B. Chat Online

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Little X and Little Z are good friends. They always chat online. But both of them have schedules.

Little Z has fixed schedule. He always online at any moment of time between a_1 and b_1, between a_2 and b_2, ..., between a_p and b_p (all borders inclusive). But the schedule of Little X is quite strange, it depends on the time when he gets up. If he gets up at time 0, he will be online at any moment of time between c_1 and d_1, between c_2 and d_2, ..., between c_q and d_q (all borders inclusive). But if he gets up at time t, these segments will be shifted by t. They become $[c_i + t, d_i + t]$ (for all i).

If at a moment of time, both Little X and Little Z are online simultaneosly, they can chat online happily. You know that Little X can get up at an integer moment of time between l and r (both borders inclusive). Also you know that Little X wants to get up at the moment of time, that is suitable for chatting with Little Z (they must have at least one common moment of time in schedules). How many integer moments of time from the segment $[l, r]$ suit for that?

Input

The first line contains four space-separated integers p, q, l, r ($1 \le p, q \le 50$; $0 \le l \le r \le 1000$).

Each of the next p lines contains two space-separated integers a_i, b_i ($0 \le a_i < b_i \le 1000$). Each of the next q lines contains two space-separated integers c_j, d_j ($0 \le c_j < d_j \le 1000$).

It's guaranteed that $b_i < a_{i+1}$ and $d_j < c_{j+1}$ for all valid i and j.

Output

Output a single integer — the number of moments of time from the segment $[l, r]$ which suit for online conversation.

Examples

input
1 1 0 4 2 3 0 1

output
3

input
2 3 0 20 15 17 23 26 1 4 7 11 15 17

output
20