Problem 1739: Building Boxes

Problem Information

Difficulty: Hard
Acceptance Rate: 52.19%
Paid Only: No
Tags: Math, Binary Search, Greedy

Problem Description

You have a cubic storeroom where the width, length, and height of the room are all equal to `n` units. You are asked to place `n` boxes in this room where each box is a cube of unit side length. There are however some rules to placing the boxes:

* You can place the boxes anywhere on the floor. * If box `x` is placed on top of the box `y`, then each side of the four vertical sides of the box `y` **must** either be adjacent to another box or to a wall.

Given an integer `n`, return _the**minimum** possible number of boxes touching the floor._

Example 1:

Input: n = 3 **Output:** 3 **Explanation:** The figure above is for the placement of the three boxes. These boxes are placed in the corner of the room, where the corner is on the left side.

Example 2:

Input: n = 4 **Output:** 3 **Explanation:** The figure above is for the placement of the four boxes. These boxes are placed in the corner of the room, where the corner is on the left side.

Example 3:

Input: n = 10 **Output:** 6 **Explanation:** The figure above is for the placement of the ten boxes. These boxes are placed in the corner of the room, where the corner is on the back side.

Constraints:

* `1 <= n <= 109`

Code Snippets

C++:

```
class Solution {
public:
int minimumBoxes(int n) {


}
};
```

Java:

```
class Solution {
public int minimumBoxes(int n) {


}
}
```

Python3:

```
class Solution:
def minimumBoxes(self, n: int) -> int:
```