

TOKENIZE DEVELOPER TEST

Goal: Create a simple webpage that simulates order book from a real exchange via their public API for a specific market (BTC-ETH in this test).

You can choose to work with any of the below exchanges' trading data feeds.

References:

- Bittrex: <https://bittrex.github.io/api/v3>
- Binance: <https://github.com/binance/binance-spot-api-docs/blob/master/rest-api.md>
- Bitfinex: <https://docs.bitfinex.com/docs/introduction>

Part 1:

- First, you need to choose an appropriate API endpoint to get the highest buying price (best bid) and lowest selling price (best ask).
- Next, let's generate the order book (consists of two lists of pending orders) based on those two above prices, with following rules:
 - o Bid list: the first order is the best bid, every next order has a price less than its previously adjacent one.
 - o Ask list: the first order is the best ask, every next order has a price greater than its previously adjacent one.
 - o All order sizes must be randomized
 - o All order prices must be randomized (except the best bid and best ask price which have been fetched from the referenced exchange API)

Example:

Size	Bid	Ask	Size
7.99999999	0.03435221	0.03444985	9.56866162
8.00	0.0343522	0.03444986	5.81639636
5.507	0.03435219	0.03444987	3.75
5.00	0.03434293	0.03444988	5.81764483
2.4313	0.03434291	0.03444989	4.36262169
2.2507533	0.03433927	0.0344499	7.27057795
0.845	0.0343301	0.03444991	3.21769273
5.00	0.03433009	0.03444992	5.507
5.81350231	0.03433008	0.03445341	2.90771424
0.04706844	0.03433006	0.03446027	5.00
2.55910664	0.03432612	0.03446208	4.39999993
0.46440954	0.03432532	0.03447421	0.01284921

In this case, **0.03435221** is the best bid and **0.03444985** is the best ask at that

moment. All of the prices and sizes behind in the bid/ask list are generated randomly by your backend, you can choose any algorithm to generate the list as many as you want. And it should be sorted with the appropriate direction.

Part 2:

- After finishing part 1, now you have 2 lists of bid and ask orders whose prices are referenced from a real exchange (Bittrex, Binance or Bitfinex). Exchange prices will keep moving all the time. Your task is to keep the best bid/ask price up-to-date to the referenced exchange price at least per 30 seconds. The generated order lists must also be updated accordingly.
- Assume that there is a constraint while generating the order lists:
 - o For the bid list: The sum of (size * price) must always be less than 5.
 - o For the ask list: The sum of size must be always less than 150.

Please show these values at the bottom of each list, respectively. And make sure your algorithm conforms to the constraint while generating these lists.

- Bonus points:
 - o Using a real-time protocol for subscribing best bid/ask price from the referenced exchange and updating your backend order lists (instead of polling).
 - o Using a real-time protocol for sending order list updates from your backend to frontend side (instead of polling).

After finishing the test, you must deploy it anywhere on the internet and provide us with the URL of your final product. Besides, please push your source code to Github and send us accessible repo links.

Thank you for your interest in Tokenize. It's a small test to prove your ability. Feel free to contact us if you need any clarification or have any other questions when doing the test.