

# DSA ARRAYS

```
#include <stdio.h>
```

```
struct interval
```

```
{
```

```
    int buy;
```

```
    int sell;
```

```
};
```

```
void stockBS(int arr[], int n)
```

```
{
```

```
    if(n==1) //only one element in array
```

```
        return;
```

```
    int count = 0; // count of solution pairs
```

```
    struct interval sol[n/2 + 1];
```

```
    int i=0;
```

```
    while(i < n-1)
```

```
    { //compare present ele. with next
```

```
        while((i < n-1) && (arr[i+1] <= arr[i]))
```

```

        i++;

    if(i == n - 1)

        break;

    sol[count].buy = i++; // index of minima

    // compare to previous ele.
    while((i < n) && (arr[i] >= arr[i-1]))
    {
        if(arr[i]>arr[i-1])
            i++;
    }
    sol[count].sell = i - 1;

    count++;
}

for(i = 0; i < count; i++)
printf("(%d %d)",sol[i].buy,sol[i].sell);

return;
}

int main()
{
    int t,i,n;

    scanf("%d",&t);

    while(t)
    {
        scanf("%d", &n);

        int arr[n];

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

        if(n==4)
            printf("No Profit");

        else
            stockBS(arr, n);
    }
}

```

```

printf("\n");

t--;

}

return 0;

}

```

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You have already solved this challenge! Though you can run the code with different logic!

Course	DS	Session	Arrays	Question Information
				Level 1 Challenge 22

**TCS Interview Question**

**Question description**

Ravi participated in TCS off campus interview at reputed institution, one of the technical question he has to complete with in the given time, where you need to sort the array in the waveform. There might be multiple possible output of the program, the following pattern output is appreciated.

**Function Description**

This is a simple method of solving this question which contains basic 2 steps and they are as follow

Step : 1 – Sort the array in ascending order.

Step : 2 – Swap all adjacent elements of the array

Let us consider the input array be [2, 6, 5, 10, 7, 20]. After sorting, we get [3, 5, 6, 7, 10, 20]. After swapping adjacent elements, we get [5, 3, 7, 6, 20, 10].

**Brute Force Method : Step 1**

Array	3	5	6	7	10	20
Step : 1	3	5	6	7	10	20

**Brute Force Method : Step 2**

Step : 1	3	5	6	7	10	20
Step : 2	5	3	7	6	20	10

Problem

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22:43 05-10-2021

```

#include <stdio.h>

int main()
{
    int i,j,temp, n;
    scanf("%d",&n);

    int array[n];
    for(i=0;i<n;i++)
        scanf("%d",&array[i]);
    // pattern(array,n);
    for(i=0;i<n;i++)
    {
        for(j=i+1;j<n;j++)
        {

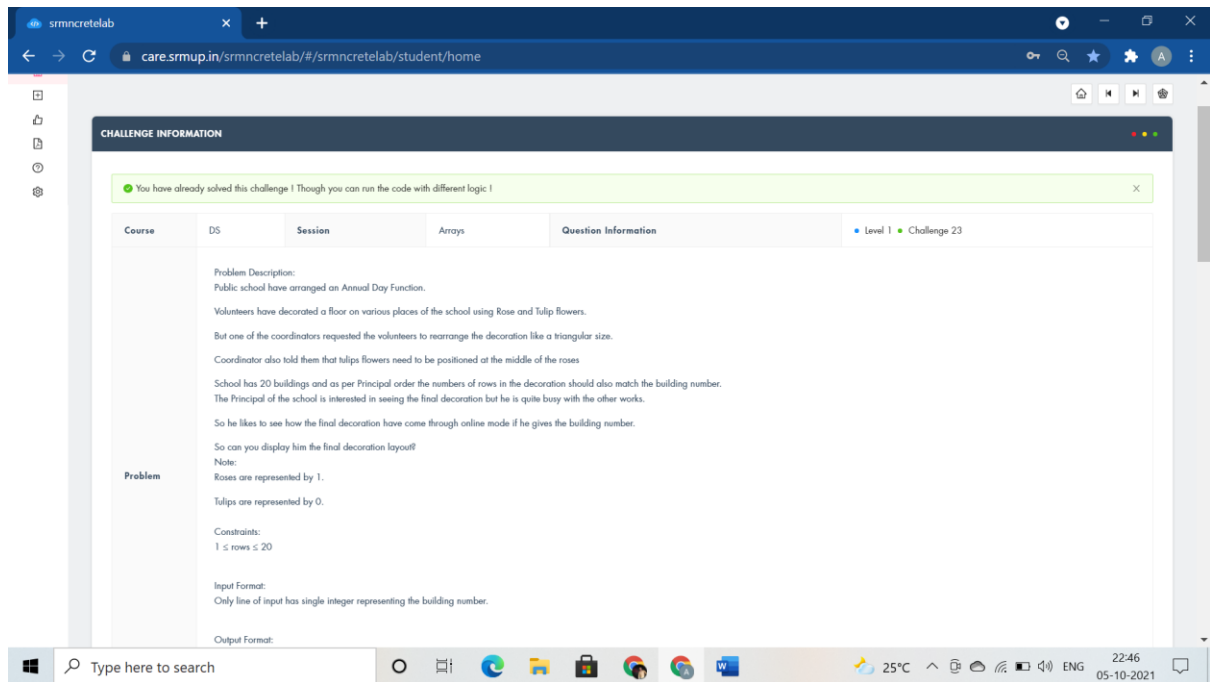
```

```
        if(array[i]>array[j])
        {
            temp=array[i];
            array[i]=array[j];
            array[j]=temp;
        }
    }
}

for(j=0;j<n;j+=2)
{
    temp=array[j];
    array[j]=array[j+1];
    array[j+1]=temp;
    printf("%d %d ",array[j],array[j+1]);
}

//for(j=0;j<n;j++)
if(0)
printf("for(int i=0;i<n;i++)");

    return 0;
}
```



```
#include <stdio.h>

int main()
{
    int rows,i,j;
    scanf("%d",&rows);
    for(i=1;i<=rows;i++)
    {
        for(j=1;j<=i;j++)
        {
            if(j==1 || j==i || i==rows)
                printf("1 ");
            else
                printf("0 ");
        }
        printf("\n");
    }
    return 0;
}
```

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CHALLENGE INFORMATION

You have already solved this challenge ! Though you can run the code with different logic !

Course DS Session Arrays Question Information Level 1 Challenge 24

Question description

Sajid is a First year student in reputed institution. Although he scored well in many subjects, he did not an expert in Algorithms. But Sajid's computer examination is scheduled for next week. As per the blueprint, many questions would come from the Arrays topic. He collected previous year's questions. one of the repeated questions is you need to reverse the array in C Programming Language. Can you help him ?

Function Description

**Algorithm**

Start  
Input -> n  
Input -> elements of array  
Start loop (i) for 0 to n/2  
exchange

**Sample Test Case : 1**

1 2 3 4 5  
↓  
5 4 3 2 1

**Sample Test Case : 2**

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```
#include<iostream>

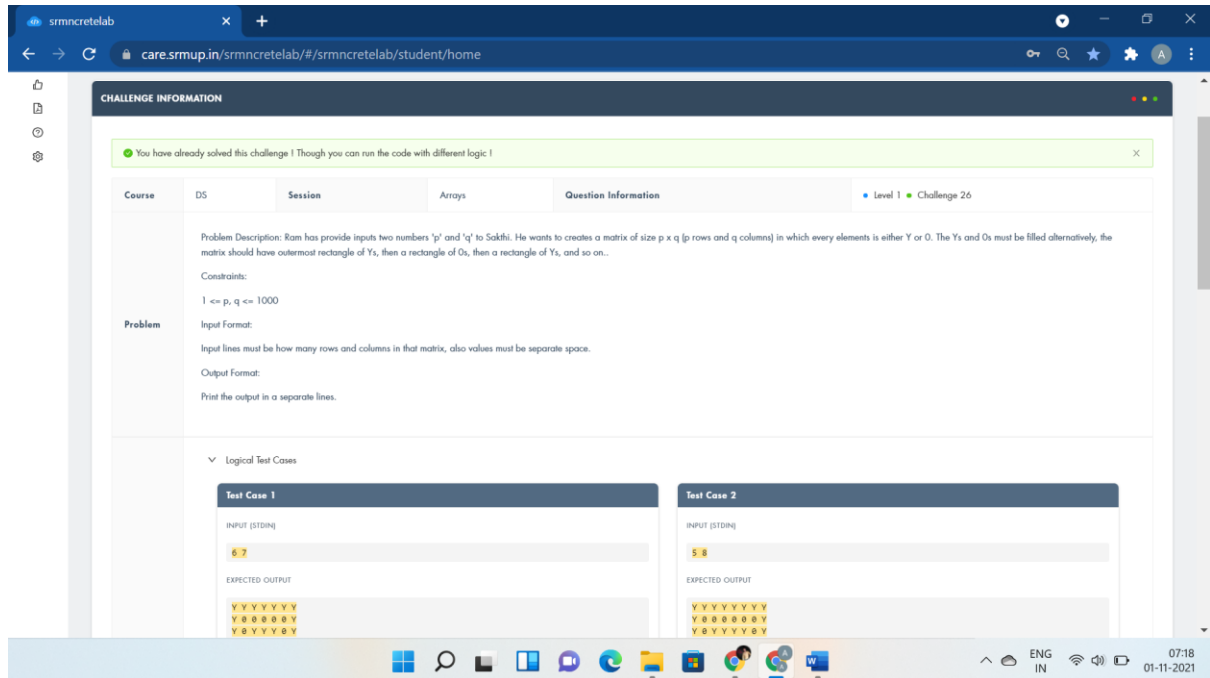
using namespace std;

int main()
{
    int n;
    cin>>n;
    int arr[n];
    for(int i=0;i<n;i++)
    cin>>arr[i];
    for(int i=0;i<n/2;i++)
    {
        int temp;
        temp=arr[i];
        arr[i]=arr[n-1-i];
        arr[n-1-i]=temp;
    }
    for(int i=0;i<n;i++)
    cout<<arr[i]<<" ";
```

```

    return 0;
}

```



```

#include <bits/stdc++.h>

using namespace std;

void ss(){
    cout<<"while(top<=bottom && right>=left)";
}

void fillOX(int m, int n){
    int i, k = 0, l = 0, r = m, c = n;
    char a[m][n], x = 'Y';
    while (k < m && l < n) {
        for (i = l; i < n; ++i)
            a[k][i] = x;
        k++, i = k;
        while(i < m)
            a[i][n-1] = x, i++;
        n--;
        if (k < m)

```

```

    for (i = n; i >= l; --i)

        a[m-1][i] = x;

        m--;

    if (l < n)

        for (i = m; i >= k; --i)

            a[i][l] = x;

            l++;

        x = (x == '0')? 'Y': '0';

    }

    for (i = 0; i < r; i++) {

        for (int j = 0; j < c; j++) {

            cout << a[i][j];

            if(j < c-1)

                cout<<" ";

        }

        cout <<"\n";

    }

}

int main()

{

    int m,n;

    cin>>m>>n;

    fillOX(m, n);

}

```



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You have already solved this challenge! Though you can run the code with different logic!

Course DS Session Arrays Question Information Level 1 Challenge 27

**Problem**

Problem Description:  
 Nirobi have given a matrix C of size N x M to Rio.  
 Also Rio are given position of submatrix as X1, Y1 and X2, Y2 inside the matrix.  
 Now Rio needs to find the sum of all elements inside that submatrix.  
 Can you help Rio in completing the task assigned by Nirobi.

Constraints:  
 $1 \leq T \leq 15$   
 $1 \leq N, M \leq 103$   
 $1 \leq C[N][M] \leq 106$   
 $1 \leq X1, Y1, X2, Y2 \leq M$

Input Format:  
 The first line of input contains an integer T denoting the number of test cases.  
 The first line of each test case is n and m, n is the number of rows and m is the number of columns.  
 The second line of each test case contains C[N][M].  
 The third line contains four value of X1, Y1, X2, Y2. X1, Y1 is the top left cell and X2, Y2 is the bottom right cell.

Output Format:  
 Print the sum of all elements inside that submatrix.

Logical Test Cases

```
#include <iostream>
```

```
using namespace std;
```

```
int main()
```

```
{
```

```
    int t;
```

```
    cin>>t;
```

```
    while(t--){
```

```
        int m, n;
```

```
        cin>>m>>n;
```

```
        int C[m][n];
```

```
        for(int i = 0; i < m; i++){
```

```
            for(int j = 0; j < n; j++) {
```

```
                cin>>C[i][j];
```

```
            }
```

```
        }
```

```
        int a,b,x,y;
```

```
        cin>>a>>b>>x>>y;
```

```
        int sum = 0;
```

```
        for(int i = a-1; i <= x-1; i++) {
```

```
            for(int j = b-1; j <= y-1; j++) {
```

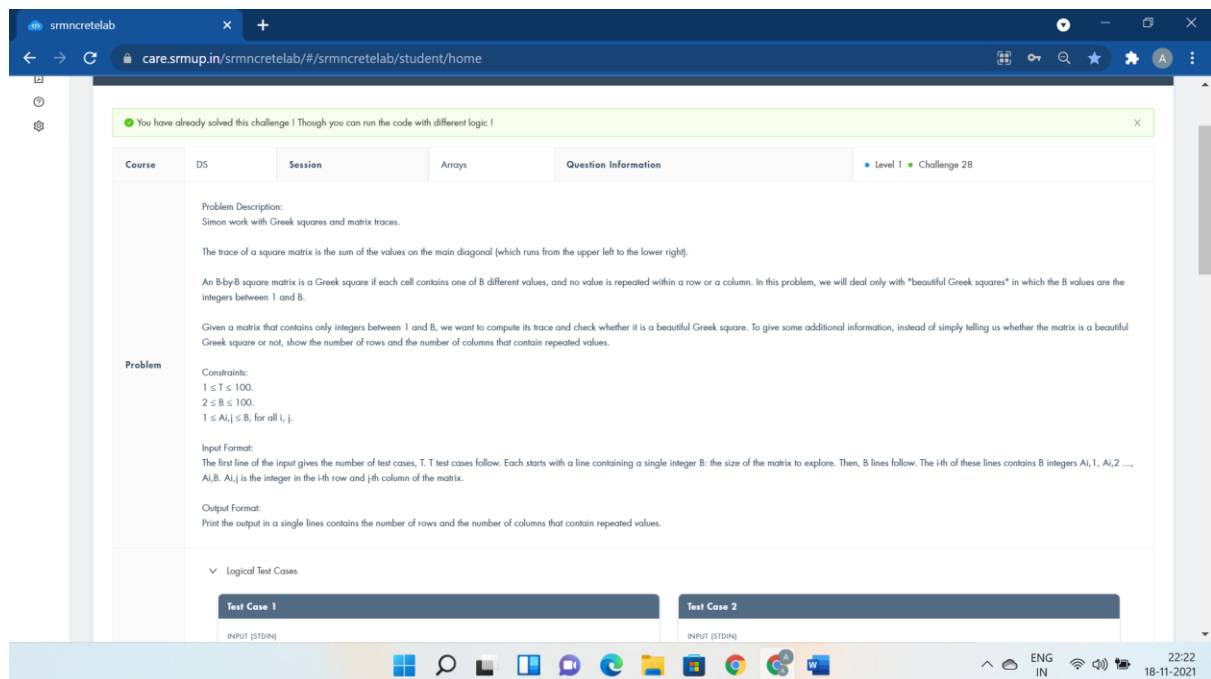
```

        sum += C[i][j];
    }
}

cout<<sum<<"\n";
}

return 0;
}

```



```

#include <bits/stdc++.h>

using namespace std;

int t,i,j,tes,n,x,y,sum;

int a[1007][1007];

map<int,bool> udah;

void solve(){}

int main() {

    solve();

    scanf("%d",&t);

    for (tes=1 ; tes<=t ; tes++) {

        scanf("%d",&n);

        for (i=1 ; i<=n ; i++) {

```

```

        for (j=1 ; j<=n ; j++) {
            scanf("%d",&a[i][j]);
        }
    }
    sum = 0;
    x = 0;
    y = 0;
    for (i=1 ; i<=n ; i++) {
        udah.clear();
        for (j=1 ; j<=n ; j++) {
            if (udah[a[i][j]]) x++, j = n;
            udah[a[i][j]] = true;
        }
    }
    for (j=1 ; j<=n ; j++) {
        udah.clear();
        for (i=1 ; i<=n ; i++) {
            if (udah[a[i][j]]) y++, i = n;
            udah[a[i][j]] = true;
        }
    }
    for (i=1 ; i<=n ; i++) sum += a[i][i];
    printf("%d %d %d\n",sum,x,y);
}

return 0;

cout<<"for(i=0;i<n;i++) int g[105][105];";
}

```

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You have already solved this challenge! Though you can run the code with different logic!

Course	DS	Session	Arrays	Question Information	Level 1	Challenge 29
Problem	<p><b>Problem Description:</b> Good news! Suresh get to go to America on a class trip! Bad news, he don't know how to use the Dollar which is the name of the American cash system. America uses coins for cash a lot more than the Kuwait does. Dollar comes in coins for values of: 1, 2, 10, 50, 100, &amp; 500 To practice your Dollar skills, suresh have selected random items from Amazon.co.us and put them into a list along with their prices in Dollar. Suresh now want to create a program to check suresh Dollar math.</p> <p>Suresh goal is to maximize your buying power to buy AS MANY items as you can with your available Dollar.</p> <p><b>Input Format:</b> File listing 2 to 6 items in the format of:</p> <p>ITEM DDDDD ITEM = the name of the item you want to buy DDDDD = the price of the item (in Dollar)</p> <p><b>Output Format:</b> Print the output in a separate lines contains, List the items suresh can afford to buy. Each item on its own line. Suresh goal is to buy as many items as possible. If suresh can only afford the one expensive item, or 2 less expensive items on a list, but not all three, then list the less expensive items as affordable. If suresh cannot afford anything in the list, output "I need more Dollar!" after the items. The final line you output should be the remaining Dollar he will have left over after make purchases.</p>					
	<p>Logical Test Cases</p> <div> <p><b>Test Case 1</b></p> <p>INPUT (STDIN)</p> <pre>6000 3 Phone-case 1486 Candybar 863 Sunglasses 5529</pre> </div> <div> <p><b>Test Case 2</b></p> <p>INPUT (STDIN)</p> <pre>2100 3 Camera 69555 TV 76439 iPhone 98000</pre> </div>					

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```
#include<iostream>

using namespace std;

int main()
{
    int m,items,price,i,sum=0,count=0;

    string s;

    cin>>m>>items;
    for(i=0;i<items;i++){
        cin>>s>>price;

        sum+=price;

        if(sum<m)
            cout<<"I can afford "<<s<<endl;
        else{
            cout<<"I can't afford "<<s<<endl;
            count++;
            sum=sum-price;
        }
    }

    if(count==items)
        cout<<"I need more Dollar!";
```

```

else

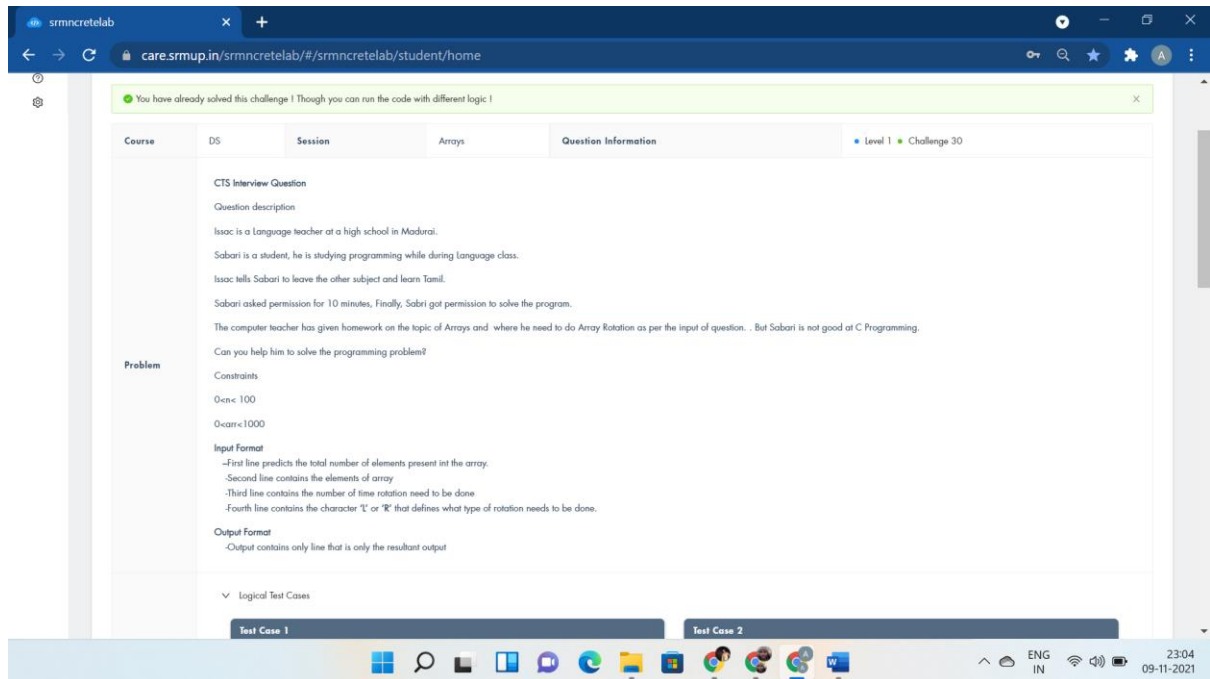
cout<<m-sum;

    return 0;

    cout<<"char name[MAX][LEN]; int price[MAX] afford[MAX]";

}

```



```

#include <iostream>
using namespace std;
int rotLeft(int arr[],int n,int d){
    for(int i=d;i<n;i++)
        cout<<arr[i]<<" ";
    for(int i=0;i<d;i++)
        cout<<arr[i]<<" ";
    return 1;
}
int rotRight(int arr[],int n,int d){
    for(int i=n-d;i<n;i++)
        cout<<arr[i]<<" ";
    for(int i=0;i<n-d;i++)

```

```
        cout<<arr[i]<<" ";
    }
    return 1;
}

int main()
{
    int n,d;
    char c;
    cin>>n;
    int arr[n];
    for(int i=0;i<n;i++)
    cin>>arr[i];
    cin>>d;
    int z;
    z=d%n;
    cin>>c;
    if(c=='L')
    rotLeft(arr,n,z);
    else
    rotRight(arr,n,z);
    return 0;
}
```