Mehta and the Typical Supermarket

Mehta is a very rich guy. He has N types of coins, and each type of coin is available in an unlimited supply.

So Mehta goes to a supermarket to buy monthly groceries. There he sees that every item has a unique price, that is, no two items have the same price.

Now, the supermarket owner tells Mehta that they are selling items in the price range $[L, R]$ only on that particular day. He also tells Mehta that for every price, there is an item in the shop.

The supermarket has recently adopted a weird new tradition: Mehta may only use a single type of coin for each item he purchases. For example, he could pay for an item of price 4 with two 2-coins, but not with a 3-coin and a 1-coin.

As you know Mehta is very weak at calculations, so he wants you to do these calculations for him and tell how many different types of items he can buy.

Input Format
The first line of input contains N, the number of types of coins Mehta has.
Then the next N lines contain an integer each: the ith line contains $A[i]$, the value of Mehta's i^{th} type of coin.

Then the next line contains a number D, the number of days Mehta goes shopping.
Then each of the next D lines contains numbers L and R, denoting that they are selling items in price range $[L, R]$ on that particular day.

Output format
There will be D lines, each containing the number of distinct items that can be bought at that particular day.

Constraints
$1 \leq N \leq 17$
$1 \leq A[i] \leq 51$
$1 \leq D \leq 101$
$1 \leq L \leq R \leq 10^{18}$

Sample Input

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4
2
3
4
5
3
1 10
2 20
3 7
```

Sample output

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8
14
4
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Explanation

For $L = 1$ and $R = 10$ you can buy items of price $\{2, 3, 4, 5, 6, 8, 9, 10\}$.

For $L = 2$ and $R = 20$ you can buy items of price $\{2, 3, 4, 5, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20\}$.

For $L = 3$ and $R = 7$ you can buy items of price $\{3, 4, 5, 6\}$.