```
 1: // $Id: synchclick.java,v 1.1 2018-05-17 16:01:36-07 - - $
 2:
 3: //
 4: // Synchronized clicking of a counter.
 5: // When one thread enters counter, the other must wait.
 6: //
 7:
 8: import java.text.DecimalFormat;
 9: import static java.lang.System.*;
10:
11: class synchclick {
12:
13:    static final long CYCLES = (long) 1e8;
14:    static DecimalFormat formatter = new DecimalFormat ("#,###");
15:
16:    static class counter {
17:       int count = 0;
18:       synchronized void click() {
19:          ++count;
20:       }
21:    }
22:    static counter count = new counter();
23:
24:
25:    static class synchr implements Runnable {
26:       int ident;
27:       synchr (int idinit) {
28:          ident = idinit;
29:       }
30:       public void run() {
31:          out.printf ("racer %d starting, count = %12s%n",
32:                      ident, formatter.format (count.count));
33:          out.flush();
34:          for (int itor = 0; itor < CYCLES; ++itor) count.click();
35:          out.printf ("racer %d finished, count = %12s%n",
36:                      ident, formatter.format (count.count));
37:          out.flush();
38:       }
39:    }
40:
41:    public static void main (String[] args) {
42:       out.printf ("main starting, count =    %12s, CYCLES = %s%n",
43:                   formatter.format (count.count),
44:                   formatter.format (CYCLES));
45:       out.flush();
46:       Thread[] threads = new Thread[4];
47:       for (int index = 0; index < threads.length; ++index) {
48:          threads[index] = new Thread (new synchr (index));
49:          threads[index].start();
50:       }
51:       out.printf ("main finished, count =    %12s%n",
52:                   formatter.format (count.count));
53:       out.flush();
54:    }
55:
56: }
57:
```

```
58:
59: //TEST// alias TIME='/usr/bin/time -f "%E elapsed, %S kernel, %U user"'
60: //TEST// for i in 1 2 3 4
61: //TEST// do
62: //TEST//    TIME synchclick >synchclick.out$i 2>&1
63: //TEST// done
64: //TEST// more synchclick.out? >synchclick.out </dev/null
65: //TEST// rm synchclick.out?
66: //TEST// mkpspdf synchclick.ps synchclick.java* synchclick.out
67:
```

```
    1: @@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@ mkc: starting synchclick.java
    2: synchclick.java:
    3:      $Id: synchclick.java,v 1.1 2018-05-17 16:01:36-07 - - $
    4: javac -Xlint synchclick.java
    5: jar cfm synchclick Manifest synchclick$counter.class synchclick$synchr.c
lass synchclick.class
    6: chmod +x synchclick
    7: rm -f synchclick$counter.class synchclick$synchr.class synchclick.class
    8: @@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@ mkc: finished synchclick.java
```

```
 1: ::::::::::::::
 2: synchclick.out1
 3: ::::::::::::::
 4: main starting, count =               0, CYCLES = 100,000,000
 5: racer 0 starting, count =            0
 6: racer 1 starting, count =            0
 7: main finished, count =               0
 8: racer 3 starting, count =       72,407
 9: racer 2 starting, count =      119,012
10: racer 2 finished, count =  375,201,874
11: racer 1 finished, count =  394,263,834
12: racer 3 finished, count =  399,879,351
13: racer 0 finished, count =  400,000,000
14: 0:09.30 elapsed, 0.26 kernel, 9.58 user
15: ::::::::::::::
16: synchclick.out2
17: ::::::::::::::
18: main starting, count =               0, CYCLES = 100,000,000
19: racer 0 starting, count =            0
20: main finished, count =               0
21: racer 1 starting, count =            0
22: racer 3 starting, count =       82,214
23: racer 2 starting, count =       85,499
24: racer 1 finished, count =  368,204,715
25: racer 3 finished, count =  392,732,081
26: racer 0 finished, count =  394,254,037
27: racer 2 finished, count =  400,000,000
28: 0:09.16 elapsed, 0.13 kernel, 9.35 user
29: ::::::::::::::
30: synchclick.out3
31: ::::::::::::::
32: main starting, count =               0, CYCLES = 100,000,000
33: racer 0 starting, count =            0
34: racer 1 starting, count =            0
35: racer 2 starting, count =          908
36: main finished, count =         171,275
37: racer 3 starting, count =      216,528
38: racer 0 finished, count =  377,803,229
39: racer 1 finished, count =  389,390,539
40: racer 3 finished, count =  396,441,174
41: racer 2 finished, count =  400,000,000
42: 0:09.39 elapsed, 0.25 kernel, 9.56 user
43: ::::::::::::::
44: synchclick.out4
45: ::::::::::::::
46: main starting, count =               0, CYCLES = 100,000,000
47: racer 0 starting, count =            0
48: racer 2 starting, count =        2,491
49: racer 1 starting, count =            0
50: main finished, count =         138,625
51: racer 3 starting, count =      150,593
52: racer 0 finished, count =  364,915,216
53: racer 1 finished, count =  389,013,242
54: racer 2 finished, count =  395,950,245
55: racer 3 finished, count =  400,000,000
56: 0:09.46 elapsed, 0.29 kernel, 9.78 user
```