

Top Stocks

Introduction

Implement a class that notifies a customer of top gainers/top losers on the stock market. The class will get prices for different stocks. Your task is to calculate price changes for stocks considering first received price of each stock as base. User of your class is interested only in top stocks - 10 stocks with biggest price changes and 10 stocks with smallest price changes. Every time when a newly arrived price affects on one of these lists you should raise an appropriate notification with updated data.

Requirements

- Each price you get is a pair of stock id (integer) and price (double). Your class must have OnQuote(int stock_id, double price) method which will be called every time when a new price arrives.
- Consider first received price for each stock as base. For example, you have got the following prices for one stock: 100.0 102.5 101.4 99.8 ...
100.0 is a base price for the current session, you can calculate price changes since the second price +2.5% +1.4% -0.2% ...
- Raise a notification about changes in the top lists every time when new stocks come to the top or current order is changed.
- There should be 2 different notification - top gainers changed and top losers changed, each of them should provide updated lists of stocks in correct order.
- Amount of different stocks can be up to 10000.
- Consider performance - amount of prices that you can process per second is critical.

Example

Top gainers

Stock id	First price	Last price	Change
34	634.12	697.20	+9.95%
235	23.87	25.60	+7.25%
9722	53.10	56.90	+7.16%
482	0.54	0.55	+1.85%
...			

Top losers

Stock id	First price	Last price	Change
523	324.90	287.2	-11.60%
1093	83.55	76.5	-8.44%
618	1.35	1.28	-5.19%
208	5.66	5.55	-1.94%
...			