

### **Purpose**

Write an app for computing Value at Risk (VaR) for a stock using three common methods and compare their accuracy using back testing.

### **Main Application**

- The program will take input from the user including the name of the stock, a time period and confidence interval etc.
- It will obtain necessary data of the given stock from the internet using Yahoo Finance API.
- VaR will be calculated based on the Historical Method, Variance-Covariance Method, and Monte Carlo Simulation.
- The output will be presented in the form of graphs.

### **Secondary Application**

Comparing the accuracy of the methods using back testing by analysing historical stock quotes.

### **Possible Extensions of the Main Application**

- Using Graphical User Interface for input and output.
- Extending the app to calculate VaR for multiple stocks (possibly using eigen- or Cholesky decomposition).
- Extend to stocks paying dividends, combination of stocks and options, or a portfolio.