

Problem C. Shiroy Album II

Input file: standard input
 Output file: standard output
 Time limit: 6 seconds
 Memory limit: 1024 megabytes

Kamome is currently researching triangular paths on **weighted undirected graphs**. More specifically, a path is called *triangular* if and only if:

- The length of this path is no more than 2, or
- For any three different edges e_1 , e_2 , and e_3 on this path, it is always true that $w(e_1)$, $w(e_2)$, and $w(e_3)$ can form the three sides of a triangle.

Recall that positive integers x , y , and z can form the sides of a triangle if and only if $x < y + z$, $y < z + x$, and $z < x + y$.

Kamome has provided you with a weighted undirected graph. You need to determine for each pair of points (u, v) whether there exists a triangular path starting from u and ending at v . We assume that there is always a triangular path from each node to itself.



Picture 1: A part of the “triangle” at Peking University

Input

Each test contains multiple test cases. The first line contains one integer t ($1 \leq t \leq 10^5$), indicating the number of test cases. The description of the test cases follows.

The first line contains two integers n, m ($1 \leq n, m \leq 3000$, $1 \leq \sum n^2, \sum m^2 \leq 3000^2$), indicating the number of nodes and edges of this graph.

The next m lines, each line contains three integers u_i, v_i, w_i ($1 \leq u_i, v_i \leq n$, $1 \leq w_i \leq 10^9$), indicating edge (u_i, v_i) with weight w_i .

The graph is **maybe disconnected** or include **self-loop** or **multiple edge**.

Output

For each test case, output n lines, each line contains a string of n characters, where the j -th characters is $s_{i,j}$, if it is 0 indicating there is no triangular path start from i and end at j , 1 otherwise.

Examples

standard input	standard output
2	1111
4 3	1111
1 2 2	1111
2 3 2	1111
3 4 3	11101110
8 7	11111111
1 2 3	11111111
2 3 4	01111000
3 4 1	11111000
3 5 2	11100111
2 6 2	11100111
6 7 4	01100111
6 8 5	