



Switch to Non-IDE mode

Contest Code: FEB222C Problem Code: WGCD



You are given an integer sequence $A = (A_1, A_2, \dots, A_N)$ of length N and an integer M such that $0 \leq M < \sum_{i=1}^N A_i$.

An integer sequence $B = (B_1, B_2, \dots, B_N)$ of length N is called *good* if:

- $0 \leq B_i \leq A_i$ for each $1 \leq i \leq N$
- $B_1 + B_2 + \dots + B_N = M$

Find the **maximum** value of $\gcd(A_1 - B_1, A_2 - B_2, \dots, A_N - B_N)$ over all good sequences B . Here, \gcd denotes the **greatest common divisor**.

Note: $\gcd(a, b, c) = \gcd(a, \gcd(b, c))$ and $\gcd(a, 0) = \gcd(0, a) = a$.

Input Format

- The first line of input contains a single integer T , denoting the number of test cases. The description of T test cases follows.
- The first line of each test case contains two space-separated integers N, M .
- The second line of each test case contains N space-separated integers A_1, A_2, \dots, A_N .

Output Format

For each test case, print a single line containing one integer — the **maximum** value of $\gcd(A_1 - B_1, A_2 - B_2, \dots, A_N - B_N)$ over all good sequences B .

Constraints

- $1 \leq T \leq 10$
- $1 \leq N \leq 10^5$
- $1 \leq A_i \leq 10^5$
- $0 \leq M < \sum_{i=1}^N A_i$

Subtasks

Subtask #1 (50 points): $1 \leq N \leq 10^4$

Subtask #2 (50 points): Original constraints

Sample Input 1

```
4
4 4
1 3 5 7
4 4
5 5 5 5
4 0
4 6 9 12
6 10
15 9 3 8 14 17
```

Sample Output 1

3
4
1
7

Explanation

Test case 1: The optimal strategy is to take $B = (1, 0, 2, 1)$. The answer is $\gcd(1 - 1, 3 - 0, 5 - 2, 7 - 1) = \gcd(0, 3, 3, 6) = 3$.

Test case 2: The optimal strategy is to take $B = (1, 1, 1, 1)$. The answer is $\gcd(5 - 1, 5 - 1, 5 - 1, 5 - 1) = \gcd(4, 4, 4, 4) = 4$.

PYTH 3.6

Code gets autosaved every second

1 # cook your dish here

2

0:0

Open FileRunSubmit

Custom Input

Note: Your program will be run with no input.

Important Links of our resources & information -

Programming Tools

Online IDE

Upcoming Coding Contests

CodeChef Certifications

Hosting Contests

Problem Setting

Learning Resources

[Getting Started](#)

[Practice Problems](#)

[Prepare for DSA Certification](#)

[CodeChef Discuss](#)

[CodeChef Tutorials](#)

Initiatives

[Go For Gold](#)

[CodeChef for Schools](#)

[Campus Chapters](#)

[CodeChef Goodies](#)

More

[CodeChef For Business](#)

[Contact Us](#)

[Code Of Conduct](#)

[User Ranklist](#)

[Release Notes](#)

[Privacy policy](#)

[Terms](#)

www.codechef.com

Follow Us