```
1  public class Semaphore {
2    final int capacity;
3    int state;
4    Lock lock;
5    Condition condition;
6    public Semaphore(int c) {
7      capacity = c;
8      state = 0;
9      lock = new ReentrantLock();
10     condition = lock.newCondition();
11   }
12   public void acquire() {
13     lock.lock();
14     try {
15       while (state == capacity) {
16         condition.await();
17       }
18       state++;
19     } finally {
20       lock.unlock();
21     }
22   }
23   public void release() {
24     lock.lock();
25     try {
26       state--;
27       condition.signalAll();
28     } finally {
29       lock.unlock();
30     }
31   }
32 }
```

FIGURE 8.12 Semaphore implementation.