

```
1 import components.naturalnumber.NaturalNumber;
2
3 /**
4  * Put a short phrase describing the program here.
5  */
6
7 * @author Vaishnavi Kasabwala
8 *
9 */
10 public final class Hailstone2 {
11     /**
12      * Private constructor so this utility class cannot be instantiated.
13      */
14     private Hailstone2() {
15     }
16
17     /**
18      * Generates and outputs the Hailstone series starting with the given
19      * {@code NaturalNumber}.
20      *
21      * @param n
22      *         the starting natural number
23      * @param out
24      *         the output stream
25      * @updates out.content
26      * @requires n > 0 and out.is_open
27      * @ensures out.content = #out.content * [the Hailstone series starting with
28      *         n]
29      */
30     private static void generateSeries(NaturalNumber n, SimpleWriter out) {
31         NaturalNumber x = new NaturalNumber2(n);
32         NaturalNumber zero = new NaturalNumber2(0);
33         NaturalNumber one = new NaturalNumber2(1);
34         NaturalNumber two = new NaturalNumber2(2);
35         NaturalNumber three = new NaturalNumber2(3);
36
37         int count = 1;
38
39         while (x.compareTo(one) != 0) {
40             out.print(x + ", ");
41             NaturalNumber temp = new NaturalNumber2(x);
42             if (temp.divide(two).compareTo(zero) == 0) { // when even
43                 x.divide(two);
44             } else { // when odd
45                 x.multiply(three);
46                 x.add(one);
47             }
48             count++;
49         }
50         out.println(x);
51         out.println("Length of series: " + count);
52     }
53
54     /**
55      * Main method.
56      *
57      * @param args
58      *         the command line arguments
59     */
60 }
```

```
63     */
64     public static void main(String[] args) {
65         SimpleReader in = new SimpleReader1L();
66         SimpleWriter out = new SimpleWriter1L();
67
68         /*
69          * Put your main program code here; it may call myMethod as shown
70          */
71
72         out.println("Enter a positive integer: ");
73         int input = in.nextInteger();
74         NaturalNumber n = new NaturalNumber2(input);
75
76         generateSeries(n, out);
77
78         /*
79          * Close input and output streams
80          */
81         in.close();
82         out.close();
83     }
84
85 }
86
```