

T1P2 – Factorial Estimation

When we want to calculate the value of $n!$, we can estimate it by using Stirling's approximation, which can estimate the lower bound and upper bound of $n!$, as shown in the following equation;

$$\sqrt{2\pi n} n^{n+\frac{1}{2}} e^{-n+\frac{1}{12n+1}} < n! < \sqrt{2\pi n} n^{n+\frac{1}{2}} e^{-n+\frac{1}{12n}}$$

Write a program to display the rounded value of lower bound and upper bound $n!$ that estimated using Stirling's approximation.

Testcases

$n \geq 1 \ \&\& \ n \leq 100 \ \&\& \ n \in \mathbb{Z}$

Sample Testcase

Input	Output
1	0 1
10	3628560 3628810
100	93326150947289492635748359870324 285153340961231571087003625025566 048159428809243186746631308491513 08003669484934380023418893128786 8115403333585570017597980672 9332621570317617484271229521609425 304487919440882407245452022822515 725640045230756364634112584784283 7206928182193601581151790978634753 050307010616227799236608