Sell in Pairs

Input file:	`standard input`
Output file:	`standard output`
Time limit:	5 seconds
Memory limit:	1024 megabytes

Busy Beaver sells mushrooms at his market. Each mushroom has a *flavor index*, an integer between 1 and N (inclusive). For each i, there are a_i mushrooms of flavor index i.

Busy Beaver sells mushrooms only in **pairs**. Each mushroom can be used in **at most one** pair. A pair can be sold in one of the following ways:

- **Type 1:** two mushrooms with the same flavor index for price x.
- **Type 2:** two mushrooms whose flavor indices differ by exactly 1 (e.g. $(3, 4)$) for price y.

You are given Q scenarios. In the j-th scenario, the prices are (x_j, y_j). For each scenario, compute the maximum total profit Busy Beaver can obtain.

Input

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

The first line of each test case contains two integers N and Q ($2 \le N \le 3 \cdot 10^5$, $1 \le Q \le 3 \cdot 10^5$).

The second line of each test case contains N integers $a_1, a_2, \ldots, a_N$ ($0 \le a_i \le 10^6$).

Each of the next Q lines contains two integers x_i and y_i ($0 \le x_i \le 10^6$, $0 \le y_i \le 10^6$), describing each scenario.

The sum of N across all test cases does not exceed $3 \cdot 10^5$.

The sum of Q across all test cases does not exceed $3 \cdot 10^5$.

Output

Print Q lines.

On the i-th line, output the maximum profit Busy Beaver can obtain in the i-th scenario.

Scoring

There are five subtasks for this problem.

- (15 points): $Q = 1$, $1 \le x_1 < y_1$
- (30 points): For each $i \in \{1, 2, \ldots, Q\}$, $1 \le x_i < y_i$
- (15 points): $Q = 1$, $1 \le y_1 < x_1$
- (30 points): For each $i \in \{1, 2, \ldots, Q\}$, $1 \le y_i < x_i$
- (10 points): No additional constraints.

Example

standard input	standard output
2 4 5 2 3 2 1 7 2 2 9 0 2 4 4 5 3 7 3 5 4 3 6 3 3 4 10 19 5 7 6 3	21 36 8 16 16 247 92 75

Note

Below is the explanation for the first test case.

In the first scenario, it is optimal to sell three type 1 pairs as follows:

$$(1, 1), (2, 2), (3, 3)$$

which yields a profit of 21.

In the second scenario, it is optimal to sell four type 2 pairs as follows:

$$(1, 2), (1, 2), (2, 3), (3, 4)$$

which yields a profit of 36.

In the fifth scenario, it is optimal to sell two type 1 pairs and two type 2 pairs as follows:

$$(1, 1), (2, 2), (2, 3), (3, 4)$$

which yields a profit of 16.