

## Assignment 7

### 1. Read n number of values in an array and display it in reverse order ?

**Answer :**

```
#include <stdio.h>
int main()
{
    int i,n,a[100];
    printf("Enter the size of array = ");
    scanf("%d",&n);
    printf("Enter the data in array = ");
    for(i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
    }
    printf("\nThe Entered Values are = \n");
    for(i=0;i<n;i++)
    {
        printf("%d",a[i]);
    }
    printf("\nThe array value in Reverse Order = \n");
    for(i=n-1;i>=0;i--)
    {
        printf("%d",a[i]);
    }
    return 0;
}
```

C:\Users\PABITRA\Music\SOA\PDSC\Program\Reverse\_of\_Array.exe

```
Enter the size of array = 5
Enter the data in array = 1
2
3
4
5

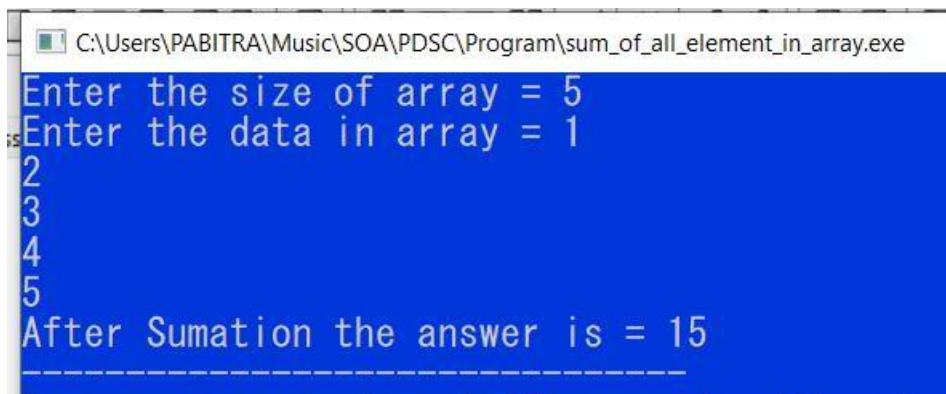
The Entered Values are =
12345
The array value in Reverse Order =
54321
-----
```

## 2. Find the sum of all elements of the array ?

**Answer :**

```
#include<stdio.h>

int main()
{
    int a[10],n,i,sum=0;
    printf("Enter the size of array = ");
    scanf("%d",&n);
    printf("Enter the data in array = ");
    for(i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
    }
    for(i=0;i<n;i++)
    {
        sum=sum+a[i];
    }
    printf("After Sumation the answer is = %d",sum);
    return 0;
}
```

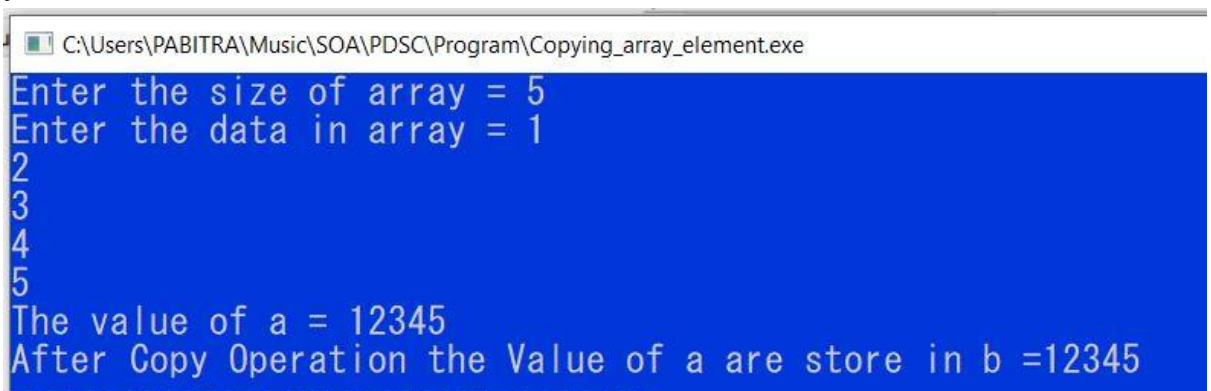


The screenshot shows a Windows command prompt window with the title bar "C:\Users\PABITRA\Music\SOA\PDSC\Program\sum\_of\_all\_element\_in\_array.exe". The prompt displays the following text: "Enter the size of array = 5", "Enter the data in array = 1", "2", "3", "4", "5", and "After Sumation the answer is = 15". A dashed line is visible below the final output.

### 3. Copy the elements of one array into another array ?

**Answer :**

```
#include<stdio.h>
int main()
{
    int a[10],n,i,b[10];
    printf("Enter the size of array = ");
    scanf("%d",&n);
    printf("Enter the data in array = ");
    for(i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
    }
    for(i=0;i<n;i++)
    {
        b[i]=a[i];
    }
    printf("The value of a = ");
    for(i=0;i<n;i++)
    {
        printf("%d",a[i]);
    }
    printf("\nAfter Copy Operation the Value of a are store in b =");
    for(i=0;i<n;i++)
    {
        printf("%d",b[i]);
    }
    return 0;
}
```

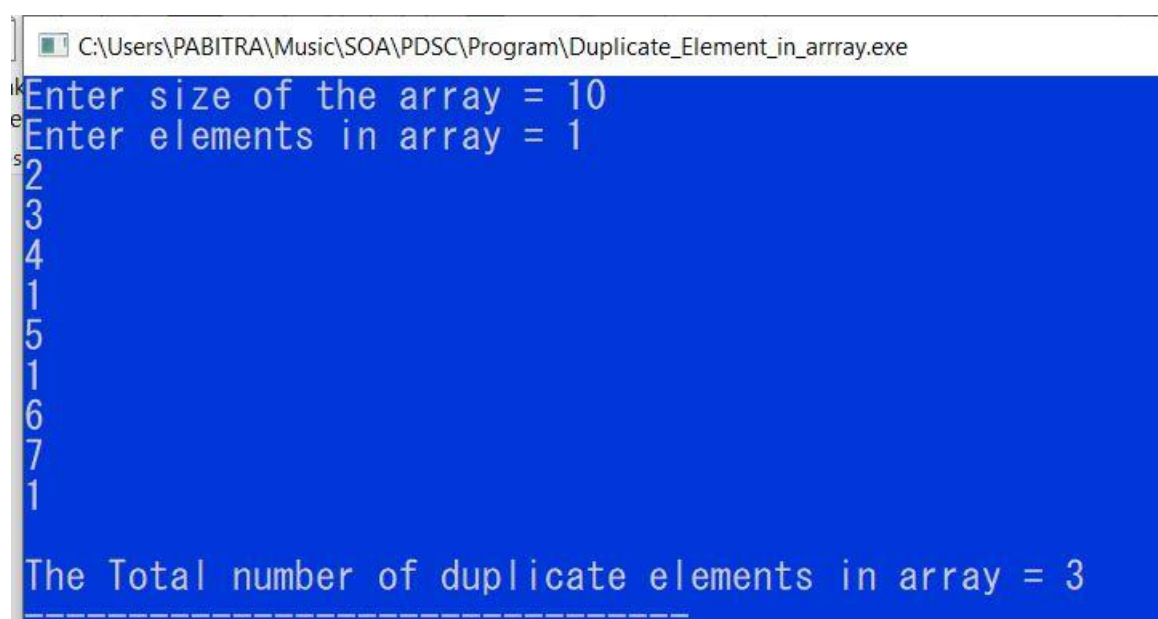


```
C:\Users\PABITRA\Music\SOA\PDSC\Program\Copying_array_element.exe
Enter the size of array = 5
Enter the data in array = 1
2
3
4
5
The value of a = 12345
After Copy Operation the Value of a are store in b =12345
```

#### 4. Count a total number of duplicate elements in an array ?

**Answer :**

```
#include <stdio.h>
int main()
{
    int a[50],i,j,n,c = 0;
    printf("Enter size of the array = ");
    scanf("%d", &n);
    printf("Enter elements in array = ");
    for(i=0; i<n; i++)
    {
        scanf("%d", &a[i]);
    }
    for(i=0; i<n; i++) {
        for(j=i+1; j<n; j++) {
            if(a[i] == a[j]){
                c++;
                break;
            }
        }
    }
    printf("\nThe Total number of duplicate elements in array = %d", c);
    return 0;
}
```



The screenshot shows a Windows command prompt window with the title bar "C:\Users\PABITRA\Music\SOA\PDSC\Program\Duplicate\_Element\_in\_array.exe". The prompt displays the following text:

```
Enter size of the array = 10
Enter elements in array = 1
2
3
4
1
5
1
6
7
1

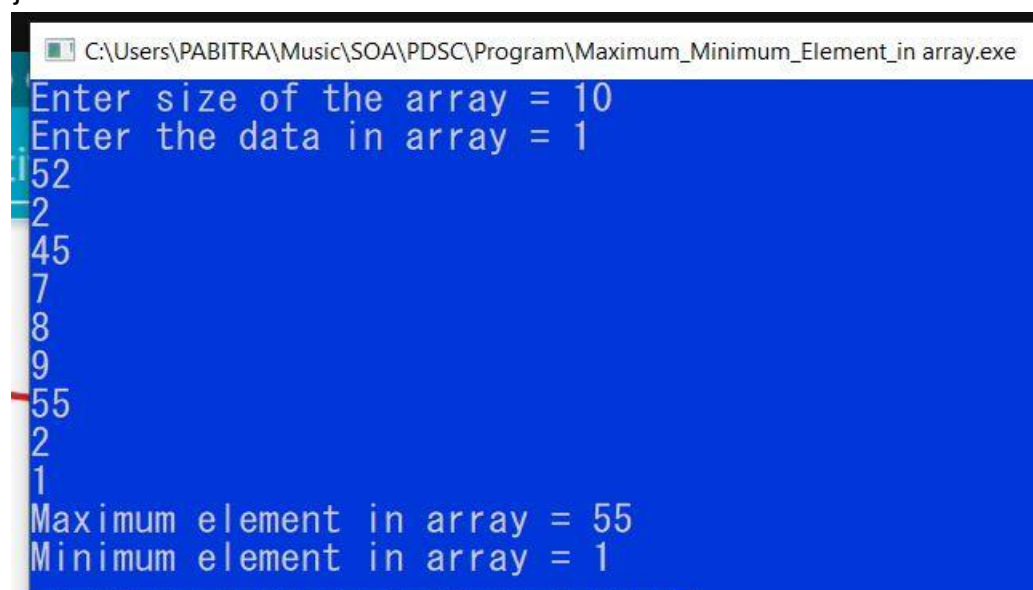
The Total number of duplicate elements in array = 3
-----
```

The input sequence for the array elements is 1, 2, 3, 4, 1, 5, 1, 6, 7, 1. The program identifies three duplicate elements (1, 1, 1) and outputs the total count as 3.

## 5. Find the maximum and minimum element in an array ?

**Answer :**

```
#include <stdio.h>
void main()
{
    int a[50], i, max, min, n;
    printf("Enter size of the array = ");
    scanf("%d",&n);
    printf("Enter the data in array = ");
    for(i=0;i<n;i++){
        scanf("%d",&a[i]);
    }
    max = min = a[0];
    for(i=1; i<n; i++) {
        if(a[i]>max)
        {
            max = a[i];
        }
        if(a[i]<min)
        {
            min = a[i];
        }
    }
    printf("Maximum element in array = %d", max);
    printf("\nMinimum element in array = %d", min);
}
```



The screenshot shows a Windows command prompt window with the title bar "C:\Users\PABITRA\Music\SOA\PDSC\Program\Maximum\_Minimum\_Element\_in array.exe". The prompt displays the following text:

```
Enter size of the array = 10
Enter the data in array = 1
52
2
45
7
8
9
55
2
1
Maximum element in array = 55
Minimum element in array = 1
```

The input sequence for the array is 1, 52, 2, 45, 7, 8, 9, 55, 2, 1. The program correctly identifies the maximum element as 55 and the minimum element as 1.

## 6. Separate odd and even integers in separate arrays ?

**Answer :**

```
#include <stdio.h>
void main()
{
    int a[50], even[50], odd[50];
    int i,k=0,m=0,n;
    printf("Enter the size of array = ");
    scanf("%d",&n);
    printf("Enter the array element = ");
    for(i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
    }
    for(i=0;i<n;i++)
    {
        if (a[i]%2 == 0)
        {
            even[k] = a[i];
            k++;
        }
        else
        {
            odd[m] = a[i];
            m++;
        }
    }
    printf("\nThe Even elements in array are = ");
    for(i=0;i<k;i++)
    {
        printf("%d\t ",even[i]);
    }
    printf("\nThe Odd elements in array are = ");
    for(i=0;i<m;i++)
    {
        printf("%d\t ", odd[i]);
    }
}
```

```

}

C:\Users\PABITRA\Music\SOA\PDSC\Program\Even_odd_element_in_array.exe
Enter the size of array = 10
Enter the array element = 1
2
3
4
5
6
7
8
9
10

The Even elements in array are = 2      4      6      8      10
The Odd elements in array are = 1      3      5      7      9
-----

```

## 7. Insert new value in the array ?

**Answer :**

```

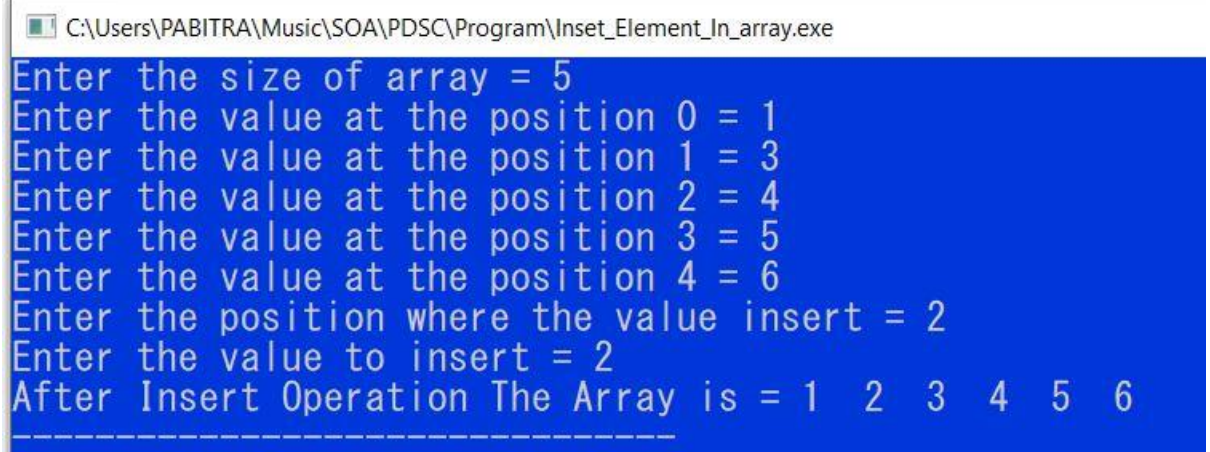
#include <stdio.h>
void main()
{
    int a[50], p, i, n, val;
    printf("Enter the size of array = ");
    scanf("%d", &n);
    for (i = 0; i < n; i++)
    {
        printf("Enter the value at the position %d = ", i);
        scanf("%d", &a[i]);
    }
    printf("Enter the position where the value insert = ");
    scanf("%d", &p);
    printf("Enter the value to insert = ");
    scanf("%d", &val);
    for (i = n - 1; i >= p - 1; i--)
    {
        a[i+1] = a[i];
    }
    a[p-1] = val;
    printf("After Insert Operation The Array is = ");
    for (i = 0; i <= n; i++)

```

```

{
    printf("%d ", a[i]);
}
}

```



The screenshot shows a command prompt window titled "C:\Users\PABITRA\Music\SOA\PDSC\Program\Inset\_Element\_In\_array.exe". The program prompts the user to enter the size of the array (5), then the values at positions 0 through 4 (1, 3, 4, 5, 6). It then asks for the position to insert (2) and the value to insert (2). Finally, it displays the array after insertion: "After Insert Operation The Array is = 1 2 3 4 5 6".

```

C:\Users\PABITRA\Music\SOA\PDSC\Program\Inset_Element_In_array.exe
Enter the size of array = 5
Enter the value at the position 0 = 1
Enter the value at the position 1 = 3
Enter the value at the position 2 = 4
Enter the value at the position 3 = 5
Enter the value at the position 4 = 6
Enter the position where the value insert = 2
Enter the value to insert = 2
After Insert Operation The Array is = 1 2 3 4 5 6
-----

```

## 8. Delete an element at desired position from an array ?

**Answer :**

```

#include <stdio.h>
void main()
{
    int a[100], p, i, n;
    printf("Enter the size of array = ");
    scanf("%d", &n);
    for (i = 0; i < n; i++)
    {
        printf("Enter the value at the position %d = ", i);
        scanf("%d", &a[i]);
    }
    printf("Enter the position where the value to be delete = ");
    scanf("%d", &p);

    if (p >= n+1)
    {
        printf("Deletion not possible.\n");
    }
    else
    {
        for (i = p - 1; i < n - 1; i++)

```



```

    {
        a[i] = a[i+1];
    }

    printf("After Deletion Operation The Array is =");

    for (i = 0; i < n - 1; i++)
    {
        printf("%d\t", a[i]);
    }
}
}

```

```

C:\Users\PABITRA\Music\SOA\PDSC\Program\Delet_an_element_in_array.exe
Enter the size of array = 5
Enter the value at the position 0 = 11
Enter the value at the position 1 = 22
Enter the value at the position 2 = 33
Enter the value at the position 3 = 44
Enter the value at the position 4 = 55
Enter the position where the value to be delete = 2
After Deletion Operation The Array is =11 33 44 55

```

## 9. Find the second largest element in an array ?

**Answer :**

```

#include<stdio.h>

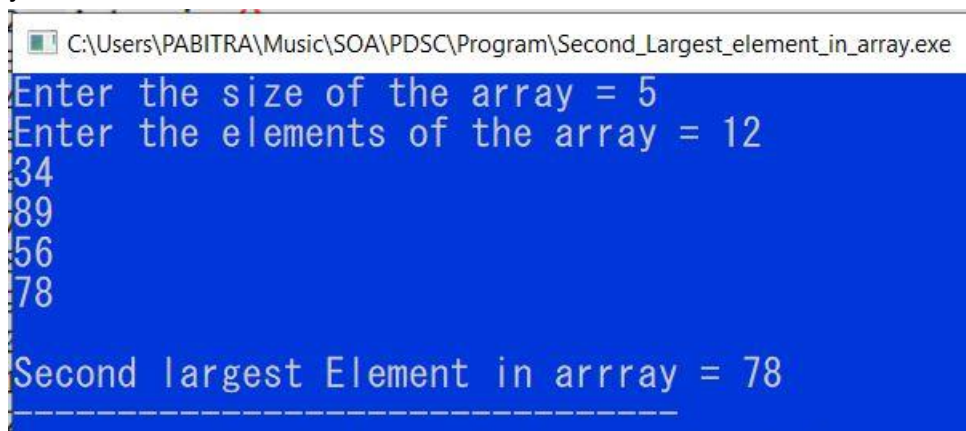
int main ()
{
    int arr[100],i,n,largest,sec_largest;
    printf("Enter the size of the array = ");
    scanf("%d",&n);
    printf("Enter the elements of the array = ");
    for(i = 0; i<n; i++)
    {
        scanf("%d",&arr[i]);
    }
    largest = arr[0];
    sec_largest = arr[1];
    for(i=0;i<n;i++)
    {
        if(arr[i]>largest)
        {

```

```

sec_largest = largest;
largest = arr[i];
}
else if (arr[i]>sec_largest && arr[i]!=largest)
{
sec_largest=arr[i];
}
}
printf("\nSecond largest Element in array = %d",sec_largest);
return 0;
}

```



The screenshot shows a Windows command prompt window with the title bar "C:\Users\PABITRA\Music\SOA\PDSC\Program\Second\_Largest\_element\_in\_array.exe". The prompt displays the following text:

```

Enter the size of the array = 5
Enter the elements of the array = 12
34
89
56
78

Second largest Element in array = 78
-----

```

**10. Find the median of two sorted arrays of same size?**

**Answer :**

**11. Multiplication of two square matrices ?**

**Answer :**

```

#include<stdio.h>
void main()
{
int a[10][10],b[10][10],mul[10][10];
int r,c,i,j,k;
printf("Enter the number of rows in matrices =");
scanf("%d",&r);
printf("Enter the number of column in matrices =");
scanf("%d",&c);
printf("Enter the value of first matrices = ");

```

```

for(i=0;i<r;i++)
{
for(j=0;j<c;j++)
{
scanf("%d",&a[i][j]);
}
}
printf("Enter the value of first matrices = ");
for(i=0;i<r;i++)
{
for(j=0;j<c;j++)
{
scanf("%d",&b[i][j]);
}
}
for(i=0;i<r;i++)
{
for(j=0;j<c;j++)
{
mul[i][j]=0;
for(k=0;k<r;k++)
{
mul[i][j]=mul[i][j]+(a[i][k]*b[k][j]);
}
}
}
printf("After Multiplication the are matrices = \n");
for(i=0;i<r;i++)
{
for(j=0;j<c;j++)
{
printf("%d\t",mul[i][j]);
}
printf("\n");
}
}

```

```
C:\Users\PABITRA\Music\SOA\PDSC\Program\Matrices_Multiplication.exe
Enter the number of rows in matrices =3
Enter the number of column in matrices =3
Enter the value of first matrices = 1
2
3
4
5
6
7
8
9
Enter the value of first matrices = 1
2
3
4
5
6
7
8
9
After Multiplication the are matrices =
30      36      42
66      81      96
102     126     150
-----
```

## 12. Find transpose of a given matrix ?

**Answer :**

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

```
void main()
```

```
{
```

```
    int a[10][10], trans[10][10], i, j, r, c;
```

```
    printf("Enter number of rows and columns = ");
```

```
    scanf("%d %d", &r, &c);
```

```
    printf("\nEnter the data value of matrix = ");
```

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

```
    {
```

```
        for (j = 0; j < c; j++)
```

```
        {
```

```
            printf("\nEnter element a in the position [%d%d]: ", i + 1, j + 1);
```

```

        scanf("%d", &a[i][j]);
    }
}
printf("\nThe Matrics is = \n");
for (i = 0; i < r; i++)
{
    for (j = 0; j < c; j++)
    {
        printf("%d ", a[i][j]);
        if (j == c - 1)
            printf("\n");
    }
}
for (i = 0; i < r; i++)
{
    for (j = 0; j < c; j++)
    {
        trans[j][i] = a[i][j];
    }
}
printf("\nTranspose of the matrix is = \n");
for (i = 0; i < c; i++)
{
    for (j = 0; j < r; j++)
    {
        printf("%d ", trans[i][j]);
        if (j == r - 1)
            printf("\n");
    }
}
}

```

```
C:\Users\PABITRA\Music\SOA\PDSC\Program\Transpose_of_Matrices.exe
Enter number of rows and columns = 2
3
Enter the data value of matrix =
Enter element a in the position [11]: 1
Enter element a in the position [12]: 2
Enter element a in the position [13]: 3
Enter element a in the position [21]: 4
Enter element a in the position [22]: 5
Enter element a in the position [23]: 6

The Matrices is =
1 2 3
4 5 6

Transpose of the matrix is =
1 4
2 5
3 6
-----
```

**13. Find the sum of left diagonals of a matrix ?**

**Answer :**

```
#include <stdio.h>
void main()
{
    int a[50][50], sum=0, n, m=0, i, j;
    printf("Enter the size of array = ");
    scanf("%d", &n);
    m=n;
    printf("\nEnter elements in array = ");
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
```

```

        printf("\nEnter element in the position [%d%d] = ",i,j);
        scanf("%d",&a[i][j]);
    }
}
printf("The matrix is = \n");
for(i=0;i<n;i++)
{
    for(j=0;j<n ;j++)
    {
        printf("%d ",a[i][j]);
    }
    printf("\n");
}
for(i=0;i<n;i++)
{
    m=m-1;
    for(j=0;j<n ;j++)
    {
        if (j==m)
        {
            sum= sum+a[i][j];
        }

    }
}
printf("After Adding the left Diagonal elements of matrices is =
%d\n",sum);
}

```

```
C:\Users\PABITRA\Music\SOA\PDSC\Program\Add_Diagonal_Element.exe
Enter the size of array = 2
Enter elements in array =
Enter element in the position [00] = 10
Enter element in the position [01] = 20
Enter element in the position [10] = 30
Enter element in the position [11] = 40
The matrix is =
10 20
30 40
After Adding the left Diagonal elements of matrices is = 50
-----
Enter element in the position [00] = 10
Enter element in the position [01] = 20
Enter element in the position [10] = 30
Enter element in the position [11] = 40
The matrix is =
10 20
30 40
After Adding the left Diagonal elements of matrices is = 50
```

#### 14. Check whether a given matrix is an identity matrix ?

**Answer :**

```
#include <stdio.h>
void main()
{
    int a[10][10];
    int r, c, i, j, value = 1;
    printf("Enter the number of Rows and column for the matrix = ");
    scanf("%d %d", &r, &c);
    printf("\nEnter the element of matrices = \n");
    for(i=0; i<r; i++)
    {
        for(j=0; j<c; j++)
        {
            printf("Enter in position [%d][%d] = ", i, j);
            scanf("%d", &a[i][j]);
        }
    }
    printf("The matrix is :\n");
    for(i=0; i<r; i++)
    {
        for(j=0; j<c; j++)
```



```

        printf("%d ",a[i][j]);
        printf("\n");
    }

    for(i=0; i<r; i++)
    {
        for(j=0; j<c; j++)
        {
            if(a[i][j] != 1 && a[j][i] != 0)
            {
                value = 0;
                break;
            }
        }
    }

    if(value == 1 )
        printf(" The matrix is an identity matrix \n ");
    else
        printf(" The matrix is not an identity matrix \n");
}

```

```
C:\Users\PABITRA\Music\SOA\PDSC\Program\Identity_Matrices.exe
Enter the number of Rows and column for the matrix = 3
3
Enter the element of matrices =
Enter in position [0][0] = 1
Enter in position [0][1] = 0
Enter in position [0][2] = 0
Enter in position [1][0] = 0
Enter in position [1][1] = 1
Enter in position [1][2] = 0
Enter in position [2][0] = 0
Enter in position [2][1] = 0
Enter in position [2][2] = 1
The matrix is :
1 0 0
0 1 0
0 0 1
The matrix is an identity matrix
-----
```

**15. Search an element in a row wise and column wise sorted matrix ?**

**Answer :**