Problem A

3D Chessboard

Time limit: 1 second
Memory limit: 512 megabytes

You are given a **3D chessboard** of size $n \times n \times n$.

In a traditional 2D chessboard, a rook controls all cells in its **row** and **column** from its position.

However, in this **3D chessboard**, a rook controls all cells along its **row** (x-axis), its **column** (y-axis), and its **depth** (z-axis) from its position.

Your task is to place the **minimum number of rooks** on the 3D board so that **every cell is under attack** by **at least one rook**.

Input

A single integer n ($1 \leq n \leq 2000$) — the size of the 3D chessboard.

Output

The first line contains a single integer k — the **minimum number of rooks** required to cover the entire board.

The next k lines should each contain three integers x, y, z ($1 \leq x, y, z \leq n$) — the coordinates of a rook.

Sample Input	Sample Output
2	2 1 1 1 2 2 2