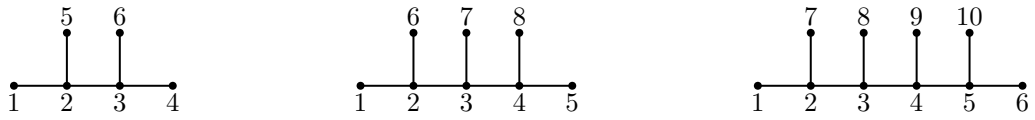
Problem E. Embedding Caterpillars

Input file:	`embedding.in`
Output file:	`embedding.out`
Time limit:	5 seconds
Memory limit:	256 megabytes

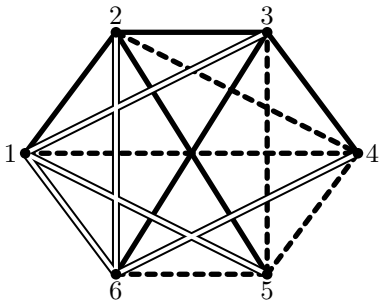
Caterpillar of order n is a graph with $2n$ vertices arranged in the following way: a path of length n has another vertex attached to every internal vertex. The picture below shows caterpillars of order 3, 4 and 5.



Embedding of graph G to graph H is mapping $\varphi : VG \to VH$ of vertices of G to vertices of H such that φ is one to one and if there is an edge uv in G then there is an edge $\varphi(u)\varphi(v)$ in H.

Simultaneous embedding of several graphs $G_1, G_2, \ldots, G_k$ to H is a collection of embeddings $\varphi_1, \varphi_2, \ldots, \varphi_k$ such that for each edge uv of H there is at most one i such that there is an edge xy in G_i such that $uv = \varphi_i(x)\varphi_i(y)$.

The picture below shows simultaneous embedding of three caterpillars of order 3 to a complete graph K_6. You have to generalize this construction and find simultaneous embedding of three caterpillars of order n to K_{2n}.



Input

There are multiple tests cases in the input file. Each test case consists of a single integer n on a line by itself ($3 \le n \le 100$). The last test case is followed by $n = 0$, it must not be processed. There are at most 10 test cases in each input file.

Output

For each test case output three lines. Let vertices of each caterpillar be numbered from 1 to $2n$ in the following way: vertices from 1 to $n + 1$ are arranged along the path, vertex $n + 2$ is connected to vertex 2, vertex $n + 3$ is connected to vertex 3, etc. For each caterpillar output $\varphi_i(u)$ for all u from 1 to $2n$.

Examples

embedding.in	embedding.out
3 0	1 2 3 4 5 6 1 4 5 3 2 6 2 6 1 3 4 5