07 [Fundamental]: Red-Green Towers

Red-Green Towers

• **Problem**

There are r red and g green blocks for construction of the red-green tower. Red-green tower can be built following next rules:

- Red-green tower is consisting of some number of levels;
- Let the red-green tower consist of n levels, then the first level of this tower should consist of n blocks, second level — of $n-1$ blocks, the third one — of $n-2$ blocks, and so on — the last level of such tower should consist of the one block. In other words, each successive level should contain one block less than the previous one;
- Each level of the red-green tower should contain blocks of the same color.

Let h be the maximum possible number of levels of red-green tower, that can be built out of r red and g green blocks meeting the rules above. The task is to determine how many different red-green towers having h levels can be built out of the available blocks.

Two red-green towers are considered different if there exists some level, that consists of red blocks in the one tower and consists of green blocks in the other tower.

You are to write a program that will find the number of different red-green towers of height h modulo $10^9 + 7$.

Red-Green Towers

- ## Input

The only line of input contains two integers r and g, separated by a single space — the number of available red and green blocks respectively ($0 \leq r, g \leq 2 \cdot 10^5$, $r + g \geq 1$).

- ## Output

Output the only integer — the number of different possible red-green towers of height h modulo $10^9 + 7$.
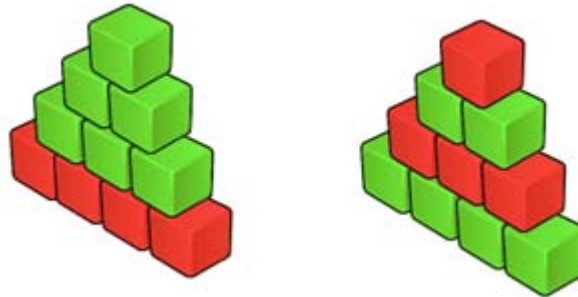
Red-Green Towers

- ## **Test case**

input
4 6
output
2

input
9 7
output
6

input
1 1
output
2

Red-Green Towers

- ## Note

The following image shows all possible red-green towers for the first sample.

Red-Green Towers

- **Evaluation strategy**

	Term	Credit
Track 1	Design an algorithm that can solve the given problem (Algorithms in pseudo code or flowchart is accepted)	40
Track 2	Implement an algorithm that can solve the given problem (3 cases will be tested)	60