

Artificium

Starship Launch Codes

Runtime Limit – 3s

Problem Statement

You are the lead engineer on an interstellar starship ready for launch, but the autopilot is locked. The backup launch sequence requires a series of launch codes. Each step in the sequence is determined by complex astronomical calculations.

Consulting your trusty "42 Checklist", you find that the launch codes have two security features:

- Each 4-digit code is always a palindrome (it reads the same forward and backward).
- The sum of digits in each code must equal the step number S .

Your task is to generate all possible codes for a given step in the launch sequence.

Format

Input

Line 1: An integer S representing the current step of the launch sequence.

Output

One line per valid code: A 4-digit code, listed in ascending numerical order.

Constraints

$$0 \leq S \leq 36$$

S is always an even number

Sample

Input

2

Output

0110

1001