SingleBook

- SingleBook is a limit order market for US stocks.
- It is Nasdaq’s principal vehicle for trading Nasdaq-listed stocks (such as INTC, MSFT, etc.)
- The system accepts priced limit orders.
- Orders that can’t be executed immediately are (usually) added to the book.
- The dynamics of the market are described by messages that may be processed in real time (or analyzed off-line).
A Java program that reads the SingleBook message file for a stock and shows how the market evolved over a day.

The market “movie” can be played forward or backward, continuously or single-step.

The program can be downloaded at www.pages.stern.nyu.edu/~jhasbrou.

It is preloaded with a day’s worth of data for one representative stock.

The initial message is a summary of the day’s market activity.
The book panel at 9:29:14.082 AM

- Bids (unexecuted orders to buy) are in blue, arranged from low prices (bottom of the screen) to higher prices.
  - The best bid is $51.29/share for 200 shares.
- Offers (asks, unexecuted orders to sell) are in red, arranged from high prices (top of the screen) to lower prices.
  - The best ask is $52.32/share for 100 shares.
- In black, bracketed, between the best (highest) bid and the best (lowest) ask is the spread.
  - The spread is 52.32 – 51.29 = 1.03.
- Note: to navigate to this screen, hit (Go to) Msg# and enter “146”
The state of the book and book transitions.

- The state of the book is completely specified by the unexecuted orders that it contains.
- The book changes when orders are
  - submitted (added to the book)
  - cancelled (removed from the book)
  - executed
- To help see which order or part of the book is changing, B/View tags the last order to submitted, cancelled or executed.
- If we “Frame Forward” (single step) from the last screen, we get ...
A new limit order is added ...

... a more aggressive sell order is added
A cancellation of a buy order ...

Note that the cancelled order is not considered eligible for “best bid”. The spread is 52.21 – 51.29 = 0.92
An execution ...

The most recent execution is placed at the top of the stack.
Hidden orders

- A trader who submits a limit order can decide whether or not it is to be displayed (the default) or hidden.
- A hidden order is held in the book and is available to be executed.
- We can only see them when they are executed.
- For orders at the same price, displayed orders have priority over hidden orders.
- In the SingleBook message stream, executions against hidden orders are reported.
- B/View shows where the hidden orders were in the book.
- Next slide: an execution against a hidden order.

The setup for a hidden execution

After message #477 is processed, the best offer in the book is 100 shares at 51.68.
An execution occurs at 51.63. We infer that there was a hidden limit order.

Grouped executions

- An incoming marketable order may execute against multiple standing orders.
- Next slide
  - A sell order arrives for 200 shares priced at 52.05
  - It executes against two 100 share buy orders.
  - This results in two execution messages.
- B/View groups executions that appear to have been caused by one incoming order.
Here’s a more complicated execution, involving a hidden order, and a partial execution of a displayed order.