Firefighters and grannies (2)   P65894_en

Examen parcial d'Algorísmia, FME (2017-11-06)

The firefighters of a distant country want to protect the grannies inside n schools. All the schools are in a row on a street, numbered in order from 1 to n. At each school j there are i_j grannies. The firefighters can form g groups, and each group can only go to a single school. If a group goes to school j, it protects all the grannies there. In addition, it also indirectly protects half the grannies in school $j - 1$, assuming that it exists and that it is not already fully protected by another group; and similarly with school $j + 1$.

What is the maximum number of grannies that can be protected?

Input

Input consists of several cases, each one with g and n, followed by the i_j's. You can assume $1 \le g \le n \le 3000$, and that all the i_j's are even natural numbers between 2 and 10^5.

Output

For every case, print how many grannies can be protected.

Hint

The expected solution for this problem is a dynamic programming code with two mutual recurrences and cost $O(g \cdot n)$.

Sample input

```
1 1   100000
1 2   10 20
1 3   10 80 20
1 3   10 20 80
3 3   10 20 80
3 9   4 8 2 4 8 8 6 2 8
9 9   2 2 2 2 2 2 2 2 2
```

Sample output

```
100000
25
95
90
110
36
18
```

Problem information

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