

Investing

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Link: <https://pranay2281.github.io/Investing/>

Background & Motivation:

With current rates of inflation being ~7.5%, the purchasing power of the US \$ is decreasing day by day. The solution to this is investing in the stock market.

The world works on stock market. Its relevance in the economic world is of the highest stature. Stock market has always been my subject of interest. Companies and countries build and break depending on how the stock market performs. My dad being a stockbroker ensured I was well informed and aware about how the stock market works. Both of us frequently discuss different stocks and its probable future. The market has been active for over a hundred years and it is often called a ‘net worth multiplier’.

Compound interest is often called the 8th wonder of the world and investing works on that principle. Many people still fear to invest in the market. So I want to take my project on those lines. It will be to convince people to invest.

Project Objectives:

The objective is simple enough, encourage people to invest.

1. Explain why investing is better than day-trading
2. Why one should invest in stocks and not in cryptocurrency ✓
3. Explaining how market capital is more important than price. (Higher share price does not mean a better/more reliable company) -
4. Provide them with a suggestion as to which portal/app to use to start investing

To not get involved with financial advice, I am not going to advise them on any particular stock they should buy as I am not an expert, but will use particular examples of stocks and cryptocurrency throughout my project (namely Apple Inc. and Bitcoin - as they are the biggest players in stocks and crypto respectively). To show an overall trend of the market, I will choose industrial averages like Dow Jones (DJIA).

Data:

Data on stock prices of apple and bitcoin is readily available all over the internet.

Apple:

<https://www.investing.com/equities/apple-computer-inc-historical-data>

Bitcoin:

<https://www.investing.com/crypto/bitcoin/historical-data>

Dow Jones:

<https://www.wsj.com/market-data/quotes/index/DJIA/historical-prices>

Also, I will explain the difference in market capital in the middle for better financial knowledge. This data is just available on google search results.

I also conducted a survey to get an estimate of how many people invest in the stock market and how many are day traders, and how many refuse to invest in the market. Over 200 people responded to the survey. The results showed that only 8% invest, 77% do not relate to the market. ✓

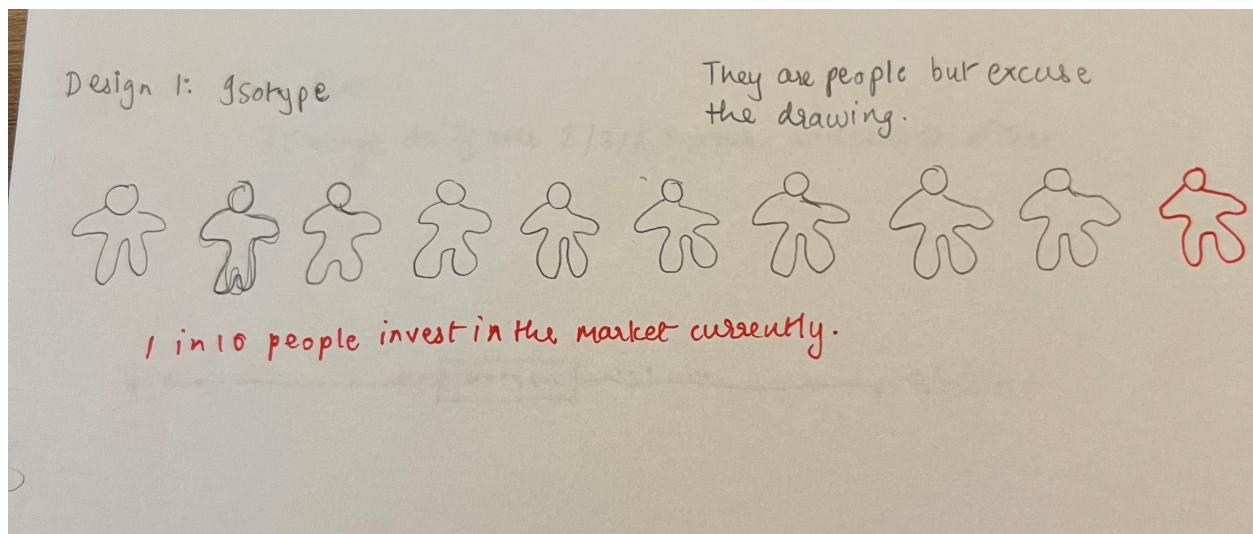
Data Processing: ✓

The data processing should not be an issue. I have data for over 40 years, so I might need to reduce it. As there might be too many events and I might not be able to cover all of it. The data on these websites is already sorted. Overall it is easier as the data is already arranged according to dates. Direct CSV files are available so it will be easier. Data will be edited via MS office and numbers.

Visualization Design:

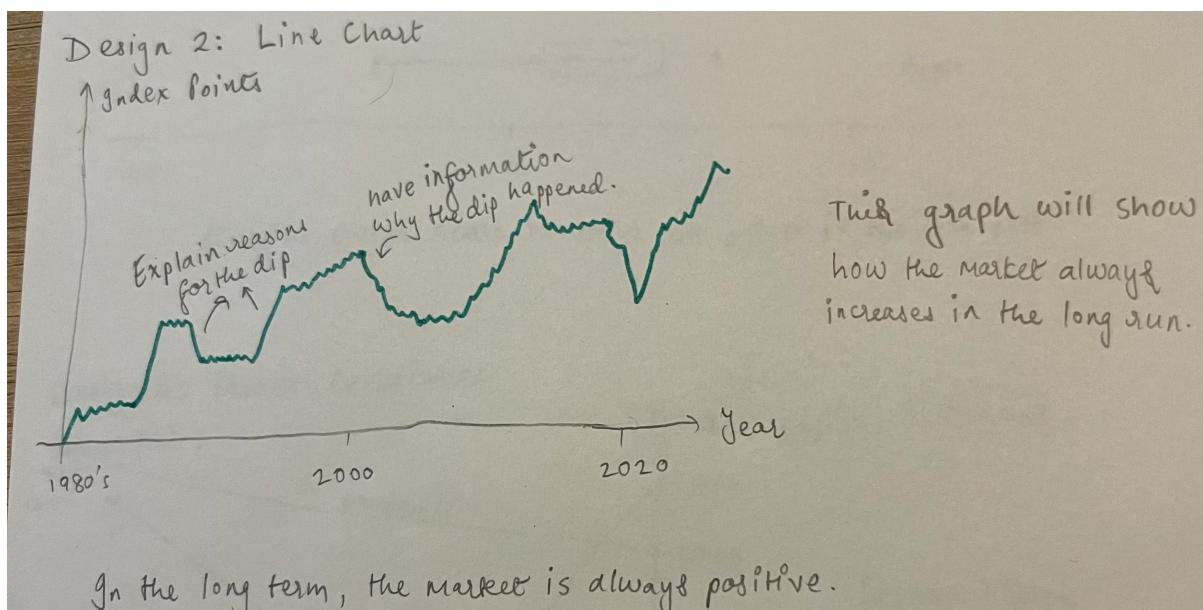
Design 1: Isotype(Pictogram) ✓

This design particularly does not fulfill any objectives but I feel it will be a great start to my project. It will show how few people invest in the market. Like a bold statement like “1 out of 10 people invest in the market and then this pictorial representation will help make it more evident”. Link: <https://pranay2281.github.io/Investing/>



Design 2: Line Chart

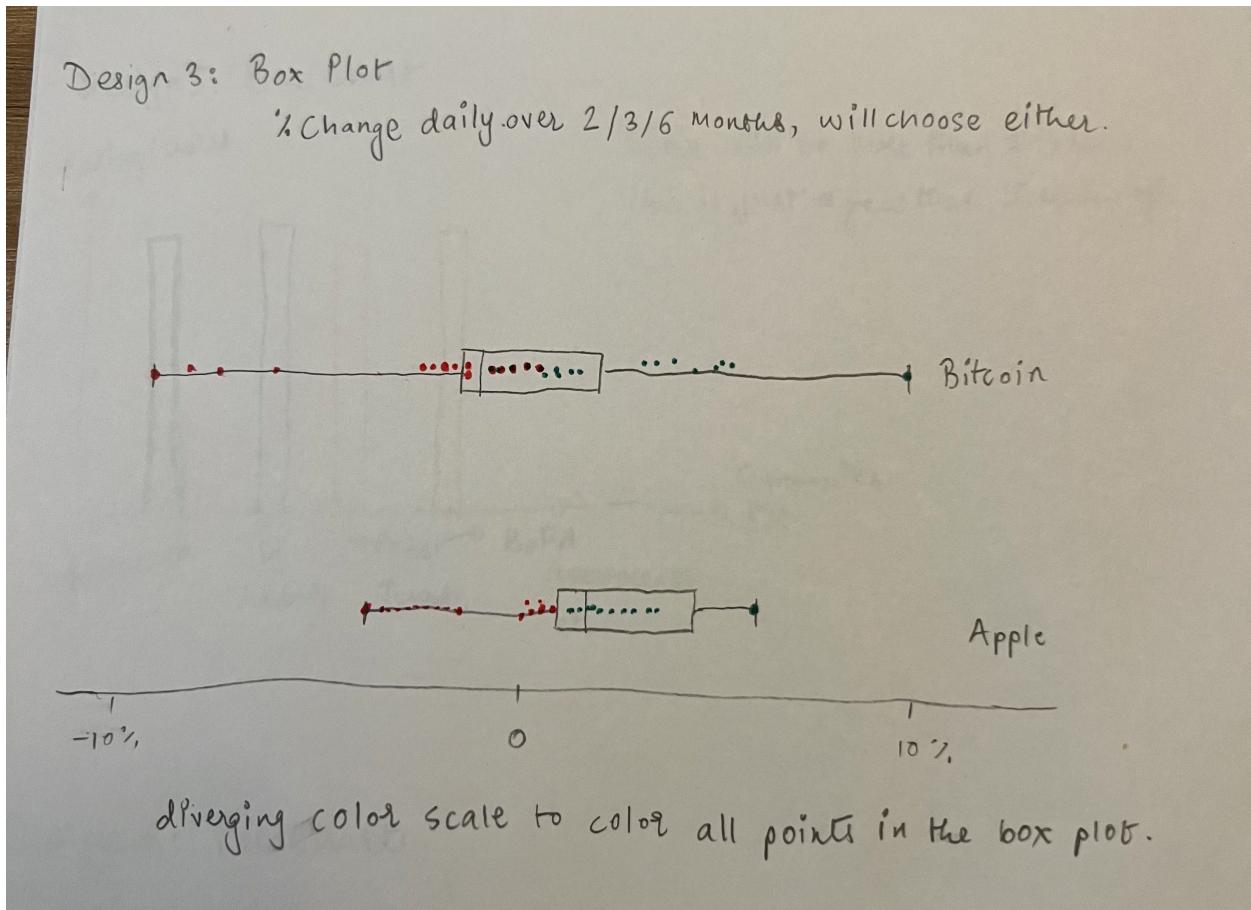
This visualization will meet Objective 1. It will show why short term losses don't matter in the long term. I will use green to sketch the line in a gradient like form to show that it is always positive.



Design 3: Box Plot ✓

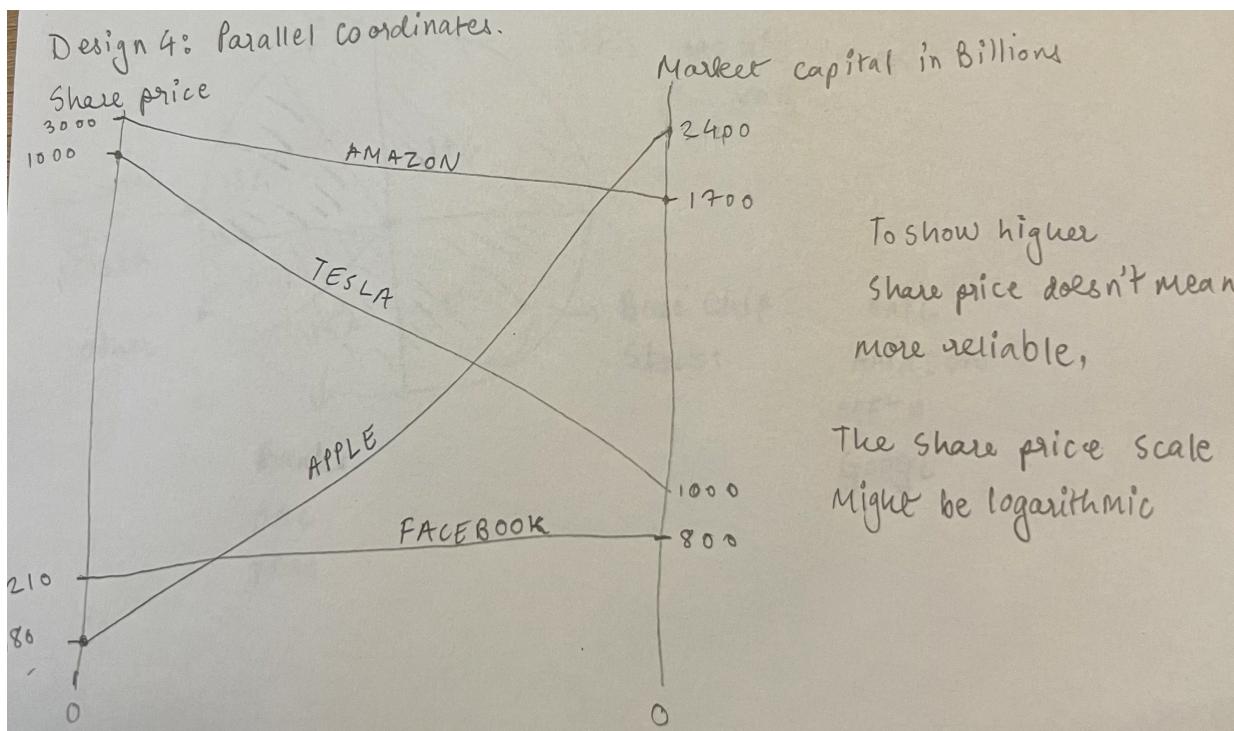
This visualization will meet Objective 2: The plot will have 2 box plots and will show the the volatility of stocks and the volatility of crypto. The box plot will even show all the points, positive changes in green and negative changes in red. I will use a diverging color scale going from red to white to green to show all the points.

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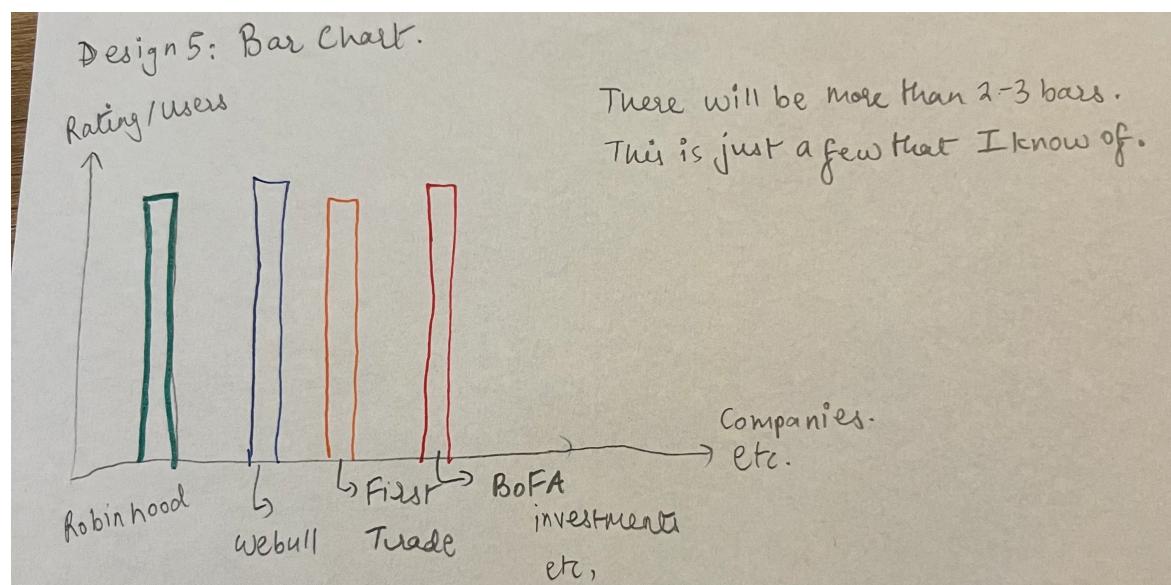
Design 4: Parallel Coordinates

The visualization will meet Objective 3. The plot will have share price on one end and the market capital on another. This objective will show that expensive shares is not necessarily the best. One of the scales might be logarithmic.



Design 5: Bar Chart

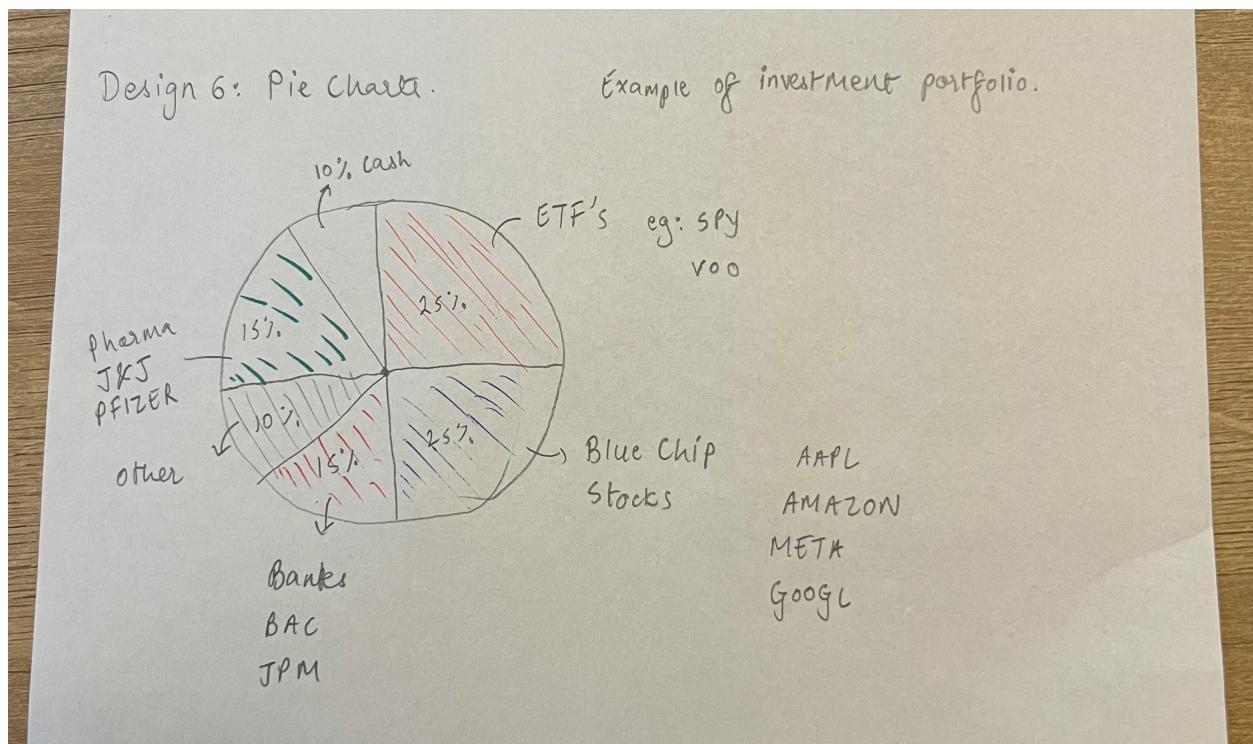
This visualization will meet Objective 4. It will compare the different online trading platforms available for use. The x axis will be the trading platform and the y axis will be rating/ number of users. The color/border of the bars should be depending on the platform they use.



Design 6: Pie Chart

This visualization does not fulfill any objective but will it will help my conclusion. Towards the end, I shall suggest them with what a diversified investment portfolio should look like. Eg: 25% to Technology, 25% to ETFs, etc.

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Must Have Features:

Design 2 and Design 5 is a must. They are key to fulfilling objective 1 and 4 respectively. I feel that those designs are very appropriate for the objectives. I have seen a few line charts that show the trend. Bar Chart is one of the simplest ways to show a comparison amongst products, and I think it is a great way to show the data.

Design 4 is also a great way to explain an idea that fulfills objective 3. It is simple rather than trying to make something difficult. I have to figure out scaling but I think, that should not be an issue.

Optional Features:

Design 1 is like something I really want to try and pull off but since it does not satisfy any objective, I am fine if it doesn't work out. ✓

Design 3 is also a must have but the features are optional. Box Plot I think will be a great way to compare volatility. I took advice from professionals in the industry and they suggested it will be a good idea. I will definitely draw the box plots but drawing the points inside it and coloring it is completely optional. ✓

Design 6 is completely optional, if I find another way to conclude my project then I might go ahead with it and not draw another visualization at all.

Project schedule:

March 23rd- Revised Proposal and website (at least an outline) ✓

March 25th- Last day for the survey. There are about 200 responses now, I assume there will be 300 by the end of the date. ✓

March 30th- Data should be cleaned and processed. Its a weekend, so I have a bit more time. Start working on some visualizations. ✓

April 6th- have the isotype and box plot ready, they are comparatively the easier ones. ✓

April 14th - Have the bar chart, parallel coordinates ready. Also scratch on paper how you want the project to be like from start to finish. What all information you want to put.

April 20th- Complete line chart. Focus on the website and the grammar and the writing and all these little details. Post this date, start polishing on all the non CS related skills. Making it useful enough so even a person who has no idea about stock market can understand.

April 28th - Complete the pie chart. I am purposely leaving this for the end because I don't know if I should conclude it by showing how they can invest and which industries they should invest in. Till this point, I should have a conclusion in mind.

May 5th- Finish the website, and give it to at least 5 people (one of them will be my dad as he is related to the stockmarket so he can give me substantial feedback) to proof read and get their feedback as to what changes can be made.

May 9th- Work on project report draft

May 12th - Complete demo code, slides and user manual

*Throughout the project, create a scratch document and type all things you may think you want to add in the project.

Upcoming milestones:

Everything is going as per schedule. I will soon(next week) complete the bar chart and parallel co-ordinates. I will try and add animation to my isotype and box plot.

Roadblocks:

Interaction in D3 is difficult, and then plugging it into the website is causing a lot of problems. I am finding a way to sort it out. The line chart also looking difficult now as I was trying to code it.

Related work:

Chauvirey, Lauren. “Pictogram Grid in d3js.” *Pictogram Grid in D3js*, bl.ocks.org/lorenzopub/2b84628d78652a007f90e41b38cf7344.

“D3-Annotation: Thresholds & Annotation Colors.” *Popular Blocks*, bl.ocks.org/susielu/23dc3082669ee026c552b85081d90976.

Desjardins, Jeff. “Volatility 101: An Introduction to Market Volatility.” *Visual Capitalist*, 11 Mar. 2019, www.visualcapitalist.com/intro-market-volatility-101/.

Holtz, Yan. “Horizontal Boxplot in d3.Js.” *The D3 Graph Gallery – Simple Charts Made with d3.Js*, d3-graph-gallery.com/graph/boxplot_horizontal.html.

Holtz, Yan. “Boxplot.” *The D3 Graph Gallery*, d3-graph-gallery.com/boxplot.html.

Kosara, Robert, et al. “The Isotype.” *Eagereyes*, 20 Apr. 2015, eagereyes.org/techniques/isotype.

“Parallel Coordinates (0.7.0).” *Parallel Coordinates*, syntagmatic.github.io/parallel-coordinates/.