Canvas

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	1024 megabytes

There is a sequence of length n. At the beginning, all elements in the sequence equal to 0. There are also m operations, where the i-th operation will change the value of the l_i-th element in the sequence to x_i, and also change the value of the r_i-th element in the sequence to y_i. Each operation must be performed exactly once.

Find the optimal order to perform the operations, so that after all operations, the sum of all elements in the sequence is maximized.

Input

There are multiple test cases. The first line of the input contains an integer T indicating the number of test cases. For each test case:

The first line contains two integers n and m ($2 \leq n, m \leq 5 \times 10^5$) indicating the length of the sequence and the number of operations.

For the following m lines, the i-th line contains four integers l_i, x_i, r_i and y_i ($1 \leq l_i < r_i \leq n$, $1 \leq x_i, y_i \leq 2$) indicating the i-th operation.

It's guaranteed that neither the sum of n nor the sum of m of all test cases will exceed 5×10^5.

Output

For each test case, first output one line containing one integer, indicating the maximum sum of all elements in the sequence after all operations. Then output another line containing m integers $a_1, a_2, \cdots, a_m$ separated by a space, indicating the optimal order to perform the operations, where a_i is the index of the i-th operation to be performed. Each integer from 1 to m (both inclusive) must appear exactly once. If there are multiple valid answers, you can output any of them.

Example

standard input	standard output
2 4 4 1 1 2 2 3 2 4 1 1 2 3 2 2 1 4 1 4 2 3 2 4 1 1 2 3 1	7 4 1 3 2 5 2 1

Note

For the first sample test case, after performing operations $4, 1, 3, 2$ in order, the sequence becomes $\{2, 2, 2, 1\}$. The sum of all elements is 7.

For the second sample test case, after performing operations $2, 1$ in order, the sequence becomes $\{2, 0, 2, 1\}$. The sum of all elements is 5.