Mini Stock Exchange

Mini **stock exchange** is an exchange where traders can buy and sell stocks. Example of stocks are RELIANCE,YESBANK,MAJESCO,INFY etc

## Trader Registration

* 1. API to Add/Update/Delete traders to exchange
     1. Each member will be assigned with a unique member code.
     2. Using this code members can put orders to exchange
     3. Request Structure

|  |  |  |
| --- | --- | --- |
| **Name** | **Type** | **Description** |
| traderName | String | Name of the trader |
| contactNumber | String | Mobile Number |
| address | String | Address of the trader |

* + 1. Response Structure

|  |  |  |
| --- | --- | --- |
| **Name** | **Type** | **Description** |
| traderCode | String | Unique Code for trader |

## Market Management

* 1. API to place Order
     1. Order Request Structure

|  |  |  |
| --- | --- | --- |
| **Name** | **Type** | **Description** |
| orderId | Long | Unique identifier for each Order |
| price | double | Price of stock |
| orderType | Enum(Buy/Sell) | Buy a stock or Sell a stock |
| qty | Long | Qty of stock ordered |
| stockId | Long | Unique Identifier for each stock |

* 1. API to delete Order
     1. Order Delete Structure

|  |  |  |
| --- | --- | --- |
| **Name** | **Type** | **Description** |
| orderId | Long | Unique identifier for each Order |
| orderIdToDelete | Long | Order id of the placed order to delete |

* 1. API to modify Order
     1. Order Modify Structure

|  |  |  |
| --- | --- | --- |
| **Name** | **Type** | **Description** |
| orderId | Long | Unique identifier for each Order |
| orderIdToModify | Long | Order id of the placed order to modify |
| qty | Long | Modified qty |
| price | Long | Modified price |

## Matching Engine (Core Java , Multithreading, Java Collections, Sorting )

* + 1. Engine to accept order
    2. Keep all Order internally as Order Book
    3. Each stockId have separate Order Book
    4. Order Book has two sides
       1. Buy Side and Sell Side
       2. All Buy Order against a stock is kept in Buy Side of the Book
       3. All Sell Order against a stock is kept in Sell Side of the Book
       4. Buy Book is sorted based on descending order of price
       5. Sell Book is sorted based on ascending order of price
       6. When an Order reaches exchange, matching engine should match the order in in book and update accordingly.
       7. When a matching is found with buy and sell order in book, a trade message should be broadcast via broadcast feature given below.