VIT - Vellore

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BCSE102P_Structured and Object Oriented Programming Lab_VL2024250502365

VIT V_BCSE102P_Lab 2_COD_Hard_2D Array

Attempt : 1
Total Mark : 20
Marks Obtained : 20

Section 1 : Coding

1. Problem Statement

David loves patterns and arrays. He has given you a 2D array and wants you to print its elements in a special snake pattern.

In this pattern, if the row number is even, the elements of that row should be printed from right to left. If the row number is odd, the elements should be printed from left to right.

Write a program to print the given 2D array in the snake pattern as per David's request.

Note: Row number = 1, 2, 3, ... etc.

Answer

```c
// You are using GCC
#include<stdio.h>

int main(){
    int m,n;
    scanf("%d %d",&m,&n);

    int arr[m][n];

    for (int i = 0; i < m; i++){
        for (int j = 0; j < n; j++){
            scanf("%d",&arr[i][j]);
        }
    }
    for (int i = 0; i < m; i++){
        if(i%2 != 0){
            for (int j = n-1; j>= 0; j--){
                printf("%d ",arr[i][j]);
            }
        }
        else{
            for (int j = 0; j < n; j++){
                printf("%d ", arr[i][j]);
            }
        }
    }
    return 0;
}
```

Status : Correct **Marks : 10/10**

2. Problem Statement

Given a square matrix of size N consisting of positive integers. Find the count of all the square sub-matrices, the sum of whose elements is equal to a given number S.

Example

Input:

3

1 2 3

4 5 6

7 8 9

16

Output:

1

Explanation:

In the given matrix, the sub-matrix (0, 1) to (1, 2) with sum = 2 + 3 + 5 + 6 = 16. So, the output is the count of all the square sub-matrices, the sum of whose elements is equal to S, which is 1.

Answer

```
// You are using GCC
#include<stdio.h>

int calcsum(int a[10][10], int x1, int y1, int size){
    int sum = 0;
    for (int i= x1; i < (x1+size); i++){
        for (int j = y1; j<(y1+size); j++){
            sum += a[i][j];
        }
    }
    return sum;
}

int main(){
    int n;
    int s;
    int a[10][10];

    scanf("%d",&n);
    for (int i = 0; i < n; i++){
        for (int j = 0; j<n; j++){
            scanf("%d", &a[i][j]);
        }
```

```
    }
    scanf("%d",&s);

    int count = 0;

    for (int size = 1; size <= n; size++){
        for (int i = 0; i <= n-size; i++){
            for (int j = 0; j <= (n-size); j++){
                if (calcsum(a,i,j,size) == s){
                    count++;
                }
            }
        }
    }
    printf("%d",count);
    return 0;
}
```

Status : Correct **Marks : 10/10**