

Example Assignment – Super Simple Stock Market

Requirements

1. Provide working 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 of shares, buy or sell indicator and traded price
 - iv. Calculate Volume Weighted Stock Price based on trades 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. No prior knowledge of stock markets or trading is required – all formulas are provided below.

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	$\frac{\text{Last Dividend}}{\text{Price}}$	$\frac{\text{Fixed Dividend} \cdot \text{Par Value}}{\text{Price}}$
P/E Ratio		$\frac{\text{Price}}{\text{Dividend}}$
Geometric Mean		$\sqrt[n]{p_1 p_2 p_3 \dots p_n}$
Volume Weighted Stock Price	$\frac{\sum_i \text{Traded Price}_i \times \text{Quantity}_i}{\sum_i \text{Quantity}_i}$	