Assignment – Super Simple Stocks

Requirements
1. Provide working source code that will :-
    a. For a given stock,
        i. calculate the dividend yield
        ii. calculate the P/E Ratio
        iii. record a trade, with timestamp, quantity of shares, buy or sell indicator and price
        iv. Calculate Stock Price based on trades recorded in past 15 minutes
    b. Calculate the GBCE All Share Index using the geometric mean of prices for all stocks

Constraints & Notes
1. Written in one of these languages:
    - Java, C#, C++, Python
2. No database or GUI is required, all data need only be held in memory
3. Formulas and data provided are simplified representations for the purpose of this exercise

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	$\dfrac{Last\ Dividend}{Ticker\ Price}$	$\dfrac{\left(Fixed\ Dividend\,.\,Par\ Value\right)}{Ticker\ Price}$
P/E Ratio	$\dfrac{Ticker\ Price}{Dividend}$	
Geometric Mean	$\sqrt[n]{p_1 p_2 p_3 \cdots p_n}$	
Stock Price	$\dfrac{\sum_i Trade\ Price_i \times Quantity_i}{\sum_i Quantity_i}$	