1 - Interactions:

- The UML sequence diagram shows the method calls between classes
- The UML class diagram shows the relationships between classes. Below mentioned is a description of the symbols used in the class diagram -
    - Class A has instances variables of type B: [A] <>--------- [B]
    - Class B extends or implements interface/class A: [A] <I---------- [B]
    - Class B uses (e.g. as local variable) class A: [A]<---------- [B]

2- What we need to store

- Processor ids
- Vector clocks for each event
- Sender Process in “send” method of algorithm and pass it to “sendmessagetomybuffer” method of the receiver buffer

4- What needs to change

- Vector clocks of each process should change upon -
    - executing its own computation
    - sending message to another process
    - receiving a message from another process

5. What will be the input? [The input will be different each time, user should have the ability to control input and get different results]

- Execution plan for each processor in the form of a text file that would be parsed by the program. The user can change the contents in the text file to provide a different input to the program.

6. What should be the output

- The event vector timestamp corresponding to each event of each processor -

Example:

Processor	Event Type	TimeStamp
Processor p0:	C	1,0
	C	2,0
	C	3,0
	S	4,0
	C	5,0
	R	6,7
Processor p1		
	C	0,1
	C	0,2
	C	0,3
	R	4,4
	C	4,5
	C	4,6
	S	4,7

7- Decide which event happened Before, which event is concurrent.

- The compareTo method in the vectorClock class compares the values of the vector timestamps of two processes a and b; and executes the following logic in order to decide if the events are concurrent or not -

equal	ta = tb	**for all i, ta[i] = tb[i]**
not equal	ta != tb	**for some i, ta[i] != tb[i]**
less than or equal	ta <= tb	**for all i, ta[i] <= tb[i]**
not less than or equal	ta !<= tb	**for some i, ta[i] !<= tb[i]**
less than	ta < tb	**ta[i] <= tb[i] AND ta[i] != tb[i]**
not less than	ta !< tb	**!(ta[i] <= tb[i] AND ta[i] != tb[i])**
concurrent	ta || tb	**ta[i] !< tb[i] AND tb[i] !< tb[i]**

(image source - http://courses.cs.vt.edu/~cs5204/fall00/vector_clocks.html)