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1 // Example 3.1 foi/examples/StaticDemo.java
2 //
3 //
4 // Copyright 2003 Bill Campbell and Ethan Bolker
5
6 // Demonstrate the interplay between static members (fields and methods)
7 // and instance (non-static) members.
8 //
9 // %> java StaticDemo
10 // 0: counter = 1; objectField = 0
11 // StaticDemo.classMethod() = 100
12 // classMethod() = 100
13 // 1: counter = 2; objectField = 1
14 // StaticDemo.classMethod() = 101
15 // classMethod() = 101
16 // 2: counter = 3; objectField = 2
17 // StaticDemo.classMethod() = 103
18 // classMethod() = 103
19 // 3: counter = 4; objectField = 3
20 // StaticDemo.classMethod() = 106
21 // classMethod() = 106
22 // 4: counter = 5; objectField = 4
23 // StaticDemo.classMethod() = 110
24 // classMethod() = 110
25 //
26 // last classMethod() = 110
27
28 public class StaticDemo
29 {
30     // Declare three (static) class variables
31     // A class variable is associated with the (one) class.
32
33     private static int counter = 0;
34     private static int classVar = 0;
35     private static Terminal terminal = new Terminal();
36
37     int objectField = 0; // an instance variable; one per object
38
39     // The constructor keeps track of how many StaticDemo objects
40     // have been constructed.
41
42     public StaticDemo( int objectFieldValue )
43     {
44         objectField = objectFieldValue; // set the instance variable
45         counter++; // increment counter (counting the StaticDemos made)
46     }
47
48     public void instanceMethod()
49     {
50         // Instance methods can refer to both instance variables
51         // and class variables.
52
53         terminal.println( "counter = " + counter +
54             " ; objectField = " + objectField );
55         classVar = classVar + objectField;
56

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57     }
58
59     public static int classMethod()
60     {
61         // Class methods may refer only to class variables
62         // (and other class methods), as well as to local variables.
63
64         // What happens if we comment out the next line?
65         int counter = 100;
66
67         return counter + classVar;
68     }
69
70     public static void main( String[] args )
71     {
72         for (int i = 0; i < 5; i++) {
73             StaticDemo sd = new StaticDemo( i );
74             terminal.print( i + " : " );
75             sd.instanceMethod();
76
77             // classMethod()
78             // is equivalent to
79             // StaticDemo.classMethod()
80             terminal.println( "StaticDemo.classMethod() = "
81                 + StaticDemo.classMethod() );
82             terminal.println( "classMethod() = "
83                 + classMethod() );
84
85         }
86         terminal.println();
87         terminal.println( "last classMethod() = " + classMethod() );
88     }

```