**Day 1**

**Intraday trading**

It is basically buying and selling the stock on the same day in order to make profit from the volatility of the market. In this type of trading there is no delivery of stocks as whatever is bought/sold on the start of the day is sold/bought towards the end. In intraday trading one can make profits regardless of the fact that whether it is a bear market or a bull market because it has the concept of long and short where long means buying the share and once the price has risen to desired amount, selling it. Whereas short means that you borrow shares from lender and sell it and get the money from it but then before the end of the day we would have to buy the share back and return the borrowed share to the lender. There is a concept of stop loss that can be selected to prevent traders from losing more money than what they have initially planned. Stop loss is basically like a automated system which will place the buy/sell order for us once the shares reach the price that we have set previously to prevent us from losing lots of money. It is generally advisable to place multiple buy/sell order in intraday trading and make small profits in each order rather than waiting to make big profit in just one transaction because if the prices turn suddenly the profits can be converted into a loss immediately. When taking part in intraday trading one generally trades stock in high volume and stocks that are highly volatile because if the prices don’t move then there wouldn’t be any profits.

**Day 2**

**Momentum Trading**

Momentum trading is a type of algorithmic trading strategy which works on the principle of buy high and sell higher instead of the usual buy low and sell high. In momentum trading we basically invest based on the momentum of a particular stock i.e. based on the rate of acceleration of a stock. It is a technique that is used to make profit from the herding behavior of the market because whenever a momentum trader sees that the price of a stock is rising then that person will invest money into that stock hoping that it will rise more and sell the stock on the first sign of the price dropping. This strategy relies on making profit from the short-term movement s in a stocks price rather than focusing on the underlying value of stock. It is necessary to focus on highly volatile stock for momentum trading otherwise the profit wouldn’t be high. Since by using this technique, we are just riding on the back of the herd, and the price trends are never guaranteed there is a chance that we may face some loss or rather there is a big risk involved in this strategy so it can be said that momentum trading could be considered as a high risk, high reward trading strategy.

**Day 3:**

**Types of Algorithm Trading Strategies**

1. Momentum Trading – This is based on the movement of stock price in one direction and then buying and selling based on the momentum of the stock.
2. Mean Reversion – This is based on the assumption that the stocks will return back to their mean price whenever they are oversold and overbought so we can make our prediction based on that logic and profit from it.
3. Factor based investing – In this investor choose securities based on attributes that are related to higher returns, based on historical data. Some of the factors that are commonly used are market capitalization, momentum, earnings momentum, beta, and free cash flow
4. Smart beta - This is a strategy used by investors to close the gap between active and passive investing. The goal of using a smart beta strategy is to lower risk or increase diversification at a lower cost than what it would be with traditional active management.
5. Sentiment analysis – In this type the investor makes investments based on crowd reactions, the investor has to keep himself updated with the data of what is going on in the world and then whenever something is trending in news or social media, make a decision based on it.
6. Seasonality Strategies – In this the investor makes decisions based on the time of the year, Many investors are aware that markets generally have better returns at the end of the year and during the warm, summer months.
7. Arbitrage opportunity – In this we buy a dual-listed stock in one market at a lower price and then sell it in the other market at a higher price. Identifying such price differences and placing orders according to them helps make profit.

**Day 4**

**Momentum Trading**

Before deciding a trading strategy we must first ask whether it answers the following four questions: what to buy, when to buy, how much to buy, when to sell. If we get an answer for this then we can move ahead with that strategy and momentum trading is one such strategy which answers these questions. For deciding a stock for momentum trading we must take a look at the market leaders, market leaders are those stocks that are performing better than the broader market. Another way of identifying is stocks that have made more than 20% move in the last three months. For momentum trading we must only try to find stocks of smallcap and midcap companies and avoid largecaps because generally the price of stocks of small and mid-sized companies is relatively cheaper so they can be bought in huge volume and thus will help generate higher profits with little price movements too. The basic idea behind this strategy is to buy the share at a higher price than the market and sell it even higher this is based on the principle that the herd is always correct and then derive small profits through this. In conclusion Momentum traders believe that prices that have been moving in one direction over some time will continue to move in that direction for a limited period. They believe that buying high price momentum stocks and selling low price momentum stocks will result in portfolio outperformance.

**Day 5 and Day 6**

**Practical implementation of momentum trading**

Momentum can be observed by checking for the following parameters in the graph: - Stagnation, Acceleration, Deceleration, Stagnation, Reversal.

For the technical implementation we can calculate the Slope (time on x axis and price on y axis) of two price points of a stock and check if the value of slope is high or low.

**Day 7**

**Generating momentum and slope graphs for nifty**

**Main piece of code:**

**Text

Description automatically generated**

References:

Day 1:

Day 2: <https://www.youtube.com/watch?v=r3Ulu0jZCJI>

<https://www.investopedia.com/articles/active-trading/101014/basics-algorithmic-trading-concepts-and-examples.asp>

<https://www.investopedia.com/ask/answers/071414/whats-difference-between-moving-average-and-weighted-moving-average.asp>

<https://www.investopedia.com/articles/active-trading/101014/basics-algorithmic-trading-concepts-and-examples.asp>

<https://www.investopedia.com/terms/m/momentum.asp#:~:text=Momentum%20trading%20is%20a%20strategy,both%20price%20and%20volume%20information>.

<https://www.investopedia.com/terms/m/marketmomentum.asp>

<https://www.investopedia.com/trading/introduction-to-momentum-trading/>

Day 3: <https://learn.alphadroid.com/blog/algorithmic-trading-strategies/common-types-of-algorithmic-trading-strategies/>

<https://www.investopedia.com/articles/active-trading/101014/basics-algorithmic-trading-concepts-and-examples.asp>

<https://en.wikipedia.org/wiki/Algorithmic_trading>

<https://www.blackrock.com/us/individual/investment-ideas/what-is-factor-investing#:~:text=Factor%20investing%20is%20an%20investment,reduce%20volatility%20and%20enhance%20diversification>.

<https://corporatefinanceinstitute.com/resources/knowledge/trading-investing/what-are-algorithms-algos/>

<https://medium.com/automation-generation/ultimate-list-of-automated-trading-strategies-you-should-know-part-1-c9a333f58930>

<https://www.globalprime.com/algorithmic-trading-strategies/>

<https://www.youtube.com/watch?v=4Ae2_i5nMxs>

<https://www.youtube.com/watch?v=OPm_EDTrz7Y>

<https://www.youtube.com/watch?v=ZCFkWDdmXG8>

<https://www.youtube.com/watch?v=5iuF42s6zNo>

<https://www.youtube.com/watch?v=ARovWEC8AnQ>

<https://www.youtube.com/watch?v=9yTrfhvJhUw>

<https://pandas.pydata.org/docs/reference/>

**Day 4:** [**https://www.youtube.com/watch?v=eYDxOI3E9aQ**](https://www.youtube.com/watch?v=eYDxOI3E9aQ)

[**https://www.youtube.com/watch?v=Rme87JmBv5I**](https://www.youtube.com/watch?v=Rme87JmBv5I)

[**https://www.youtube.com/watch?v=e9O4Z9gxwuI**](https://www.youtube.com/watch?v=e9O4Z9gxwuI)

[**https://www.youtube.com/watch?v=OUtfEEL3YJE**](https://www.youtube.com/watch?v=OUtfEEL3YJE)

[**https://www.youtube.com/watch?v=mnK4zz0KiV8**](https://www.youtube.com/watch?v=mnK4zz0KiV8)

[**https://www.youtube.com/watch?v=R8qYEOZF460**](https://www.youtube.com/watch?v=R8qYEOZF460)

[**https://www.youtube.com/watch?v=NpCZXLxAUqw**](https://www.youtube.com/watch?v=NpCZXLxAUqw)

[**https://www.fidelity.com/learning-center/trading-investing/trading/momentum-trading-strategies**](https://www.fidelity.com/learning-center/trading-investing/trading/momentum-trading-strategies)

[**https://www.indiatimes.com/worth/news/how-stock-market-transactions-are-taxed-565707.html#:~:text=capital%20gains%20(LTCG)-,When%20you%20sell%20a%20stock%20after%20holding%20it%20for%20more,be%20taxed%20at%20%4010%25**](https://www.indiatimes.com/worth/news/how-stock-market-transactions-are-taxed-565707.html#:~:text=capital%20gains%20(LTCG)-,When%20you%20sell%20a%20stock%20after%20holding%20it%20for%20more,be%20taxed%20at%20%4010%25)**.**

[**https://www.ig.com/en/trading-strategies/momentum-trading-strategies--a-beginners-guide-190905**](https://www.ig.com/en/trading-strategies/momentum-trading-strategies--a-beginners-guide-190905)

[**https://www.fool.com/investing/stock-market/types-of-stocks/momentum-stocks/momentum-trading/**](https://www.fool.com/investing/stock-market/types-of-stocks/momentum-stocks/momentum-trading/)

[**https://www.5paisa.com/stock-market-guide/online-trading/what-is-momentum-trading**](https://www.5paisa.com/stock-market-guide/online-trading/what-is-momentum-trading)

**Day 5 and Day 6:**

[**https://www.youtube.com/watch?v=-NTuzQtKMzs**](https://www.youtube.com/watch?v=-NTuzQtKMzs)

[**https://www.youtube.com/watch?v=aXuWv38A5gw**](https://www.youtube.com/watch?v=aXuWv38A5gw)

[**https://www.youtube.com/watch?v=F\_pj5wQiRCQ**](https://www.youtube.com/watch?v=F_pj5wQiRCQ)

[**https://www.investopedia.com/trading/candlestick-charting-what-is-it/**](https://www.investopedia.com/trading/candlestick-charting-what-is-it/)

[**https://www.youtube.com/watch?v=dnrJ4zwCADM**](https://www.youtube.com/watch?v=dnrJ4zwCADM)

[**https://www.youtube.com/watch?v=d2kXmWzfS0w**](https://www.youtube.com/watch?v=d2kXmWzfS0w)

[**https://www.guru99.com/api-vs-web-service-difference.html#:~:text=Web%20service%20is%20a%20collection%20of%20open%20source%20protocols%20and,other%20without%20any%20user%20involvement**](https://www.guru99.com/api-vs-web-service-difference.html#:~:text=Web%20service%20is%20a%20collection%20of%20open%20source%20protocols%20and,other%20without%20any%20user%20involvement)**.**

[**https://towardsdatascience.com/python-how-to-get-live-market-data-less-than-0-1-second-lag-c85ee280ed93**](https://towardsdatascience.com/python-how-to-get-live-market-data-less-than-0-1-second-lag-c85ee280ed93)

[**https://www.freecodecamp.org/news/how-to-interact-with-web-services-using-python/amp/**](https://www.freecodecamp.org/news/how-to-interact-with-web-services-using-python/amp/)

[**https://www.alphavantage.co**](https://www.alphavantage.co)

[**https://www.youtube.com/watch?v=BM4S0lNUytA**](https://www.youtube.com/watch?v=BM4S0lNUytA)

[**https://community.esri.com/t5/python-questions/how-to-call-a-web-service-from-python/td-p/175783#:~:text=The%20easiest%20way%20to%20GET,your%20web%20service%20requires%20authentication**](https://community.esri.com/t5/python-questions/how-to-call-a-web-service-from-python/td-p/175783#:~:text=The%20easiest%20way%20to%20GET,your%20web%20service%20requires%20authentication)**.**

**Day 7:**

**Technical:**

**Important functions of Numpy:**

**mean:** It is used to find the mean value of the NumPy array

**std:** It is used to find the standard deviation of the NumPy array

**median:** It is used to find the median of a NumPy array

**percentile:** It is used to find the percentile in a NumPy array

**shape:** It is used to get the shape of an array

**reshape:** It is used to reshape an array

**transpose:** It is used to reverse the axes of an array

**vstack:** It is used to join the sequence of an array along a new axis vertically

**hstack:** It is used to join the sequence of an array along a new axis horizontally

**sort:** It is used to get a sorted array

**arange:** It is used to create an array in a range with a specified increment.

**unique:** It is used to return the number of unique elements in an array.