

Problem J4: Favourite Times

Time limit: 1 second

Problem Description

Wendy has an LED clock radio, which is a 12-hour clock, displaying times from 12:00 to 11:59. The hours do not have leading zeros but minutes may have leading zeros, such as 2:07 or 11:03.

When looking at her LED clock radio, Wendy likes to spot arithmetic sequences in the digits. For example, the times 12:34 and 2:46 are some of her favourite times, since the digits form an arithmetic sequence.

A sequence of digits is an *arithmetic sequence* if each digit after the first digit is obtained by adding a constant common difference. For example, 1,2,3,4 is an arithmetic sequence with a common difference of 1, and 2,4,6 is an arithmetic sequence with a common difference of 2.

Suppose that we start looking at the clock at noon (that is, when it reads 12:00) and watch the clock for some number of minutes. How many instances are there such that the time displayed on the clock has the property that the digits form an arithmetic sequence?

Input Specification

The input contains one integer D ($0 \leq D \leq 1\,000\,000\,000$), which represents the duration that the clock is observed.

For 4 of the 15 available marks, $D \leq 10\,000$.

Output Specification

Output the number of times that the clock displays a time where the digits form an arithmetic sequence starting from noon (12:00) and ending after D minutes have passed, possibly including the ending time.

Sample Input 1

34

Output for Sample Input 1

1

Explanation of Output for Sample Input 1

Between 12:00 and 12:34, there is only the time 12:34 for which the digits form an arithmetic sequence.

Sample Input 2

180

Output for Sample Input 2

11

Explanation of Output for Sample Input 2

Between 12:00 and 3:00, the following times form arithmetic sequences in their digits (with the difference shown:

- 12:34 (difference 1),
- 1:11 (difference 0),
- 1:23 (difference 1),
- 1:35 (difference 2),
- 1:47 (difference 3),
- 1:59 (difference 4),
- 2:10 (difference -1),
- 2:22 (difference 0),
- 2:34 (difference 1),
- 2:46 (difference 2),
- 2:58 (difference 3).