Aqre

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	1024 megabytes

Given an $n \times m$ matrix, you need to fill it with 0 and 1, such that:

- There cannot be **four** consecutive horizontal or vertical cells filled with the same number.
- The cells filled with 1 form a connected area. (Two cells are adjacent if they share an edge. A group of cells is said to be connected if for every pair of cells it is possible to find a path connecting the two cells which lies completely within the group, and which only travels from one cell to an adjacent cell in each step.)

Please construct a matrix satisfying the conditions above and has as many 1s as possible. Output the maximum number of 1s, and the matrix.

Input

The first line contains an integer T ($1 \leq T \leq 10^3$) – the number of test cases.

For each test case, the first line contains two integers n, m ($2 \leq n, m \leq 10^3$).

It is guaranteed that the sum of $n \cdot m$ over all test cases does not exceed 10^6.

Output

For each test case, output the maximum number of 1s in the first line. Then output the matrix in the following n lines. If there are multiple solution, output any.

Example

standard input	standard output
3 2 2 3 4 3 8	4 11 11 9 1110 1110 1110 18 11101110 10111011 11011011