

```
1 import org.junit.jupiter.api.Test;
2
3 import java.util.Iterator;
4 import java.util.LinkedList;
5
6 import static org.junit.jupiter.api.Assertions.*;
7
8 class UserTest {
9     @Test
10     void processUndoLastMessage() {
11         User testUser = new User("testUser");
12
13         Message message1 = new Message("sender1", "Hello", new User[]{testUser}, "123");
14         Message message2 = new Message("sender1", "Hi", new User[]{testUser}, "456");
15
16         testUser.updatePercievedChat(message1);
17         testUser.updatePercievedChat(message2);
18
19         int initialPerceivedChatSize = testUser.getPercievedChat().size();
20         int initialChatHistorySize = testUser.getChatHistory().getWholeHistory().size();
21
22         testUser.processUndoLastMessage(new User("sender1"));
23
24         assertEquals(initialPerceivedChatSize - 1, testUser.getPercievedChat().size());
25
26         assertEquals(initialChatHistorySize - 1, testUser.getChatHistory().getWholeHistory().size());
27     }
28
29     @Test
30     void updatePercievedChat() {
31         User testUser = new User("testUser");
32
33         Message testMessage = new Message("sender1", "Hello", new User[]{testUser}, "123");
34
35         testUser.updatePercievedChat(testMessage);
36
37         LinkedList<Message> perceivedChat = testUser.getPercievedChat();
38         assertNotNull(perceivedChat);
39         assertEquals(1, perceivedChat.size());
40         assertTrue(perceivedChat.contains(testMessage));
41
42         LinkedList<MessageMomento> chatHistory = testUser.getChatHistory().getWholeHistory();
43         assertNotNull(chatHistory);
44         assertEquals(1, chatHistory.size());
45         assertEquals(chatHistory.getFirst().getChatVersion(), testMessage);
46     }
47
48     @Test
49     void iterator() {
50         User testUser = new User("testUser");
51
52         Message message1 = new Message("sender1", "Hello", new User[]{testUser}, "123");
53         Message message2 = new Message("sender2", "Hi", new User[]{testUser}, "456");
54     }
```

```
54
55     testUser.updatePercievedChat(message1);
56     testUser.updatePercievedChat(message2);
57
58     Iterator<MessageMomento> iterator = testUser.iterator();
59
60     assertNotNull(iterator);
61
62     assertTrue(iterator.hasNext());
63     MessageMomento momento1 = iterator.next();
64     assertEquals(message2, momento1.getChatVersion());
65
66     assertTrue(iterator.hasNext());
67     MessageMomento momento2 = iterator.next();
68     assertEquals(message1, momento2.getChatVersion());
69
70     assertFalse(iterator.hasNext());
71 }
72 }
```