Graph Programming Assignment

Introduction

arbitrage
: the simultaneous buying and selling of the same negotiables or commodities in different markets in order to make an immediate profit. (Encarta(R) World English Dictionary (C) 1999)

One market where arbitrage can be applied is in the buying and selling of currencies. Dollars can be exchanged for pounds that can be exchanged for pesos that can be exchanged for dollars to end up with more dollars than you started with.

The assignment

Your assignment is to:

1. build a directed weighted graph that represents exchange rates. Each node of the graph represents a currency (such as dollars) and each directed weighted edge represents the exchange rate (the edge weight is what you multiply the from-node by to get the corresponding amount of currency in the to-node).
2. find sequences of trades that will result in a profit. Print out the trades and the resulting profit if $1000 is invested (or 1000 of the currency that you start with).

Input Data

The input data should be read in from a file that has the following format:

- The first line in the file contains an int representing the number of different currencies.
- Each subsequent line represents one exchange with the name of the from-node, the name of the to-node and a real number that shows the exchange rate.

For example, the file might look like the following:

```
4
dollar peso .0412
franc pound 1.731
dollar pound 1.0153
peso franc 14.321
peso dollar 24.8804
pound franc .58793
```

What to hand in

Email me a copy of your program and the output when run against this data file.
Note 1: This file has comments at the top. The data starts after a line of asterisks.
Note 2: Exchange rates provided are from country A to Country B. Assume exchange rates going the other way are the reciprical of the rate provided.

Due: Thursday, 2019.12.05 any time.