

F. Quests

time limit per test: 3 seconds
memory limit per test: 256 megabytes

There are n quests. If you complete the i -th quest, you will gain a_i coins. You can only complete at most one quest per day. However, once you complete a quest, you cannot do the same quest again for k days. (For example, if $k = 2$ and you do quest 1 on day 1, then you cannot do it on day 2 or 3, but you can do it again on day 4.)

You are given two integers c and d . Find the maximum value of k such that you can gain at least c coins over d days. If no such k exists, output `Impossible`. If k can be arbitrarily large, output `Infinity`.

Input

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

The first line of each test case contains three integers n, c, d ($2 \leq n \leq 2 \cdot 10^5$; $1 \leq c \leq 10^{16}$, $1 \leq d \leq 2 \cdot 10^5$) — the number of quests, the number of coins you need, and the number of days.

The second line of each test case contains n integers a_1, a_2, \dots, a_n ($1 \leq a_i \leq 10^9$) — the rewards for the quests.

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

Output

For each test case, output one of the following.

- If no such k exists, output `Impossible`.
- If k can be arbitrarily large, output `Infinity`.
- Otherwise, output a single integer — the maximum value of k such that you can gain at least c coins over d days.

Please note, the checker is **case-sensitive**, and you should output strings exactly as they are given.

Example

input	Copy
6 2 5 4 1 2 2 20 10 100 10 3 100 3 7 2 6 4 20 3 4 5 6 7 4 10000000000 2022 8217734 927368 26389746 627896974 2 20 4 5 1	
output	Copy
2 Infinity Impossible 1 12 0	

Note

In the first test case, one way to earn 5 coins over 4 days with $k = 2$ is as follows:

- Day 1: do quest 2, and earn 2 coins.
- Day 2: do quest 1, and earn 1 coin.
- Day 3: do nothing.
- Day 4: do quest 2, and earn 2 coins.

In total, we earned $2 + 1 + 2 = 5$ coins.
In the second test case, we can make over 20 coins on the first day itself by doing the first quest to earn 100 coins, so the value of k can be arbitrarily large, since we never need to do another quest.

In the third test case, no matter what we do, we can't earn 100 coins over 3 days.

Codeforces Round 835 (Div. 4)

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

Submission	Time	Verdict
257686638	Apr/22/2024 07:14	Accepted
257686118	Apr/22/2024 07:05	Time limit exceeded on test 1

Problem tags

binary search greedy sortings *1500

No tag edit access

Contest materials

Announcement (en)

Tutorial (en)