C. Little Girl and Maximum Sum

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

The little girl loves the problems on array queries very much.

One day she came across a rather well-known problem: you've got an array of n elements (the elements of the array are indexed starting from 1); also, there are q queries, each one is defined by a pair of integers l_i, r_i $(1 \le l_i \le r_i \le n)$. You need to find for each query the sum of elements of the array with indexes from l_i to r_i, inclusive.

The little girl found the problem rather boring. She decided to reorder the array elements before replying to the queries in a way that makes the sum of query replies maximum possible. Your task is to find the value of this maximum sum.

Input

The first line contains two space-separated integers n $(1 \le n \le 2 \cdot 10^5)$ and q $(1 \le q \le 2 \cdot 10^5)$ — the number of elements in the array and the number of queries, correspondingly.

The next line contains n space-separated integers a_i $(1 \le a_i \le 2 \cdot 10^5)$ — the array elements.

Each of the following q lines contains two space-separated integers l_i and r_i $(1 \le l_i \le r_i \le n)$ — the i-th query.

Output

In a single line print a single integer — the maximum sum of query replies after the array elements are reordered.

Please, do not use the `%lld` specifier to read or write 64-bit integers in C++. It is preferred to use the `cin`, `cout` streams or the `%I64d` specifier.

Examples

input
3 3 5 3 2 1 2 2 3 1 3

output
25

input
5 3 5 2 4 1 3 1 5 2 3 2 3

output
33