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| [Demo Day] Project Outline | 08/28/2019 |
| Created On: 08/11/2019 | **Last Modified: 08/11/2019** |

1. Project Overview
   1. Target Audience:
      1. Amateur/Beginner/Novice Focused on Building Efficient, Long-Term Investment Portfolios
      2. Finance/Business Students Looking for an Introduction into the Basics of Modern Portfolio Theory and Portfolio Management.
   2. Goals & Objective:
      1. Promote financial education and literacy by attempting reduce the learning curve barrier to entry typically associated with investment finance
      2. Increase awareness and bring focus to investment management practices which look to improve an investor’s performance by improving inefficiencies and better managing risk.
      3. Design and build an interactive, web-based, portfolio analytics platform which provide our target audience with the tools and resources to further their understanding and improve their practice of portfolio management.
2. Project Overview - Components:

* Primary: Web-Based Interactive Portfolio Analytics Dashboard
  + The purpose of this dashboard is to provide novice investors with tools, and actionable insights with which can be easily implement to better manage their personal portfolios. It achieves this by providing a risk/return breakdown of the user’s optimized portfolio and compares it’s historic risk-adjusted performance to that of the overall market.
* Secondary: Interactive Educational Learning Resource
  + Simplified, interactive, web visualizations designed to demonstrate, relate and gamefy the core financial concepts which underly the tools used in the portfolio analytics dashboard.

1. Primary: Web-Based Interactive Portfolio Analytics Dashboard
   1. Required Technologies:
      1. Python – Pandas
      2. Python – Numpy
      3. HTML, Bootstrap
      4. CSS
      5. JavaScript – Plotly
      6. JavaScript – D3
   2. Step-by-Step Breakdown
      1. Data Quality,Collection,Aggregation:
         1. Closing price data for each stock within the user’s portfolio
      2. Data Concerns: Validations, Cleaning, Adujustments
         1. Stock Splits/ Reverse Splits – Legal stock price manipulation (without changing the company’s market capitalization) by increasing/reducing the number of outstanding shares on the market.
         2. Stocks w/ Limited Historical Data – Newer Stocks (ie: SnapChat)
      3. Data Calculations:
         1. [Portfolio] Score/Strength
         2. [Portfolio] Expected Return
         3. [Portfolio] Expected Volatility
         4. [Portfolio] Holding Period Return
         5. [Portfolio] Sharpe Ratio
         6. [Portfolio] Beta
         7. [Portfolio] Back-Tested Performance
         8. [Benchmark] Back-Tested Performance
         9. [Benchmark] Historic Volatility
         10. [Benchmark] Historic Return
      4. Data Visualizations:
         1. [Portfolio] Backtested Performance
            1. Type: Line Graph
            2. Interactive Features:

Overlay w/ Benchmark

Hover Over (Date, Closing, %Change)

* + - 1. [Portfolio] Volatility of Historic Returns
         1. Type: Line Graph
         2. Interactive Features: None
      2. [Portfolio] Asset Correlation
         1. Type: Heat Map (-1: Green >> 0: Blue >> 1: Red)
         2. Interactive Features:
      3. [Portfolio] Risk/Return Attribution
         1. Type: Bar Graph
         2. Interactive Features;

Toggle: Return & Risk

Hover Over: Show Associated Values

Conditional Formattting ( LT 0 : Red, GT 0: Green)

* + - 1. [Portfolio] Profile Overview (Attributes)
         1. Type: Radar Chart (Pentagon)
         2. Interactive Features:

Overlay: Market Profile (Attributes)

* + 1. Web Development (HTML, Bootstrap, CSS, JavaScript)
       1. Web Hosting
       2. HTML, Bootstrap, CSS
          1. Design
          2. Layout
          3. Styling
       3. JavaScript
          1. Functionality
          2. Interactivity