

International Institute of Information Technology, Bangalore
CSE 102P Data Structures and Algorithms Lab- Sec A
End Term Exam: 12 Mary 2026.

You are given a complete undirected graph G with n nodes, where $0 < n < 10^9$. The nodes are labeled $1, 2, \dots, n$. For any two distinct nodes i and j , the weight of the edge (i, j) is defined as

$$w(i, j) = i + j.$$

Let M_1 be the total weight of a *maximum spanning tree* of G , and let M_2 be the total weight of a *minimum spanning tree* of G .

Task: Implement an efficient algorithm to compute the value $M_1 - M_2$.

Input: A single integer n .

Output: A single integer equal to $M_1 - M_2$.

Constraints:

$$0 < n < 10^9.$$

Note: The answer may be as large as about 10^{18} , so use a 64-bit integer type.

Sample Inputs and Outputs

Example #	Input (n)	Output ($M_1 - M_2$)
1	3	2
2	4	6
3	5	12
4	7	30
5	10	72