Problem G. Numb

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	512 mebibytes

You are given an even integer n. Construct a binary number $a = \overline{a_1 a_2 \dots a_n}$ consisting of n binary digits such that it is divisible by n, and all numbers $\overline{a_1 a_2 \dots a_i}$ (the prefixes of a in binary notation) for $i = 1, 2, \dots, n$ have different remainders modulo n.

Input

The only line of input contains an integer n ($2 \le n \le 1000$, n is even).

Output

Print the desired number $\overline{a_1 a_2 \dots a_n}$ as a string of n binary digits. Leading zeroes are disallowed. If there are several possible answers, print any one of them. It is guaranteed that at least one answer exists under these constraints.

Examples

standard input	standard output
2	10
4	1100