Understanding BITCOIN

- Bitcoin is often compared to gold.
- It needs to be mined via digital means
- It is said that there are 21M bitcoins that can be mined in total.
- The number of Bitcoins generated per block starts at 50 and is halved every 210,000 blocks (about four years).
- The difficulty of the mathematical problem is automatically adjusted by the network, such that it targets a goal of solving an average of 6 blocks per hour.
- There is no maximum number, blocks just keep getting added to the end of the chain at an average rate of one every 10 minutes.
- Yes. The blocks are for proving that transactions existed at a time. Transactions will still occur once all the coins have been generated, so blocks will still be created if people are trading Bitcoins.
- Bitcoin has fixed supply of 21M
- It is true, once all the bitcoins have been mined, transaction fees will be the sole source of income for miners.
- it is possible that transaction fees will rise due to an increase in the demand for transactions.
- The price of Bitcoin fluctuates constantly and is determined by open-market bidding on Bitcoin exchanges, like the way that stock and gold prices are determined by bidding on exchanges.
- All Bitcoin transactions are recorded on the network's public ledger, known as the block chain.
- price of Bitcoin has always been driven by the scarcity of the digital tokens.

- irrational mentality that can take over in speculative bubbles.
- So, if I understand correctly:
    - 21M bitcoins total
    - 50 BTC per block
    - Each block every 10 minute
    - then 300 BTC per hour
    - 7200 per day
    - 2628000 BTC per year
    - 10512000 per 4 years (1 cycle)

- How many blocks per cycle?
    - 6 block per hour
    - 144 per day
    - 52560 per year
    - 210240 blocks per 4 years (1 cycle)

- Next cycle: BTC quantity halved
    - so: 5256000 in next cycle

- **bitcoin reward**
- more hash power miners apply, more coins they get (that they can sell later)
- After all bitcoins are mined, only source of income for miners will be transaction fee
- which can either collapse the system or going to be very high that no transactions.

- Block reward halving also decreases supply, which as discussed above may cause Bitcoin's price to increase.
- Concepts:
    - Controlled supply
    - Behavioral Finance
- Sources:
    - https://en.bitcoin.it/wiki/Block
    - https://news.bitcoin.com/what-happens-bitcoin-miners-all-coins-mined/
    - https://www.bitcoinmining.com/what-is-the-bitcoin-block-reward/
    - https://www.nytimes.com/2017/05/15/business/all-about-bitcoin-the-mysterious-digital-currency.html

- So, the first value is the correlation and the second value the probability of an uncorrelated set producing the same result.
- When the correlation coefficient is close to zero there is no evidence of any relationship. if there are many pairs then a coefficient closer to 0 can still be considered 'highly significant'.
- Null Hypothesis: No relation between price of bitcoin and price of stock
- A competent researcher investigating a hypothesized relationship will set a p-value in advance of the empirical study. Typically, values of either 0.01 or 0.05 are used. If the data from the study results in a p-value of less than that specified in advance, the researcher will claim that their study is significant and it enables them to reject the null hypothesis and conclude that a relationship really exists.
- p-value of say 0.01 they might conclude that there is a 1 in a 100 chance of no relationship (which is the same as a 99% chance that there is a relationship).

Ideas

  - explore bitcoin_price dataset
  - time vs price
  - day of week analysis
  - seasonal trend in price
  - join it with bitcoin_dataset
  - you get output.csv File

- You have much information now
  - check bitcoin price vs block size
  - check price correlation with all other variables in that dataset and see which one are correlated
  - try to find out the if you can see any relations
  - look for seasonal trend

- How many cryptocurrencies.
- Why people are interested in it?
- what are the factors that lead to increase/decrease in price?
- can we predict the future price looking at the historic data?
- Is there a seasonal trend in price fluctuation?

- Join bitcoin price dataset with US stock dataset

    - with three companies of different sectors: see how bitcoin price change with respect to those

- Join bitcoin dataset with tokyo company
    - see the price vs stock trend/correlation

- Compare prices of bitcoin, japan and us stock and see if you can see some trend
- Find correlation between prices of all cryptocurrencies.
- causal analysis
- how prices are associated

- 3M company: Industrial
- Apple Inc: Information Technology
- AFLAC AFL Financial Life and health Insurance