Beginner's Guide To Ethereum

V2.5

This guide is designed to be a short introduction to some high level concepts of Ethereum, and to answer some of the more commonly asked questions I've seen on r/EthTrader.

Feel free to direct any comments or corrections to the Reddit thread:

https://goo.gl/raQ8w2

What is Ethereum?

At a very high level, Ethereum is a network of computers that supports the execution of programs and transmission of data. The key difference between this system and how the internet works today is that while apps and web pages are hosted on a single server (or small cluster of servers), everything on the Ethereum network is distributed. Any machine in the network can process calculations to determine the result of a transaction or piece of code in an app, and all the machines involved eventually reach a consensus on what the correct result should be. In practice, this means that apps cannot "go down" because of some single point of failure. As long as there are enough machines contributing to the network, everything built on Ethereum will persist and the network will ensure the validity of the blockchain.

Where does cryptocurrency come into the picture? Ether (ETH) fuels the execution of these distributed apps (DApps). In order for a DApp to execute a task, or for you to send some message across the blockchain, there needs to be a small amount of Ether spent, which is proportional to how large or computationally complex the task is. It can also be involved in the way an application works, such as a site that charges for a service, or a site where users transfer funds between each other for selling items, gambling, etc. These apps can even create their own currency for use within their ecosystem. A huge advantage of currency exchange via Ether on the Ethereum network is that these transactions are extremely fast, taking no longer than 15 seconds (new block creation time) plus the time to reach consensus. At the time of writing this, the median wait time is 35 seconds. This time will decrease further in the next iterations of Ethereum.
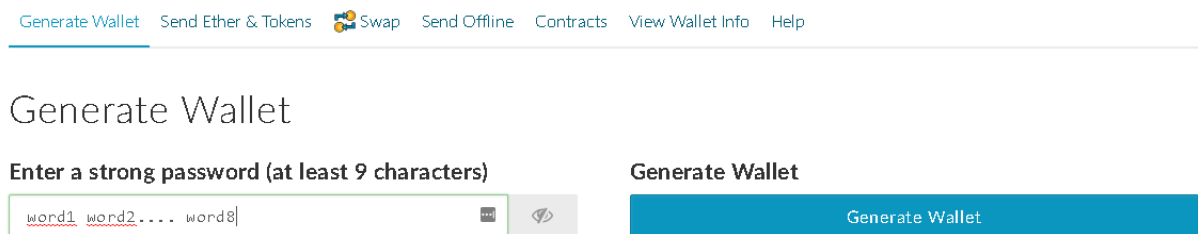
Aside from being able to fuel applications, Ether also functions as any other cryptocurrency does. It is used as an anonymous* ways to make purchases from an Ethereum wallet. If you're familiar with how Bitcoin works, Ether can be used the same way. Spend it

directly at any online storefront that accepts it or sell it on an exchange for cash, another currency, or anything else available.

Getting an address:

There are multiple ways to get an Ethereum address, but the easiest way by FAR is using https://www.myEtherwallet.com/. MyEtherWallet is open source and can be downloaded for use off-line or on an air-gapped machine if you're so inclined. It does nothing more than interface with the existing command line interface of Ethereum ([geth]).

1) Go to https://www.myEtherwallet.com/

2) On the Generate Wallet screen, create your password. I recommend using several words (at least eight) as your password.

Generate Wallet   Send Ether & Tokens   Swap   Send Offline   Contracts   View Wallet Info   Help

Generate Wallet

Enter a strong password (at least 9 characters)   Generate Wallet

word1 word2.... word8   Generate Wallet

a) **<u>MAKE SURE YOU WRITE THIS DOWN AND KEEP IT SOMEWHERE SAFE</u>**

b) It is not recommended that you keep this phrase/password on your computer.

c) You should see this information

Save your Wallet File. Don't forget your password.

❓ **Keystore File (UTC / JSON)**

Download

MyEtherWallet.com is not a web wallet & does not store or transmit this secret information at any time.
If you do not save your wallet file and password, we cannot recover them.
Save your wallet file now & back it up in a second location (not on your computer).

I understand. Continue.

i) The page will no longer let you continue to see your wallet information until you've downloaded your encrypted keystore file.

d) You will then be presented with your private key, an option to print your paper wallet, and your private key QR code.

Optional: Print your paper wallet or store a QR code.

If you think you may <u>ever</u> forget your password, save one of these, please! Keep it safe!

❓ Private Key (unencrypted)

❓ Print Paper Wallet

Print

Private Key (unencrypted)

Next: Save your Address

e) Keystore file

    i) As of now it does not appear as though you can download unencrypted JSON on myEtherwallet anymore. You will need to have your **PASSWORD** handy to unlock your wallet with the Keystore file.

f) Your address

    i) This is your public address. Ethereum can be sent to you and requested from you at this address.

g) Unencrypted private key

    i) This can open your wallet ***WITH JUST THE PLAIN TEXT***. Never share this with anyone. Do not store it on your computer. If you want to keep it, write it down and keep it in a safe place.

h) Paper wallet

    i) This will contain all of your account information ***including your private key*** in a printer friendly form.

Purchasing Ether Through a Third Party:

You've got your wallet and now you're ready to get yourself some Ether. This step is pretty simple, so I'll do a quick high level for [Coinbase](#).

1) Go to the Coinbase website and click the "sign up" button in the top right hand corner.
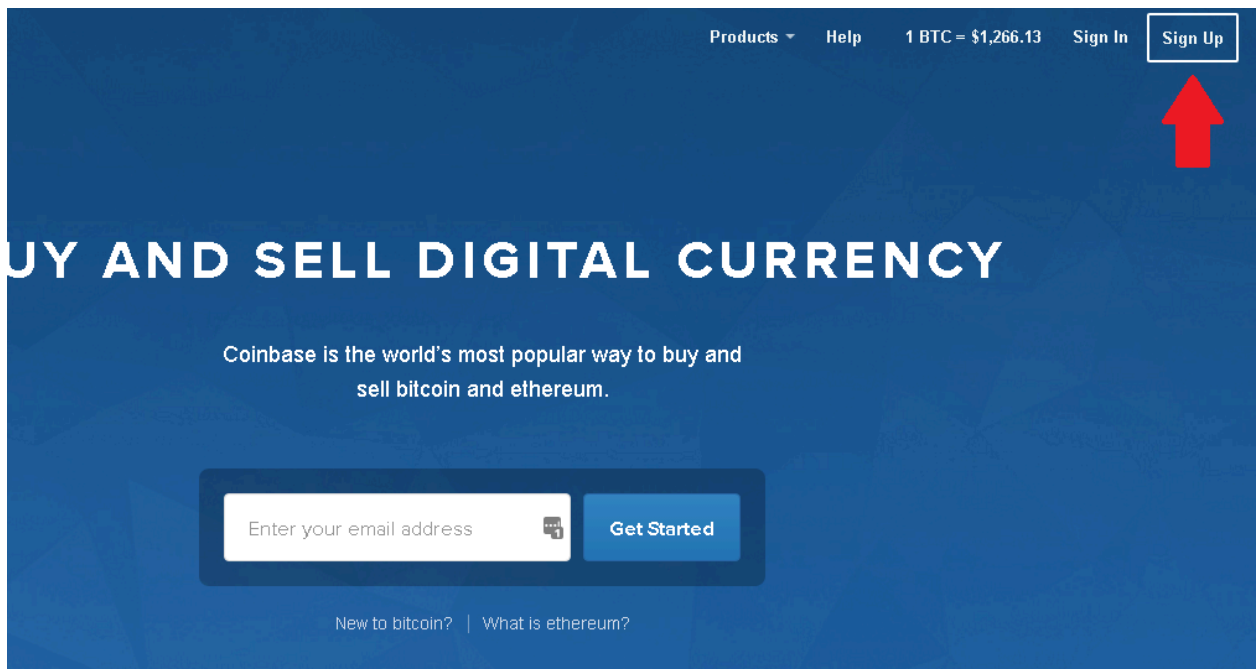
2) Fill out all your information and verify your account.

   a) Coinbase will be asking for sensitive information regarding your identity. This is to comply with federal money laundering regulation.

   b) It is ***HIGHLY RECOMMENDED*** that you set up two-factor authentication with your cell phone in order to better secure your account.

3) Coinbase will prompt you to add a new payment method before you can buy Bitcoin or Ether. Methods include bank accounts, as well as Credit/Debit cards.

   a) Buying from a bank account will incur a 4-5 day wait time, and a 1.49% fee.

b) Credit and debit cards purchase instantly, but incur a slightly higher, 3.99% fee

c) More detailed information, including international rates, can be found on the

Coinbase support website.

i)https://support.coinbase.com/customer/portal/articles/2109597-buy-sell-b

ank-transfer-fees

4) Once your coins have been purchased and are in your Coinbase wallet, it is

recommended that you move them off of coinbase and into your own wallet. Preferably

cold storage.

a) To do this, simply click "Send/Request" on the side bar located on the left
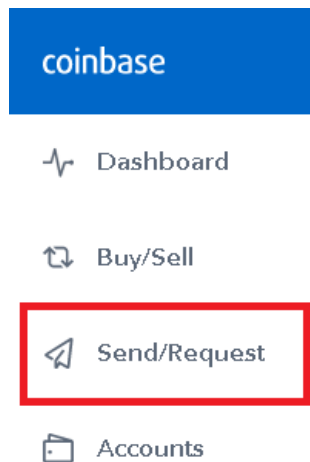
b) Set the correct Ethereum address in the "Recipient" box, along with the amount

of Ether you want to send and click "Send Funds"

Purchasing Ether Via an Exchange:

This gets a hair more complicated, but it's worth knowing this stuff.   I'll be using GDAX in my

example, but this terminology will carry over to any other exchange.

Market size	Price (USD)	My size
0.051809	90.97	-
0.586243	90.96	-
4.084903	90.95	-
0.586243	90.94	-
0.597149	90.93	-
0.586243	90.92	-
0.586243	90.90	-
7.25090434	90.89	-
0.04	90.88	-
0.015536	90.87	-
0.026323	90.85	-
0.068919	90.84	-
0.036465	90.83	-
0.015066	90.82	-
0.026998	90.81	-
0.015737	90.80	-
1.02418212	90.79	-
0.32432	90.78	-
0.015033	90.77	-
0.048128	90.76	-
3.29966513	90.75	-
0.026908	90.74	-
0.2158	90.72	-
474.63465176	90.70	-
0.027224	90.69	-
0.0124	90.68	-
10.0	90.67	-

0.02 USD SPREAD

Market size	Price (USD)	My size
0.256205	90.65	-
0.017639	90.64	-
0.61481	90.63	-
0.592387	90.62	-
1.15676291	90.61	-
0.60317	90.60	-
0.592123	90.59	-
0.591638	90.58	-
0.299817	90.57	-
0.017833	90.56	-
1.026342	90.55	-
0.049781	90.54	-
0.028224	90.53	-
0.029205	90.52	-
0.051061	90.51	-
118.91546106	90.50	-
3.691	90.39	-
0.771	90.31	-
93.775996	90.30	-
49.62	90.26	-
94.901	90.25	-
0.010099	90.24	-
111.90241	90.23	-
172.393648	90.22	-
349.45011733	90.21	-
1302.2859	90.20	-
0.30042	90.19	-
0.010099	90.18	-

THE ORDERBOOK

This is the **order book**. The order book shows you how much of the traded currency is being bought at a certain price.

Buy orders:
So right now it looks like there's 474 Ether being PURCHASED for a price of $90.70, so ~$43,000 in Ether. If you ever get confused about which side is which, just remember that you're always going to want to sell *YOUR* Ether to the person willing to buy it at the highest price.

Sell orders:
On the other side of the buy orders, you have the sell orders. They're exactly what they sound like. These numbers indicate how much Ether people are willing to sell at a given price.

So like in the above example, someone is willing to sell 118 Ether at a price of $90.5, so ~$10,500 is for sale at that price.

I would highly recommend also reading this. It gives a pretty good high level view of what a **buy wall** and a **sell wall** are.

http://bitcoin.stackexchange.com/questions/16918/what-is-the-strategy-behind-a-sell-wall

THE PRICE CHART

This is the **price chart**. On the price chart, you can see what price Ether and other cryptocurrencies are currently being traded for. The vertical bars are called **candles**, and they indicate at which price the item opened and closed during the **interval**. A **red candle** indicates an interval in which the cryptocurrency, in this case Ether , opened at a high price and close at a low price. In other words, it *lost* value.

For example. If at 8:00 AM Ether traded for $10.00, and at the end of a *five minute* interval, it was trading at $9.50, there would be a red candle to indicate this.

Conversely, a **green candle** indicates that the cryptocurrency opened at a lower price and closed at a higher price, gaining value.
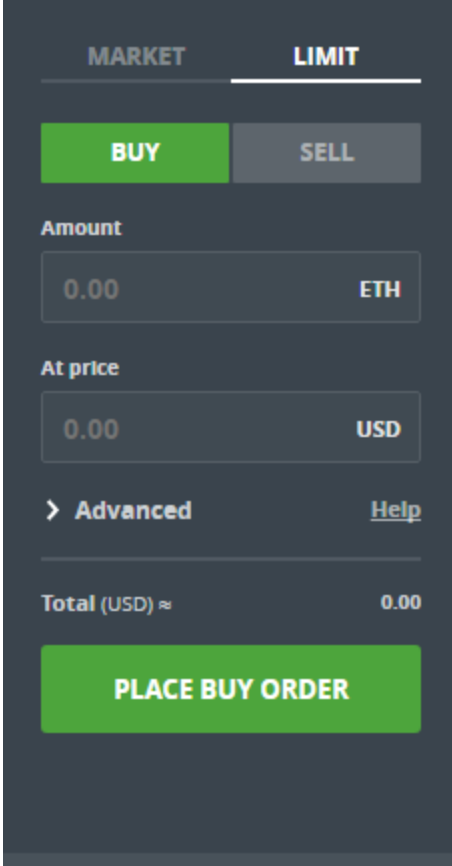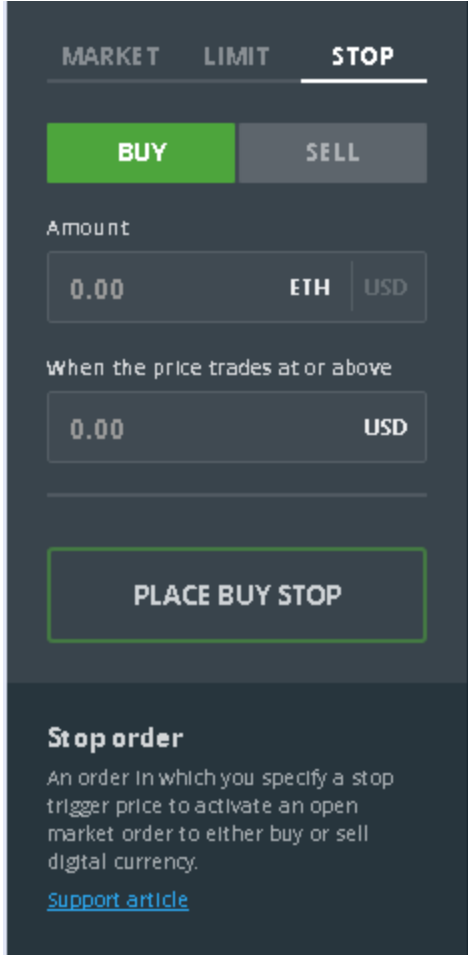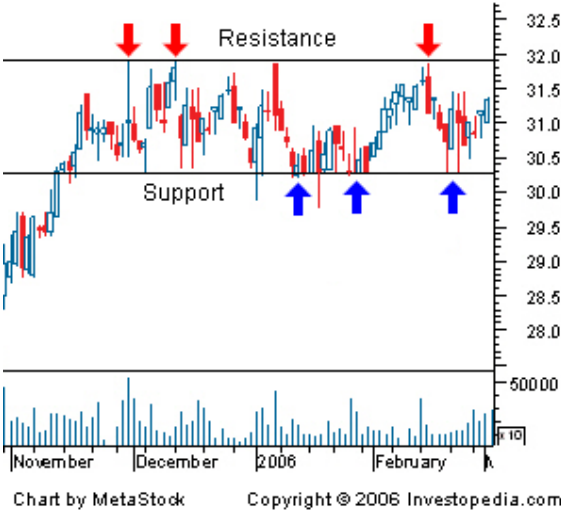
THE ORDER BOOK

This is the **order book**. This chart gives a graphical representation of how much Ether is purchasable *up to* a certain price. The total **volume** available at a given price is represented by filling in a section of the graph representing either a buy or a sell.

In this example, the buy side is green and the sell side is red. This is fairly standard on all exchanges, but could possibly be different.

TRADE HISTORY Trade Size Price (USD) Time 8.0000000 90.54 ↗ 12:01:56 0.01625700 90.54 ↗ 12:01:56 0.21500000 90.54 ↗ 12:01:56 0.02650800 90.53 ↗ 12:01:56 0.01581200 90.52 ↗ 12:01:56 0.08220500 90.51 ↗ 12:01:56 0.01611500 90.50 ↗ 12:01:56 0.25530000 90.49 ↗ 12:01:56 0.02726000 90.49 ↗ 12:01:56 0.02698000 90.48 ↗ 12:01:56 0.02665800 90.46 ↗ 12:01:56 0.01530200 90.45 ↗ 12:01:56 0.02732700 90.44 ↗ 12:01:56 0.02713900 90.43 ↗ 12:01:56 0.02654400 90.40 ↗ 12:01:56 0.02698300 90.39 ↗ 12:01:56 117.21327190 90.21 ↘ 12:01:51 0.2000000 90.21 ↘ 12:01:51	**Trade History** This is the **trade history**. This is simply a representation of the most recent transactions on any exchange. Once again, green represents a buy and red represents a sell.
MARKET LIMIT **BUY** SELL **Amount** 0.00 USD Total (ETH) ≈ 0.00000000 **PLACE BUY ORDER** NOTE: GDAX no longer supports the option to purchase a set number of eth, but it is still possible on other exchanges.	**Market Orders** A **Market Order** is simply an order at a given price or total number of Ether . This will give you the *best price* or the *greatest number* of cryptocurrency that you can get for a set amount of Ether or a set number of dollars. These are more designed for immediate buys, and not to get you the best price possible. That is to say you would be better off setting a limit order. For example. If you place a **market buy** for 100 Ether, and the order book has 100 Ether available at $10 each, you will buy 100 Ether at $10 each and pay $1000. On the other hand, if you place a market buy for 100 Ether and there is only one Ether available at $10 each, and 99 Ether available at $100 each, you will buy one $10 Ether and 99 $100 Ether, for a total of $9,910. If you were to place a market buy for a set dollar amount, then the exchange Ether simply purchase you as much Ethereum you can afford at the lowest price possible. So buying $100 in Ether in our first example would net you 10 Ether, but the same order

would only net you 1.9 Ether in the second example.

A **market sell** has the exact same principle, but obviously is the act of selling rather than buying.

For example, if someone was buying 100 Ether for $10 each, and you set a **market sell** for 50 Ether, you would sell 50 Ether for $10 each, for a total of $500.

On the other hand, if there is only one Ether being bought at $10, and 99 being bought for $1, the *same* market sell would sell one Ether for $10 and the remaining 49 for $1, netting you $59.

Limit Orders

A **limit order** is simply an order at a set price.

If you place a **limit buy** for 100 Ether at $10 each, then you would buy 100 Ether for $10 each *SO LONG AS SOMEONE IS WILLING TO SELL IT TO YOU AT THAT PRICE.*

If you place a **limit sell** for 100 Ether at $10 each, then you would sell 100 Ether for $10 each. Again, only so long as someone is willing to buy them at that price.

One small caveat is that if there exists an order that is *the same or better* than what you are currently setting, then the exchange will automatically execute it.

For example, if you placed the same market buy for 100 Ether at $10 each, but someone was already selling 10 Ether for $9 each, and someone else was selling 15 Ether at $10 each, then you would BUY those 25 Ether and set a limit buy for 75 Ether at $10 each.

The same applies to a limit sell. If you set a limit sell for 100 Ether at $10 each, but someone is already buying 10 Ether fat $11 each, the market will automatically sell your

	Ether to them at a price of $11 each.
	BUY STOP/STOP LOSS

A **stop order** is simply an order which is triggered by market action.

A **stop loss** is a market order which is placed by you at a given price if and when the cryptocurrency trades at or below that price.

For example. If I wanted to make sure I didn't lose money on a margin trade overnight, I might set a stop loss at $10 each to sell 100 of my Ether.

I might also place a **buy stop** in order to make sure I didn't miss out on the rising price of a cryptocurrency.

For example, if I thought the price of a cryptocurrency might double overnight, I might set a buy stop at $10 in order to not miss out on possible profits. Nobody ever made any money buying at the top!

NOTE: GDAX NO LONGER SUPPORTS THIS ON THEIR WEBSITE, YOU MUST USE THEIR API |
|

Source for Resistance Definition - Investopedia

Source for Support Definition - Investopedia | **Support** or support level refers to the price level below which, historically, a stock has had difficulty falling. It is the level at which buyers tend to enter the stock.

Resistance (resistance level) is a price point on a bar chart for a security in which upward price movement is impeded by an overwhelming level of supply for the security that accumulates at a particular price level. |

Decentralized Exchanges

As we covered in the introduction to this guide, any app can be created on the Ethereum platform, providing a decentralized place for the storage and execution of the app. And, yes, this includes exchanges. Like any other decentralized app, decentralized exchanges are defined by smart contracts that are stored on the blockchain and require no central storage or other infrastructure to run. Also like many DApps, you will need a browser such as Mist to interact with them. A few to check out are EtherDelta and OasisDex. While they are being built on Ethereum and use smart contracts on the blockchain to function, they function the same way from an end-user perspective.

In the following section, a few key principles of Ethereum will be discussed. It is not necessary to understand these concepts if one is simply interested in purchasing Ethereum and holding on to it. This information will attempt to explain a few of the more 'technical' details of Ethereum at a high level.

Smart Contracts: What are they?

Smart contracts are scripts, which are typically written in [Solidity](.). These scripts are built to *autonomously* carry out work on the Ethereum blockchain. They are fully self executing, self enforcing and self governed. You can think of them as autonomous, transparent, open source businesses which are available on the blockchain, and as such, are fully distributed. These distributed contracts take away the need for middlemen in most use cases. Along with their ridiculous fees, restrictive business hours, and long processing times.

ERC20 Token Standard

The ERC20 token standard is the Ethereum network's formal definition of a token. This definition allows the developers of said tokens to write smart contracts which directly interface with the Ethereum network, and allow for these tokens to be recognized as valid currencies on the Ethereum network. As such, they are visible by Ethereum wallets, and easily transferred via the same channels as Ethereum.

Proof of Stake (PoS) vs Proof of Work (PoW)

To keep the blockchain of any cryptocurrency moving forward, the network needs to provide incentives for correctly validating transactions recorded in new blocks on the chain. Two of the most common schools of thought on how these incentives should be distributed and how validation should be trusted are known as Proof of Work and Proof of Stake.

Proof of Work is the system by which most cryptocurrencies, including Bitcoin, manage their blockchains. Through a process known as mining, individuals contribute processing power to solve difficult, arbitrary calculations as well as to validate calculations to determine what the next block in the blockchain should be. Whenever a new block is added to the chain, whoever was lucky enough to be the person that created that block is rewarded with some amount of currency. The difficulty of these calculations can be determined by the devs behind the currency to control the rate at which new coins are dispersed into the economy. The reason for the difficult calculations is to secure the network by making it difficult for an attacker to start adding invalid blocks to the universally accepted chain - in this system, the attacker would need to generate over 50% of the processing power in the entire network to have their malicious validation be accepted. A higher-level way to think about this is that processing power is what creates scarcity and is proportional to the odds of you getting the next reward. This has the unfortunate side-effect of giving a disproportionate amount of power, in regards to both reward and blockchain validation, to miners that control a large portion of the mining hashrate.

On the other hand, in a Proof of Stake system, rewards for creating new blocks on the chain is provided proportional to the "stake" that validators have in the economy as opposed to the work you can do. Your stake increases based on the amount of currency in your wallet and how long it's been there. The greater your stake, the higher the odds are that you will receive a reward for the creation of the new block on the chain. In contrast to PoW where scarcity comes from processing power, in PoS, the scarcity comes from the currency itself.

As of March 2017, Ethereum is using a Proof of Work system. By the Serenity update the platform will be updated to use a Proof of Stake system. As we get closer to that release we will learn more details about how the PoS system will work in Ethereum's implementation, known as **Casper**.

zkSNARKs

To explain the importance of zkSNARKs, let's first quickly go over how the Ethereum network works. Whenever a new calculation is made on the network (a new transaction is recorded, some piece of code is executed as part of an app), some number of other nodes need to confirm that the calculation was done correctly before the result is recorded in the blockchain. In other words, everything needs to be double-checked enough to be universally accepted. As you might imagine, the easiest way to do this is to make the calculation visible to everyone on the network so they can each run the calculation. This is how Ethereum works now, and it has shortcomings, such as requiring all apps on the network to be open source. That's where zkSNARKs comes in.

zkSNARKs stands for "**z**ero **k**nowledge **S**uccinct **N**on-interactive **AR**guments of **K**nowledge". They allows us to manipulate and translate calculations that need to be double-checked so that nothing on the network needs to know exactly what the original calculation was, but can still confirm whEther a result is correct or not. The details of how this works are too opaque for this guide (any big math/coding fans will enjoy [this](#)), but what it means is that code deployed on Ethereum doesn't have to be open-source and the details of transactions can remain completely secret. zkSNARKs will be implemented in the Metropolis update.

Metropolis

Metropolis is the next major update to the Ethereum network, the third of four phases that the developers have planned for Ethereum. This update will bring with it modifications to the way that applications interact with the network, making it simpler for developers to write apps on the platform. zkSNARKs will also be implemented in this update, opening up the Ethereum network to developers that want to keep their apps' source code a secret and users that want greater privacy for their transactions.

Serenity

This is the fourth and final major planned update to Ethereum. This is defined by two massive changes: transition from a PoW to PoS system using the **Casper** algorithm (described above), and sharding. Sharding will allow applications to be split into tiny pieces, or sharded, and distributed across the network. One calculation required to execute an app may happen on one machine (and then double-checked using zkSNARKs on several others), then the next calculation happens somewhere else, and so on. Not only does this improve performance by reducing the time it takes for apps to execute on the network, allowing network nodes to validate only shards of the blockchain means that new blocks can be added, and transactions confirmed, *near instantly*. This is the biggest update planned for Ethereum and has no release date yet determined.

Ethereum Name Service(ENS)

ENS is a decentralized name service on Ethereum, built using smart contracts. It enables the resolution of human readable addresses [Source - ens.codetract.io] e.g. Ethereum.eth into machine readable identifiers. That is to say, instead of having to remember 0xee348bc15fcd3e5bfbef68fb5a4d06a9e5ea2264, or have it written down somewhere, you could have MyCleverName.eth, which would use smart contracts to direct the transaction to the address you've linked, which in this case is the one above. This is the same way the modern internet works. When you want to go to google, you don't type 172.217.9.14, that would be ridiculous! Even though your computer would have no problem pointing you to google.com, it's much easier for you to remember just that. Google.com.

Looking Forward / Closing Thoughts:

It is my personal belief that Ethereum has a *very* bright future ahead of it, but that is not to say that there are no risks involved. Ethereum is a young, innovative technology with many dedicated developers working tirelessly to push us further into the future. However, one must keep in mind that innovation doesn't necessarily mean success. While I do not personally hold this belief, there is always the possibility of something going catastrophically wrong, and Ethereum as we know it could be put to an abrupt end.

Please keep in mind that investing in Ethereum right now is investing in a speculative, volatile market. Things are going well now, but that isn't to say that it will always be this way. Don't invest money you cannot afford to lose, don't try to time the market, and be sure to express all the risks involved when discussing Ethereum with friends and family.

For more information about Ethereum's roadmap in the coming months and the rest of 2017, I recommend giving this article a read.

www.ethnews.com/Ethereums-road-map-for-2017

Links

- **Exchanges**

  - https://www.gdax.com/ (Exchange for https://www.coinbase.com)

  - https://poloniex.com/

  - https://www.kraken.com/

  - https://exchange.gemini.com/

- **Wallets**

  - https://www.myEtherwallet.com/

    - General Wallet Generator

  - https://jaxx.io

    - Cell Phone Wallet

  - https://www.ledgerwallet.com/products/ledger-nano-s

    - Hardware Wallet

- **Information**

  - https://www.Ethereum.org/

    - The Ethereum Foundation's official website

  - https://blog.Ethereum.org/

    - Official Ethereum Foundation Blog

- ○ http://entethalliance.org/
    - ■ Enterprise Ethereum Alliance official website

- ○ https://www.cryptocoinsnews.com/what-is-Ethereum/
    - ■ A great summation of Ethereum with technical and conceptual detail

- ○ https://dappdaily.com/
    - ■ Daily updates on new dapp development

- ○ https://coinmarketcap.com/
    - ■ Market information for various cryptocurrencies

- ○ https://cryptowat.ch/
    - ■ A cryptocurrency exchange graph aggregate

- ○ https://www.ethnews.com/news
    - ■ It's… well, it's eth news.

- ○ http://www.weekinEthereum.com/
    - ■ A weekly newsletter by Evan Van Ness

- **Discussion**
  - https://www.reddit.com/r/ethtrader/
  - https://www.reddit.com/r/Ethereum/

Thanks for reading!

Definitions

Address – A hexadecimal string which represents the unique ID of a wallet on the block chain. It is analogous to an account number.

Air-Gapped – Completely disconnected from any network.

Arbitrage – The act of purchasing coins on one exchange and selling them on another. This is usually done to exploit a price difference between exchanges.

ATH – All time high, the highest the price has ever been.

Automated Trading – Trading done by a script with little to no human interaction.

Bear Market – A prolonged downward trend of a traded commodity.   This is the opposite of a **bull market**.

Blockchain - a digital ledger in which transactions made in bitcoin or another cryptocurrency are recorded chronologically and publicly. In Ethereum's case, it also records the execution state of applications on the platform.

Bull Market – A prolonged upward trend of a traded commodity. This is the opposite of a **bear market**.

Casper - The Proof of Stake algorithm that Ethereum will implement with the release of the **Serenity** update.

Cold Storage – Storing crypto away from the internet. Meaning on a **paper wallet**, in a **hardware wallet**, or on an **air-gapped** machine.

Confirmation – A transaction is *confirmed* when it has been verified by miners on the blockchain.

Correction - A correction is a reverse movement, usually negative, of at least 10% in a stock, bond, commodity or index to adjust for an overvaluation. Corrections are generally temporary price declines interrupting an uptrend in the market or an asset.[Source - Investopedia]

Day Trading – Detailed SEC definition of a Pattern Day Trader.

Dollar Cost Average(DCA) – Placing a fixed amount towards an investment on a fixed schedule (monthly, daily, weekly, etc.).

Exchange – Where you buy and sell your traded commodity. In our case: GDAX, Poloniex, Kraken, etc.

Fiat - Fiat money is currency that a government has declared to be legal tender, but it is not backed by a physical commodity. [Source - Investopedia]

The Flippening - The point at which Ethereum's market cap, and overall block chain dominance, overtakes Bitcoin's.

FOMO - Fear of Missing Out. This is a term used to describe the act of purchasing a commodity while it is on a bull run. It often carries a negative connotation, in that FOMO may cause the price to be artificially high and indicate that a correction is coming.

FUD - Fear, Uncertainty and Doubt. This term is used to describe the malicious spread of negativity. This is often done with the goal of causing inexperienced members to sell, or possibly cause a temporary dip in price.

Hardware Wallet – a cryptographically secure piece of hardware designed to keep wallet information secure. E.g. Trezor wallet, ledger nano, etc.

Hodl – The act of buying and holding. A play on the word hold.

ICO – Initial Coin/Token Offering. When a new coin is being sold at a base price before the launch of the service it is associated with.

Long Position - Making a purchase with the hope that the item will increase in value so it can be sold for a profit. This is what most investors do. [Source - Investopedia]

Margin Short (Shorting) - This is the act of selling something that you've borrowed with the hope of being able to buy it back later at a lower price. [Source - Investopedia]

Margin Trading – Trading on money that has been loaned to you by an exchange. A deposit of capital must be placed to receive said loan.

Market Order - Placing either a *buy* or a *sell* order on the market with no regard for price. The market will buy or sell $x.xx/yy eth, for the best price currently available.

Metropolis - The third of four major phases of Ethereum. Characterized in part by improved anonymity of calculation validation. Explained in more detail below.

Mining - The act of contributing processing power to a blockchain network to help determine the next block. Incentivized by the chain providing a reward for doing so.

Paper Wallet – A printed document containing the information linked to your wallet. I.e. your private key, public key, etc.

Private Key - This is like the key to your home. It can unlock your wallet and everything inside it for whatever transaction you (or whoever has it) choose. It is not advisable to share this with ANYONE.

Proof of Stake (PoS) - A system for blockchain currencies in which the rewards given out for the creation of new blocks is given proportional to people's stake, or volume of currency. Explained in more detail above.

Proof of Work (PoW) - A system for blockchain currencies in which the rewards given out for the creation of new blocks is given proportional to the computational resources contributed to the creation process. Called "mining". Explained in more detail above.

Public Key - Your wallet address. This is the key you will share with people in order to have Ether sent to you or requested from you.

Serenity - The fourth of four major phases for Ethereum. The biggest component of this release is the move to a Proof of Stake system via the **Casper** algorithm.

Smart Contract - A piece of code that can be broadcasted to the blockchain and executed. Used to write applications that run distributed across the platform.

Staking - In a Proof of Stake system, this generally means leaving your coins in your wallet to increase their stake in an attempt to net rewards from block creation

Stop Buy - An order which is triggered by the act of a traded commodity going above a price set by the trading party.

Stop Loss - An order which is triggered by the act of a traded commodity falling below a price set by the trading party.

Technical Analysis - financial analysis that uses patterns in market data to identify trends and make predictions.

Whales - Traders with *massive* amounts of the currency being traded. They are able to sell and buy in quantities large enough to manipulate the market price in the short term.

zkSNARKs - A method for allowing members of the Ethereum network to validate calculations without knowing what the original calculation was. Expected in the Metropolis update. Explained in more detail above.