**Problem Statement: "Alice's Magical Stats"**

**Example 1:**

| **Input** | **Output** |
| --- | --- |
| ENTER THE LIMIT: 2 | 6 |

**Explanation:**

* For i = 0: Binary is 0, stat is 1.
* For i = 1: Binary is 1, stat is 2.
* For i = 2: Binary is 10, stat is 3 (1 + 2).
* Total stat = 1 + 2 + 3 = 6.

**Example 2:**

| **Input** | **Output** |
| --- | --- |
| ENTER THE LIMIT: **5** | **17** |

**Explanation:**

* For i = 0: Binary is 0, stat is 1.
* For i = 1: Binary is 1, stat is 2.
* For i = 2: Binary is 10, stat is 3 (1 + 2).
* For i = 3: Binary is 11, stat is 4 (2 + 2).
* For i = 4: Binary is 100, stat is 4 (1 + 1 + 2).
* For i = 5: Binary is 101, stat is 5 (2 + 1 + 2).
* Total stat = 1 + 2 + 3 + 4 + 4 + 5 = 19.

Alice is fascinated by binary numbers and their properties. She has a peculiar way of evaluating numbers: she likes to calculate a special "magical stat" for each number from 0 to n.

For any number i in this range:

* Alice considers the binary representation of i.
* For every 1 bit in this binary representation, she adds 2 to the stat.
* For every 0 bit in this binary representation, she adds 1 to the stat.

Given a limit n, Alice wants to know the total sum of these magical stats for all numbers from 0 to n.

**Input:**

* An integer n representing the limit.

**Output:**

* An integer representing the total sum of magical stats for all numbers from 0 to n.

**Constraints:**

* 0 <= n <= 10^5