

```
1  /* Problem 2--Christmas In Heaven
2     DON'T make a huge array for this one!  DON'T loop through all
3     previous days!
4     All odd numbers are NEW sketches.  If it's divisible by 2 but not 4,
5     it has been performed once before.  If it's divisible by 4 but not 8,
6     it has been performed twice before, and so forth.  Just count factors
7     of 2! */
8
9  import java.io.*;
10 import java.util.*;
11
12 public class prob2 {
13
14     public static Scanner in;
15     public static PrintWriter out;
16     public static int cs;
17
18     public static void main (String[] args) throws Exception {
19
20         in = new Scanner (new File ("prob2.in"));
21         out = new PrintWriter ("prob2.out");
22         cs = 1;
23         while (true) {
24             int day = in.nextInt (); //Read in the input
25             if (day==0) break;
26             int daysv = day;
27             int ct = 1;
28             while (day%2==0) { //As long as it's even, halve it an count!
29                 day /= 2;
30                 ct++;
31             }
32             out.printf ("Case %d: On Christmas #%d was performance #%d of "+
33                 "sketch #d.\r\n\r\n",cs++,daysv,ct,
34                 ((long)day+1)/2);
35         }
36         in.close ();
37         out.close ();
38     }
39 }
40
```