

Audition

N dancers are auditioning for the chance to compete in hit TV show *Dancing with the Stars*. The dancers are numbered from 1 to N according to their skill, with 1 being the least skilled and N being the most skilled.

The stage is divided into D segments, numbered from 1 to D from left to right. There are J judges who will score the contestants. The i -th judge can only see dancers in the segments from l_i to r_i inclusive.

Overworked and running behind schedule, the judges decided to make all the contestants dance together. The i -th contestant is scheduled to appear on stage b_i seconds after the start of the audition. No two dancers are scheduled to appear on the same second.

Each second:

1. Any dancers currently on the stage move to the next segment to the right (or leave the stage, if they are in the last segment).
2. If there is a dancer scheduled to appear this second, then they enter segment 1.
3. Each judge gives one point to the dancer with the highest skill level they can see. Note:
 - A dancer can receive multiple points in one second.
 - A dancer can receive multiple points from the same judge in different seconds.
 - If a judge cannot see any dancers in a particular second, then they do not give out any points.

The audition ends when every dancer has left the stage. The *final score* of a dancer is the total number of points they received from all judges during the audition.

Can you help the organizers calculate the final score for each dancer?

Subtasks and Constraints

For all subtasks, you are guaranteed that:

- $1 \leq N \leq 100\,000$.
- $1 \leq J \leq 100\,000$.
- $1 \leq D \leq 100\,000$.
- $1 \leq b_i \leq 1\,000\,000\,000$ for all i .
- No two dancers have the same b_i .
- $1 \leq l_i \leq r_i \leq D$ for all i .

Additional constraints for each subtask are given below.

Subtask	Points	Additional constraints
1	7	$N, D, J \leq 100$ and $b_i \leq 100$ for all i .
2	9	$N, D, J \leq 100$.
3	14	$N, J \leq 1000$.
4	29	$J = 1$.
5	34	$b_i < b_{i+1}$ for all i .
6	7	No additional constraints.

Input

- The first line of input contains the three integers N , J and D .
- The second line contains N integers b_1, b_2, \dots, b_N .
- The next J lines describe the judges. The i -th line contains l_i and r_i .

Output

Output N lines: the i -th line should contain the final score of the i -th dancer.

Sample Input

```
3 2 5
3 4 1
2 3
3 5
```

Sample Output

```
1
5
5
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Explanation

In Sample Input 1, the table below describes each second of the audition.

Second	Stage	Judge 1 gives a point to...	Judge 2 gives a point to...					
1	<table border="1" style="width: 100%; text-align: center;"><tr><td>3</td><td></td><td></td><td></td><td></td></tr></table>	3					-	-
3								
2	<table border="1" style="width: 100%; text-align: center;"><tr><td></td><td>3</td><td></td><td></td><td></td></tr></table>		3				3	-
	3							
3	<table border="1" style="width: 100%; text-align: center;"><tr><td>1</td><td></td><td>3</td><td></td><td></td></tr></table>	1		3			3	3
1		3						
4	<table border="1" style="width: 100%; text-align: center;"><tr><td>2</td><td>1</td><td></td><td>3</td><td></td></tr></table>	2	1		3		1	3
2	1		3					
5	<table border="1" style="width: 100%; text-align: center;"><tr><td></td><td>2</td><td>1</td><td></td><td>3</td></tr></table>		2	1		3	2	3
	2	1		3				
6	<table border="1" style="width: 100%; text-align: center;"><tr><td></td><td></td><td>2</td><td>1</td><td></td></tr></table>			2	1		2	2
		2	1					
7	<table border="1" style="width: 100%; text-align: center;"><tr><td></td><td></td><td></td><td>2</td><td>1</td></tr></table>				2	1	-	2
			2	1				
8	<table border="1" style="width: 100%; text-align: center;"><tr><td></td><td></td><td></td><td></td><td>2</td></tr></table>					2	-	2
				2				