Problem H
Pascals Triangle

Time limit: 3 seconds
Memory limit: 1024 megabytes

Problem Description

In mathematics, Pascal's triangle is an infinite triangular array of the binomial coefficients which play a crucial role in probability theory, combinatorics, and algebra. The rows of Pascal's triangle are conventionally enumerated starting with row $n = 0$ at the top (the 0th row). The entries in each row are numbered from the left beginning with $k = 0$ and are usually staggered relative to the numbers in the adjacent rows. The triangle may be constructed in the following manner: In row 0 (the topmost row), there is a unique nonzero entry 1. Each entry of each subsequent row is constructed by adding the number above and to the left with the number above and to the right, treating blank entries as 0. For example, the initial number of row 1 (or any other row) is 1 (the sum of 0 and 1), whereas the numbers 1 and 3 in row 3 are added to produce the number 4 in row 4.

							1							
						1		1						
					1		2		1					
				1		3		3		1				
			1		4		6		4		1			
		1		5		10		10		5		1		
	1		6		15		20		15		6		1	
1		7		21		35		35		21		7		1

Pascal's triangle determines the coefficients which arise in binomial expansions. For example, in the expansion

$$(x+y)^2 = x^2 + 2xy + y^2 = 1x^2y^0 + 2x^1y^1 + 1x^0y^2$$

, the coefficients are the entries in the second row of Pascal's triangle: $C^2_0 = 1$, $C^2_1 = 2$ and $C^2_2 = 1$. In general, the binomial theorem states that when a binomial like $x + y$ is raised to a positive integer power n, the expression expands as

$$(x+y)^n = \Sigma^n_{k=0} a_k x^{n-k} y^k = a_0x^n + a_1x^{n-1}y + a_2x^{n-2}y^2 + \cdots + a_{n-1}xy^{n-1} + a_ny^n$$

where the coefficients a_k are precisely the numbers in row n of Pascal's triangle: $a_k = C^n_k$.

Given a integer number n. please determine the summation of the coefficients of binomial expansions with n.

Input Format

There are several test cases. Each test case contains an integer numbers n.

Output Format

For each test case, output two lines. The first line is the sequence of the coefficients of binomial expansions with n. The second line the summation of the sequence.

Technical Specification

- $0 \leq n \leq 50$.

Sample Input 1

```
2
8
```

Sample Output 1

```
1 2 1
4
1 8 28 56 70 56 28 8 1
256
```