HSC CRACKERS

Assignment on Bitwise Operations

Problem 1: Counting Set Bits

Awesh is learning about bitwise operations. He wants to count the number of set bits (1s) in a given integer. Can you help him write a function to count the number of set bits?

Input

A single integer N.

Output

An integer representing the number of set bits in N.

Input	Output
5	2
8	1
15	4
0	0

Problem 2: Finding the Missing Number

Awesh and his friends are playing a game where they are supposed to list numbers from 0 to N, but one number is missing. Given an array containing N distinct numbers from 0 to N, write a function to find the missing number.

Input

An array of N integers, where each integer is between 0 and

N, inclusive.

Output

The missing Number.

Input	Output
3 3 0 1	2
8 9 6 5 3 2 4 0 1	8
6 0 1 5 4 3 2	6
0 0	1

Problem 3: Awesh's Bit Checker

Awesh is given an integerN and a position P. He wants to check whether the bit at position P in N is set (1) or not (0). Can you help Awesh write a function to perform this check?

Input

Two integers N and P, where P is a non negative number lesser than the number of bits in N. P starts from 0.

Output

Print `1` if the bit at position P in N is set (1), otherwise print `0`.

Input	Output
13 2	1
7 1	1
4 3	0
5 0	1

Problem 4: Awesh's Bit Reversal Challenge

Awesh is fascinated by the concept of bit manipulation and wants to reverse the bits of an integer N. Can you help him write a function to reverse the bits of N?

Input

An integer N. Use unsigned int and format specifier %u for both input and output.

Output

An integer representing N with its bits reversed.

Input	Output
5	2684354560
10	1342177280
20	671088640
256	8388608