

Orange Pit

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 256 megabytes

Busy Beaver has filled a pit with N labeled oranges. The i -th orange is labeled a_i .

Busy Beaver is playing a game with these oranges. They start with a score of 0. Then, until there is only one orange left, Busy Beaver will select two oranges i and j , gain $|a_i - a_j|$ points, discard one of these oranges, and return the other to the pit.

Find the maximum number of points Busy Beaver can score.

Input

Each test contains multiple test cases. The first line contains a single integer T ($1 \leq T \leq 10^4$) — the number of test cases. The description of the test cases follows.

The first line of each test case contains a single integer N ($1 \leq N \leq 2 \cdot 10^5$).

The second line of each test case contains N integers a_1, \dots, a_N ($1 \leq a_i \leq 10^9$).

The sum of N across all test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, print the maximum number of points Busy Beaver can score.

Example

standard input	standard output
3	8
3	0
1 6 3	2499999999
1	
4	
5	
1 500000000 500000000 500000000 1000000000	

Note

For the first test case, Busy Beaver should first select oranges 2 and 3, obtain $|6 - 3| = 3$ points, then discard orange 3. Then, after selecting oranges 1 and 2, Busy Beaver obtains $|1 - 6| = 5$ additional points, ending with 8 points total. This is the maximum number of points Busy Beaver can score.