

```

1
2 import components.queue.QueueSecondary;
5
6 /**
7  * {@code Queue} represented as a {@code Sequence} of entries, with
8  * implementations of primary methods.
9  *
10 * @param <T> type of {@code Queue} entries
11 * @correspondence this = $this.entries
12 */
13 public abstract class Queue3<T> extends QueueSecondary<T> {
14
15     /**
16      * Private members -----
17      */
18
19     /**
20      * Entries included in {@code this}.
21      */
22     private Sequence<T> entries;
23
24     /**
25      * Creator of initial representation.
26      */
27     private void createNewRep() {
28         this.entries = new SequenceLL<T>();
29     }
30
31     /**
32      * Constructors -----
33      */
34
35     /**
36      * No-argument constructor.
37      */
38     public Queue3() {
39         this.createNewRep();
40     }
41
42     /**
43      * Standard methods removed to reduce clutter...
44      */
45
46     /**
47      * Kernel methods -----
48      */
49
50     @Override
51     public final void enqueue(T x) {
52         assert x != null : "Violation of: x is not null";
53
54         this.enqueue(x);
55     }
56
57     @Override
58     public final T dequeue() {
59         assert this.length() > 0 : "Violation of: this /= <>";
60     }
61

```

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62         T removed = this.dequeue();
63
64         return removed;
65     }
66
67     @Override
68     public final int length() {
69
70         // This line added just to make the component compilable.
71         return this.length();
72     }
73
74     /**
75      * Reports the front of {@code this}.
76      *
77      * @return the front entry of {@code this}
78      * @aliases reference returned by {@code front}
79      * @requires this != <>
80      * @ensures <front> is prefix of this
81      */
82     @Override
83     public T front() {
84         assert this.length() > 0 : "Violation of: this != <>";
85
86         T front = this.dequeue();
87         T temp = front;
88
89         for (int idx = 0; idx <= this.length(); idx++) {
90             this.enqueue(temp);
91             temp = this.dequeue();
92         }
93
94         return front;
95     }
96
97     /**
98      * Iterator removed to reduce clutter...
99      */
100
101 }
```