```
 1
 2 import components.queue.Queue;
 4
 5 /**
 6  * First-in-first-out (FIFO) queue kernel component with primary methods. (Note:
 7  * by package-wide convention, all references are non-null.)
 8  *
 9  * @param <T>
10  *            type of {@code QueueKernel} entries
11  * @mathmodel type QueueKernel is modeled by string of T
12  * @initially <pre>
13  * ():
14  *  ensures
15  *    this = <>
16  * </pre>
17  * @iterator ~this.seen * ~this.unseen = this
18  */
19 public interface WaitingLineKernel<T> extends Standard<Queue<T>>, Iterable<T> {
20
21     /**
22      * Adds {@code x} to the end of {@code this}.
23      *
24      * @param x
25      *            the entry to be added
26      * @aliases reference {@code x}
27      * @updates this
28      * @ensures this = #this * <x>
29      */
30     void enqueue(T x);
31
32     /**
33      * Removes and returns the entry at the front of {@code this}.
34      *
35      * @return the entry removed
36      * @updates this
37      * @requires this /= <>
38      * @ensures #this = <dequeue> * this
39      */
40     T dequeue();
41
42     /**
43      * Removes and returns the entry at the front of {@code this}.
44      *
45      * @param x
46      *            the entry to be removed
47      * @return the entry removed
48      * @updates this
49      * @requires this /= includes <x>
50      * @ensures #this = <x> * this
51      */
52     T remove(T x);
53
54     /**
55      * Reports length of {@code this}.
56      *
57      * @return the length of {@code this}
58      * @ensures length = |this|
59      */
60     int length();
```

```
61
62 }
63
```