

```
1 import java.util.Iterator;
2 import java.util.LinkedList;
3
4 public class User implements Iterable<MessageMomento>{
5     private final ChatServer server;
6     private final String username;
7     private LinkedList<Message> percievedChat;
8     private ChatHistory chatHistory;
9
10    public User (String givenUsername)
11    {
12        this.username = givenUsername;
13        this.server = ChatServer.getChatServerInstance();
14        percievedChat = new LinkedList<>();
15        this.chatHistory = new ChatHistory();
16    }
17
18    public void writeToChat(String givenMessage, User[] givenRecipients)
19    {
20        server.write(new Message(this.username, givenMessage, givenRecipients, "123"));
21    }
22
23    public String getUsername()
24    {
25        return this.username;
26    }
27
28    public void requestUndoLastMessage()
29    {
30        server.sendUndoRequest(this);
31    }
32
33    public void processUndoLastMessage(User userToUndoMessage)
34    {
35        for(MessageMomento momento : this.chatHistory.getWholeHistory())
36        {
37            if(momento.getChatVersion().getSender() == userToUndoMessage.getUsername())
38            {
39                this.chatHistory.getWholeHistory().remove(momento);
40            }
41        }
42
43        for(Message message : this.percievedChat)
44        {
45            if(message.getSender() == userToUndoMessage.getUsername()) {
46                this.percievedChat.remove(message);
47            }
48        }
49    }
50
51    public void updatePercievedChat(Message givenMessage)
52
53    {
```

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54     this.percievedChat.addLast(givenMessage);
55     chatHistory.addToHistory(givenMessage);
56 }
57
58 public void printPercievedChat()
59 {
60     System.out.println(this.username + " sees: ");
61     for (Message message : this.percievedChat)
62     {
63         System.out.println("Timestamp [" + message.getTimestamp() + "] " +
64             message.getSender() + ": " + message.getText());
65     }
66 }
67
68 @Override
69 public Iterator<MessageMomento> iterator() {
70     return new SearchMessagesByUser(this.chatHistory.getWholeHistory());
71 }
72
73 class ChatHistory {
74     LinkedList<MessageMomento> history;
75
76     public ChatHistory()
77     {
78         this.history = new LinkedList<>();
79     }
80
81     public void addToHistory(Message message)
82     {
83         history.addFirst(new MessageMomento(message));
84     }
85
86     public LinkedList<MessageMomento> getWholeHistory()
87     {
88         return this.history;
89     }
90
91     public MessageMomento getPriorHistory()
92     {
93         return history.pop();
94     }
95 }
96
97 }

```