

Question 1:

Given four strings A,B,C,D and you are allowed to rearrange the characters in each string. After that you have to insert all four strings into the trie such that trie requires a minimum number of nodes.

Find the minimum number of nodes.

Question 2:

Given N pairs $(a_1, b_1), (a_2, b_2), \dots (a_N, b_N)$ and there is an integer M.

You can swap any number pairs from given N pairs, such that the sum of the first element of all pairs is equal to M.

Determine whether it is possible or not, if yes then also print lexicographically smallest binary string of length N, such that if i th character is '1' then you have swapped that pair and '0' otherwise.

Question 3:

You are given an array A of N non-negative integers. There are K empty slots from 1 to K. You have to arrange these N numbers into K slots ($2K \geq N$).

Each slot can contain the atmost 2 integers. After all the integers have been filled into the slot, find the sum of bitwise AND of all the numbers with respective slot numbers.

Determine the maximum possible.

Question 4:

Question 1 Max. score: 30.00

The reaching point

1 You are given a 2-dimensional matrix in the form of a grid containing integers.

2 Dimensions of the matrix are $N \times M$ with N rows and M columns. If you are standing at a cell (X, Y) , then you can jump from that cell to any adjacent cell within the boundaries of the grid. For example, you can move to the following places from (X, Y) :

- To the cell $(X+1, Y)$, if $X+1 \leq N$ and $Y \leq M$
- To the cell $(X, Y+1)$, if $X \leq N$ and $Y+1 \leq M$
- To the cell $(X-1, Y)$, if $X-1 \geq 1$ and $Y \leq M$
- To the cell $(X, Y-1)$, if $X \leq N$ and $Y-1 \geq 1$

You can also jump from current cell C to another cell A if the value in cell A divides the value in cell C . In other words, you can jump from a cell to its divisors containing cells.

Task

Answer Q queries and each query consist of two cells u and v . Determine whether you can reach from u to v in atmost 4 jumps. Print YES if it is possible else, print NO.

Example

Assumptions

- $N = 3$

Question 5:

You are given a grid with values in it and we are given K . We need to count the number of ways good paths from $0,0$ to end pt of grid.

Good path is path in which total sum of elements in this path is divisible by K .
(Movements allowed are right and down.)