SPOJ.com - Problem SQRBR 30/10/17, 2:39 AM



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SQRBR - Square Brackets

#dynamic-programming (/problems/tag/dynamic-programming)

You are given:

- a positive integer n,
- an integer k, 1<=k<=n,
- an increasing sequence of k integers $0 < s_1 < s_2 < ... < s_k <= 2n$.

What is the number of proper bracket expressions of length 2n with opening brackets appearing in positions s_1 , s_2 ,..., s_k ?

Illustration

Several proper bracket expressions:

(1)1((1)1(1) (((1)1)1((1)1

An improper bracket expression:

There is exactly one proper expression of length 8 with opening brackets in positions 2, 5 and 7.

Task

Write a program which for each data set from a sequence of several data sets:

- reads integers n, k and an increasing sequence of k integers from input,
- computes the number of proper bracket expressions of length 2n with opening brackets appearing at positions $s_1, s_2, ..., s_k$.
- writes the result to output.

Input

The first line of the input file contains one integer d, $1 \le d \le 10$, which is the number of data sets. The data sets follow. Each data set occupies two lines of the input file. The first line contains two integers n and k separated by single space, $1 \le n \le 10$, $1 \le k \le n$. The second line contains an increasing sequence of k integers from the interval [1;2n] separated by single spaces.

Output

The i-th line of output should contain one integer - the number of proper bracket expressions of length 2n with opening brackets appearing at positions s_1 , s_2 ,..., s_k .

Example

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Added by: adrian (/users/adrian)
Date: 2004-06-22

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Languages: All

Resource:

III Polish Collegiate Team Programming Contest

(AMPPZ), 1998

Vote requirements

- ✓ be spoj user for at least 5 days
- ✓ solve at least 15 problems
- × solve this problem

