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**JusPay- Practice-Test-18-06-2023**

Few Instructions:

1. You have one hour to complete the test
2. You can choose any language and code editor of your choice.
3. Submit the code in a word document in the following format

Name-Department-Juspay-Test-2023

1. Use the drive link that has been shared in your respective groups to upload the document.
2. The document that you upload should have the following things:

1. Your code

2. Screenshot of the output if you have successfully run the program.

3. Time stamp should be visible in your output screenshot uploaded.

Question 1:

Given a string s consisting of stars “\*” and bars  “|” ,an array of starting indices  starIndex,and an array of ending indices endIndex,determine the number of stars between any two bars within the substrings between the two indices inclusive . NOTE that in this problem indexing starts at 1.

* A Star is represented as an asterisk [\*=ascii decimal 42]
* A Bar is represented as a Pipe [“|”=ascii decimal 124]

Example

    s=’|\*\*|\*|’   
    startIndex=[1,1]  
    endIndex=[5,6]

* For the first pair of indices (1,5) the substrings is “|\*\*|\*”  . There are 2 stars between a pair of bars
* For the second pair of indices (1,6) the substring is  “|\*\*|\*|” and there are 2+1=3 stars in between the bars.
* Both of the answers are returned to the array [2,3].

Constraints

* 1<=n<=105
* 1<=StartInde[i]<=endIndex[i]
* Each Character of s is either “\*” or “|”

Input Format for Custom testing

First line contains a string S the next line contains an integer n , the no.of elements in startIndex. Each line i of the n subsequent lines contains an integer of startIndex.the next line contains an integer n , the no.of elements in endIndex. Each line i of the n subsequent lines contains an integer of endindex

Sample Input

    0

    1 → startindex[] size=1  
    1 → startindex= 1  
    1 → endindex[] size=1  
    3 → endindex=3

Sample output:

    0

Explanation :

The substring from index =1 to index=3 is “\*|\*” . there is no consecutive pair of bars in this string.

Question 2:

#### You are given a maze consisting of N cells numbered from 0 to N - 1 and an array

#### ‘arr’ of N integers in which arr[i] contains the cell number that can be reached

#### from ‘i’th cell in one step. You are supposed to find the length of the largest cycle

#### in the maze, given that each cell has less than or equal to 1 exit but can have

#### multiple entry points.

##### Note:

The maze may contain self-cycles. arr[i] = -1 means the ‘i’th cell doesn’t have an exit.

##### Input Format:

The first line of input contains an integer ‘T’, denoting the number of test cases. The test cases follow. The first line of each test case contains integer ‘N’, which denotes the number of cells in the maze. The second line contains N integers, denoting the elements of the array ‘arr’.

##### Output Format:

For each test case, print the length of the largest cycle in the maze and -1 if there are no cycles. Print the output of each test case in a separate line.

##### Constraints:

1<= T <= 50 1 <= N <= 10,000 -1 <= arr[i] <= N-1 Where ’T’ is the number of test cases, and N denotes the number of cells in the maze and arr[i] is the cell that can be reached from ‘i’th cell. Time Limit: 1 sec

Question 3:

#### You are given a starting position for a rat which is stuck in a maze at an initial point (0, 0) (the maze can be thought of as a 2-dimensional plane). The maze would be given in the form of a square matrix of order 'N' \* 'N' where the cells with value 0 represent the maze’s blocked locations while value 1 is the open/available path that the rat can take to reach its destination. The rat's destination is at ('N' - 1, 'N' - 1). Your task is to find all the possible paths that the rat can take to reach from source to destination in the maze. The possible directions that it can take to move in the maze are 'U'(up) i.e. (x, y - 1) , 'D'(down) i.e. (x, y + 1) , 'L' (left) i.e. (x - 1, y), 'R' (right) i.e. (x + 1, y).

##### Note:. C

Here, sorted paths mean that the expected output should be in alphabetical order.

##### For Example:

Given a square matrix of size 4\*4 (i.e. here 'N' = 4): 1 0 0 0 1 1 0 0 1 1 0 0 0 1 1 1 Expected Output: DDRDRR DRDDRR i.e. Path-1: DDRDRR and Path-2: DRDDRR The rat can reach the destination at (3, 3) from (0, 0) by two paths, i.e. DRDDRR and DDRDRR when printed in sorted order, we get DDRDRR DRDDRR.

##### Input format:

The first line contains an integer 'N', which denotes the dimensions of the square matrix (maze). Then 'N' lines follow. Each line contains 'N' space-separated integers denoting the values which would either be 0 denoting a blocked path or 1 denoting the available path in the maze, respectively.