The *Pascal matrix* is the (infinite) matrix defined by (zero based row and column):

`Pascal[row, column] = Comb(row, column) for 0 <= column <= row`

and zero otherwise, where **`Comb(n, k)`** is the number of combinations of **`n`** things taken **`k`** at a time (the binomial coefficient).

```
1    0    0    0    0    0    0    0    0    0 …
1    1    0    0    0    0    0    0    0    0 …
1    2    1    0    0    0    0    0    0    0 …
1    3    3    1    0    0    0    0    0    0 …
1    4    6    4    1    0    0    0    0    0 …
1    5   10   10    5    1    0    0    0    0 …
1    6   15   20   15    6    1    0    0    0 …
1    7   21   35   35   21    7    1    0    0 …
1    8   28   56   70   56   28    8    1    0 …
1    9   36   84  126  126   84   36    9    1 …
.    .    .    .    .    .    .    .    .    .
.    .    .    .    .    .    .    .    .    .
.    .    .    .    .    .    .    .    .    .
```

For this problem, you will write a program to compute entries in powers of the *Pascal* matrix:

`Pascal`$^{\mathbf{P}}$ **`= Pascal × Pascal × … × Pascal`** (**P** factors)

Since the matrix is lower triangular, all powers are lower triangular and only the upper left **`N`** by **`N`** corner is used in computing coefficients in the upper left **`N`** by **`N`** corner of the power.

Input

The first line of input contains a single integer *K*, ($1 \leq K \leq 1000$), which is the number of data sets that follow. Each data set should be processed identically and independently.

Each data set consists of a single line of input containing four space-separated decimal integers. The first integer is the data set number. The second integer is the power, **P** (**1 <= P <= 100,000**), to which to raise the Pascal matrix. The third and fourth integers give the row number, **R**, and the column number, **C**, of the desired entry (**0 <= C <= R <= 100,000**).

Output

For each data set there is a single line of output. The line consists of the data set number, a single space, which is then followed by the requested entry of the requested *Powers of the Pascal* matrix. Input values will be restricted so results will not overflow a 64-bit integer value.

Sample Input	Sample Output
3 1 1 8 3 2 9 21 13 3 200 100000 99998	1 56 2 8759577256290 3 199998000000000