

Contest Duration: 2025-07-26(Sat) 22:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250726T2100&p1=248>) - 2025-07-26(Sat) 23:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250726T2240&p1=248>) (local time) (100 minutes)

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## D - Match, Mod, Minimize 2

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 400 points

### Problem Statement

You are given length- $N$  sequences  $A = (A_1, A_2, \dots, A_N)$  and  $B = (B_1, B_2, \dots, B_N)$  consisting of non-negative integers, and a positive integer  $M$ .

When you can freely rearrange the elements of  $A$ , find the minimum possible value of  $\sum_{i=1}^N ((A_i + B_i) \bmod M)$ .

$T$  test cases are given, so find the answer for each of them.

### Constraints

- $1 \leq T \leq 10^5$
- $1 \leq N \leq 3 \times 10^5$
- $1 \leq M \leq 10^9$
- $0 \leq A_i, B_i < M$
- The sum of  $N$  over all test cases is at most  $3 \times 10^5$ .
- All input values are integers.

## Input

The input is given from Standard Input in the following format:

```
T  
case1  
case2  
:  
caseT
```

Each test case  $\text{case}_i$  is given in the following format:

```
N M  
A1 A2 ... AN  
B1 B2 ... BN
```

## Output

Output  $T$  lines.

The  $j$ -th line should contain the minimum possible value of  $\sum_{i=1}^N ((A_i + B_i) \bmod M)$  for the  $j$ -th test case.

### Sample Input 1

Copy

```
3  
3 6  
3 1 4  
2 0 1  
1 1000000000  
999999999  
999999999  
10 201  
144 150 176 154 110 187 38 136 111 46  
96 109 73 63 85 1 156 7 13 171
```

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### Sample Output 1

Copy

```
5  
999999998  
619
```

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For the first test case, if we rearrange  $A$  as 4, 3, 1, then  $(A_i + B_i) \bmod M$  becomes 0, 3, 2, respectively, and their sum is 5.

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