ASSIGNMENT-7

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1. read n number of values in an array and display it in reverse order.

```
#include<stdio.h>
int main()
{
        int i,no[100],a;
        printf("Enter the range ");
        scanf("%d",&a);
        printf("Enter the data ");
        for(i=0;i<a;i++)
        {
                scanf("%d",&no[i]);
        }
        for(i=a-1;i>=0;i--)
        {
                printf(" %d ",no[i]);
        }
    return(0);
}
```

Output:-

```
Enter the range 5
Enter the data 1
2
3
4
5
5  4  3  2  1
```

2. find the sum of all elements of the array.

```
 #include<stdio.h>
int main()
{
        int i,n,a[100],sum;
        sum=0;
```

```
        printf("Enter the range ");
        scanf("%d",&n);
        printf("Enter the data ");
        for(i=0;i<n;i++)
        {
                scanf("%d",&a[i]);
        }
        for(i=0;i<n;i++)
        {
                sum=sum+a[i];
        }
        printf("Addition is %d",sum);
        return(0);
}
```

Output:-

```
Enter the range 4
Enter the data 50
50
50
50
Addition is 200
```

3. copy the elements of one array into another array.

```
#include<stdio.h>
int main()
{
        int i,n,a[100],b[100];
        printf("Enter the range ");
        scanf("%d",&n);
        printf("Enter the data ");
        for(i=0;i<n;i++)
        {
                scanf("%d",&a[i]);
        }
        for(i=0;i<n;i++)
        {
                b[i]=a[i];
        }
```

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

Output:-

```
Enter the range 4
Enter the data 14
25
36
74
 14
 25
 36
 74
14    25    36   74
```

4.

```
#include <stdio.h>

int main()

{

   int a[100],i,j,size,count=0;

   printf("Enter size of the array ");

   scanf("%d", &size);

   printf("Enter elements in array ");

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

```
    {
        scanf("%d",&a[i]);
    }
    for(i=0;i<size;i++)
    {
        for(j=i+1;j<size;j++)
        {
            if(a[i]==a[j])
            {
                count++;
                break;
            }
        }
    }
    printf("\nTotal number of duplicate elements found in array  %d",count);
    return 0;
}
```

Output:-

```
Enter size of the array 5
Enter elements in array 10
20
30
```

10

30

Total number of duplicate elements found in array 2

5. #include <stdio.h>

```
int main()
{
   int a[100],i,mx,mn,n;
   printf("Enter the size of array ");
   scanf("%d",&n);
   printf("Enter the elements in array\n",n);
   for(i=0;i<n;i++)
   {
            scanf("%d",&a[i]);
        }
   mx = a[0];
   mn = a[0];
   for(i=1;i<n;i++)
   {
      if(a[i]>mx)
      {
         mx=a[i];
```

```
        }
        if(a[i]<mn)
        {
            mn=a[i];
        }
    }
    printf("Maximum element is  %d\n", mx);
    printf("Minimum element is  %d\n\n", mn);
    return(0);
}
```

Output:-

```
Enter the size of array 5
Enter the elements in array
10
20
30
40
50
Maximum element is  50
Minimum element is  10
```

6. separate odd and even integers in separate arrays.

```
 #include <stdio.h>
int main()
```

```
{
  int arr1[10], arr2[10], arr3[10];
  int i,j=0,k=0,n;
    printf("Input the number of elements to be stored in the array :");
    scanf("%d",&n);

    printf("Input %d elements in the array :\n",n);
    for(i=0;i<n;i++)
        {
            printf("element - %d : ",i);
            scanf("%d",&arr1[i]);
         }
  for(i=0;i<n;i++)
  {
       if (arr1[i]%2 == 0)
       {
         arr2[j] = arr1[i];
         j++;
       }
       else
       {
         arr3[k] = arr1[i];
         k++;
       }
  }
  printf("\nThe Even elements are : \n");
  for(i=0;i<j;i++)
  {
       printf("%d ",arr2[i]);
  }
  printf("\nThe Odd elements are :\n");
  for(i=0;i<k;i++)
  {
       printf("%d ", arr3[i]);
  }
  printf("\n\n");
}
```

```
Input the number of elements to be stored in the array :5
Input 5 elements in the array :
element - 0 : 3
element - 1 : 6
element - 2 : 78
element - 3 : 89
element - 4 : 33

The Even elements are :
6 78
The Odd elements are :
3 89 33
```

7.
```
#include <stdio.h>

int main()

{

  int a[100],pos,i,n,value;

  printf("Enter the siz of elements in array ");

  scanf("%d",&n);

  printf("Enter the elements\n");

  for (i=0;i<n;i++)

  {

        scanf("%d",&a[i]);

  }

  printf("Enter the location for insert an element\n");

  scanf("%d",&pos);
```

```
  printf("Enter the value to insert\n");
  scanf("%d", &value);
  for (i=n-1;i>=pos-1;i--)
  {
        a[i+1]=a[i];
    a[pos-1]=value;
  }
  printf("Resultant array is\n");
  for (i=0;i<=n;i++)
  {
        printf("%d\n",a[i]);
  }
  return 0;
}
```

Output:-

```
Enter the siz of elements in array 5
Enter the elements
10
20
30
40
50
```

Enter the location for insert an element

5

Enter the value to insert

60

Resultant array is

10

20

30

40

60

50

8. #include <stdio.h>

```
int main()
{
  int a[100],pos,i,n;
  printf("Enter the size of elements in array\n");
  scanf("%d", &n);
  printf("Enter the elements\n");
  for (i=0;i<n;i++)
  {
        scanf("%d",&a[i]);
```

```
  }
  printf("Enter the location where you wish to delete element\n");
  scanf("%d", &pos);
  if (pos>=n+1)
  {
        printf("Deletion not possible");
  }
  else
  {
    for (i=pos-1;i<n-1;i++)
        {
        a[i]=a[i+1];
        }
    printf("Resultant array\n");
    for (i=0;i<n-1;i++)
        {
            printf("%d\n",a[i]);
        }
  }
  return 0;
}
```

Output:-

Enter the size of elements in array

5

Enter the elements

10

20

30

40

50

Enter the location where you wish to delete element

5

Resultant array

10

20

30

40

9. #include <stdio.h>

#include <limits.h>

int main()

{

    int a[100],size,i;

    int max1,max2;

```
printf("Enter size of the array ");
scanf("%d", &size);
printf("Enter elements in the array ");
for(i=0;i<size;i++)
{
   scanf("%d",&a[i]);
}
max1=max2=INT_MIN;
for(i=0;i<size;i++)
{
   if(a[i]>max1)
   {
      max2=max1;
      max1=a[i];
   }
   else if(a[i]>max2&&a[i]<max1)
   {
      max2=a[i];
   }
}
printf("Second largest = %d", max2);
return 0;
```

}

Output:-

Enter size of the array 5

Enter elements in the array 10

20

30

40

50

Second largest = 40

10. find the median of two sorted arrays of same size.

```
#include <stdio.h>
int max(int a, int b)
{
  return ((a > b) ? a : b);
}
int min(int a, int b)
{
  return ((a < b) ? a : b);
}
int median(int arr[], int size)
{
  if (size % 2 == 0)
      return (arr[size/2] + arr[size/2-1])/2;
  else
      return arr[size/2];
}
int median2SortedArrays(int arr1[], int arr2[], int size)
{
  int med1;
  int med2;
  if(size <= 0) return -1;
```

```
  if(size == 1) return (arr1[0] + arr2[0])/2;
  if (size == 2) return (max(arr1[0], arr2[0]) + min(arr1[1], arr2[1])) / 2;

  med1 = median(arr1, size);
  med2 = median(arr2, size);

  if(med1 == med2) return med1;

  if (med1 < med2)
  {
    return median2SortedArrays(arr1 + size/2, arr2, size - size/2);
  }
  else
  {
    return median2SortedArrays(arr2 + size/2, arr1, size - size/2);
  }
}
int main()
{
  int i,m,n;
  int arr1[] = {19, 25, 55, 24, 35};
  int arr2[] = {34, 28, 53, 17, 3};
  m = sizeof(arr1) / sizeof(arr1[0]);
  n = sizeof(arr2) / sizeof(arr2[0]);
        printf("The given array - 1 is :  ");
        for(i = 0; i < m; i++)
        {
        printf("%d  ", arr1[i]);
   }
        printf("\n");
        printf("The given array - 2 is :  ");
        for(i = 0; i < n; i++)
        {
        printf("%d  ", arr2[i]);
   }
        printf("\n");
```

```
  printf("\nThe Median of the 2 sorted arrays is: %d",median2SortedArrays(arr1,
arr2, n));
  printf("\n");
  return 0;
}
```

```
The given array - 1 is :  19  25  55  24  35
The given array - 2 is :  34  28  53  17  3

The Median of the 2 sorted arrays is: 11
```

11. multiplication of two square Matrices

```
#include<stdio.h>

int main()

{

        int a[10][10],b[10][10],d[10][10],n,n2,r,c,k;

        printf("Enter the rows and colomns ");

        scanf("%d %d",&n,&n2);

        printf("Enter the value for first array ");

        for(r=0;r<n;r++)

        {

                for(c=0;c<n2;c++)

                scanf("%d",&a[r][c]);

        }

        printf("Enter the value for second array ");

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

```
{
        for(c=0;c<n2;c++)
        scanf("%d",&b[r][c]);
}
for(r=0;r<n;r++)
{
        for(c=0;c<n2;c++)
        {
                d[r][c]=0;
                for(k=0;k<n2;k++)
                {
                        d[r][c]=d[r][c]+(a[r][k]+b[k][c]);
                }
        }
}
printf("Multiplication array: ");
for(r=0;r<n;r++)
{
        for(c=0;c<n2;c++)
        printf("\n %d \n",d[r][c]);
}
return(0);
```

```
}
```

Output:--

```
Enter the rows and colomns 2
2
Enter the value for first array 10
10
10
10
Enter the value for second array 10
10
10
10
Multiplication array:
   40
   40
   40
   40
```

12.

```
#include <stdio.h>
int main()
{
   int a[10][10],trans[10][10],r,c,i,j;
```

```
printf("Enter rows and columns ");
scanf("%d %d",&r,&c);
printf("\nEnter matrix elements\n");
for (i=0;i<r;++i)
      {
   for (j=0;j<c;++j)
               {
       scanf("%d",&a[i][j]);
   }
}
printf("\nEntered matrix \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\n");
   for (i=0;i<c;++i)
        {
      for (j=0;j<r;++j)
                  {
         printf("%d  ",trans[i][j]);
         if (j==r-1)
            printf("\n");
      }
   }
   return 0;
}
```

Output:-

```
Enter rows and columns 2
3
Enter matrix elements
10
```

20

30

40

50

60

Entered matrix

10 20 30

40 50 60

Transpose of the matrix

10 40

20 50

30 60

13. #include<stdio.h>

```
int main()
{
        int i,j,rows,col,a[10][10],sum=0;
        printf("\nEnter the size of rows and columns ");
        scanf("%d %d",&i,&j);
        printf("\nEnter the Elements\n");
        for(rows=0;rows<i;rows++)
        {
```

```
            for(col=0;col<j;col++)
        {
            scanf("%d",&a[rows][col]);
        }
        }
        for(rows=0;rows<i;rows++)
        {
            sum=sum+a[rows][rows];
        }
        printf("\nThe sum of diagonal elements of matrix= %d",sum);
        return 0;
}
```

Output:-

```
Enter the size of rows and columns 2
3
Enter the Elements
10
20
30
40
50
60
```

70

80

90

The sum of diagonal elements of matrix= 150

14. #include <stdio.h>

```
int main()
{
  int a[100][100],r,c,i,j,n=1;
  printf("Enter the size of rows ");
  scanf("%d", &r);
  printf("Enter the size of Columns ");
  scanf("%d",&c);
        printf("Enter the elements in the matrix\n");
    for(i=0;i<r;i++)
     {
        for(j=0;j<c;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)
        {
          n = 0;
          break;
        }
       }
}
if(n==1)
{
         printf("The matrix is an identity matrix");
}
```

```
  else
  {
        printf("The matrix is not an identity matrix");
  }
  return(0);
}
```

Output:-

```
Enter the size of rows 3
Enter the size of Columns 3
Enter the elements in the matrix
1
0
0
0
1
0
0
0
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.

```
#include <stdio.h>
int searchElement(int arr2D[4][4], int n, int x)
{
  int i = 0, j = n-1;
  while ( i < n && j >= 0 )
  {
    if ( arr2D[i][j] == x )
    {
      printf("\nThe element Found at the position in the matrix is:  %d, %d", i, j);
      return 1;
    }
    if ( arr2D[i][j] > x )
     j--;
    else
     i++;
  }
  printf("\nThe given element not found in the 2D array.");
  return 0;
}

int main()
{
 int arr2D[4][4] = { {15, 23, 31, 39},
                {18, 26, 36, 43},
                {25, 28, 37, 48},
                {30, 34, 39, 50},
               };

 searchElement(arr2D, 4, 25);
 return 0;
```

```
}
```

```
The element Found at the position in the matrix is:  2, 0
```