Here is a worked example to show how updates to the portfolio is recorded.  
  
Suppose you start off with an empty portfolio stored on the server side.

|  |  |  |
| --- | --- | --- |
| Stock | Quantity | Price |
|  |  |  |
|  |  |  |

When the user inputs

Stock symbol: AAPL

Quantity: 100

Price: 120

The portfolio is updated as follows:

|  |  |  |
| --- | --- | --- |
| Stock | Quantity | Price |
| AAPL | 100 | 120 |
|  |  |  |

Now if the user buys 50 more shares of AAPL at $140 per share, she will enter the following input in the browser

Stock symbol: AAPL

Quantity: 50

Price: 140

The purchase price of each share held by the user is calculated as follows: (100\*120 + 50\*140)/150 = 126.67  
The portfolio on the server will be updated as follows.

|  |  |  |
| --- | --- | --- |
| Stock | Quantity | Price |
| AAPL | 150 | 126.67 |
|  |  |  |

Suppose now the users reduces their position in AAPL by 75 shares:

Stock symbol: AAPL

Quantity: -75

Note when the quantity is negative, the purchase price is not applicable because she is selling the shares.  
The portfolio is updated as follows: 

|  |  |  |
| --- | --- | --- |
| Stock | Quantity | Price |
| AAPL | 75 | 126.67 |
|  |  |  |

The user should not be allowed to sell more shares than they own (i.e. short selling).  If the user attempts it they should be given an error message, and the portfolio should not get updated. 

Stock symbol: AAPL

Quantity: -100

<error short selling not allowed>

|  |  |  |
| --- | --- | --- |
| Stock | Quantity | Price |
| AAPL | 75 | 126.67 |
|  |  |  |

If the user sells all the shares they hold, then the corresponding position should be removed.

Stock symbol: AAPL

Quantity: -75

|  |  |  |
| --- | --- | --- |
| Stock | Quantity | Price |
|  |  |  |
|  |  |  |

Note: the gain/loss column is computed on the fly based on the current quote. There is no need to store gain/loss field on the server.