

Problem G. Geometry

Input file: *standard input*
Output file: *standard output*
Time limit: 3 seconds
Memory limit: 1024 mebibytes

Grammy has a special two-dimensional coordinate system: the angle between the positive half-axis of the X -axis and the positive half-axis of the Y -axis is 60 degrees.

Consider the following graph. The vertices are all integer coordinates (x, y) such that at least one of x, y is odd and $-2a + 1 \leq x \leq 2a - 1$, $-2b + 1 \leq y \leq 2b - 1$, $-2c + 1 \leq x + y \leq 2c - 1$. The edges from (x, y) go to $(x, y + 1)$, $(x, y - 1)$, $(x + 1, y)$, $(x - 1, y)$, $(x + 1, y - 1)$, and $(x - 1, y + 1)$.

Find the size of the maximum independent set of vertices in this graph. Additionally, find the number of such sets modulo 998 244 353.

Input

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

Each of the following T lines contains three integers a, b, c ($1 \leq a, b, c \leq 10^6$).

Output

Output T lines. Each line must contain two integers: the size of the maximum independent set and the number of such sets. **Please note that the size should not be taken modulo 998 244 353.**

Example

standard input	standard output
6	7 4
2 1 2	4 1
1 1 137	1124 31585548
3 94 95	23951 33873190
3 1998 1996	1289433675488 748596399
998244 353999 999999	23600 480090154
50 120 150	

Note

The following picture shows the situation for the first and second test case of the sample.

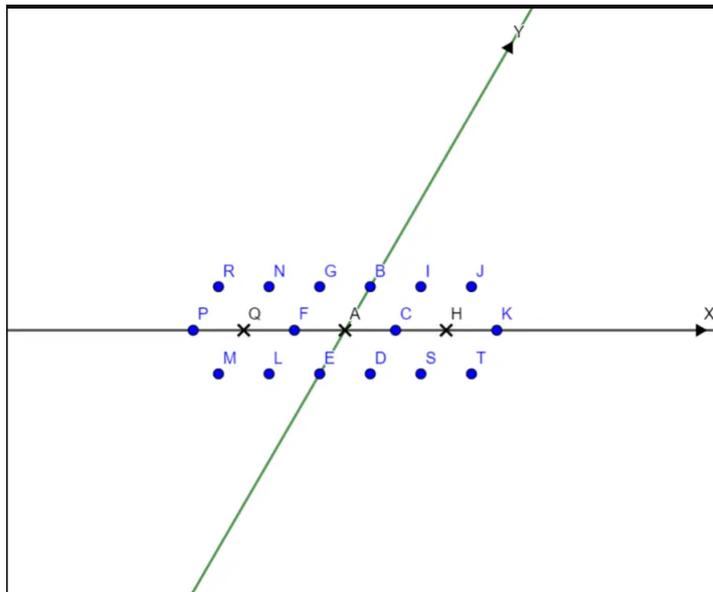
Point J has coordinates $(2, 1)$, point F has coordinates $(-1, 0)$, and point H has coordinates $(2, 0)$. Among these three points, only H has even X -coordinate and even Y -coordinate. The neighbours of point A are $BCDEFG$.

In the first test case, the points that satisfy the conditions are $NGBIJPFCKMLEDST$.

The size of the maximum independent set is 7, and there are 4 ways: $PNLBDJT$, $RMFBDJT$, $RMGECJT$, $RMGEISK$.

In the second test case, the points that satisfy the conditions are $GBIFCLED$.

The size of the maximum independent set is 4, and there is one way: $LGID$.



Picture for test case 1 and 2.