

Q1 | We model the orderbook as follows (Obviously it can be made in different ways):

In my model, in any other the number of share is between 20 and 200.

Also; the price for the limit orders are limited to  $\{91, 92, \dots, 114\}$

The probability for each order is  $\frac{1}{4}$  buy-market, sell-market, buy-limit, sell-limit

In each order we have uniform distribution for the number of shares (and prices for limit orders)

Example  $\text{Prob}(\text{buy-market}(i)) = \frac{1}{4} \cdot \frac{1}{180}$

We modeled it and implemented it, one can set the number of rounds and we display the order book.

$$\text{Prob}(\text{buy-limit}(i,j)) = \frac{1}{4} \cdot \frac{1}{180} \cdot \frac{1}{24} \xrightarrow{[91, 114]} \xrightarrow{[20, 200]}$$

Q2 | I implemented the code