Exchange Digits

Problem Description

Compute nearest larger number by interchanging digits updated.

Given 2 numbers a and b find the smallest number greater than b by interchanging the digits of a and if not possible print -1.

Constraints

1 <= a,b <= 10000000

Input Format

2 numbers, a and b, separated by space.

Output

A single number, greater than than b.

If not possible, print -1.

Test Case

Explanation

Example 1

Input

459 500

Output

549

Example 2

Input

645757 457765

Output

465577

Example 3

Input

5964 9984

Output

-1

Petrol Pump

Problem Description

A big group of students, starting a long journey on different set of vehicles need to fill petrol in their vehicles.

As group leader you are required to minimize the time they spend at the petrol pump to start the journey at the earliest. You will be given the quantity of petrol (in litres) that can be filled in each vehicle. There are two petrol vending machines at the petrol pump. You need to arrange the vehicles in such a way that they take shortest possible time to fill all the vehicles and provide the time taken in seconds as output. Machine vends petrol @ 1litre/second.

Assume that there is no time lost between switching vehicles to start filling petrol.

Constraints

1<= Number of vehicles < 50.

0 <= Quantity of petrol required in any vehicle <= 200

Input Format

First line will provide the quantity of petrol (separated by space) that can be filled in each vehicle.

Output

Shortest possible time to fill petrol in all the vehicles.

Test Case

Explanation

Example 1

Input

1 2 3 4 5 10 11 3 6 16

Output

31

Explanation

First Petrol vending machine will cater to vehicles taking - 16, 6, 4, 3, 2 litres of petrol (Total 31 sec)

Second machine will cater to vehicles taking - 11, 10, 5, 3, 1 litres of petrol (Total 30 sec)

Example 2

Input

25 30 35 20 90 110 45 70 80 12 30 35 85

Output

335

Explanation

First Petrol vending machine will cater to vehicles taking - 80, 45, 35, 30, 25, 12, 85, 20 litres of petrol.

Second machine will cater to vehicles taking - 90, 70, 35, 30, 110 litres of petrol. Since second machine will take more time, total time to fill petrol in all vehicles will be 335 seconds.

All Party Meet

Problem Description

There have been unprecedented natural calamities in several parts of India and the Prime Minister’s office has called for an all party meeting to discuss how the Government can handle such calamities with a coordinated effort. It is well known that leaders of different political parties indulge in mud slinging at each other, some times these going beyond the lines of decency, so that the leaders of two such parties would not want to sit next to each other in any meeting. The Prime Minister’s Office has a tough time in planning the seating arrangements in the round table. Some one suggested that one can use the IT expertise of TCS to find a feasible solution to the seating arrangement problem.

The PMO hands over the list of political parties invited to the meeting. To simplify things, let us assume that the parties are numbered 1,2,...N. The PMO also hands over which of the pairs of parties that are friendly, and must be seated next to each other and the parties that are inimical, who must not be seated adjacent to each other. Given this information, find a seating arrangement for the meeting in the circular table.

As the table is circular, we may assume that position 1 is occupied by party 1. The output is a sequence of N party numbers starting from 1, which meets the criteria. If there are multiple sequences that meet the criteria, the sequence that is the lowest in lexicographic sequence is to be printed. If a possible seating arrangement does not exist, the output must be -1.

Constraints

N <= 100

Input Format

First line contains N, the number of political parties

The next line contains a pair of space separated integers a b indicating the number of pairs of friendly parties and number of pairs of inimical parties

Each of the next a lines contains a pair space separated integers u v where party u is friendly with party v

Each of the next b lines contains a pair of space separated numbers x y where party x is inimical with party y.

Output

If the seating arrangement is possible, the lexicographically smallest sequence of N integers in order of the seating arrangement, starting with 1. These should be space separated

If not possible, -1

Test Case

Explanation

Example 1

Input

7

3 2

1 5

3 4

1 6

2 3

2 4

Output

1 5 2 7 3 4 6

Explanation:

There are 7 political parties. There are 3 pairs of friendly political parties. Party2 and Party 3 can not be seated together and Party 2 and 4 can not be seated together. The above arrangement satisfies all the given constraints.

Example 2

Input

5

2 2

5 1

2 4

2 3

4 2

Output

-1

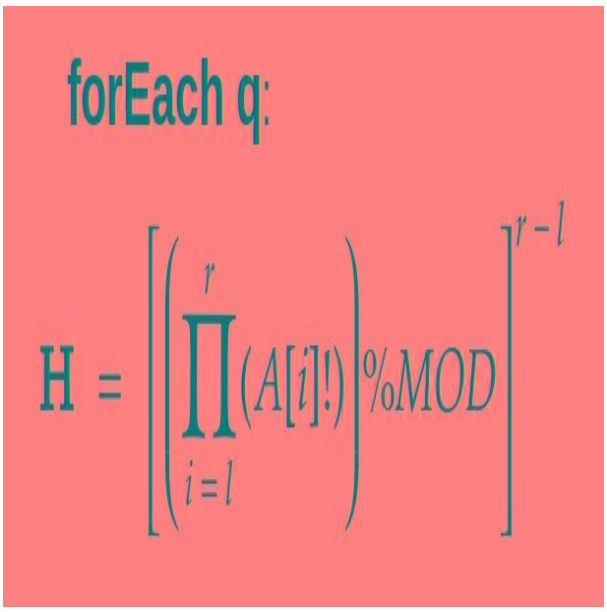
Explanation:

The conditions are inconsistent: 2, 4 should be seated together but 4, 2 should not be. Hence no seating arrangement is possible.

Hermoine Number

Problem Description

Voldemort is finally dead. Hermoine is bored and has now developed some interest in mathematics, so she keeps challenging her friends. Harry is now one of the victims to those hard problems and needs your help to solve this puzzle.



She calls the result to be Hermoine Number H.

Since H can be large, you need to print the result modulo MOD = **1000000007**

Constraints

N <= 10^5

A[i] <= 10^5

Input Format

First line provides an integer N denoting number of elements in Array A

Second line provides N space separated values for the array A,

Third Line provides an integer denoting Query (q) corresponding the problem statement

Next q lines contain two numbers l, r denoting the values mentioned above in the statement

Output

q lines containing the value of H mod **1000000007**

Test Case

Explanation

Example 1

Input

5

1 2 3 4 5

2

2 2

2 4

Output

1

82944

Example 2

Input

10

77883 48760 68269 31574 57351 20528 45398 54148 37399 31382

10

5 9

2 8

2 9

6 6

1 3

1 9

7 8

6 10

2 7

1 2

Output

667891964

31641898

769678014

1

29992112

654285930

776096678

444042335

886182048

728170986