

PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS HACKS STANDINGS CUSTOM INVOCATION

E. Price Maximization

time limit per test: 2 seconds
memory limit per test: 256 megabytes

A batch of n goods (n — an even number) is brought to the store, i -th of which has weight a_i . Before selling the goods, they must be packed into packages. After packing, the following will be done:

- There will be $\frac{n}{2}$ packages, each package contains exactly two goods;
- The weight of the package that contains goods with indices i and j ($1 \leq i, j \leq n$) is $a_i + a_j$.

With this, the cost of a package of weight x is always $\lfloor \frac{x}{k} \rfloor$ burles (rounded down), where k — a fixed and given value.

Pack the goods to the packages so that the revenue from their sale is maximized. In other words, make such $\frac{n}{2}$ pairs of given goods that the sum of the values $\lfloor \frac{x_i}{k} \rfloor$, where x_i is the weight of the package number i ($1 \leq i \leq \frac{n}{2}$), is **maximal**.

For example, let $n = 6$, $k = 3$, weights of goods $a = [3, 2, 7, 1, 4, 8]$. Let's pack them into the following packages.

- In the first package we will put the third and sixth goods. Its weight will be $a_3 + a_6 = 7 + 8 = 15$. The cost of the package will be $\lfloor \frac{15}{3} \rfloor = 5$ burles.
- In the second package put the first and fifth goods, the weight is $a_1 + a_5 = 3 + 4 = 7$. The cost of the package is $\lfloor \frac{7}{3} \rfloor = 2$ burles.
- In the third package put the second and fourth goods, the weight is $a_2 + a_4 = 2 + 1 = 3$. The cost of the package is $\lfloor \frac{3}{3} \rfloor = 1$ burle.

With this packing, the total cost of all packs would be $5 + 2 + 1 = 8$ burles.

Input

The first line of the input contains an integer t ($1 \leq t \leq 10^4$) —the number of test cases in the test.

The descriptions of the test cases follow.

The first line of each test case contains two integers n ($2 \leq n \leq 2 \cdot 10^5$) and k ($1 \leq k \leq 1000$). The number n — is even.

The second line of each test case contains exactly n integers a_1, a_2, \dots, a_n ($0 \leq a_i \leq 10^9$).

It is guaranteed that the sum of n over all the test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, print on a separate line a single number — the maximum possible total cost of all the packages.

Example

input	Copy
6 6 3 3 2 7 1 4 8 4 3 2 1 5 6 4 12 0 0 0 0 2 1 1 1 6 10 2 0 0 5 9 4 6 5 5 3 8 6 3 2	
output	Copy
8 4 0 2 1 5	

Note

The first test case is analyzed in the statement.

In the second test case, you can get a total value equal to 4 if you put the first and second goods in the first package and the third and fourth goods in the second package.

In the third test case, the cost of each item is 0, so the total cost will also be 0.

Codeforces Round 797 (Div. 3).

Finished

Practice



→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++20 13.2 (64 bit, win

Choose file: Choose File No file chosen

Submit

→ Last submissions

Submission	Time	Verdict
315265088	Apr/13/2025 12:34	Accepted

→ Problem tags

binary searchgreedymath

two pointers*1500

No tag edit access

→ Contest materials

Announcement

Tutorial