

11 Maximum Triangles

11.1 Problem Description

We called a triangle is good if and only If the triangle contains the origin.

You need to find n points on the plane, satisfying:

- None any two of them and the origin should be collinear.
- The coordinates of each point should be an integer and in the range $[-50000, 50000]$.
- Under the above limits, the number of good triangles made up of those n points should be maximized.

Output the maximum number and a set of the coordinates of those n points for which the maximum is reached.

11.2 Input

The first line of input contains a single integer $T(1 \leq T \leq 10)$, indicating the number of test cases.

Each of the next T lines contains a single integer $n(1 \leq n \leq 2 \times 10^5)$, describing the number of points you have to find for that test case.

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

11.3 Output

For each test case print $(n+1)$ lines. The first line should contain a single integer, denoting the maximum number of good triangles. The i -th of the next n lines should contain two space-separated integers $x_i, y_i(|x_i|, |y_i| \leq 50000)$, denoting the coordinates of the i -th point of the set. If there are multiple solutions, output any.

11.4 Sample Input

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1
3
```

11.5 Sample Output

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1
0 1
-1 -1
1 -1
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