Assignment – Super Simple Stock Market

Requirements

1. The Global Beverage Corporation Exchange is a new stock market trading in drinks companies.
    a. Your company is building the object-oriented system to run that trading.
    b. You have been assigned to build part of the core object model for a limited phase 1
2. Provide the complete source code that will:-
    a. For a given stock,
        i. Given any price as input, calculate the dividend yield
        ii. Given any price as input, calculate the P/E Ratio
        iii. Record a trade, with timestamp, quantity, buy or sell indicator and price
        iv. Calculate Volume Weighted Stock Price based on trades in past 5 minutes
    b. Calculate the GBCE All Share Index using the geometric mean of the Volume Weighted Stock Price for all stocks

Constraints & Notes

1. Written in one of these languages - Java, C#, C++, Python
2. The source code should be suitable for forming part of the object model of a production application, and can be proven to meet the requirements. A shell script is not an appropriate submission for this assignment.
3. No database, GUI or I/O is required, all data need only be held in memory
4. No prior knowledge of stock markets or trading is required – all formulas are provided below.
5. The code should provide only the functionality requested, however it must be production quality.

Table1. Sample data from the Global Beverage Corporation Exchange

Stock Symbol	Type	Last Dividend	Fixed Dividend	Par Value
TEA	Common	0		100
POP	Common	8		100
ALE	Common	23		60
GIN	Preferred	8	2%	100
JOE	Common	13		250

All number values in pennies

Table 2. Formula

	Common	Preferred
Dividend Yield	$\frac{Last\ Dividend}{Price}$	$\frac{Fixed\ Dividend\ .\ Par\ Value}{Price}$
P/E Ratio	$\frac{Price}{Dividend}$	
Geometric Mean	$\sqrt[n]{p_1 p_2 p_3 \cdots p_n}$	
Volume Weighted Stock Price	$\frac{\sum_i Traded\ Price_i \times Quantity_i}{\sum_i Quantity_i}$	

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