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|  | **Palindromic Tax Paths** | |  |  | | --- | --- | | Prob# | palpath | | Author | Alex Schwendner | | Date | 2002 | | From | USACO Fall, 2002 Green Competition | |

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| Problem palpath: Palindromic Tax Paths [Alex Schwendner, 2002]  The cows are bored. To amuse themselves, they have started searching  for palindromes in Farmer John's tax forms. Palindromes are numbers  that read the same forwards and backwards, e.g., 1234321 (but not  1231). A palindrome can be as short as 1 digit in length.  Each tax form is an N x N (2 <= N <= 20) table of random single  digits (0..9). The cows wish to find paths on the grid such that  the sequence of digits the path traces is a palindrome. For example,  in the table below, the path shown traces out the palindrome 122221:  1-2 0 0  \  3 8 2=2  /  3 1 8 9  3 4 5 4  Some of the other palindromes that exist in the above example are  000, 121, 131, 1331, 13331, 2002 (many different ways), 318813,  454, and 8338. The paths may loop back upon themselves (as is the  case with, e.g., 121, 122221, and 000). However, the paths may not  use the same table entry more than once sequentially (i.e., 9889,  95559, and 9999999 are not valid palindromes). The length of a  palindromic path is the number of digits it uses (12221 uses 5  digits).  The cows would like to know how many palindromic paths of a given  length L (1 <= L <= 18) exist. Write a program to determine the  number of palindromic paths of length L for a given table of digits.  If a path and its inverse are distinct, count them as two paths.  That is, if traversing a path backwards is not the same as traversing  it forwards, count it as two paths. In the example table above,  count 122221 as two paths because it can be traversed either starting  on the 1 in the first row and ending on the 1 in the third row, or  starting on the 1 in the third row and ending on the 1 in the first  row. On the other hand, count `949' only once, as it can only be  traversed starting at 9, going to 4, and returning to the single  9.  PROBLEM NAME: palpath  INPUT FORMAT:  \* Line 1: Two space-separated integers: N and L  \* Lines 2..N+1: The tax form: N lines of N space-separated digits  SAMPLE INPUT (file palpath.in):  3 3  1 2 3  1 2 3  1 2 3  OUTPUT FORMAT:  \* Line 1: A single integer: the total number of palindromic paths.  All answers for this problem's test data fit into signed 32  bit entities.  SAMPLE OUTPUT (file palpath.out):  86 |

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