

Problem 2-Roman Piazzas
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The piazza, or town square, is almost, but not quite, empty today. Ptolemy, one of the few people in the piazza, is reminded of square matrices that are also sparse. The square matrices might actually be quite large, but the vast majority of entries in such a matrix are zero, and matrix multiplication is more doable in this case.

When we multiply two $n \times n$ matrices (or two-dimensional numeric arrays) A and B , we get a new $n \times n$ matrix C . For each entry $C[i,j]$ in the new matrix, we have $C[i,j] = A[i,1]B[1,j] + A[i,2]B[2,j] + \dots + A[i,n]B[n,j]$. (For the purposes of this problem, the indices of the matrix go from 1 to n rather than from 0 to $n-1$.) Running this formula could take n^3 time to compute all the entries of C , but you might be able to do it a lot faster if you knew in advance that the vast majority of the entries in A and B would be zero.

INPUT SPECIFICATION. Each input case consists of the following: n followed by **<EOLN>**, indicating that this is an $n \times n$ matrix; n is guaranteed to be no larger than 200000. The number of non-zero entries in the first matrix followed by **<EOLN>**. A series of lines indicating these non-zero entries: the row number, the column number, and the value. The numbers in each line are separated by one space and followed by **<EOLN>**. The number of non-zero entries in the second matrix followed by **<EOLN>**. A series of lines indicating these non-zero entries, formatted the same way as the entries for the first matrix. All numbers are normal 32-bit integers. A zero followed by **<EOLN>** will follow the last input case.

OUTPUT SPECIFICATION. The output cases should appear in the same order as their corresponding input cases. You should not print out the new matrix, which might be quite large. Instead, each output case should be the following: "Case c : The number of nonzero entries is n and the maximum nonzero entry is m ." where c is the case number and n and m are as described, understanding that if there aren't any nonzero entries, then m will be zero. Two **<EOLN>** characters should follow each output case.

SAMPLE INPUT

```
3<EOLN>
2<EOLN>
1 2 3<EOLN>
2 3 4<EOLN>
2<EOLN>
2 1 5<EOLN>
3 1 6<EOLN>
2<EOLN>
4<EOLN>
1 1 1<EOLN>
1 2 1<EOLN>
2 1 1<EOLN>
2 2 1<EOLN>
4<EOLN>
1 1 1<EOLN>
1 2 1<EOLN>
2 1 -1<EOLN>
2 2 -1<EOLN>
0<EOLN>
<EOF>
```

SAMPLE OUTPUT

```
Case 1: The number of nonzero entries is 2 and the maximum nonzero entry is 24.<EOLN>
<EOLN>
Case 2: The number of nonzero entries is 0 and the maximum nonzero entry is 0.<EOLN>
<EOLN>
<EOF>
```