

Problem 2—Pointless Riffle

President Snow has arranged the tributes in a circle and is dealing from the deck to each tribute a card containing a specific task they must accomplish. To the television audience, the cards appear to be dealt randomly; they even see President Snow shuffle them on camera. However, they are not random at all! The cards have been pre-stacked so that they will be dealt to precisely whomever President Snow wants them dealt!

Here's the trick. President Snow shuffles the cards with a perfect riffle. He takes the top half of the deck in his left hand (just over half the deck if the size of the deck is odd) and the bottom half the deck (just under half the deck if the size of the deck is odd). He then riffles the deck so that the bottom left card falls first, then the bottom right card, then the next left card, then the next right card, and so on until the left and right halves are perfectly interleaved. He then repeats this process over and over until the deck has returned to its starting configuration! You are to compute the number of times he has to riffle the deck to do this.

INPUT SPECIFICATION. The input is divided into a number of cases. Each case will consist of an unsigned positive decimal integer representing the number of cards in the deck. A zero will follow the last case. There may be any number of spaces or <EOLN>'s before, after, or between the input cases.

OUTPUT SPECIFICATION. The output cases should be in the same order as the input cases. Each output case should be of the form “Case c : President Snow should shuffle the deck t times.” where c is the case number and t is the smallest positive number of riffles that will restore the deck to its original configuration. Each data case should be followed by two <EOLN>'s.

SUCKA!

SAMPLE INPUT.

```
4<EOLN>
10<EOLN>
52<EOLN>
0<EOLN>
<EOF>
```

SAMPLE OUTPUT.

```
Case 1: President Snow should shuffle the deck 4 times.<EOLN>
<EOLN>
Case 2: President Snow should shuffle the deck 10 times.<EOLN>
<EOLN>
Case 3: President Snow should shuffle the deck 52 times.<EOLN>
<EOLN>
<EOF>
```