

COS126 Linked List Activity - Web Exercise 4.3.1 (Rec. BookEx 4.3.23, 25, 26, 27)

- Complete the class `Quote.java` for a null terminated list.

```

10: public class Quote {
11:
12:     // the first card in null-terminated linked list
13:     private Card start;
14:
15:     // helper linked-list data type
16:     private class Card {
17:         private String word;
18:         private Card next;
19:
20:         public Card(String word) {
21:             this.word = word;
22:             this.next = null;
23:         }
24:     }
25:
26:     // constructor - create an empty quote
27:     public Quote() {
28:         start = null;
29:     }
30:
31:     // add the word w to the end of the quote
32:     public void addWord(String w) {
33:         Card newWord = new Card(w);
34:
35:         // degenerate case when w is first word
36:         if (start == null) start = newWord;
37:
38:         // otherwise, traverse list until card points to last word
39:         else {
40:             Card card = start;
41:             while(card.next != null) {
42:                 card = _____;
43:             }
44:
45:             // add card for new word to end of list
46:             _____ = newWord;
47:         }
48:     }
49:
50:     // number of words in the quote
51:     public int count() {
52:         int total = 0;
53:         for (Card card = start; _____; _____)
54:             total++;
55:         return total;
56:     }

```

```

58: // return the ith word where i = 1 is first word in quote
59: public String getWord(int i) {
60:     // check for less than i words in quote or invalid index
61:     if (count() < i || i <= 0) {
62:         throw new RuntimeException("index out of bounds");
63:     }
64:
65:     Card card = start;
66:     for (int count = 1; _____; _____)
67:         card = card.next;
68:     return _____;
69: }
70:
71: // insert w after the ith word, where i = 1 is the first word
72: public void insertWord(int i, String w) {
73:     // check for less than i words in quote or invalid index
74:     if (count() < i || i <= 0)
75:         throw new RuntimeException("index out of bounds");
76:
77:     // make Card for the new word, place it after the ith card
78:     Card newWord = _____
79:     Card card = start;
80:     for (int j = 1; j < i; j++) {card = card.next; }
81:     _____
82:     _____
83: }
84:
85: // string representation of the quote
86: public String toString(){
87:     String s = "";
88:     for (Card card = start; card != null; card = card.next)
89:         s = s + card.word + " ";
90:     return s;
91: }
92:
93: public static void main(String[] args) {
94:     Quote q = new Quote();
95:     q.addWord("A");
96:     q.addWord('‘rose’');
97:     q.addWord('‘is’');
98:     q.addWord('‘a’');
99:     q.addWord('‘rose.’');
100:    System.out.println(q);
101:    System.out.println(q.count());
102:    System.out.println(q.getWord(2));
103:    q.insertWord(3, '‘just’');
104:    System.out.println(q);
105:    System.out.println(q.count());
106: }
107: }

```