

## 6 Burns So Good

Timothy “Sauceboss” von Fyre knows how to make one thing: hot sauce. His creations are regionally recognized as being the finest around, with one customer remarking of his newest sauce “It’s like tangoing with Hades in an ironworks”. Every day a hoard of intestinally compromised consumers arrives at his store, ready to purchase more of their cherished condiments.

Sauceboss has implemented a queue system to manage the crowd. Each patron receives a ticket displaying two numbers and their first name. Sauceboss, while designing his queue system, had a moment of hot sauce induced mental clarity. He decided that to figure out one’s place in line, one must first take the two numbers on the ticket, say,  $n$  and  $k$ , and compute their binomial coefficient. This is computed by:  $\frac{n!}{k!(n-k)!}$

Once calculated, a customer’s precedence in the queue corresponds to a numerical ordering of the calculated binomial coefficients in which the lower its value on the real number line the closer a person is to the front of the queue. In a situation where two tickets have the same binomial coefficient, they are compared lexicographically by the individuals’ names where  $a < b < c < \dots < z$

Tim has one other passion in life: drawing binary trees. His wild fanbase has hired you to write a program which will print the customer queue at a given point in time as a binary tree. In other words, a queue of seven people: 1, 2, 3, 4, 5, 6, 7 has a binary tree representation of:

```

      1
     2 3
    4 5 6 7

```

Assumptions:

$2 \leq n \leq 50$ , for all inputs of  $n$ ;  $n$  will always be an integer

$1 \leq k \leq 49$  for all inputs of  $k$ ;  $k$  will always be an integer

$n > k$  for each line of input

All individuals in the queue have a unique name.

The input size will always be  $2^y - 1$  where  $y \geq 2$  for any value of  $y$

### 6.1 Input

X lines of input in the format of:  $< n >$  $<$ single space $>$  $< k >$  $<$ single space $>$  $<$ name $>$

### 6.2 Output

The name of the customers in the queue, represented as a left-justified binary tree.

### 6.3 Sample Input/Output

Sample Input	Sample output
39 34 Ashton	Otto
24 21 King	Mohammed Lucian
13 12 Lucian	King Ashton Aryan Camron
2 1 Otto	
5 1 Mohammed	
36 24 Aryan	
41 30 Camron	