

## 11438 Integer Transmission EXTREME

You're transmitting an  $n$ -bits unsigned integer  $k$  through a simulated network. The  $i$ -th bit counting from left is transmitted at time  $i$  (e.g. 4-bit unsigned integer 5 is transmitted in this order: 0-1-0-1). The network delay is modeled as follows: if a bit is transmitted at time  $i$ , it may arrive at as early as  $i + 1$  and as late is  $i + d + 1$ , where  $d$  represents the maximal network delay. If more than one bit arrived at the same time, they could be received in any order.

For example, if you're transmitting a 3-bit unsigned integer 2 (010) for  $d = 1$ , you may receive 010, 100 (first bit is delayed) or 001 (second bit is delayed).

Write a program to find the number of different integers that could be received, and the smallest/largest ones among them.

### Input

The input contains at most 10 test cases. Each case consists of three integers  $n, d, k$  ( $1 \leq n \leq 1000, 0 \leq d \leq n, 0 \leq k < 2^n$ ), the number of bits transmitted, the maximal network delay, and the integer transmitted. The last test case is followed by a single zero, which should not be processed.

### Output

For each test case, print the case number and the number of different integers that could be received, followed by the minimal and maximal one among them.

### Sample Input

```
3 0 2
3 1 2
10 2 888
7 3 107
0
```

### Sample Output

```
Case 1: 1 2 2
Case 2: 3 1 4
Case 3: 25 490 984
Case 4: 19 47 122
```