

Czech ACM Student Chapter
Charles University in Prague
University of West Bohemia

Czech Technical University in Prague
Technical University of Ostrava
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CTU Open Contest 2021

Organ-free Man

`organ.c`, `organ.cpp`, `Organ.java`, `organ.py`

Every so often, a shipment of universal robots comes from Earth to Mars in order to help you with routine colonization tasks. The robots are called Organ-free Men (precisely OFMv5001.41.912) and each one of them is identified by a unique serial number, which is a positive integer.

To prevent space theft, OFMs are transported from Earth to Mars in a locked state and have to be first unlocked by a special password. The password to unlock an OFM is based on its serial number and a function $f(x)$. The function $f(x)$ is defined as follows:

If $0 \leq x \leq 9$, then $f(x) = x!$, and if $x > 9$, then $f(x) = (x \bmod 10)! + f(\lfloor x/10 \rfloor)$. The brackets $\lfloor\rfloor$ denote the floor value of a number (e.g. $\lfloor 2.43 \rfloor = 2$). Exclamation mark denotes the factorial, i.e., $x! = 1 \times 2 \times \cdots \times x$ for $x > 0$ and $0! = 1$.

To unlock an OFM with a serial number y, you need to input smallest such non-negative integer x, so that $f(x) = y$ holds.

Will you manage to unlock all robots that were shipped to you?

Input Specification

The input consists of one integer y ($1 \leq y \leq 10^9$), the serial number of a particular OFM.

Output Specification

Output a single non-negative integer x, the password to unlock the particular OFM.

Sample Input 1	Output for Sample Input 1
3	12

Sample Input 2	Output for Sample Input 2
20	2333