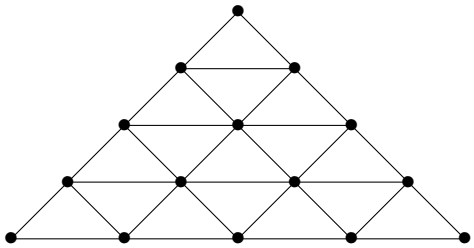
Traversal of a Triangular Grid

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	1024 mebibytes

Let $n \geqslant 1$. Consider the following standard way to divide a large triangle into n^2 smaller triangles by drawing three sets of pairwise parallel lines:



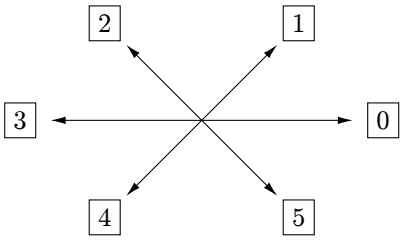
Naturally, this defines an undirected graph with $(n+1)(n+2)/2$ vertices and $3n(n+1)/2$ edges: the vertices are the nodes of the grid or, in other words, the intersection points of the lines (marked in bold in the picture), and the edges are the segments between neighboring nodes. Your task is to construct an Eulerian cycle on the edges of this graph that "starts" from the topmost vertex of the triangle. In other words, you need to start at the topmost vertex, move along the edges, traverse each edge exactly once, and, in the end, return to the topmost vertex. It can be proven that a solution always exists.

Input

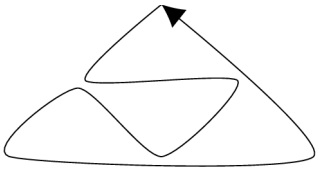
An integer n is given, ranging from 1 to 20.

Output

Output a string of exactly $3n(n+1)/2$ digits from 0 to 5, representing some Eulerian cycle of the graph in the following format: 0 means moving directly to the right from the current vertex, 1 means moving in the right-up direction, 2 means moving left-up, 3 means moving left, 4 means moving left-down, and 5 means moving right-down. For clarity, the directions are shown in the picture below.



The traversal **must start from the top vertex**. Any of the possible traversals will be accepted.

Example

standard input	*standard output*	*picture of the path*
2	404240022