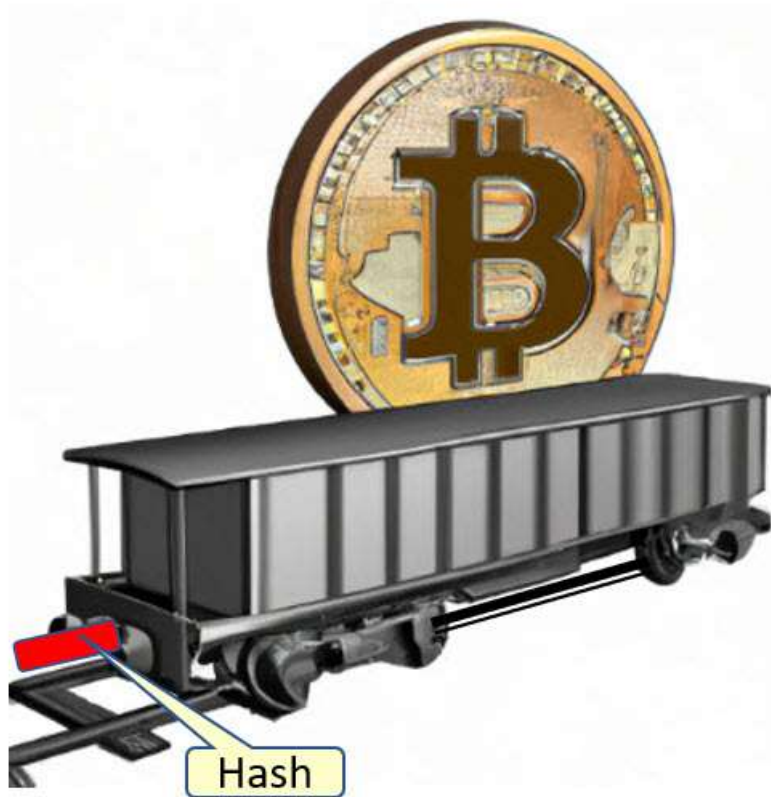


# *Crypto Currency for Beginners*



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**v 1.0 – May 1, 2023**

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## **Acknowledgements**

I have invested modestly in Crypto Currency since 2017 and I still do. I have educated myself in various ways, but one of the most important has been the AltCoin Daily videos on YouTube. Aaron and Austin Arnold provide on-going and balanced insight into the emerging world of crypto currency.

### **Altcoin Daily**

<https://www.youtube.com/@AltcoinDaily>

Neither they nor I are registered financial advisors. Educating yourself and limiting your exposure to risk is critical. With that being said, for many people holding 1% to 5% of your investments in crypto currency for the long-term can make sense.

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# Introduction

**Crypto currency is a global phenomenon.** It is reported that today over 400 million people worldwide own crypto currency representing over \$8 billion (averaging \$20 per person). Of these, 50 million are American adults (representing 20% of the U.S. adult population) own crypto.

**Crypto currency is a new and fast developing technology** and business opportunity that, as such, needs to have appropriate regulation and protections for retail customers.

This book is intended for those new to crypto currency.

- **Part 1** of this book covers the basics about crypto currency, Bitcoin and Ethereum.
- **Part 2** of this book covers more advanced concepts related to crypto currency.

Throughout this book I have **highlighted in red** phrases that I think are important.

# **Part 1 – The Basics**

# 1 - Types of Currencies

In order to understand Crypto Currency, you must first understand what a currency is and how a currency derives its value.

## The Difference Between Traditional Currency and Crypto Currency

- **We think of “traditional currencies” as money** – physical dollar bills, euros, yen, etc.
- **Crypto Currency is a “virtual currency”, also known as a “digital currency”**. It is a type of non-physical digital asset designed to function as a medium of exchange.
- Unlike traditional currencies, which are physical and issued by central authorities such as governments, virtual currencies are decentralized and **operate on a peer-to-peer computer network**.

## What Gives a Currency its Value?

In a broad perspective **the value of any currency, whether traditional or crypto, is determined by social agreement**.

### Traditional Currencies

**Traditional Currencies serve as a medium of exchange** that is widely accepted in transactions, and it derives its value from various factors:

- **Acceptance:** Money has value because people accept it as a means of payment for goods and services. It has become a commonly accepted medium of exchange and is recognized as legal tender by governments.
- **Scarcity:** Money has value because it is relatively scarce. Governments and central banks control the money supply, and they limit its quantity in circulation to maintain its value.
- **Trust:** Finally, money derives its value from the trust that people have in the institution that issues it. If people believe that the government or central bank will maintain the stability and value of

the currency, they are more likely to use it and accept it as a means of payment.

A wide variety of economic factors influence the value of a traditional currency (for example a low or high inflation rate, high or low unemployment). But **in the end, the “value” of a currency is linked to its purchasing power – the goods and services you can exchange it for.** The purchasing power of a dollar today will be different in one year and different again in 10 years. As a result, when a person invests in traditional currencies, they are really making a guess about the future purchasing power of their investment.

## Crypto Currencies

**Crypto currencies, such as Bitcoin and Ethereum, are also a medium of exchange.** They derive their value from a combination of factors, including:

- **Limited Supply:** Many cryptocurrencies have a limited supply, which means that they cannot be endlessly created like fiat currencies. This scarcity can give cryptocurrencies value, especially if they are in high demand.
- **Utility and Functionality:** Cryptocurrencies can be used for various purposes, including as **a medium of exchange, a store of value, and as a means of making decentralized transactions.** The usefulness of a crypto currency can drive its value, as can the demand for its functionality.
- **Market Demand and Perception:** Like stocks, Cryptocurrencies are traded on markets, and their value can fluctuate based on supply and demand. If more people want to buy a particular crypto currency than sell it, the value will go up, and if more people want to sell it than buy it, the value will go down. Perception can also play a role in the value of a crypto currency, as positive news or public sentiment can drive demand and increase its value.



- **Decentralization and Security:** Cryptocurrencies can offer decentralized and secure transactions, which can be attractive to users who value privacy and security. The more secure and decentralized a crypto currency is perceived to be, the more valuable it can become.

### Summary

Traditional and Virtual currency share a lot in common. Both serve as a medium of exchange and maintain their value by social agreement.

At the same time Traditional and Virtual currencies have some important differences.

	<b>Traditional Currency</b>	<b>Crypto Currency</b>
Type	Gold and Currency	Digital
Control	Centralized	De-centralized
Stored	In Banks	On global computer network

In a sense the question is – to paraphrase Shakespeare -- *“could a dollar by any other name smell as sweet?”*

## 2 - Key Elements

### What is a “Centralized Ledger”?

Centralized Ledgers can be physical or digital. For example, **your personal checkbook is a physical centralized ledger** for recording the checks you have written and the deposits you have made to your checking account. If you use online banking, your bank will maintain a digital version of your checkbook online. **This would be an example of a digital centralized ledger.**

A centralized ledger is controlled by a central authority or intermediary. **In a centralized ledger, the data is stored in a single location or database controlled by a single organization** or entity.

### More Details

There are many examples of centralized ledgers in use today. Here are a few common examples:

- **Banking systems:** Traditional banking systems use centralized ledgers to keep track of customer balances, transactions, and other financial data. These ledgers are controlled by banks and financial institutions, and users must rely on the bank to ensure the accuracy and security of the data.
- **Government registries:** Many government agencies maintain centralized ledgers to keep track of various types of data, such as property ownership, birth and death records, and business registrations. These ledgers are typically controlled by the government agency, and users must go through the agency to access the data.
- **Social media platforms:** Social media platforms such as Facebook and Twitter maintain centralized ledgers to keep track of user accounts, posts, and interactions. The platforms control the data, and users must agree to the platform's terms of service in order to use the service.

- **E-commerce platforms:** E-commerce platforms such as Amazon and eBay maintain centralized ledgers to keep track of transactions, product listings, and customer data. The platforms control the data, and users must agree to the platform's terms of service to use the service.

While centralized ledgers have been the norm for many years, the emergence of decentralized ledgers such as blockchain technology is starting to disrupt many of these industries by providing a more transparent, secure, and efficient way to manage data.

### What is a “Decentralized Ledger”?

A decentralized ledger is a type of digital ledger that is distributed across a network of computers or nodes, without a central authority or intermediary controlling the data.

In a decentralized ledger, **each node in the network has a copy of the ledger**, and new transactions are validated and recorded by consensus among the nodes. This creates a transparent and tamper-proof record of all the transactions that have taken place on the network, since any attempt to alter the data would need to be made across the entire network to be considered valid.

Decentralized ledgers are often implemented using blockchain technology, which provides a secure and transparent way to record transactions.

**Decentralized ledgers have a wide range of applications, from cryptocurrencies and digital identity management to supply chain management and voting systems.** They offer a way to create transparent and secure digital systems without relying on a central authority or intermediary to manage the data.

### What is a Blockchain?

**A blockchain is a decentralized, digital ledger** that records transactions in a secure and transparent way. It is essentially a database that is distributed across a network of computers, with each computer (or node) in the network having a copy of the ledger.

The ledger consists of **blocks, which are packages of data that contain information about a specific set of transactions**. Each block is linked to the previous block, forming a chain of blocks (hence the name "blockchain"). This chain of blocks provides a permanent and unalterable record of all the transactions that have taken place on the network.

While Centralized Ledgers can be built on Blockchain technology, **one of the key features of blockchain technology is its decentralization. Since the ledger is distributed across a network of computers, there is no central authority or middleman that controls the data**. This makes it difficult for any one party to manipulate or tamper with the data, since changes would need to be made across the entire network to be considered valid.

Blockchains are often used as the underlying technology for cryptocurrencies such as Bitcoin and Ethereum, but they can also be used for a wide range of other applications, such as supply chain management, voting systems, and digital identity verification.

### **How are Blocks Connected – What is a “Hash”?**

In the context of a blockchain, each block in a blockchain contains a **Hash value** that is **computed based on the transactions in the block, as well as the Hash value of the previous block** in the chain. This creates a chain of blocks, where each block's Hash value depends on the contents of the previous block.

**The Hash is essentially a unique fingerprint that identifies that block.**

When a new block is added to the blockchain, its Hash is computed based on the transactions in the block, and the Hash of the previous block. This creates a chain of blocks, with each block linked to the one before it through the previous block's Hash.

**This linking of blocks through their Hashes makes it virtually impossible to alter any past transaction in the blockchain** without also altering all subsequent blocks. This is because any change to a block's data would result in a different Hash being computed for that block, which would in turn cause all subsequent block Hashes to change as well.

## Summary of Key Elements

Block chain technology is what makes digital currency possible. It is an efficient way of packaging information to be reliably transferred and stored on a computer network.

Here's a useful analogy. Think of a train as a Digital Ledger. Then think of each car in the train as a block in a block chain. Each car is connected to the one ahead of it by a "coupler". In this case, the Hash can be thought of as the coupler.

## 3 - About Bitcoin

### History of Bitcoin

Bitcoin is a decentralized digital currency that was created in 2009 by an unknown person or group using the pseudonym Satoshi Nakamoto. The idea for Bitcoin was first introduced in a whitepaper titled "Bitcoin: A Peer-to-Peer Electronic Cash System" which was published on October 31st, 2008.

The exact identity of Satoshi Nakamoto remains unknown, and it is unclear whether the name represents an individual or a group of individuals. Satoshi Nakamoto's involvement in the development of Bitcoin ended in 2010, and since then, the project has been maintained and improved upon by a decentralized community of developers.

Bitcoin was created in response to the financial crisis of 2008, which highlighted the shortcomings of the traditional financial system. The goal of Bitcoin was to create a decentralized, peer-to-peer currency that would allow individuals to transact directly with one another without the need for intermediaries such as banks or other financial institutions.

Bitcoin uses a decentralized ledger called the blockchain to record all transactions. The blockchain is a public ledger that is maintained by a network of computers around the world, which work together to verify and record each transaction. This decentralized system ensures that Bitcoin transactions are secure and transparent, as each transaction is verified by multiple parties before it is added to the blockchain.

Since its creation, Bitcoin has grown in popularity and value. Initially, Bitcoin was worth only a few cents, but its value has since skyrocketed to tens of thousands of dollars per coin. Today, Bitcoin is widely accepted as a form of payment by businesses and individuals around the world, and many other cryptocurrencies have been created based on the Bitcoin model.

## **Bitcoin as a “Store of Value” – Digital Gold**

Bitcoin is often referred to as a store of value because it shares many of the characteristics of traditional stores of value, such as gold or silver. A store of value is any asset that can be saved, retrieved and exchanged at a later time, and retains its purchasing power over time.

Unlike other Crypto Currencies, Bitcoin is limited in supply, with a maximum of 21 million coins that will ever exist, which makes it a scarce asset. This limited supply, combined with its decentralized and secure nature, makes Bitcoin attractive to investors as a store of value.

Bitcoin's value is determined by market demand, similar to traditional stores of value like gold or silver. Its value has been highly volatile, with frequent fluctuations in price, but its overall trend has been upward since its inception.

One of the key features that make Bitcoin a store of value is its decentralized nature. It is not controlled by any government or financial institution, which reduces the risk of inflation or other economic shocks that can devalue traditional fiat currencies. Additionally, Bitcoin transactions are secure and transparent, making it difficult for fraudsters to manipulate the market or steal funds.

Overall, while Bitcoin is still a relatively new asset, it has demonstrated many of the characteristics of a store of value and has been increasingly recognized as a legitimate investment option by individuals and institutions around the world.

## 4 - About Ethereum

### History of Ethereum

Ethereum is a decentralized, open-source blockchain platform that was launched in 2015. The project was conceived and developed by Vitalik Buterin, a Canadian-Russian programmer, and a group of other developers.

The idea for Ethereum grew out of Buterin's interest in Bitcoin and his desire to create a more flexible blockchain platform that could support more complex applications beyond simple financial transactions. He published a whitepaper in 2013 outlining the concept of Ethereum, and in 2014 he began working on its development full-time.

### Ethereum as a “medium for digital commerce (DeFi)

The Ethereum platform uses a crypto currency called Ether (ETH) as its native currency. Unlike Bitcoin, which is primarily used as a store of value or a medium of exchange, **Ether is used to pay for transactions and computational services on the Ethereum network. This allows developers to create decentralized applications (dApps) that can be used for a wide variety of purposes**, from financial services to supply chain management to gaming.

**Ethereum's main innovation is the concept of smart contracts**, which are self-executing contracts with the terms of the agreement between buyer and seller being directly written into lines of code. Smart contracts allow for the creation of decentralized applications that can automate complex processes and eliminate the need for intermediaries.

Since its launch, Ethereum has become one of the most popular blockchain platforms in the world, with a vibrant community of developers and users. Its success has led to the creation of numerous other blockchain platforms and cryptocurrencies, and it continues to be a major force in the world of blockchain technology.



## 5 - Examples of Coins

There are numerous cryptocurrencies in circulation, but some of the most well-known include:

- **Bitcoin** (BTC): The first and most popular crypto currency, created in 2009 by an unknown person or group of people using the pseudonym Satoshi Nakamoto.
- **Ethereum** (ETH): A decentralized platform that enables developers to build and run smart contracts and decentralized applications (dApps).
- **Ripple** (XRP): A real-time gross settlement system, currency exchange, and remittance network that is built on a distributed ledger database called XRP Ledger.
- **Litecoin** (LTC): A peer-to-peer crypto currency that was created as a "lite" version of Bitcoin, designed to have faster transaction times and lower fees.
- **Bitcoin Cash** (BCH): A fork of Bitcoin that was created in 2017 to increase the block size limit and improve transaction speeds.
- **Cardano** (ADA): A blockchain platform that aims to provide a more secure and scalable infrastructure for decentralized applications.
- **Polkadot** (DOT): A blockchain protocol that allows multiple chains to interoperate and exchange information with each other.
- **Dogecoin** (DOGE): A crypto currency that was created as a joke but has since gained a cult following and widespread adoption.

These are just a few examples of the many different cryptocurrencies that exist. Each crypto currency has its unique features, strengths, and weaknesses, making it important to research and evaluate each one before investing.

The term "**AltCoin**" is used to refer to all cryptocurrencies other than BitCoin. **Ethereum is the largest of the AltCoins.**

## 6 - The “Layers” of Blockchain Networks

In crypto currency, the term "layer" typically refers to a protocol or system built on top of an existing blockchain network, such as Bitcoin or Ethereum. These layers are designed to provide additional functionality or features to the underlying blockchain, such as improved scalability, privacy, or interoperability.

By building these layers on top of existing blockchains, developers can extend the functionality of these networks without having to create an entirely new blockchain from scratch. This can help to address some of the scalability and functionality challenges faced by early blockchain networks.

### Layer 1

This is the underlying blockchain technology that provides the basic infrastructure for the network. It includes features such as consensus mechanisms, cryptographic algorithms, and data structures. **Bitcoin and Ethereum are examples of Layer 1 protocols.**

### Layer 2

These are protocols that are built on top of Layer 1 to provide additional functionalities such as **scalability and improved transaction throughput**. Layer 2 protocols include state channels, sidechains, and Plasma chains. These protocols allow for more efficient and faster processing of transactions by reducing the load on the main blockchain. **Lightning, Polygon/Matic and ziSynch are examples of Layer 2 protocols.**

### Layer 3

These are protocols that are built on top of Layer 2 to provide even more functionalities, such as privacy and interoperability. Examples of Layer 3 protocols include cross-chain bridges, atomic swaps, and zero-knowledge proofs. **Polkadot and Cosmos are examples of Layer 3 protocols.**

It's important to note that the concept of layers in crypto currency is not a strict hierarchy, and different layers can interact with each other in complex ways. For example, Layer 2 solutions can be built on top of multiple Layer 1 protocols, and Layer 3 protocols can interact with Layer 1 and Layer 2 in various ways.

Overall, the layering of technologies in crypto currency is designed to provide a flexible and scalable framework for building decentralized applications and providing more advanced features and functionalities than traditional centralized systems.

### Summary

Coin	Function	Layer 1	Layer 2	Layer 3	Note
Bitcoin	Store of Value	X	-	-	
Ethereum	DeFi	X	-	-	
Cardano	Defi	X	-	-	
Solano	Defi	X	-	-	
Lightening	Payments	-	X	-	Bulti on Bitcoin
Polygon/Matic	Defi	-	X	-	Built on Ethereum
Plasma	Scaling	-	X	-	Built on Ethereum
Raiden	Payments	-	X	-	Built on Ethereum
Polkadot	Defi	-	-	x	Multi-protocol
Chainlink	Data Access	-	-	X	Multi-protocol
Cosmos	Defi	-	-	X	Multi-protocol

## 7 - Social Implications

### Role in Established economies.

In established economies like the U.S., Canada, and Europe, Bitcoin and other cryptocurrencies can play several different roles. Here are a few examples:

- **Investment:** Bitcoin and other cryptocurrencies can be used as an investment asset, similar to stocks, bonds, or real estate. Some people may view Bitcoin as a hedge against inflation or a store of value, while others may see it as a speculative investment with the potential for high returns.
- **Payment:** While Bitcoin is not widely accepted as a form of payment in established economies, it is possible to use Bitcoin to make purchases from merchants who accept it. Some businesses, particularly in the technology and finance sectors, have started accepting Bitcoin as a form of payment, and there are also payment processing companies that allow merchants to accept Bitcoin payments.
- **Trading:** Bitcoin can be traded on crypto currency exchanges, where it can be bought and sold for fiat currencies such as the U.S. dollar, Canadian dollar, or euro. Some investors and traders may engage in Bitcoin trading as a way to profit from fluctuations in its price.
- **Innovation:** Bitcoin and other cryptocurrencies have sparked innovation in the financial industry, particularly in the areas of blockchain technology and decentralized finance. Established companies may be exploring ways to use blockchain technology to improve their operations or to create new products and services.

Overall, the role that Bitcoin plays in established economies is still evolving, and its use cases may differ depending on the specific economic and regulatory environment. While some people may see Bitcoin as a disruptive force in the financial industry, others may view it as a speculative asset with uncertain long-term prospects.

## Role in Emerging Economies

Bitcoin and other cryptocurrencies can play **different roles in emerging economies** compared to established economies like the U.S., Canada, and Europe. Here are a few ways in which this can be the case:

- **Remittances:** In many emerging economies, remittances from workers abroad are an important source of income. Bitcoin and other cryptocurrencies can offer a cheaper and faster way to send money across borders, which can be especially beneficial for people who don't have access to traditional banking services.
- **Inflation and currency volatility:** In some emerging economies, the local currency may be subject to high levels of inflation and volatility. Bitcoin can offer an alternative store of value that is not tied to any government or central bank, which may be attractive to people who are looking for a way to protect their wealth.
- **Financial inclusion:** In many emerging economies, a large portion of the population does not have access to traditional banking services. Bitcoin and other cryptocurrencies can offer a way for people to participate in the global financial system without needing a bank account or credit history.
- **Economic instability:** Some emerging economies may be more prone to economic instability and political turmoil. Bitcoin and other cryptocurrencies can offer a way for people to store their wealth outside of the traditional banking system, which can be beneficial in times of economic crisis.

## Summary

Overall, the role that Bitcoin and other cryptocurrencies play in emerging economies can be different from their role in established economies. In some cases, cryptocurrencies can offer solutions to specific challenges that are unique to emerging economies, such as high remittance fees or lack of financial inclusion. However, there are also risks associated with cryptocurrencies, such as volatility and lack of regulation, which may affect their adoption and use in these economies.

## 8 – Getting Started in Investing

I am not an investment advisor or financial consultant. So I am not encouraging you to invest in Crypto currency. However, if you choose to do so, I can give you some basic guidance.

- If you are buying crypto currency with money you have already saved, d plan on only putting **1% to 5% of your investment holdings** into crypto currency.
- Invest in crypto currency for the long-term. **Plan on holding it for 2 or 3 years.**
- **Crypto currency is a volatile investment**, do not get freaked out with week-to-week or month-to-month changes. You probably track the value of your total crypto assets at the beginning of each month and compare it to the value at the beginning of your year.
- **Start with buying Bitcoin and Ethereum.** You may consider other riskier coins as you educate yourself.
- **Open an account** at a major crypto exchange like Coinbase, or purchase it through an account at a major brokerage that also sells crypto currency like Fidelity. Be sure to check to see how much of your investment is protected or insured.
- If you buy or sell crypto currency you may have to file a report with your income taxes. **Coinledger is a company that can prepare this form** in a few minutes at a reasonable cost.
- Continue to educate yourself on a regular basis. One resource I use is watching the **daily YouTube video on the Altcoin Daily channel**. The vLogers are twin brothers Austin and Aaron who have built a large following and have a down-to-earth and balanced view.

**Altcoin Daily**

<https://www.youtube.com/@AltcoinDaily>

## **Part 2 – Advanced Concepts**

# 1 - Transferring Money

## Transferring Money with Traditional (Fiat) Currencies

With traditional currencies, money is transferred from one country to another using a variety of methods, including:

- **Bank transfers:** This involves transferring money from one bank account to another. It is often used for larger transfers and can be expensive, with high fees and unfavorable exchange rates.
- **Money transfer services:** Companies like Western Union and MoneyGram offer money transfer services that allow people to send money to recipients in other countries. These services can be convenient, but they are also expensive and may have limited coverage in some regions.
- **Remittance services:** These are specialized money transfer services that cater to migrants and allow them to send money back to their home countries. They often offer lower fees and better exchange rates than traditional bank transfers or money transfer services.

## Transferring Money with Crypto Currency

Cryptocurrencies offer an alternative way to transfer money between countries that is often faster, cheaper, and more secure than traditional methods. Here are some of the ways crypto currency can be used to transfer money:

- **Peer-to-peer transfers:** Cryptocurrencies can be transferred directly between individuals without the need for intermediaries like banks or money transfer services. This can be faster and cheaper than traditional methods, as there are no middlemen taking a cut.
- **Decentralized exchanges:** These are platforms that allow people to trade cryptocurrencies with each other without the need for a centralized exchange. They can be used to exchange one crypto currency for another or to convert crypto currency into fiat currency.
- **Stablecoins:** These are cryptocurrencies that are pegged to the value of a fiat currency, such as the US dollar. They offer a way to transfer



money across borders using crypto currency without the volatility associated with other cryptocurrencies.

Overall, crypto currency offers an alternative way to transfer money between countries that can be faster, cheaper, and more secure than traditional methods. However, it is still a relatively new and volatile technology, and it is important to do your own research and understand the risks involved before using it for money transfers.

## 2 – What Are Smart Contracts?

In crypto currency, a "smart contract" is a self-executing program that is stored on the blockchain and can automatically enforce the rules and conditions of an agreement or contract between parties. **Smart contracts are essentially computer programs that can execute pre-programmed commands** and carry out certain actions based on predefined conditions and events.

Smart contracts are a key feature of some cryptocurrencies, such as Ethereum, which were specifically designed to support their creation and execution. They allow for decentralized, trustless and transparent execution of agreements, which can greatly reduce the need for intermediaries and third-party oversight.

**Smart contracts can be used for a wide range of applications**, such as digital identity verification, supply chain management, real estate transactions, insurance claims processing, and many others. They can also be used to create decentralized applications (DApps) that run on the blockchain.

The code of a smart contract is publicly visible and immutable, which means that once it is deployed on the blockchain, it cannot be altered or tampered with. This provides a high level of security and transparency, as all parties can see and verify the terms of the contract and the actions that will be carried out based on the predefined conditions.

### 3 - What are dApps?

There are many **decentralized applications** (dApps) built on various blockchain networks in the crypto industry.

In crypto currency, "**dApps**" are **software applications that run on a blockchain network, rather than on a centralized server**. dApps use the decentralized architecture of blockchain to provide secure, transparent, and trustless functionality without relying on a centralized authority.

dApps operate on top of the lower layers much as Microsoft Word and Excel operate on top of Microsoft Windows. Each dApp performs one or more useful functions.

Here are some examples of popular dApps:

- **Decentralized Exchanges (DEXs)**: These are platforms that enable users to trade cryptocurrencies without intermediaries, allowing for peer-to-peer trading. Examples include Uniswap, Sushiswap, and PancakeSwap.
- **Non-Fungible Token (NFT) Marketplaces**: These are platforms that enable the buying, selling, and trading of unique digital assets such as artwork, music, and collectibles. Examples include OpenSea, Rarible, and SuperRare.
- **Decentralized Finance (DeFi) platforms**: These are platforms that offer financial services such as lending, borrowing, and staking on the blockchain, without the need for intermediaries. Examples include Compound, Aave, and MakerDAO.
- **Gaming dApps**: These are decentralized games that run on the blockchain, enabling players to earn crypto currency rewards or trade in-game items as digital assets. Examples include Axie Infinity, The Sandbox, and Gods Unchained.
- **Identity verification dApps**: These are platforms that enable users to verify their identity without a centralized authority, using blockchain-based authentication and verification mechanisms. Examples include Civic and uPort.

- **Supply chain management dApps:** These are platforms that use blockchain to track and manage the supply chain of products, ensuring transparency and traceability. Examples include VeChain and Ambrosus.

In summary, there are various dApps built on blockchain networks that offer a wide range of decentralized services, such as trading, finance, gaming, identity verification, and supply chain management.

## 4 – What Does Fungible and Non-fungible Mean

### What does fungible mean?

Fungible means that something is interchangeable with something else of the same type or value. In other words, if something is fungible, it can be replaced or exchanged for something else that is identical in value, quality, and quantity.

In the context of finance, a common example of a fungible asset is currency. For instance, if you have two \$10 bills, you can exchange them for a single \$20 bill because the value of each bill is identical. Another example is commodities like gold, where one ounce of gold is equal to another ounce of gold in terms of value.

**Fungibility is an important concept in economics and finance because it allows for the efficient exchange of goods and services.** It also allows for the creation of markets where fungible assets can be bought and sold, such as stock exchanges or commodity markets.

### What does non-fungible mean?

**Non-fungible assets, on the other hand, are unique and cannot be easily replaced or exchanged for something else** of equal value, such as a one-of-a-kind painting or a rare collectible. Non-fungible assets are becoming increasingly popular in the form of NFTs (non-fungible tokens) in the digital realm.

In the context of NFTs (non-fungible tokens), each NFT is a unique digital asset that cannot be replicated or exchanged for another asset of equal value. This is because each NFT represents a specific piece of content, such as an artwork, music, or video, and has a unique digital signature that verifies its authenticity and ownership.

For example, if someone buys an NFT of a particular artwork, they own the original, unique version of that artwork, and it cannot be exchanged for another artwork of equal value. This uniqueness and authenticity are what

gives NFTs their value and has led to their use in a wide range of industries, from art and music to gaming and sports.

## Summary

**Fungible** means something can be exchanged for something else of equal value. **Non-fungible** means that something is unique and cannot be easily exchanged for something else of equal value.

## 5 – What are NFTs?

### What are NFTs?

NFTs, or non-fungible tokens, are a type of digital asset that use blockchain technology to provide a unique, verifiable record of ownership and authenticity. Unlike fungible tokens such as cryptocurrencies, which are interchangeable and have the same value, each NFT is unique and represents a specific asset or piece of content.

NFTs can be used to represent a wide range of digital assets, such as art, music, videos, and other types of content. When an NFT is created, it is assigned a unique identifier that is recorded on a blockchain, which is a decentralized ledger that provides an immutable record of ownership and transactions. This allows NFTs to be bought and sold on blockchain-based marketplaces, where buyers can verify the authenticity and ownership of the asset.

One of the key features of NFTs is that they allow creators of digital content to monetize their work in new ways. For example, an artist can create a unique piece of digital art and sell it as an NFT, with the buyer receiving a verifiable record of ownership and authenticity. This can allow artists to bypass traditional intermediaries such as galleries and auction houses and reach a global audience of potential buyers.

While NFTs have generated a lot of excitement and media attention in recent years, there is also some debate about their long-term prospects and their impact on the art and entertainment industries. Some critics argue that NFTs are a speculative bubble that will eventually burst, while others see them as a transformative technology that will change the way we think about ownership and value in the digital age.

### What are examples of NFT applications?

There are many examples of NFT applications, and the technology is being used in a variety of creative and innovative ways. Here are a few examples:

- **Digital Art:** NFTs have become a popular way for artists to sell digital art. The NFT serves as a verifiable proof of ownership and authenticity, which allows buyers to purchase and collect digital art in the same way that they would collect physical art.
- **Gaming:** NFTs are being used in online games to create unique and rare in-game items, such as weapons, skins, and avatars. These items can be bought and sold on blockchain-based marketplaces, allowing players to monetize their in-game achievements.
- **Music:** Musicians and producers are using NFTs to sell digital music and other audio content. NFTs can be used to create unique, limited-edition releases or to sell individual tracks or samples.
- **Collectibles:** NFTs are being used to create digital collectibles, such as trading cards, rare stamps, and other memorabilia. These items can be bought and sold on blockchain-based marketplaces, and their unique digital properties make them highly sought after by collectors.
- **Virtual Real Estate:** NFTs are being used to represent virtual real estate in online worlds and metaverses. These NFTs can be bought and sold, allowing investors to speculate on the growth of virtual real estate markets.

These are just a few examples of the many ways that NFTs are being used. As the technology continues to evolve, we can expect to see new and innovative applications emerge.

### **What Layer are NFTs?**

NFTs (non-fungible tokens) can be created on various layers of the blockchain, depending on the specific platform and application.

For example, most NFTs on the Ethereum blockchain are created on the layer-1 protocol, which is the main blockchain network. However, some NFTs are also being created on layer-2 solutions, such as Polygon (previously known as Matic Network), which is a scaling solution built on top of Ethereum.



Other blockchain platforms, such as Binance Smart Chain, Flow, and Tezos, also support NFTs and have their own layering systems.

Overall, NFTs can be created on any layer of the blockchain that supports smart contracts and tokenization, and their functionality and use cases may vary depending on the specific layer and platform.

## 6 – About “Mining” and Energy Use

### Mining

In crypto currency, "mining" refers to the process of using computer hardware to solve complex mathematical problems in order to validate transactions and add new blocks to the blockchain. This process is also known as **"proof of work"** and is a fundamental part of how many cryptocurrencies, such as Bitcoin, operate.

Miners compete to solve these mathematical problems in order to be the first to validate a block of transactions and add it to the blockchain. **The first miner to solve the problem and validate the block is rewarded with a certain amount of crypto currency** as an incentive for their work. This reward is often referred to as the "block reward".

Mining is a crucial aspect of many cryptocurrencies because it ensures that the blockchain remains secure and trustworthy. By requiring miners to perform work in order to add new blocks to the blockchain, it becomes much more difficult for malicious actors to tamper with the blockchain or create fraudulent transactions.

However, **mining can also be energy-intensive and requires specialized computer hardware, which can be expensive**. As a result, many cryptocurrencies are exploring alternative consensus mechanisms, such as proof of stake, that do not rely on mining to validate transactions and secure the network.

### Proof of Work (PoW)

In a PoW-based blockchain, miners compete to solve complex mathematical problems using their computing power. The first miner to solve the problem and validate a block of transactions is rewarded with newly minted coins and transaction fees. This process is known as mining.

### Proof of Stake (PoS)

In a PoS-based blockchain, validators (also known as "forgers" or "block producers") are selected to validate transactions and add new blocks to the

blockchain. These validators are chosen based on the amount of crypto currency they hold and "stake" in the network. This stake represents a financial incentive to act in the best interests of the network, as validators stand to lose their stake if they act maliciously.

Instead of competing to solve complex mathematical problems as in PoW, validators in PoS are responsible for validating transactions and maintaining the network. They are incentivized to act honestly and validate transactions correctly, as doing otherwise could lead to a loss of their stake.

## **Summary**

Proof of Work – More energy intensive

- Bitcoin – Store of Value

Proof of Stake – Faster processing, less energy use

- Ethereum – Decentralized Finance
- Other AltCoins – Decentralized Finance

## 7 – What Is “Burning”?

### Burning

In crypto currency, "burning" refers to the process of intentionally and permanently destroying a certain amount of crypto currency or tokens by sending them to an address that is not accessible or cannot be spent. **The purpose of burning crypto currency is to reduce the total supply of that particular crypto currency or token**, which can have a number of different effects on the market and the value of the remaining tokens.

Burning can be done for a variety of reasons. For example, a crypto currency project may burn tokens in order to reduce the supply and increase the value of the remaining tokens, or to incentivize holders to hold their tokens for longer periods of time. Burning can also be used to get rid of tokens that are no longer needed, such as when a project switches to a new token standard or protocol.

## 8 – What is “Halving”?

Halving, also known as "halvening," is a key event that occurs in some cryptocurrencies, such as Bitcoin. Halving is a pre-programmed reduction in the amount of new coins that are created and earned by miners for adding new blocks to the blockchain.

**In Bitcoin, halving occurs approximately every four years and reduces the block reward that miners receive for validating transactions and adding new blocks to the blockchain. The block reward is the amount of Bitcoin that miners earn as a reward for their work, and halving reduces this reward by half.** The current block reward for Bitcoin is 6.25 BTC, but the next halving event will reduce this reward to 3.125 BTC.

Halving is an important mechanism for controlling the supply of cryptocurrencies like Bitcoin. By reducing the block reward, halving slows down the rate at which new coins are added to the system. This helps to ensure that the total supply of the crypto currency is limited and helps to maintain its value over time.

Halving events are closely watched by investors and traders in the crypto currency space, as they can have a significant impact on the price and volatility of the crypto currency.

## 9 - Summary

**One of the main advantages of virtual currencies is that they can be transferred instantly and securely, without the need for intermediaries** such as banks or payment processors. This makes them useful for online transactions, especially for cross-border payments, where traditional methods can be slow, expensive, and subject to fees and restrictions.

**Virtual currencies can also be used for a variety of other purposes**, such as investments, remittances, and micropayments. Some virtual currencies, such as Bitcoin and Ethereum, have gained widespread popularity and acceptance, and are used by millions of people around the world.

However, **virtual currencies are not without their risks and challenges**. They are highly volatile and subject to speculation and market manipulation. They have sometimes been associated with illegal activities such as money laundering and terrorist financing and are not yet widely regulated by governments and financial authorities.