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|  | **Cheapest Palindrome** | |  |  | | --- | --- | | Prob# | cheappal | | Author | Eko Mirhard | | Date | 20070304 | | From | USACO 2007 U S Open Gold Competition | |

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| Problem cheappal: Cheapest Palindrome [Eko Mirhard, 2007]  Memory Limit: 18MB due to system change.  Keeping track of all the cows can be a tricky task so Farmer John  has installed a system to automate it. He has installed on each cow  an electronic ID tag that the system will read as the cows pass by  a scanner. Each ID tag's contents are currently a single string  with length M (1 <= M <= 2,000) characters drawn from an alphabet  of N (1 <= N <= 26) different symbols (namely, the lower-case roman  alphabet).  Cows, being the mischievous creatures they are, sometimes try to  spoof the system by walking backwards. While a cow whose ID is  "abcba" would read the same no matter which direction the she walks,  a cow with the ID "abcb" can potentially register as two different  IDs ("abcb" and "bcba").  FJ would like to change the cows's ID tags so they read the same  no matter which direction the cow walks by. For example, "abcb" can  be changed by adding "a" at the end to form "abcba" so that the ID  is palindromic (reads the same forwards and backwards). Some other  ways to change the ID to be palindromic include adding the three  letters "bcb" to the begining to yield the ID "bcbabcb" or removing  the letter "a" to yield the ID "bcb". One can add or remove characters  at any location in the string yielding a string longer or shorter  than the original string.  Unfortunately as the ID tags are electronic, each character insertion  or deletion has a cost (0 <= cost <= 10,000) which varies depending  on exactly which character value to be added or deleted. Given the  content of a cow's ID tag and the cost of inserting or deleting  each of the alphabet's characters, find the minimum cost to change  the ID tag so it satisfies FJ's requirements. An empty ID tag is  considered to satisfy the requirements of reading the same forward  and backward. Only letters with associated costs can be added to a  string.  PROBLEM NAME: cheappal  INPUT FORMAT:  \* Line 1: Two space-separated integers: N and M  \* Line 2: This line contains exactly M characters which constitute the  initial ID string  \* Lines 3..N+2: Each line contains three space-separated entities: a  character of the input alphabet and two integers which are  respectively the cost of adding and deleting that character.  SAMPLE INPUT (file cheappal.in):  3 4  abcb  a 1000 1100  b 350 700  c 200 800  INPUT DETAILS:  The nametag is "abcb" with these per-operation costs:  Insert Delete  a 1000 1100  b 350 700  c 200 800  OUTPUT FORMAT:  \* Line 1: A single line with a single integer that is the minimum cost  to change the given name tag.  SAMPLE OUTPUT (file cheappal.out):  900  OUTPUT DETAILS:  If we insert an "a" on the end to get "abcba", the cost would be  1000. If we delete the "a" on the beginning to get "bcb", the cost  would be 1100. If we insert "bcb" at the begining of the string, the  cost would be 350+200+350=900, which is the minimum. |

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