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|  | **The County Fair** | |  |  | | --- | --- | | Prob# | cfair | | Author | Brian Dean | | Date | 20060328 | | From | USACO 2006 U S Open Gold Competition | |

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| Problem cfair: The County Fair [Brian Dean, 2006]  Every year, Farmer John loves to attend the county fair. The fair  has N booths (1 <= N <= 400), and each booth i is planning to give  away a fabulous prize at a particular time P(i) (0 <= P(i) <=  1,000,000,000) during the day. He has heard about this and  would like to collect as many fabulous prizes as possible to share  with the cows. He would like to show up at a maximum possible number  of booths at the exact times the prizes are going to be awarded.  FJ investigated and has determined the time T(i,j) (always in range  1..1,000,000) that it takes him to walk from booth i to booth j.  The county fair's unusual layout means that perhaps FJ could travel  from booth i to booth j by a faster route if he were to visit  intermediate booths along the way. Being a poor map reader, Farmer  John never considers taking such routes -- he will only walk from  booth i to booth j in the event that he can actually collect a  fabulous prize at booth j, and he never visits intermediate booths  along the way. Furthermore, T(i,j) might not have the same value  as T(j,i) owing to FJ's slow walking up hills.  Farmer John starts at booth #1 at time 0. Help him collect as many  fabulous prizes as possible.  PROBLEM NAME: cfair  INPUT FORMAT:  \* Line 1: A single integer: N.  \* Lines 2..1+N: Line i+1 contains a single integer: P(i).  \* Lines 2+N..1+N+N^2: These N^2 lines each contain a single integer  T(i,j) for each pair (i,j) of booths. The first N of these  lines respectively contain T(1,1), T(1,2), ..., T(1,N). The  next N lines contain T(2,1), T(2,2), ..., T(2,N), and so on.  Each T(i,j) value is in the range 1...1,000,000 except for the  diagonals T(1,1), T(2,2), ..., T(N,N), which have the value  zero.  SAMPLE INPUT (file cfair.in):  4  13  9  19  3  0  10  20  3  4  0  11  2  1  15  0  12  5  5  13  0  INPUT DETAILS:  There are 4 booths. Booth #1 is giving away a prize at time 13, booth #2  at time 9, booth #3 at time 19, and booth #4 at time 3.  OUTPUT FORMAT:  \* Line 1: A single integer, containing the maximum number of prizes  Farmer John can acquire.  SAMPLE OUTPUT (file cfair.out):  3  OUTPUT DETAILS:  Farmer John first walks to booth #4 and arrives at time 3, just in  time to receive the fabulous prize there. He them walks to booth  #2 (always walking directly, never using intermediate booths!) and  arrives at time 8, so after waiting 1 unit of time he receives the  fabulous prize there. Finally, he walks back to booth #1, arrives  at time 13, and collects his third fabulous prize. |

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