xMarkowitz (MPT): <https://www.investopedia.com/terms/m/modernportfoliotheory.asp>

Risk Parity: <https://www.investopedia.com/articles/active-trading/091715/how-create-risk-parity-portfolio.asp>

Black-Litterman: <https://www.investopedia.com/terms/b/black-litterman_model.asp>

What we need to do for Case 3:

1. Calculate the variance covariance matrix of the given 9 stocks based on the historical data. We must make this a dynamic calculation, meaning the matrix should expand as more data is added.
2. Calculate lambda which is the Risk aversion coefficient
3. Diagram

   Description automatically generated with medium confidence
4. Calculate the market cap weights (Easy calculation) (% of Mcap against total Mcap in portfolio)
5. Calculate implied equilibrium return vector using Diagram, box and whisker chart

   Description automatically generated with medium confidence
6. Using the provided column vector of analyst predicted expected returns Q we need to
7. Graphical user interface, text, application, email

   Description automatically generated
8. We need to calculate P which is the matrix that matches each specific view in Q to the corresponding asset. Graphical user interface, text, application, email

   Description automatically generated
9. Then we can calulate Chart

   Description automatically generated
10. Where tau is some small constant that we have to decide
11. Finally we throw everything into

Diagram

Description automatically generated with low confidence

1. Then we use E(R) to find the point on the efficient frontier that corresponds given the risk calculation. Note that E® is a nx1 vector of adjusted expected return for each stock
2. We need to use E® in these 2 calculations to get the efficient frontier  
   For 2 asset, need to generalize
3. Graphical user interface, text, application, email

   Description automatically generated
4. Then we either plot a graph or do some division to get the best values for the sharpe ratioChart, line chart

   Description automatically generated