Functions

A. Hello Functions

1 second, 256 megabytes

You are given an integer N.

Write a function that takes N as a parameter and prints the string `I am learning functions` exactly N times, each on a new line.

Input
The only line contains an integer N ($1 \le N \le 1000$).

Output
Print N lines. Each line must be exactly:

```
I am learning functions
```

input
3
output
I am learning functions I am learning functions I am learning functions

B. Print Factors - I

1 second, 256 megabytes

You are given an integer N.

Write a function that prints all *factors** of N in increasing order.

*A positive integer d is called a divisor (factor) of N if $N \bmod d = 0$.

Input
The only line contains an integer N ($1 \le N \le 10^5$).

Output
Print all factors of N in increasing order, separated by single spaces.

input
12
output
1 2 3 4 6 12

C. Print Factors - II

1 second, 256 megabytes

You are given an integer N.

Write a function that prints all *factors** of N in decreasing order.

*A positive integer d is called a divisor (factor) of N if $N \bmod d = 0$.

Input
The only line contains an integer N ($1 \le N \le 10^5$).

Output
Print all factors of N in decreasing order, separated by single spaces.

input
12
output
12 6 4 3 2 1

D. Check Prime

1 second, 256 megabytes

You are given an integer N.

Write a function that checks whether N is a prime number.

Print `Prime` if N is prime, otherwise print `Not Prime`.

Input
The only line contains an integer N ($1 \le N \le 10^5$).

Output
Print `Prime` or `Not Prime`.

input
17
output
Prime

input
4
output
Not Prime

E. Factorial

1 second, 256 megabytes

You are given an integer N.

Find the factorial of N by writing a function that takes N as a parameter and returns $N!$, where:

$$N! = 1 \times 2 \times 3 \times \cdots \times N$$

Input
The first line contains an integer N ($0 \le N \le 20$).

Output
Print the value of $N!$.

input
5
output
120

input
7
output
5040

- By definition, $0! = 1$.
- The constraint $N \le 20$ ensures the answer fits in a 64-bit integer.

F. nCr

1 second, 256 megabytes

You are given two integers n and r.

Write a function to compute the binomial coefficient:

$$\binom{n}{r} = \frac{n!}{r!\,(n-r)!}$$

Input
The only line contains two integers n and r ($0 \le r \le n \le 10$).

Output
Print the value of $\binom{n}{r}$.

input
5 2
output
10

input
10 0
output
1

G. Print Primes from 1 to N

1 second, 256 megabytes

You are given an integer N.

Print all prime numbers from 1 to N in increasing order by writing a function that takes N as a parameter and prints the required primes.

Input
The only line contains an integer N ($1 \le N \le 10^3$).

Output
Print all prime numbers from 1 to N in increasing order, separated by single spaces.

If there is no prime number in the range, print nothing.

input
10
output
2 3 5 7

H. Count Zeros

1 s., 256 MB

You are given a non-negative integer N.

Find the number of digits equal to 0 in the decimal representation of N by writing a function that takes N as a parameter and returns the count of zero digits.

Input
The only line contains an integer N ($0 \le N \le 10^{18}$).

Output
Print a single integer — the count of zeros in N.

input
102030
output
3

input
0
output
1

I. Find HCF

1 second, 256 megabytes

You are given two integers A and B.

Find the HCF of A and B by writing a function that takes A and B as parameters and returns their HCF.

Input
The only line contains two integers A and B ($1 \le A, B \le 10^5$).

Output
Print the HCF of A and B.

input
12 36
output
12