Problem 2—Christmas In Heaven

Every Christmas in heaven, the late members of the Monty Python cast perform a sketch. Since they will be dead forever, they can perform a new sketch forever every Christmas without going into reruns. However, they want to have reruns because that will allow the recently dead to enjoy the past sketches. So here is how they do it:

1. They schedule new sketches on odd numbered Christmases. Here is how the first ten sketches would be scheduled over nineteen Christmases. Note the pattern: one, blank, two, blank, and so forth, forever.

1 _ 2 _ 3 _ 4 _ 5 _ 6 _ 7 _ 8 _ 9 _ 10 ...

2. The blanks in the pattern are replaced with the same one, blank, two, blank, etc. pattern:

1 1 2 _ 3 2 4 _ 5 3 6 _ 7 4 8 _ 9 5 10 ...

3. The remaining blanks are also replaced with the one, blank, two, blank, etc. pattern:

1 1 2 1 3 2 4 _ 5 3 6 2 7 4 8 _ 9 5 10 ...

4. Keep doing this forever:

1 1 2 1 3 2 4 1 5 3 6 2 7 4 8 _ 9 5 10 ...
1 1 2 1 3 2 4 1 5 3 6 2 7 4 8 1 9 5 10 ...

Notice that this pattern will allow an infinite number of new sketches, yet still allow each sketch to be rerun an infinite number of times.

Given the number of the Christmas, you are to print the sketch number and the iteration of that sketch number.

INPUT SPECIFICATION. Each case is an unsigned decimal integer representing the number of the specified Christmas. The last case is a 0 which signals the end of input and is not to be processed. There may be any number of spaces and/or <EOLN>'s before, after, or between these integers. These integers might be large, but they will always fit into a standard 4-byte signed integer.

OUTPUT SPECIFICATION. Each output case should appear in the same order as the corresponding input case. The output case should be of the form "Case *c*: On Christmas #*n* was performance #*p* of sketch #*s*." *c* is the case number; *n* is the Christmas number; *s* is the sketch number; *p* is the number of times, including this one, that it has been performed.

SAMPLE INPUT.

2<EOLN>
19<EOLN>
1000<EOLN>
0<EOLN>
<EOF>

SAMPLE OUTPUT.

Case ·1: ·On ·Christmas ·#2 ·was ·performance ·#2 ·of ·sketch ·#1.<EOLN>
<EOLN>
Case ·2: ·On ·Christmas ·#19 ·was ·performance ·#1 ·of ·sketch ·#10.<EOLN>
<EOLN>
Case ·3: ·On ·Christmas ·#1000 ·was ·performance ·#4 ·of ·sketch ·#63.<EOLN>
<EOLN>
<EOF>