

500!

In these days you can more and more often happen to see programs which perform some useful calculations being executed rather than trivial screen savers. Some of them check the system message queue and in case of finding it empty (for examples somebody is editing a file and stays idle for some time) execute its own algorithm.

As an examples we can give programs which calculate primary numbers.

One can also imagine a program which calculates a factorial of given numbers. In this case it is the time complexity of order $O(n)$ which makes troubles, but the memory requirements. Considering the fact that 500! gives 1135-digit number no standard, neither integer nor floating, data type is applicable here.

Your task is to write a programs which calculates a factorial of a given number.

Assumptions: Value of a number n which factorial should be calculated of does not exceed 1000 (although 500! is the name of the problem, 500! is a small limit).

Input

Any number of lines, each containing value n for which you should provide value of $n!$

Output

2 lines for each input case. First should contain value n followed by character '!'. The second should contain calculated value $n!$.

Sample Input

10
30
50
100

Sample Output

10!
3628800
30!
265252859812191058636308480000000
50!
30414093201713378043612608166064768844377641568960512000000000000
100!
933262154439441526816992388562667004907159682643816214685929638952175
999932299156089414639761565182862536979208272237582511852109168640000
00000000000000000000