

PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS HACKS ROOM STANDINGS CUSTOM INVOCATION

B2. Bouquet (Hard Version)

time limit per test: 1.5 seconds
memory limit per test: 256 megabytes

This is the hard version of the problem. The only difference is that in this version, instead of listing the number of petals for each flower, the number of petals and the quantity of flowers in the store is set for all types of flowers.

A girl is preparing for her birthday and wants to buy the most beautiful bouquet. There are a total of n different types of flowers in the store, each of which is characterized by the number of petals and the quantity of this type of flower. A flower with k petals costs k coins. The girl has decided that the difference in the number of petals between any two flowers she will use to decorate her cake should not exceed one. At the same time, the girl wants to assemble a bouquet with the maximum possible number of petals. Unfortunately, she only has m coins, and she cannot spend more. What is the maximum total number of petals she can assemble in the bouquet?

Input

Each test consists of several test cases. The first line contains a single integer t ($1 \leq t \leq 10\,000$) — the number of test cases. This is followed by descriptions of the test cases.

The first line of each test case contains two integers n, m ($1 \leq n \leq 2 \cdot 10^5, 1 \leq m \leq 10^{18}$) — the number of types of flowers in the store and the number of coins the girl possesses, respectively. The second line of each test case contains n different integers a_1, a_2, \dots, a_n ($1 \leq a_i \leq 10^9$), where a_i is the number of petals of the i -th flower type in the store (for different indexes $i \neq j$, it must be $a_i \neq a_j$). The third line of each test case contains n integers c_1, c_2, \dots, c_n ($1 \leq c_i \leq 10^9$), where c_i is the quantity of the i -th flower type in the store.

The sum of n over all test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, print one integer — the maximum possible number of petals in a bouquet that a girl can collect, observing all the conditions listed above.

Example

input	Copy
7 3 10 1 2 3 2 2 1 3 1033 206 207 1000 3 4 1 6 20 4 2 7 5 6 1 1 2 1 3 1 7 8 100000 239 30 610 122 24 40 8 2 12 13123 112 1456 124 100 123 10982 6 13 2 4 11 1 3 5 2 2 1 2 2 1 8 10330 206 210 200 201 198 199 222 1000 9 10 11 12 13 14 15 16 2 1000000000 11 12 87312315 753297050	
output	Copy
7 1033 19 99990 13	

Codeforces Round 961 (Div. 2)

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: Python 3.8.10
Almost always, if you send a solution on PyPy, it works much faster

Choose file: Choose File No file chosen

Submit

→ Last submissions

Submission	Time	Verdict
272679089	Jul/26/2024 11:54	Accepted

→ Problem tags

binary search data structures greedy
math sortings two pointers

No tag edit access

→ Contest materials

- Announcement (en) ✕
- Tutorial #1 (en) ✕
- Video Tutorial (en) ✕

10000
9999999999

Note

In the first test case, some valid bouquets are $(1, 1, 2, 2)$, $(2, 2, 3)$, $(1, 1)$, $(2, 2)$. The maximum over all valid bouquets not greater than 10 is 7 for $(2, 2, 3)$. In the second test case, you can assemble a valid bouquet with $(206, 206, 207, 207, 207)$ with a sum of 1033, which is the maximum number of petals the girl can buy. In the third test case, you can assemble a valid bouquet with $(5, 5, 5, 4)$ with a sum of 19. It can be seen that no valid bouquet can have 20 petals.

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