

# Assignment 1 - Order Matching Program

Input is provided in this format:

```
type,from,stock,qnt,price
```

Compile Main.java file using this command. It will compile all dependent classes:

```
javac Main.java
```

Execute the program using this command:

```
java Main
```

Sample input can be provided with the input file like this:

```
java Main < input
```

## Design

There are 6 classes defined in this code.

### Order class

This class contains common attributes and methods across buy and sell orders. This was done to avoid redundancy.

### BuyOrder class

It inherits from Order class.

### SellOrder class

It also inherits from the Order class.

### Customer class

This class currently contains one variable for customer id. In future, if more details about customer needs to be stored, it can be easily extended for that.

### Stock class

This class contains one variable for stock name.

## OrderMatching class

This class implements the logic for the program. It maintains two queues for orders of type buy and sell. It finds matched buy orders for a sell order and vice versa, if trade is possible. It implements several methods for validating the input and find matched orders.

# Algorithm

The program currently maintains two linked lists - one for orders of type buy, and one for orders of type sell. Pending orders are stored in these linked lists in chronological order. It finds the matches for an order through a linear scan and removes matched orders or modifies a partially matched order. If trade is possible, matched orders are return to Main class and displayed to the user.

# JUnit Tests

JUnit tests for a class is provided in file with same class name appended with "Test". For example, tests for OrderMatching class is in OrderMatchingTest class.

# Java version

Java version

```
openjdk version "1.8.0_141"  
OpenJDK Runtime Environment (build 1.8.0_141-8u141-b15-3-b15)  
OpenJDK 64-Bit Server VM (build 25.141-b15, mixed mode)
```

Java compiler version

```
javac 1.8.0_141
```