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**36th Annual High School Programming Contest**

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##### April 12, 2024

###### Gold Problem #4: Go Dog Go!

Background Information:

One day a curious dog named Solomon is doodling with numbers and creates a monotonically increasing (which is the same as non-decreasing) sequence of positive integers where each term in the sequence An is the number of times that n occurs in the sequence, starting with A1 =1, and for all n > 1 each An is the smallest unique integer possible.

Since A1 = 1 there is only one occurrence of 1 in the sequence. The smallest possible unique integer for A2 is therefore 2. Because A2  = 2 there must be two 2s in the sequence so A3 must also be 2. The smallest possible unique integer for A4 is 3 and because A3 = 2 there must be two 3s in the sequence so A5 is also equal to 3. The smallest integer for A6 is 4 and because A4 is 3 then A7 and A8 are also 4.

The first 20 Solomon numbers are 1, 2, 2, 3, 3, 4, 4, 4, 5, 5, 5, 6, 6, 6, 6, 7, 7, 7, 7, 8.



Appropriately, the sequence is named after Solomon. For his career achievements in mathematics, Solomon, joining Rin Tin Tin, Beethoven, Scooby-Doo, Toto, Laika, Benji, Old Yeller, Tramp, Clifford and Snoopy was inducted into the prestigious Canine Hall of Fame.

Write a program that given integer input 1 ≤ N ≤ 10,000 computes the nth Solomon number.

###### Programming Problem:

Input:  Positive integer N ≤ 10,000

Output: The Nth Solomon number.

Example 1: Input: Example 2: Input: Example 3: Input:

1 20 9999

Output: Output: Output:

1 8 356