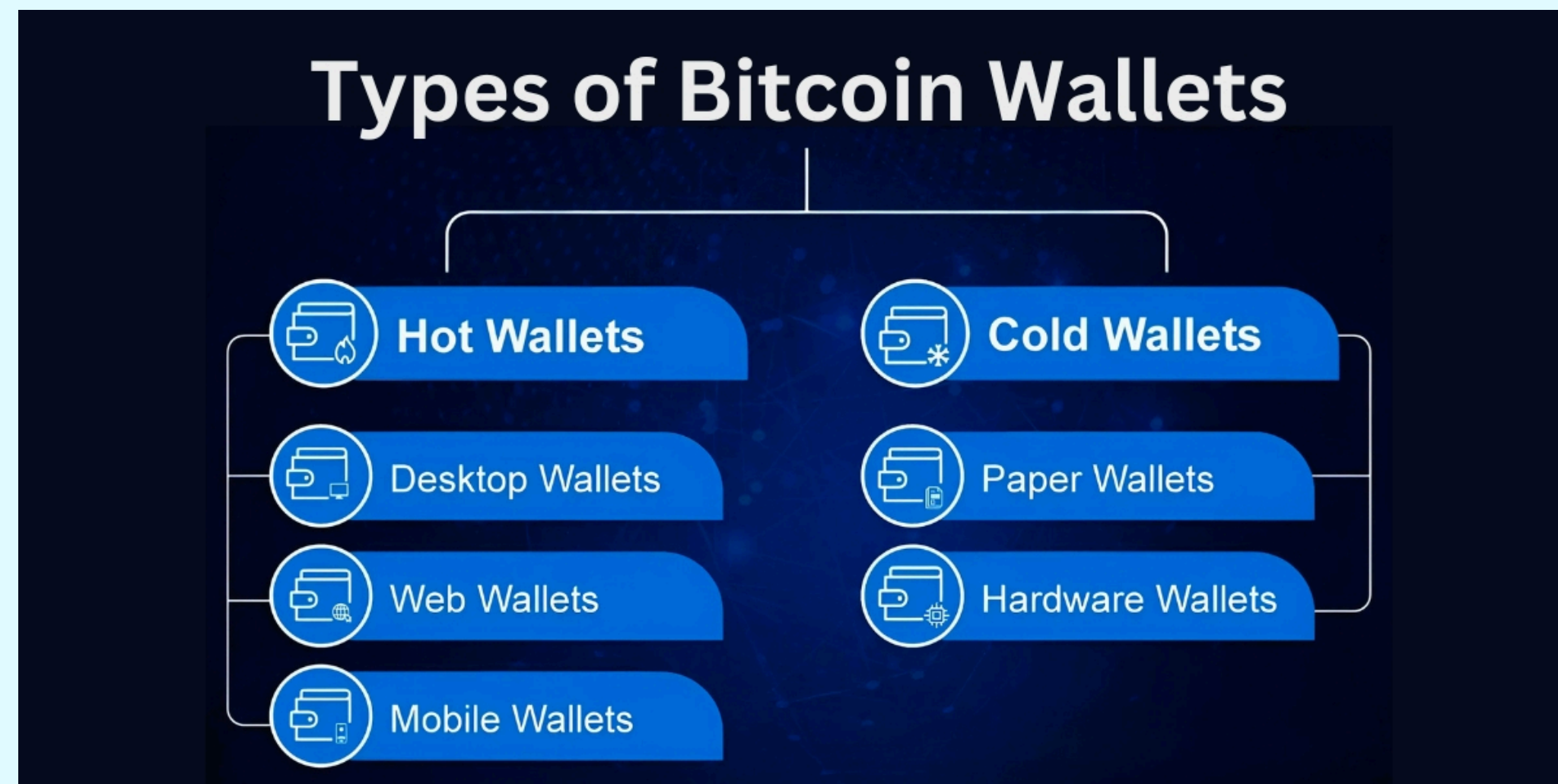
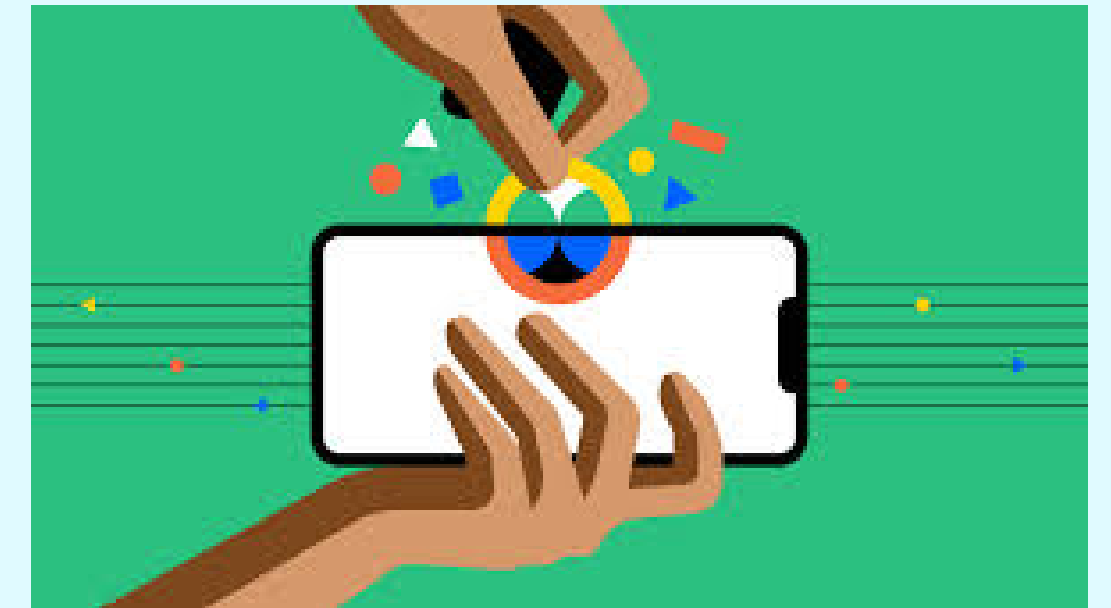
- Created mainly for fun or community trends.
- Highly volatile and driven by social media.
- Sometimes gain massive popularity.
- Examples:
- Dogecoin (DOGE)
- Shiba Inu (SHIB)

CRYPTOCURRENCY USAGE



CRYPTO WALLETS

- A crypto wallet is a digital tool that stores your private keys and allows you to send, receive, and manage cryptocurrencies.
- Wallets can be software (apps/extensions) or hardware devices.



METAMASK

- A software crypto wallet mainly used for the Ethereum blockchain.
- Available as a browser extension (Chrome/Brave/Firefox/Edge) and mobile app.
- Supports Ethereum (ETH) and all ERC-20 tokens, plus other EVM blockchains (Polygon, BNB Chain, Avalanche, etc.).

Key Features

- Connects easily to DApps, NFTs, DeFi apps
- Stores ETH, tokens, and NFTs
- Lets you switch networks (Ethereum, Polygon, BNB Chain, etc.)
- Highly used for Web3 and NFT marketplaces like OpenSea
- In-built swap feature for exchanging tokens
- Private keys stored on your device (non-custodial)

Best For

- Web3 users
- NFT buyers
- DeFi investors



COINBASE

- A non-custodial crypto wallet created by Coinbase (the exchange company).
- Not the same as keeping crypto on the Coinbase Exchange.
- You fully control your private keys and funds.

Key Features

- Supports Ethereum, ERC-20 tokens, Bitcoin, Solana, and many others
- Built-in DApp browser
- Very easy and secure for beginners
- Can store NFTs and interact with NFT marketplaces
- Connects with Coinbase Exchange for quick transfers
- Cloud backup option for private keys (optional)

Best For

- Beginners entering crypto
- Users managing multiple different blockchains
- People who want high security + easy UI
- NFT and DeFi users



BINANCE

- You can use Binance in two ways:
- Binance Exchange Wallet (Custodial) – Binance controls the private keys
- Binance Chain Wallet (Non-custodial) – You control the keys
- Also available inside the Binance app.

Key Features

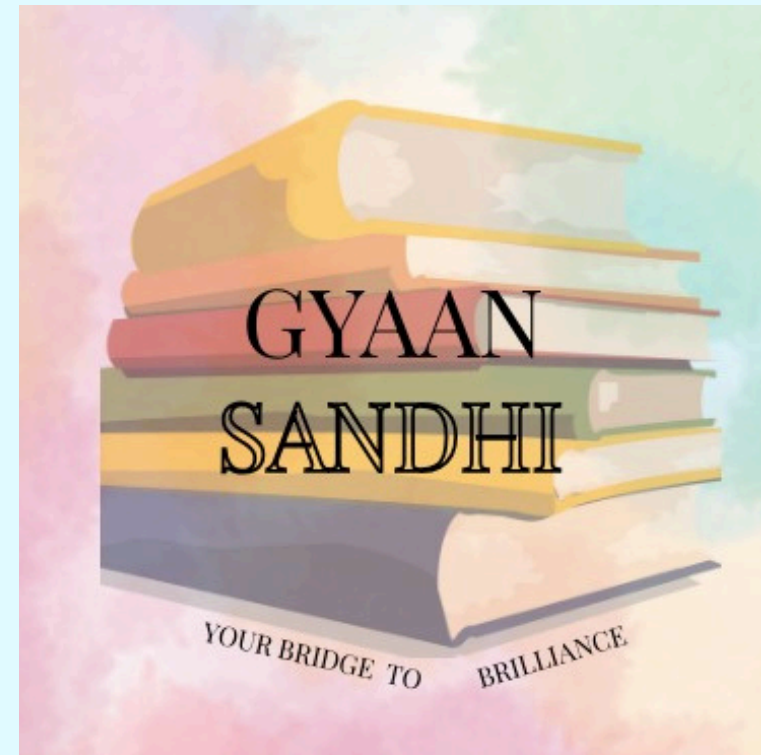
- Supports BNB Chain, Ethereum, and many other networks
- Built-in trading platform with hundreds of cryptocurrencies
- Easy swapping, staking, earning interest
- Integrated with Binance exchange
- Secure wallet with strong authentication

Best For

- Traders
- Users who want to buy/sell instantly
- Beginners who want everything in one app
- BNB Chain users



Feature	MetaMask	Coinbase Wallet	Binance Wallet
Type	Non-custodial	Non-custodial	Both (custodial & non)
Best For	NFTs, DeFi	Beginners, Multi-chain users	Traders & BNB chain
Blockchains	Ethereum + EVM	Multi-blockchain	BNB Chain + others
Supports NFTs	Yes	Yes	Yes
Private Keys Control	User	User	Depends on wallet type
DApp Connection	Excellent	Good	Good



THANK YOU



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