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|  | **Treats for the Cows** | |  |  | | --- | --- | | Prob# | trt | | Author | Marco Gallotta | | Date | 20050924 | | From | USACO February, 2006 Gold Competition | |

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| Problem trt: Treats for the Cows [Marco Gallotta, 2005]  FJ has purchased N (1 <= N <= 2000) yummy treats for the cows who  get money for giving vast amounts of milk. FJ sells one treat per  day and wants to maximize the money he receives over a given period  time.  The treats are interesting for many reasons:  \* The treats are numbered 1..N and stored sequentially in single  file in a long box that is open at both ends. On any day, FJ  can retrieve one treat from either end of his stash of treats.  \* Like fine wines and delicious cheeses, the treats improve with  age and command greater prices.  \* The treats are not uniform: some are better and have higher  intrinsic value. Treat i has value v(i) (1 <= v(i) <= 1000).  \* Cows pay more for treats that have aged longer: a cow will  pay v(i)\*a for a treat of age a.  Given the values v(i) of each of the treats lined up in order of  the index i in their box, what is the greatest value FJ can receive  for them if he orders their sale optimally?  The first treat is sold on day 1 and has age a=1. Each subsequent  day increases the age by 1.  PROBLEM NAME: trt  INPUT FORMAT:  \* Line 1: A single integer, N  \* Lines 2..N+1: Line i+1 contains the value of treat v(i)  SAMPLE INPUT (file trt.in):  5  1  3  1  5  2  INPUT DETAILS:  Five treats. On the first day FJ can sell either treat #1 (value 1) or  treat #5 (value 2).  OUTPUT FORMAT:  \* Line 1: The maximum revenue FJ can achieve by selling the treats  SAMPLE OUTPUT (file trt.out):  43  OUTPUT DETAILS:  FJ sells the treats (values 1, 3, 1, 5, 2) in the following order  of indices: 1, 5, 2, 3, 4, making 1x1 + 2x2 + 3x3 + 4x1 + 5x5 = 43. |

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