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## E - Most Valuable Parentheses

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 450 points

### Problem Statement

You are given a sequence of non-negative integers  $A = (A_1, \dots, A_{2N})$  of length  $2N$ .

Define the score of a parenthesis sequence  $s$  of length  $2N$  as follows:

- For every position  $i$  where the  $i$ -th character of  $s$  is  $)$ , set  $A_i$  to  $0$ , then take the sum of all elements of  $A$ .

Find the maximum possible score of a correct parenthesis sequence of length  $2N$ .

You are given  $T$  test cases; solve each.

► What is a correct parenthesis sequence?

### Constraints

- $1 \leq T \leq 500$
- $1 \leq N \leq 2 \times 10^5$
- For each input file, the sum of  $N$  over all test cases is at most  $2 \times 10^5$ .
- $0 \leq A_i \leq 10^9$  ( $1 \leq i \leq 2N$ )
- All input values are integers.

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# Input

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

```
 $T$   
case1  
case2  
⋮  
case $T$ 
```

case <sub>$i$</sub>  represents the  $i$ -th test case. Each test case is given in the following format:

```
 $N$   
 $A_1$   
 $A_2$   
⋮  
 $A_{2N}$ 
```

# Output

Output  $T$  lines. The  $i$ -th line ( $1 \leq i \leq T$ ) should contain the answer for the  $i$ -th test case.

## Sample Input 1

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```
2  
3  
400  
500  
200  
100  
300  
600  
6  
1000000000  
1000000000  
1000000000  
1000000000  
1000000000  
1000000000  
1000000000  
1000000000  
1000000000  
1000000000  
1000000000  
1000000000  
1000000000
```

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# Sample Output 1

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```
1200
6000000000
```

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In the first test case, choosing the correct parenthesis string  $((()))$  gives a score of  $400 + 500 + 0 + 0 + 300 + 0 = 1200$ .

No correct parenthesis string yields a higher score, so the answer is 1200.

Note that, as in the second test case of this sample, the answer may exceed the 32-bit integer range.

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