Problem 2: Bricks Game

(Medium-Hard)

(Adapted from Hackerrank from the problem bearing the same name)

You and your friend decide to play a game using a stack consisting of N bricks. In this game, you can alternatively remove 1, 2 or 3 bricks **from the top**, and the numbers etched on the removed bricks are added to your score. You have to play so that you **obtain the maximum possible score**. **It is given that your friend will also play optimally** and you make the first move.

As an example, suppose that the bricks are numbered $A = [1, 2, 3, 4, 5]$. You can remove either $[1]$ for 1 point, $[1, 2]$ for 3 points, or $[1, 2, 3]$ for 6 points. For your friend, your moves would leave the options of 1 to 3 elements from $[2, 3, 4]$ giving them 9 points and leaving brick 5 for you (leaving you with a score of 6), $[3, 4, 5]$ for 12 points or $[4, 5]$ for 9 points. In this case, it will never be optimal for your friend to take fewer than the maximum available number of elements. Your maximum possible score is 6, achievable in two ways: 1 first move and 5 for the second move, or $[1, 2, 3]$ in your first move.

Input Format

The first line will contain an integer t, the number of test cases.

Each of the next t pairs of lines is in the following format:

- The first line contains an integer n, the number of bricks in A.
- The next line contains n space-separated integers A_i.

Constraints

- $1 \leq t \leq 5$
- $1 \leq n \leq 10^5$
- $0 \leq A_i \leq 10^9$

The time limit for this problem is 2 seconds.

Output Format

For each test case, print a single line containing your maximum score.

Sample Input

```
2
5
999 1 1 1 0
```

```
5
0 1 1 1 999
```

Sample Output

```
1001
999
```

Explanation

In the first test case, you will pick $[999, 1, 1]$ on your first (and only) turn. If you play in any other way, you will not get a score of 1001.

In the second test case, the best option will be to pick up the first brick (with a score of 0) for your first turn. Then your friend will choose the next three bricks (that is, the bricks $[1, 1, 1]$), and you will get the last brick 999.