

# Base Station Construction

Input file: standard input  
Output file: standard output  
Time limit: 2 seconds  
Memory limit: 1024 megabytes

China Mobile Shenzhen Branch was registered in 1999. Four years later, Guangdong Collegiate Programming Contest was held for the first time. China Mobile Shenzhen Branch, along with Guangdong Collegiate Programming Contest, witnesses the prosperity and development of the computer industry in Guangdong.



The 5G base station of China Mobile.

During the construction of a communication line, it is critical to carefully choose the locations for base stations. The distance from west to east of a city is  $n$  kilometers. The engineers have investigated the cost to build a base station at  $1, 2, \dots, n$  kilometers from west to east, which are  $a_1, a_2, \dots, a_n$  respectively.

To ensure communication quality for the residents, the locations of base stations also need to meet  $m$  requirements. The  $i$ -th requirement can be represented as a pair of integers  $l_i$  and  $r_i$  ( $1 \leq l_i \leq r_i \leq n$ ), indicating that there must be at least 1 base station between  $l_i$  kilometers and  $r_i$  kilometers (both inclusive) from west to east.

As the chief engineer, you need to decide the number of base stations to build and their locations, and finally calculate the minimum total cost to satisfy all requirements.

## Input

There are multiple test cases. The first line of the input contains an integer  $T$  indicating the number of test cases. For each test case:

The first line contains an integer  $n$  ( $1 \leq n \leq 5 \times 10^5$ ) indicating the distance from west to east of the city.

The second line contains  $n$  integers  $a_1, a_2, \dots, a_n$  ( $1 \leq a_i \leq 10^9$ ) where  $a_i$  indicates the cost to build a base station at  $i$  kilometers from west to east.

The third line contains an integer  $m$  ( $1 \leq m \leq 5 \times 10^5$ ) indicating the number of requirements.

For the following  $m$  lines, the  $i$ -th line contains two integers  $l_i$  and  $r_i$  ( $1 \leq l_i \leq r_i \leq n$ ) indicating that there must be at least 1 base station between  $l_i$  kilometers and  $r_i$  kilometers (both inclusive) from west to east.

It's guaranteed that neither the sum of  $n$  nor the sum of  $m$  of all test cases will exceed  $5 \times 10^5$ .

## Output

For each test case output one line containing one integer indicating the minimum total cost to satisfy all requirements.

## Example

standard input	standard output
2 5 3 2 4 1 100 3 1 3 2 4 5 5 5 7 3 4 2 2 3 1 4 2 3 4 5	102 5

## Note

For the first sample test case the optimal solution is to build base stations at 2 kilometers and 5 kilometers from west to east. The total cost is  $2 + 100 = 102$ .

For the second sample test case the optimal solution is to build base stations at 2 kilometers and 4 kilometers from west to east. The total cost is  $3 + 2 = 5$ .