D. Three Activities

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

Winter holidays are coming up. They are going to last for n days.

During the holidays, Monocarp wants to try all of these activities **exactly once** with his friends:

- go skiing;
- watch a movie in a cinema;
- play board games.

Monocarp knows that, on the i-th day, exactly a_i friends will join him for skiing, b_i friends will join him for a movie and c_i friends will join him for board games.

Monocarp also knows that he can't try more than one activity in a single day.

Thus, he asks you to help him choose three **distinct** days x, y, z in such a way that the total number of friends to join him for the activities ($a_x + b_y + c_z$) is maximized.

Input

The first line contains a single integer t ($1 \le t \le 10^4$) — the number of testcases.

The first line of each testcase contains a single integer n ($3 \le n \le 10^5$) — the duration of the winter holidays in days.

The second line contains n integers $a_1, a_2, \ldots, a_n$ ($1 \le a_i \le 10^8$) — the number of friends that will join Monocarp for skiing on the i-th day.

The third line contains n integers $b_1, b_2, \ldots, b_n$ ($1 \le b_i \le 10^8$) — the number of friends that will join Monocarp for a movie on the i-th day.

The fourth line contains n integers $c_1, c_2, \ldots, c_n$ ($1 \le c_i \le 10^8$) — the number of friends that will join Monocarp for board games on the i-th day.

The sum of n over all testcases doesn't exceed 10^5.

Output

For each testcase, print a single integer — the maximum total number of friends that can join Monocarp for the activities on three distinct days.

Example

input

```
4
3
1 10 1
10 1 1
1 1 10
4
30 20 10 1
30 5 15 20
30 25 10 10
10
5 19 12 3 18 18 6 17 10 13
15 17 19 11 16 3 11 17 17 17
1 17 18 10 15 8 17 3 13 12
10
17 5 4 18 12 4 11 2 16 16
8 4 14 19 3 12 6 7 5 16
3 4 8 11 10 8 10 2 20 3
```

output

```
30
75
55
56
```

Note

In the first testcase, Monocarp can choose day 2 for skiing, day 1 for a movie and day 3 for board

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→ Virtual participation

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Start virtual contest

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games. This way, $a_2 = 10$ friends will join him for skiing, $b_1 = 10$ friends will join him for a movie and $c_3 = 10$ friends will join him for board games. The total number of friends is 30.

In the second testcase, Monocarp can choose day 1 for skiing, day 4 for a movie and day 2 for board games. $30 + 20 + 25 = 75$ friends in total. Note that Monocarp can't choose day 1 for all activities, because he can't try more than one activity in a single day.

In the third testcase, Monocarp can choose day 2 for skiing, day 3 for a movie and day 7 for board games. $19 + 19 + 17 = 55$ friends in total.

In the fourth testcase, Monocarp can choose day 1 for skiing, day 4 for a movie and day 9 for board games. $17 + 19 + 20 = 56$ friends in total.