Longwood Invitational (Fall 2011)

Problem 3: A Ladder Problem (Contributed by Ben Burrell, Randolph-Macon College)

Suppose that Tom washes windows using a long extension ladder which he can adjust to different heights. For example, he can set the ladder to be forty rungs long -- or only twenty rungs long. Tom uses several different ladders in which the rungs are spaced differently. For instance, on really steep buildings, he might use a ladder on which the rungs are so close together that he can take five or six rungs at a time. However, on some other buildings, he uses a ladder in which the rungs are so far apart he can only take one rung at a time.

Your problem is to determine how many different ways Tom can climb a ladder with *n* rungs if each step can take anywhere from 1 to *m* rungs. For example, the number of different ways to climb a 5-step ladder where a permitted step can be 1, 2, or 3 rungs (that is, n=5 and m=3) is 13 (the possible steps are listed below):

1,1,1,1,1
1,1,1,2
1,1,2,1
1,2,1,1
2,1,1,1
1,2,2
2,1,2
2,2,1
1,1,3
1,3,1
3,1,1
2,3
3,2

Input

The input will consist of a series of lines. Each line will contain a pair of values separated by a space. The first value of the pair represents "*n*", the number of rungs in the ladder. The second value of the pair represents "*m*", the maximum number of rungs Tom can take in a single step. You may assume for each pair of input values that $1 \le n \le 20$ and that $m \le n$.

Output

For each line of input you should produce one line of output which contains a single integer. The integer should describe the number of ways in which Tom can climb an n-rung ladder using only steps of size 1 through *m* rungs each.

Example

Input:
5 3
1 1
10 1
4 2

Output:
13
1
1
5

(Example continued on back)

Output:

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13
1
1
5
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