

All you code must be commented

Question 1 (scripting language): Using the time series provided, calculate:

- YTD Return
- Total Net Return
- Compounded Annually
- Max Drawdown
- Annualized Sharpe Ratio
- Sortino Ratio
- Omega Ratio
- Annual Volatility
- Downside Deviation
- % Positive Period
- Average Gain
- Average Loss
- Skewness
- Correlation between the time series
- Beta between the time series

Create a graph showing the monthly return of both time series

Bonus question: put the results into a format that could be added to a presentation/factsheet (image or pdf)

Question 2 (scripting language): write a program to calculate the factorial of a number

Question 3: Using an object-oriented language, create a program with the following:

- A class called Cars with variables: colors, make, models and two constructors: a default constructor and one that has color, make and models in its arguments
- Set up the getters/setters for each of the variables
- Create a method to take another car's color
- In the main, create two different cars with different colors, make and model.

Question 4: Draw the class diagram of a chess game

Question 5 (object-oriented language): Using the two times series provided, write a TimeSeries Class which has two methods:

- Date subset: takes two dates in arguments and return a subset TimeSeries between these two dates
- Annualized Return

In the main, load the TimeSeries and use the two methods