Problem B. Binary Substrings

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	512 megabytes

Given an integer n, you need to find a string of length n containing only 0s and 1s that maximize the number of different nonempty substrings.

Input

The only line contains a single integer n ($1 \le n \le 2 \times 10^5$), the length of the 01-string.

Output

Output a single 01-string of length n that has the maximum number of different nonempty substrings among all the 01-strings of length n. If there are multiple solutions, you may output any.

Examples

standard input	standard output
2	01
5	00110

Note

In the first sample case, there are 3 different nonempty substrings "0", "1", and "01".

In the second sample case, there are 12 different nonempty substrings "0", "1", "00", "01", "11", "10", "001", "011", "110", "0011", "0110", and "00110".