

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

```
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
```