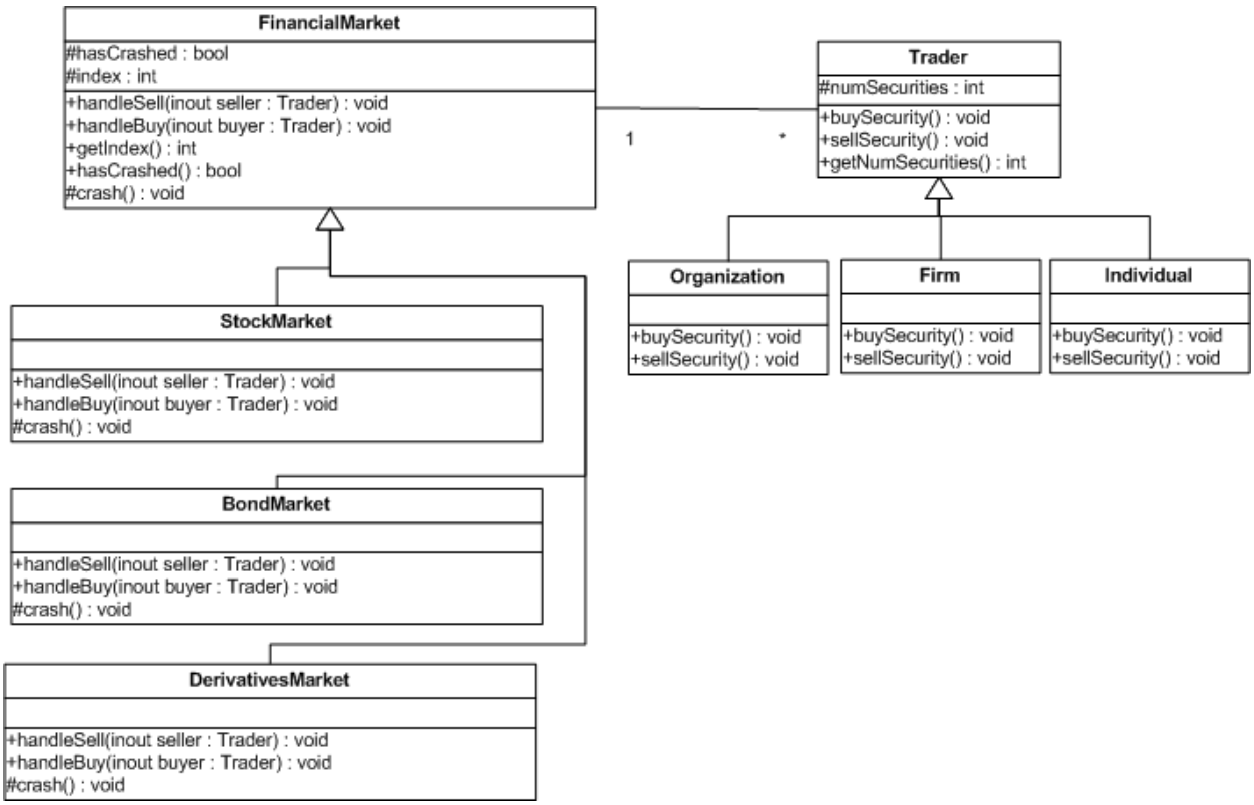
Question 3 (ii)

(a) For this example, we've decided to model the world's financial markets and traders. An example of this is the Toronto Stock Exchange (TSX) and all the traders that buy and sell stock in this market.

Although these markets are extremely complicated and beyond our current understanding, we've noticed that most people or organizations who have invested in them monitor them very closely and desire to receive updates as soon as possible.

Because of this, we've decided to apply the **Observer** design pattern, that way the markets can automatically update all of its **traders** (such as individuals, companies or organizations) who may hold **securities** (such as shares in the stock market example).

The following is a UML diagram represents the basic idea that may be implemented without the observer pattern. The Traders essentially hold links to a market, which communicate back to a variable amount of traders who are involved. Traders can buy or sell securities, and the stock market handles these, possibly crashing if too many things are sold without being bought. Traders need to manually query the market for their current index or to see if they have crashed. Therefore there isn't really an effective way for the market to update the traders.



(b) The following UML diagram displays and highlights the reviewed design including the design pattern, where the new components are highlighted in green. This provides a convenient way for any Financial Market to update all of its Trader listeners, who now all override update accordingly.