# Assignment-7

Q1. Read n number of values in an array and display it    in reverse order.

 #include <stdio.h>

Int main() {

    Int a[20];

   Int n,i;

    Printf(“enter the size of array\n”);

    Scanf(“%d”,&n);

    Printf(“enter the values for the array\n”);

    For(i=0;i<n;i++)

    {

    Printf(“a[%d]=”,i);

    Scanf(“%d”,&a[i]);

    }

    Printf(“the array is: “);

    For(i=0;i<n;i++)

    {

        Printf(“%d\t”,a[i]);

    }

    Printf(“\nthe array in reverse order is:”);

    For(i=n-1;i>-1;i--)

    {

        Printf(“%d\t”,a[i]);

    }

    Return 0;

}

Output-

Enter the size of array

2

Enter the values for the array

A[0]=1

A[1]=2

The array is: 1 2

The array in reverse order is:2 1

 Q2. Find the sum of all elements of the array.

#include <stdio.h>

Int main()

{

Int a[20],i,n,sum=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++)

{

Sum+=a[i];

}

Printf(“sum of the array is : %d”,sum);

Return 0;

}

Output-

Enter size of the array : 4

Enter elements in array : 1

2

3

4

Sum of the array is : 10

Q3. Copy the elements of one array into another array.

#include <stdio.h>

Int main()

{

Int a1[20], a2[20];

Int i, n;

Printf(“enter the number of elements you want to store in the array :”);

Scanf(“%d”,&n);

Printf(“enter the %d elements of the array :\n”,n);

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

{

Printf(“a1[%d]=”,i);

Scanf(“%d”,&a1[i]);

}

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

{

A2[i] = a1[i];

}

Printf(“\nThe elements copied into the second array are :\n”);

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

{

Printf(“a2[%d]=%d\n”,i, a2[i]);

}

Return 0;

}

Output-

Enter the number of elements you want to store in the array :3

Enter the 3 elements of the array :

A1[0]=9

A1[1]=8

A1[2]=7

The elements copied into the second array are :

A2[0]=9

A2[1]=8

A2[2]=7

Q4. Count a total number of duplicate elements in an array.

#include <stdio.h>

Int main()

{

Int a[20],b[20],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++)

{

 If(a[i]!=-1){

For(j=i+1; j<n; j++)

{

If(a[i]==a[j])

{

C++;

A[j]=-1;

}

}

}

}

Printf(“duplicate numbers in the  array: %d”,c);

Return 0;

}

Output-

Enter size of the array : 4

Enter elements in array : 4 4 4 4

Duplicate numbers in the  array: 3

Q5. Find the maximum and minimum element in an array.

#include <stdio.h>

Int main()

{

Int a1[20];

Int i, mx, mn, n;

Printf(“enter the number of elements to be stored in the array :”);

Scanf(“%d”,&n);

Printf(“enter %d elements in the array :\n”,n);

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

{

Printf(“a1[%d]=”,i);

Scanf(“%d”,&a1[i]);

}

Mx = a1[0];

Mn = a1[0];

For(i=1; i<n; i++)

{

If(a1[i]>mx)

{

Mx = a1[i];

}

If(a1[i]<mn)

{

Mn = a1[i];

}

}

Printf(“Maximum element is : %d\n”, mx);

Printf(“Minimum element is : %d\n”, mn);

Return 0;

}

Output-

Enter the number of elements to be stored in the array :4

Enter 4 elements in the array :

A1[0]=5

A1[1]=7

A1[2]=8

A1[3]=23

Maximum element is : 23

Minimum element is : 5

Q6. Separate odd and even integers in separate arrays.

#include <stdio.h>

Int main()

{

Int a1[10];

Int i,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(“a1[%d]=”,i);

Scanf(“%d”,&a1[i]);

}

Printf(“\nThe Even elements are : \n”);

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

{

If (arr1[i]%2 == 0)

{

Printf(“%d”,a1[i]);

}

Printf(“\nThe Odd elements are :\n”);

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

{

If (arr1[i]%2 != 0)

{

Printf(“%d”,a1[i]);

}

Return 0;

}

Output-

Enter the number of elements to be stored in the array :4

Enter 4 elements in the array :

A1[0] : 1

A1[1] : 2

A1[2] : 3

A1[3] : 4

The Even elements are :

2 4

The Odd elements are :

1 3

2

Q7. Insert New value in the array.

#include <stdio.h>

Int main()

{

Int a1[100],i,n,p,val;

Printf(“Input the size of array : “);

Scanf(“%d”, &n);

Printf(“Input %d elements in the array:\n”,n);

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

{

Printf(“a[%d]:”,i);

Scanf(“%d”,&a1[i]);

}

Printf(“Input the value to be inserted : “);

Scanf(“%d”,&val);

Printf(“The exist array list is :\n “);

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

Printf(“%d”,a1[i]);

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

If(val<a1[i])

{

P = i;

Break;

}

For(i=n;i>=p;i--)

A1[i]= a1[i-1];

A1[p]=val;

Printf(“\n\nAfter Insert the list is :\n “);

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

Printf(“%d”,a1[i]);

Return 0;

}

Output-

Input the size of array : 4

Input 4 elements in the array:

A[0]:1

A[1]:2

A[2]:3

A[3]:4

Input the value to be inserted : 6

The array list is :

     1    2    3    4

After Insert the list is :

     6    1    2    3    4

Q8. Delete an element at desired position from an array.

#include<stdio.h>

Int main()

{

Int a1[50],i,pos,n;

Printf(“Input the size of array : “);

Scanf(“%d”, &n);

Printf(“Input %d elements in the array :\n”,n);

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

{

Printf(“ a[%d]:”,i);

Scanf(“%d”,&a1[i]);

}

Printf(“\nInput the position where to delete: “);

Scanf(“%d”,&pos);

I=0;

While(i!=pos-1)

I++;

While(i<n)

{

A1[i]=a1[i+1];

I++;

}

n--;

printf(“The new list is : “);

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

{

Printf(“%d\t”,a1[i]);

}

Return 0;

}

Output-

Input the size of array : 3

Input 3 elements in the array :

 A[0]:1

  A[1]:2

   A[2]:3

Input the position where to delete: 2

The new list is : 1 3

Q9. Find the second largest element in an array.

#include <stdio.h>

Int main()

{

Int a1[50],n,i,j=0,lrg,lrg2nd;

Printf(“enter the size of array : “);

Scanf(“%d”, &n);

Printf(“enter %d elements in the array :\n”,n);

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

{

Printf(“a1[%d] : “,i);

Scanf(“%d”,&a1[i]);

}

Lrg=0;

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

{

If(lrg<a1[i])

{

Lrg=a1[i];

J = i;

}

}

Lrg2nd=0;

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

{

If(i==j)

{

I++;

i--;

}

Else

{

If(lrg2nd<a1[i])

{

Lrg2nd=a1[i];

}

}

}

Printf(“The Second largest element in the array is :  %d \n\n”, lrg2nd);

Return 0;

}

Output-

Enter the size of array : 4

Enter 4 elements in the array :

A1[0] : 1

A1[1] : 2

A1[2] : 3

A1[3] : 4

The Second largest element in the array is :  3

Q11. Multiplication of two square Matrices

#include<stdio.h>

#include<stdlib.h>

Int main(){

Int a[10][10],b[10][10],mul[10][10],r,c,i,j,k;

Printf(“enter the number of row:”);

Scanf(“%d”,&r);

Printf(“enter the number of column:”);

Scanf(“%d”,&c);

Printf(“enter the first matrix element:\n”);

For(i=0;i<r;i++)

{

For(j=0;j<c;j++)

{

Scanf(“%d”,&a[i][j]);

}

}

Printf(“enter the second matrix element:\n”);

For(i=0;i<r;i++)

{

For(j=0;j<c;j++)

{

Scanf(“%d”,&b[i][j]);

}

}

Printf(“multiply of the matrix=\n”);

For(i=0;i<r;i++)

{

For(j=0;j<c;j++)

{

Mul[i][j]=0;

For(k=0;k<c;k++)

{

Mul[i][j]+=a[i][k]\*b[k][j];

}

}

}

For(i=0;i<r;i++)

{

For(j=0;j<c;j++)

{

Printf(“%d\t”,mul[i][j]);

}

Printf(“\n”);

}

Return 0;

}

Output-

Enter the number of row:2

Enter the number of column:2

Enter the first matrix element:

1 2 3 4

Enter the second matrix element:

1 2 3 4

Multiply of the matrix=

7 10

15 22

Q12.Find transpose of a given matrix.

#include <stdio.h>

Int main()

{

Int a[10][10], transpose[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) {

Printf(“Enter element a%d%d: “, i + 1, j + 1);

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) {

Transpose[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  “, transpose[i][j]);

If (j == r – 1)

Printf(“\n”);

}

Return 0;

}

Output-

Enter rows and columns: 2 2

Enter matrix elements:

Enter element a11: 1

Enter element a12: 2

Enter element a21: 3

Enter element a22: 4

Entered matrix:

1 2

3  4

Transpose of the matrix:

1 3

2  4

Q13. Find the sum of left diagonals of a matrix.

#include <stdio.h>

Int main()

{

Int i,j,a1[50][50],sum=0,n,m=0;

Printf(“Input the size of the square matrix : “);

Scanf(“%d”, &n);

M=n;

Printf(“Input elements in the first matrix :\n”);

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

{

For(j=0;j<n;j++)

{

Printf(“a1 [%d][%d] : “,i,j);

Scanf(“%d”,&a1[i][j]);

}

}

Printf(“The matrix is :\n”);

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

{

For(j=0;j<n ;j++)

Printf(“%d”,a1[i][j]);

Printf(“\n”);

}

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

{

M=m-1;

For(j=0;j<n ;j++)

{

If (j==m)

{

Sum= sum+a1[i][j];

}

}

}

Printf(“Addition of the  left Diagonal elements is :%d\n”,sum);

Return 0;

    }

Output-

Input the size of the square matrix : 2

Input elements in the first matrix :

A1 [0][0] : 1

A1 [0][1] : 2

A1 [1][0] : 3

A1 [1][1] : 4

The matrix is :

12

34

Addition of the  left Diagonal elements is :5

Q14. Check whether a given matrix is an identity matrix.

#include <stdio.h>

Int main()

{

Int a1[10][10];

Int r1,c1;

Int i, j, yn =1;

Printf(“Input number of Rows for the matrix :”);

Scanf(“%d”, &r1);

Printf(“Input number of Columns for the matrix :”);

Scanf(“%d”,&c1);

Printf(“Input elements in the first matrix :\n”);

For(i=0;i<r1;i++)

{

For(j=0;j<c1;j++)

{

Printf(“a1[%d][%d] : “,i,j);

Scanf(“%d”,&a1[i][j]);

}

}

Printf(“The matrix is :\n”);

For(i=0;i<r1;i++)

{

For(j=0;j<c1 ;j++)

Printf(“% d”,a1[i][j]);

Printf(“\n”);

}

For(i=0; i<r1; i++)

{

For(j=0; j<c1; j++)

{

If(a1[i][j] != 1 && a1[j][i] !=0)

{

Yn = 0;

Break;

}

}

}

If(yn == 1 )

Printf(“ The matrix is an identity matrix.\n\n”);

Else

Printf(“ The matrix is not an identity matrix.\n\n”);

Return 0;

}

Output-

Input number of Rows for the matrix :2

Input number of Columns for the matrix :2

Input elements in the first matrix :

A1[0][0] : 5

A1[0][1] : 4

A1[1][0] : 6

A1[1][1] : 7

The matrix is :

 5 4

 6 7

 The matrix is not an identity matrix.