ONSOLVE™ Coding Project

The purpose of this coding project is to assess **what you consider to be production-quality code** with a small set of requirements. Please make use of best practices for coding in areas such as design, exception handling, and testing. The solution to the problem should include at least one meaningful unit and integration test each. This is your chance to impress us!

The problem we are solving is to create a naive currency exchange predictor. Given one exchange rate sample each month over a year for two currencies we want to predict the currency exchange for a future rate using a simple linear regression model.

To solve this problem the requirement is to create a command-line application which takes two input parameters for the “from” currency and the “to” currency and outputs a predicted currency exchange rate.

Example usage:

exchangePredict from=USD to=TRY

Example output:

The predicted currency exchange from USD to TRY for 15/1/2017 is 3.263.

Please submit compilable source code as a zip or rar.gz file.

Additional requirements:

1. Calculate the prediction of the exchange rate for 15/1/2017 using 12 sample points, one per month, from the 15th of the month for the period 15/1/2016 through 15/12/2016.
2. Use the following web service to retrieve the exchange rates: https://docs.openexchangerates.org
    a. You can use the historical API to retrieve the dates in the requirements. https://docs.openexchangerates.org/docs/historical-json
3. The solution must include at least one meaningful unit and integration test.

Notes

1. Linear regressions can get complicated, but we are interested in implementing the algorithm as described simply here: https://www.easycalculation.com/statistics/learn-regression.php . Please implement this algorithm as opposed using a library function. *Hint*: *This is a good unit test candidate!*
2. When implementing the algorithm X should be the ordinal value of the month e.g. 1,2,3, etc. and Y should be the the exchange rate between the two currencies for the given month.
3. You can may use any of the following programming languages: C#, Java, Go, Python, PHP, or NodeJS.
4. If you have a question about a requirement make an assumption and document it in your code.

Question

1. How accurate is the predictor? How could we make it more accurate?