Homework 8 - Exchange Rates

PROG 1403 - Java I

How much is it worth?

Summary

For this assignment we will use file IO to calculate current exchange rates.

Specifications

1. Write a program that allows the user to convert an amount of money between UK Pounds and other currencies.
2. The menu should have the following elements -
    a. Allow the user to enter the amount to be converted.
    b. Allow the user to enter the currency type (The user enters the country, like Brazil, etc.)
        i. Make sure you validate the user input.
        ii. Make sure when you display the converted value, you show the original entered value, the calculated value, the exchange rate, and the dates range it is valid.
    c. An option to allow the user to export the data to a csv text file. For example, if the user wants to convert 10-pound sterling then decides to export, the file should contain the amount converted to all available currencies. Prompt the user for the name of the file and write the data in CSV format in the following order:
        i. country code, country, converted amount, the exchange rate, date range it is valid.
3. You can get a CSV file of exchange rates from here -
    a. https://www.gov.uk/government/publications/hmrc-exchange-rates-for-2020-monthly
4. Make sure you use the URL specific to the current month like
    a. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/793045/exrates-monthly-0419.csv
5. Your application should read the file from the web and parse it into a POJO.
6. Consider a Currency Object that you can store in a Set. This object should model data from the file for one currency.
7. Create another class to contain a set of your currency objects
8. Create a class CurrencyDAO to handle reading and writing the file.
9. Make sure you overload all methods as required.
10. Reading a file from the web means creating a URL object and passing it to a Scanner. Once you have the scanner object you can read from the file like you would any text file.

11. Download the file and open it in notepad so you can see the format. However, MAKE SURE your code reads the file from the URL and not a local file.
12. Make sure you display a user-friendly message if the file cannot be loaded.
13. Sample Code:
    a. var url = new URL(CURRENCY_URL);
    b. var input = new Scanner(url.openStream()); // make sure you use your buffers.
14. Do not forget the JavaDoc comments.

Documentation

A text document (.docx, .rtf, .pdf) which contains the following:

- Your name and assignment.
- Screenshots of your code output for three test cases.
- Explain the following, in detail –
    - Why we use a Buffer for IO.
    - What it the JNI
    - Difference between checked, un-checked, and Error exceptions.
    - What methods are required to be overridden to use Objects in Sets? Why?
- Remember to be specific in your responses.

What to Submit

You need to submit your document and your .java files. DO NOT Zip your files.