Problem PL
Nine Never

Time limit: 3 seconds
Memory limit: 1024 megabytes

Problem Description

Once upon a time, there lived a great general called Tso who was well-known in arranging his soldiers into small groups to perform different tasks. If possible, Tso would divide his soldiers into as many groups as possible, so as to increase the flexibility. However, there was a little secret that only very few people knew: When Tso was young, a fortune-teller warned him that "9" would be a super unlucky number for him. So now, whenever Tso divided his soldiers into groups, he would make sure that the total number of soldiers, in any combination of these groups, would not be equal to 9.

For instance, when there are $N = 11$ soldiers, we can divide the soldiers into three groups, with 3, 4, 4 soldiers, respectively, so that any combination would not sum up to exactly 9 soldiers (the total number could only be 3, 4, 7, 8, or 11). Another way is to divide the soldiers into four groups, with 1, 3, 3, 4 soldiers, respectively, so that again, any combination would not sum up to exactly 9 soldiers (the total number could only be 1, 3, 4, 5, 6, 7, 8, 10, or 11). Since the latter way has more groups, it is a better choice than the former way.

In contrast, if we divide the soldiers into eleven groups, one for each group, then we would have even more groups; however, some combination (taking nine of these groups) would have exactly 9 soldiers in total, so this will not be an acceptable division for Tso.

As one of Tso's most reliable assistants, you are assigned the following task: Given a number N of soldiers where $N \neq 9$, help Tso to find the maximum number K of groups that can be formed.

Input Format

The input has only one line, which contains a single positive integer N.

Output Format

Let K denote the desired maximum number of groups. The output has only one line, which prints a non-negative integer X such that X is the remainder of K when divided by $10^9 + 7$. That is, $X \equiv K \pmod{10^9 + 7}$ with $0 \leq X < 10^9 + 7$.

Technical Specification

- $1 \leq N \leq 10^{15}$
- $N \neq 9$
- $0 \leq X < 10^9 + 7$

Sample Input 1

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11
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Sample Output 1

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4
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Sample Input 2

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8
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Sample Output 2

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8
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Sample Input 3

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12345678901234
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Sample Output 3

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839407413
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