TCS Digital Coding Questions

1) Legendre polynomials

Problem Statement

In the field of mathematical physics, Legendre polynomials play a significant role not only in producing some beautiful patterns but also in deriving multiple expansions for coulombic , gravitational and magnetic potentials. These polynomials form the solutions for the differential equation :

(1-x^2)d^2y/dx^2 – 2x dy/dx + n(n+1) y = 0

And the solution Pn(x) for every n is given by the recursive relation:

Pn(x)=1 when n=0

Pn(x)=x when n=1

(n+1)Pn+1(x) = (2n+1)xPn(x) – nPn-1(x) for all n>1

For example when x=10 and n=1, Pn(x)=10

Given a set of (x,n) values , write a program to print the value of Pn(x) correct to four decimal places.

Input

The first line contains an int m , the number of (x,n) pairs , 2<=m<20

The next m lines contain space separated values for x and n . x is a double and n is an integer .

-100.0<=x<=100.0, 0<=n<=10

Output

m lines with each line showing the value of Pn(x) correct to not more than four decimal places in the same order as input.

Example:

Input

4

0.5 2

0.678 3

0.512 2

0.123 4

Expected output

-0.125

-0.2378

-0.1068

0.3193

2) Up and Down Sequences

From the sequence 1 3 1 4 5 2 we can extract the subsequences 1 4 5 2, 1 3 2 and 3 4 2. These lists are called "up and down sequences" , as all the numbers to left of the maximum value (the up part) are in strictly ascending order , and those to the right of the maximum are in descending order (the down part).Note that there must be at least one number to the left of the maximum value(the up part) and at least one number to the right of the subsequences(the down part).

A maximal up and down subsequences is one with the maximal length. Note that there

may be more than one maximal up and down subsequences in a given sequences .In the sequence 1 4 3 6 2 1 , the two subsequences 1 4 3 2 1 and 1 4 6 2 1 are both maximal up and down subsequences .

A maximal subsequences like 1 4 3 2 1 may have up and down subsequences of its own which have the same maximum value (4). These are 1 4 3; 1 4 2; 1 4 3 2; 1 4 3 1; 1 4 2 1; and 1 4 3 2 1 (a total of 7).This includes the full subsequences also.

A similar enumeration shows that 1 4 6 2 1 has 9 up and down subsequences that have 6 as the maximum value.

Given a list of numbers, write a program to count the number of up and down subsequences with the same maximum value that could be formed from any one maximal subsequences .

Input

The first line contains the number of integers in the sequences (N)

The second line contains the N integer (not necessarily positive , and not necessarily distinct) delimited by commas

Output

One integer representing the total number of up and down sequences that could be formed from the given sequence.

Constraints

The number of integers in the input sequences < 30.

Example 1

Input

4

-1,2,3,4

Output

0

Explanation

There are 4 integers in the input (N==4). The numbers in the sequences are -1,2,3 and 4. The sequences is in the increasing order and hence cannot have a "down" part

Of the sequences. As there is no maximal up and down subsequences the result is 0.

Example 2

Input

5

1 5 4 3 2

Output

7

Explanation

N=5

The maximal up and down sequences is 1 5 4 3 2.This has 7 up and down sequences with the maximal element 5 (the same as the maximal subsequences).There are

1,5,4,3,2;1,5,4;1,5,3;

1,5,2;1,5,4,3;1,5,4,2;1,5,3,2

3) Problem Statement

Generally , In any examination the mark attached to a question is linearly related to the time taken to solve it. Unfortunately, our universe is neither consistent not fair always ;

and examinations bodies are no exception to this exception. One institution has designed a question paper, where this linear relationship is thrown out of the window. As a judicious programmer, you should help in choosing the questions that would give maximum score to the candidate within the specified time limit.
The input to your program consists of the first line with two space separated integers.The first one is the number of questions (n) and the second is the time limit to answer the questions 2<=n<=20
The next line has space separated n unique integers each giving the individual (score for the questions. The third and final line has another set of unique n integers , which gives the time required to solve the questions . You can assume that your program should output the maximum possible score.
Example 1:
Input
4 30
25 10 40 17
12 20 15 8
Expected output
65
Example 2
Input
3 40
34 22 16
10 30 20
Excepted output
56

4) Telephone directory
Problem Statement
Given a list of phone numbers determine if it is consistent in the sense that has no number is the prefix of another.Let 's say the phone numbers:
Bheembai 1002345678
Chakravathy 9876543210
Police 100
Ramachandran 9100012345
In this case ,It's not possible to call Bheembai, because the exchange would direct call you to the police as soon as you had dialed the first three digits.So this list would not be consistent.
Input
The first line of input gives a single integer n, number of phone numbers, 1<=n<=10.
Then follows n lines with one uniques phone number on each line.A phone number can at most have ten digits.
Output
Please refer to the examples below
Input 1:
3
911
8976259989

9112542612

Expected output

No, there is a collision with 911

Input 2:

5

113

1234078901

1234401234

1234512345

9834698765

Expected output

Yes, the list of 5 numbers is consistent

5) Write a program to find the count of numbers which consists of unique digits.

Input:

Input consist of two Integer lower and upper value of an range

Output:

Output consists of single line, print the count of unique digits in given range. Else Print"**No Unique Number**"

Solution:

Input -

10

15

6) There is a range given n and m in which we have to find the count all the prime pairs whose difference is 6. We have to find how many sets are there within a given range.

Output:

Output consists of single line, print the count prime pairs in given range. Else print"**No Prime Pairs**".

Constraints:

2<=n<=1000

n<=m<=2000

Sample Input:

4

30

Output:

6

Explanation:
(5, 11) (7, 13) (11, 17) (13, 19) (17, 23) (23, 29) . we have 6 prime pairs.

Solution:

Input -
101
500

7) Write a program to print all the combinations of the given word with or without meaning (when unique characters are given).

Sample Input:
abc

Output:
abc
acb
bac
bca
cba
cab

Solution:

Input -
hai

8) Bastin once had trouble finding the numbers in a string. The numbers are distributed in a string across various test cases. There are various numbers in each test case you need to find the number in each test case. Each test case has various numbers in sequence. You need to find only those numbers which do not contain 9. For eg, if the string contains "hello this is alpha 5051 and 9475".You will extract 5051 and not 9475. You need only those numbers which are consecutive and you need to help him find the numbers. Print the largest number.

Note: Use long long for storing the numbers from the string.

Input:
The first line consists of **T** test cases and next **T** lines contain a string.

Output:
For each string output the number stored in that string if various numbers are there print the largest one. If a string has no numbers print -1.

Constraints:

1<=**T**<=100
1<=**|S|**<=10000

Example:
Input:
1
This is alpha 5057 and 97
Output:
5057

Solution:

Input -
1
dream job 100 and 101

9) In the amusement park at Looney's amusement, there is a "Weighted Maze" challenge. This consists of a set of East West roads (referred to as left to right roads) and North South roads (referred to as up down roads). Each intersection has a block of iron bar, the weight of which is given. You enter the maze at the top left corner with 1 kg in a cart. The exit from the maze is at the bottom right corner. Movement at any intersection is to the right or down provided a road exists in that direction.

At each intersection you pass through, you must exchange the weight in your cart with the weight of the bar at the intersection if it is heavier than the weight you have in the cart.
The objective is to determine a path through the maze along the roads so that one can exit the maze with the minimum weight in the cart.
For example, in the maze shown, the least weight one can exit the maze is 22 kg.
-> 1 8 21 7
19 17 10 20
2 18 23 22
14 25 4 13 ->
Input:
The first line consists of a positive integer n, which is the number of intersection in any up-down or left-right road.
The next n lines each consist of n positive integers representing the weights at the intersections in the corresponding left-right road
Output:
A positive integer that represents the minimum weight possible in the cart when exiting the maze.
Example
Input
4
1,8,21,7
19,17,10,20
2,18,23,22

14,25,4,13
Output
22
Explanation
One possible path through the maze is through the intersections with coordinates (1,1),(1,2),(2,2),(2,3)(2,4)(3,4),(4,4). This would result in the cart having a weight of 22 kg (at the intersections on this path,, the weight in the cart after the exchange are 1,8,17,18,18,20,22,22
Input
5 1,29,40,24,12 13,31,40,31,33 29,40,17,35,32 15,39,28,3,31 15,21,31,38,24
Output
38
Explanation
One path through the maze is (1,1),(2,1), (3,1),(4,1),(5,1),(5,2), (5,3), (5,4) (5,5). The maximum weight in this path is 38, which is the weight in the cart when leaving the maze. As there is no other pathe in the maze which has a lower weight in the cart when exiting it, the output is 38

10) **Maximum size square sub-matrix with all 1s**
Only allowed to code in C/C++/Java
Given a binary matrix, find out the maximum size square sub-matrix with all 1s.
For example, consider the below binary matrix.

11) **Find Maximum Sum Submatrix in a given matrix**
Given a M x N matrix, calculate maximum sum submatrix of size k x k in a given M x N matrix in O(M*N) time. Here, 0 < k < M, N.
For example, consider below 5 x 5 matrix
[3 -4 6 -5 1]
[1 -2 8 -4 -2]
[3 -8 9 3 1]
[-7 3 4 2 7]
[-3 7 -5 7 -6]
If k = 2, maximum sum k x k sub-matrix is
[9 3]
[4 2]
If k = 3, maximum sum k x k sub-matrix is
[8 -4 -2]
[9 3 1]
[4 2 7]
The idea is to pre-process the matrix. We take an auxiliary matrix sum[][] where sum[i][j] will store the sum of the elements in matrix from (0, 0) to (i, j). We can easily calculate the value of sum[i][j] in constant time using below relation –

```
sum[i][j] = sum[i][j – 1] + sum[i – 1][j] + mat[i][j] – sum[i – 1][j – 1];
```

Now to find maximum sum k x k sub-matrix, we consider every sub-matrix of size k x k and calculate their sum in constant time by directly using below relation –

```
submatrixSum = sum[i][j] – sum[i – k][j] – sum[i][j – k] + sum[i – k][j – k];
```

Here, (i, j) is bottom right corner coordinates of k x k sub-matrix. Finally, we print the sub-matrix that has maximum sum.

12) Program to find second most frequent character
Given a string, find the second most frequent character in it. Expected time complexity is O(n) where n is the length of the input string.

Examples:

Input: str = "aababababa";
Output: Second most frequent character is 'b'

Input: str = "abcd";
Output: No Second most frequent character
A simple solution is to start from the first character, count its occurrences, then second character and so on. While counting these occurrence keep track of max and second max. Time complexity of this solution is O(n2).
We can solve this problem in O(n) time using a count array with size equal to 256 (Assuming characters are stored in ASCII format). Following is C implementation of the approach.

13) Pangram Checking
Given a string check if it is Pangram or not. A pangram is a sentence containing every letter in the English Alphabet.

Examples : The quick brown fox jumps over the lazy dog '' is a Pangram [Contains all the characters from 'a' to 'z']
''The quick brown fox jumps over the dog'' is not a Pangram [Doesn't contains all the characters from 'a' to 'z', as 'l', 'z', 'y' are missing]

We create a mark[] array of Boolean type. We iterate through all the characters of our string and whenever we see a character we mark it. Lowercase and Uppercase are considered the same. So 'A' and 'a' are marked in index 0 and similarly 'Z' and 'z' are marked in index 25.

After iterating through all the characters we check whether all the characters are marked or not. If not then return false as this is not a pangram else return true.

14) Given an n x n square matrix, find sum of all sub-squares of size k x k

Given an n x n square matrix, find sum of all sub-squares of size k x k where k is smaller than or equal to n.

Examples :

Input:
n = 5, k = 3

arr[][] = { {1, 1, 1, 1, 1},
{2, 2, 2, 2, 2},
{3, 3, 3, 3, 3},
{4, 4, 4, 4, 4},
{5, 5, 5, 5, 5},
};
Output:
18 18 18
27 27 27
36 36 36

Input:
n = 3, k = 2
arr[][] = { {1, 2, 3},
{4, 5, 6},
{7, 8, 9},
};
Output:
12 16
24 28
A Simple Solution is to one by one pick starting point (leftmost-topmost corner) of all possible sub-squares. Once the starting point is picked, calculate sum of sub-square starting with the picked starting point.

15) Checking if a given year is leap year or not
Explanation:

To check whether a year is leap or not

Step 1:

We first divide the year by 4.
If it is not divisible by 4 then it is not a leap year.
If it is divisible by 4 leaving remainder 0
Step 2:

We divide the year by 100
If it is not divisible by 100 then it is a leap year.
If it is divisible by 100 leaving remainder 0
Step 3:

We divide the year by 400
If it is not divisible by 400 then it is a leap year.
If it is divisible by 400 leaving remainder 0
Then it is a leap year

16) Prime Numbers with a Twist
Ques. Write a code to check whether no is prime or not. Condition use function check() to find whether entered no is positive or negative ,if negative then enter the no, And if yes pas no as a parameter to prime() and check whether no is prime or not?

Whether the number is positive or not, if it is negative then print the message "please enter the positive number"
It is positive then call the function prime and check whether the take positive number is prime or not.

17) Number Series with a Twist – 1
Find the 15th term of the series?

0,0,7,6,14,12,21,18, 28

Explanation : In this series the odd term is increment of 7 {0, 7, 14, 21, 28, 35 – – – – – – }

And even term is a increment of 6 {0, 6, 12, 18, 24, 30 – – – – – – }

18) Number Series with a Twist 2
Link to this Question

Consider the following series: 1, 1, 2, 3, 4, 9, 8, 27, 16, 81, 32, 243, 64, 729, 128, 2187 …

This series is a mixture of 2 series – all the odd terms in this series form a geometric series and all the even terms form yet another geometric series. Write a program to find the Nth term in the series.

The value N in a positive integer that should be read from STDIN. The Nth term that is calculated by the program should be written to STDOUT. Other than value of n th term,no other character / string or message should be written to STDOUT. For example , if N=16, the 16th term in the series is 2187, so only value 2187 should be printed to STDOUT.

You can assume that N will not exceed 30.

19) Number Series with a Twist 3
Link to this Question –

Consider the below series :

0, 0, 2, 1, 4, 2, 6, 3, 8, 4, 10, 5, 12, 6, 14, 7, 16, 8

This series is a mixture of 2 series all the odd terms in this series form even numbers in ascending order and every even terms is derived from the previous term using the formula (x/2)

Write a program to find the nth term in this series.

The value n in a positive integer that should be read from STDIN the nth term that is calculated by the program should be written to STDOUT. Other than the value of the nth term no other characters /strings or message should be written to STDOUT.

For example if n=10,the 10 th term in the series is to be derived from the 9th term in the series. The 9th term is 8 so the 10th term is (8/2)=4. Only the value 4 should be printed to STDOUT.

You can assume that the n will not exceed 20,000.

20) String with a Twist
Link to this Questions

1. The program will recieve 3 English words inputs from STDIN

These three words will be read one at a time, in three separate line
The first word should be changed like all vowels should be replaced by %
The second word should be changed like all consonants should be replaced by #
The third word should be changed like all char should be converted to upper case
Then concatenate the three words and print them
Other than these concatenated word, no other characters/string should or message should be written to STDOUT

For example if you print how are you then output should be h%wa#eYOU.

You can assume that input of each word will not exceed more than 5 chars

21) Addition of two numbers a Twist
1. Using a method, pass two variables and find the sum of two numbers.

Test case:

Number 1 – 20

Number 2 – 20.38

Sum = 40.38

There were a total of 4 test cases. Once you compile 3 of them will be shown to you and 1 will be a hidden one. You have to display error message if numbers are not numeric.

Consider the below series :
0, 0, 2, 1, 4, 2, 6, 3, 8, 4, 10, 5, 12, 6, 14, 7, 16, 8
This series is a mixture of 2 series all the odd terms in this series form even numbers in ascending order and every even terms is derived from the previous term using the formula (x/2)

22) Write a program to find the nth term in this series.

The value n in a positive integer that should be read from STDIN the nth term that is calculated by the program should be written to STDOUT. Other than the value of the nth term no other characters /strings or message should be written to STDOUT.

For example if n=10,the 10 th term in the series is to be derived from the 9th term in the series. The 9th term is 8 so the 10th term is (8/2)=4. Only the value 4 should be printed to STDOUT.

You can assume that the n will not exceed 20,000.

23) Sweet Seventeen
Problem Description
Given a maximum of four digits to the base 17(10 -> A, 11-> B,12 -> C, 16 -> G) as input, output its decimal value

Input 1
1A
Expected output
27
Input 2
23 GF
Expected output
10980

24) A Sober Walk
Problem Statement
Our hoary culture had several great persons since time immemorial and king vikramaditya's nava ratnas (nine gems) belongs to this ilk.They are named in the following shloka:

Among these, Varahamihira was an astrologer of eminence and his book Brihat Jataak is recokened as the ultimate authority in astrology.

He was once talking with Amarasimha,another gem among the nava ratnas and the author of Sanskrit thesaurus, Amarakosha.

Amarasimha wanted to know the final position of a person, who starts from the origin 0 0 and travels per following scheme.

Scheme
He first turns and travels 10 units of distance
His second turn is upward for 20 units
Third turn is to the left for 30 units

Fourth turn is the downward for 40 units
Fifth turn is to the right(again) for 50 units
… And thus he travels, every time increasing the travel distance by 10 units.

Test Cases
Case 1
Input : 3
Expected Output :-20 20
Case 2
Input: 4
Expected Output: -20 -20
Case 3
Input : 5
Expected Output : 30 -20
Case 4
Input : 7
Expected Output : 90 -20

25) Oddly Even
Problem Statement
Given a maximum of 100 digit numbers as input, find the difference between the sum of odd and even position digits.

Case 1
Input: 4567
Expected Output: 2
Explanation : Odd positions are 4 and 6 as they are pos: 1 and pos: 3, both have sum 10. Similarly, 5 and 7 are at even positions pos: 2 and pos: 4 with sum 12. Thus, difference is 12 – 10 = 2

Case 2

Input: 5476
Expected Output: 2
Case 3

Input: 9834698765123
Expected Output: 1
Solution
(When using Strings as input)

26) Word is Key
Problem Statement
One programming language has the following keywords that cannot be used as identifiers: Break, case, continue, default, defer else, for, func, goto, if, map, range, return, struct, type, var

Write a program to find the given word is a keyword or not

Case 1

Input – defer
Expected Output – defer is a keyword
Case 2

Input – While
Expected Output – while is not a keyword

27) Consider the below series:
1, 2, 1, 3, 2, 5, 3, 7, 5, 11, 8, 13, 13, 17…..

This series is a mixture of 2 series fail the odd terms in this series form a Fibonacci series and all the even terms are the prime numbers in ascending order

Write a program to find the Nth term in this series

The value N in a positive integer that should be read from mm. The Nth term that is calculated by the program should be written to STDOUT Otherthan the value of Nth term , no other characters / string or message should be written to STDOUT.

For example, when N:14, the 14th term in the series is 17 So only the value 17 should be printed to STDOUT

28) There are four integers in the input (N=4).the number in the sequence are 1,2,3,4. The sequence is in the increasing order and hence cannot have a down part of the sequence.and there is no maximal up and down subsequence, the result is 0.

Input:
4
-1,2,3,4
Output:
0

29) Problem Statement : Card Shuffle You have 100 cards, numbered 1 to 100. You distribute them into k piles and collect back the piles in order. For example, if you distribute them into 4 piles, then the first pile will contain the cards numbered 1, 5, 9, … and the 4th pile will contain the cards numbered 4, 8, 12, …. While collecting back the cards you collect first the last pile, flip it bottom to top, then take the third pile, flip it bottom to top and put the cards on top of the 4th pile and so on. Next round, you distribute the cards into another set of piles and collect in the same manner (last pile first and first pile last). If we have 10 cards, and put them into 2 piles, the order of the cards in the piles (top to bottom) would be 9, 7, 5, 3, 1 and 10, 8, 6, 4, 2 We flip the piles to get the order 1, 3, 5, 7, 9 and 2, 4, 6, 8, 10 We put second pile at the bottom and first on top of it to get the deck 1, 3, 5, 7, 9, 2, 4, 6, 8, 10 Given the number of

rounds (m), number of piles in each round (ki), you need to write a program to find the Nth card from the top at the end of the final round. Input The input consists of a single line of (m+2) comma separated integers. The first number is m, the number of rounds. The next m numbers are ki which represent the number of piles in each round. The last number in the input is N, the position in the final pile whose value is to be determined. Output One integer representing the Nth card after all rounds have been played. Constraints Number of rounds <= 10, number of piles in each round <= 13. Example 1 Input 2, 2, 2, 4 Output 13 Explanation m = 2, k1 = 2, k2 = 2 and N = 4. We have two rounds. The first round has two piles. At the end of the round, the deck is in the following order: 1, 3, 5, …, 99, 2, 4, 6, …, 100 The next round also has 2 piles and after the second round, the cards are in the order 1, 5, 9, 13, …. The fourth card from the top has number 13. Example 2 Input 3, 2, 2, 3, 2 Output 13 Explanation m = 3, k1 = 2, k2 = 2, k3 = 3 and N = 2. After the second round, the cards are in the order 1, 5, 9, 13, … The third round has 3 piles. Thus after this round the cards will be in the order 1, 13, …. Second card is 13.

30) Check if a key is present in every segment of size k in an array Given an array arr[] and size of array is n and one another key x, and give you a segment size k. The task is to nd that the key x present in every segment of size k in arr[].
Examples:
/
Input :
arr[] = { 3, 5, 2, 4, 9, 3, 1, 7, 3, 11, 12, 3}
x = 3
k = 3
Output : Yes
There are 4 non-overlapping segments of size k in the array, {3, 5, 2}, {4, 9, 3}, {1, 7, 3} and {11, 12, 3}. 3 is present all segments.
Input : arr[] = { 21, 23, 56, 65, 34, 54, 76, 32, 23, 45, 21, 23, 25}
x = 23
k = 5
Output :Yes
There are three segments and last segment is not full {21, 23, 56, 65, 34}, {54, 76, 32, 23, 45} and {21, 23, 25}. 23 is present all window.
Input :
arr[] = { 5, 8, 7, 12, 14, 3, 9}
x = 8
k = 2
Output : No

Sample Input
12
3 5 2 4 9 3 1 7 3 11 12 3
3 3

Sample Output
Yes

31) Sum of all mersenne numbers present in an array Given an array of integers arr[], the task is to nd the sum of all the Mersenne numbers from the array. A number is a Mersenne number if it is greater than 0 and is one less than some power of 2. First few Mersenne numbers are 1, 3, 7, 15, 31, 63, 127, …
Examples:
Input: arr[] = {17, 6, 7, 63, 3}
Output: 73
Only 7, 63 and 3 are Mersenne numbers i.e. 7 + 63 + 3 = 73

Input: arr[] = {1, 3, 11, 45}
Output: 4

Sample Input:
5
17 6 7 63 3

Sample Output:
73

32) Target Value in 2D Find a target value in a two-dimensional matrix given the number of rows as rowCount and number of columns as columnCount, and return its coordinates. If the value didn't exist, the program had to return (-1,-1).

Input Format
Input contains rowCount , columnCount, values and the target value

Output Format
If the value didn't exist, print -1 -1 else print its coordinates

Constraints
1 ≤ array_size ≤ 1000

Sample Input
3 4
1 2 3 4
5 6 7 8
9 10 11 12

Sample Output
(1,2)

33) Prime and Fibonacci series Consider the below series: 1, 2, 1, 3, 2, 5, 3, 7, 5, 11, 8, 13, 13, 17, … This series is a mixture of 2 series – all the odd terms in this series form a Fibonacci series and all the even terms are the prime numbers in ascending order. Write a program to nd the Nth term in this series. The value N is a Positive integer that should be read from STDIN. The Nth term that is calculated by the program

should be written to STDOUT. Other than the value of Nth term, no other characters/strings or message should be written to STDOUT.

For example, when N = 14, the 14th term in the series is 17. So only the value 17 should be printed to
STDOUT.
Sample Input
14

Sample Output
17

34) Mooshak Mouse Mooshak the mouse has been placed in a maze.There is a huge chunk of cheese somewhere in the maze. The maze is represented as a two dimensional array of integers, where 0 represents walls.1 repersents paths where mooshak can move and 9 represents the huge chunk of cheese.

Mooshak starts in the top left corner at 0. Write a method is Path of class Maze Path to determine if Mooshak can reach the huge chunk of cheese. The input to is Path consists of a two dimensional array gnd for the maze matrix. the method should return 1 if there is a path from Mooshak to the cheese.and 0 if not Mooshak is not allowed to leave the maze or climb on walls.
EX: 8 by 8(8*8) matrix maze where Mooshak can get the cheese.
1 0 1 1 1 0 0 1
1 0 0 0 1 1 1 1
1 0 0 0 0 0 0 0
1 0 1 0 9 0 1 1
1 1 1 0 1 0 0 1
1 0 1 0 1 1 0 1
1 0 0 0 0 1 0 1
1 1 1 1 1 1 1 1

Input Format
The input to is Path consists of a two dimensional array size and the values for the maze matrix

Output Format
return 1 if there is a path and 0 if not

Sample Input
8
1 1 1 1 1 0 0 1
1 0 0 1 1 1 1 1
1 1 1 0 0 0 0 1

Sample Output
1