Adjacent Bit Counts

For a string of n bits x1, x2, x3 ... Xn the adjacent bit count of the string (AdjBC(x)) is given by

$$X1*X2 + X2*X3 + X3*X4 + ... + Xn-1 * Xn$$

which counts the number of times a 1 bit is adjacent to another 1 bit. For example:
AdjBC(011101101) = 3
AdjBC(111101101) = 4
AdjBC(010101010) = 0

Write a program which takes as input integers n and k and returns the number of bit strings x of n bits (out of 2^n) that satisfy AdjBC(x) = k. For example, for 5 bit strings, there are 6 ways of getting AdjBC(x) = 2:
11100, 01110, 00111, 10111, 11101, 11011

Input

The first line of input contains a single integer P, ($1 \leq P \leq 1000$), which is the number of data sets that follow. Each data set is a single line that contains the data set number, followed by a space, followed by a decimal integer giving the number (n) of bits in the bit strings, followed by a single space, followed by a decimal integer (k) giving the desired adjacent bit count. The number of bits (n) will not be greater than 100 and the parameters n and k will be chosen so that the result will fit in a signed 32-bit integer.

Output

For each data set there is one line of output. It contains the data set number followed by a single space, followed by the number of n-bit strings with adjacent bit count equal to k.

Example

Input:
10
1 5 2
2 20 8
3 30 17
4 40 24
5 50 37
6 60 52
7 70 59
8 80 73
9 90 84
10 100 90

Output:
1 6
2 63426
3 1861225
4 168212501
5 44874764
6 160916

7 22937308
8 99167
9 15476
10 23076518