**ASSIGNMENT-7**

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

**PROGRAM:**

#include<stdio.h>

void main()

{

int n, i;

printf("Enter the value of n: ");

scanf("%d", &n);

int a[n];

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

{

printf("Enter a number: ");

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

}

printf("\n");

printf("The numbers in reverse order are:\n");

for(i=n-1; i>=0; i--)

{

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

}

}

**OUTPUT:**

Enter the value of n: 5

Enter a number: 2

Enter a number: 4

Enter a number: 6

Enter a number: 8

Enter a number: 10

The numbers in reverse order are:

10

8

6

4

2

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

**PROGRAM:**

#include<stdio.h>

void main()

{

int a[5], i, sum=0;

for(i=0; i<5; i++)

{

printf("Enter a number: ");

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

}

for(i=0; i<5; i++)

{

sum = sum + a[i];

}

printf("The sum is: %d", sum);

}

**OUTPUT:**

Enter a number: 5

Enter a number: 10

Enter a number: 15

Enter a number: 20

Enter a number: 25

The sum is: 75

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

**PROGRAM:**

#include<stdio.h>

void main()

{

int a[5], b[5], i;

for(i=0; i<5; i++)

{

printf("Enter a number: ");

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

}

printf("The elements after coping are:\n");

for(i=0; i<5; i++)

{

b[i] = a[i];

printf("%d\n", b[i]);

}

}

**OUTPUT:**

Enter a number: 2

Enter a number: 4

Enter a number: 6

Enter a number: 8

Enter a number: 10

The elements after coping are:

2

4

6

8

10

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

**PROGRAM:**

#include<stdio.h>

void main()

{

int a[10], i, j, c=0;

for(i=0; i<10; i++)

{

printf("Enter a number: ");

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

}

for(i=0; i<10; i++)

{

for(j=i+1; j<10; j++)

{

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

{

c = c + 1;

break;

}

}

}

printf("Total number of duplicate elements in the array are: %d\n", c);

}

**OUTPUT:**

Enter a number: 2

Enter a number: 10

Enter a number: 20

Enter a number: 40

Enter a number: 2

Enter a number: 10

Enter a number: 50

Enter a number: 20

Enter a number: 40

Enter a number: 65

Total number of duplicate elements in the array are: 4

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

**PROGRAM:**

#include<stdio.h>

void main()

{

int a[5], i, max, min;

for(i=0; i<5; i++)

{

printf("Enter a number: ");

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

}

max = a[0];

min = a[0];

for(i=1; i<5; i++)

{

if(max > a[i])

max = a[i];

if(min < a[i])

min = a[i];

}

printf("The maximum element in the array is:%d\n", max);

printf("The minimum element in the array is:%d\n", min) }

**OUTPUT:**

Enter a number: 2

Enter a number: 4

Enter a number: 6

Enter a number: 8

Enter a number: 10

The maximum element in the array is:2

The minimum element in the array is:10

1. Separate odd and even integers in separate arrays.

**PROGRAM:**

#include <stdio.h>

void main()

{

int n,i,j=0,k=0,c=0;

printf("Enter size of array: ");

scanf("%d",&n);

int arr[n],odd[n],even[n];

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

{

printf("Input number in array: ");

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

}

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

{

if(arr[i] % 2 == 0)

{

even[j] = arr[i];

j ++;

c ++;

}

else

{

odd[k] = arr[i];

k++;

}

}

printf("Even numbers: ");

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

{

printf("%d ",even[i]);

}

printf("Odd numbers: ");

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

{

printf("%d ",odd[i]);

}

}

**OUTPUT:**

Enter size of array: 5

Input number in array: 2

Input number in array: 3

Input number in array: 5

Input number in array: 4

Input number in array: 1

Even numbers: 2 4

Odd numbers: 3 5 1

1. Insert New value in the array.

**PROGRAM:**

#include <stdio.h>

int main()

{

int location, i, n, value;

printf("Enter number of elements in array\n");

scanf("%d", &n);

int arr[n];

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

{

printf("Enter a number: ");

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

}

printf("Enter the location where you wish to insert an element\n");

scanf("%d", &location);

printf("Enter the value to insert\n");

scanf("%d", &value);

for (i = n - 1; i >= location - 1; i--)

arr[i+1] = arr[i];

arr[location-1] = value;

printf("Resultant array is\n");

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

printf("%d\n", arr[i]);

return 0;

}

**OUTPUT:**

Enter number of elements in array

5

Enter a number: 2

Enter a number: 4

Enter a number: 6

Enter a number: 8

Enter a number: 10

Enter the location where you wish to insert an element

4

Enter the value to insert

9

Resultant array is

2

4

6

9

8

10

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

**PROGRAM:**

#include <stdio.h>

int main()

{

int position, i, n;

printf("Enter number of elements in array\n");

scanf("%d", &n);

int arr[n];

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

{

printf("Enter a number: ");

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

}

printf("Enter the location where you wish to delete element\n");

scanf("%d", &position);

if (position >= n+1)

printf("Deletion not possible.\n");

else

{

for (i = position - 1; i < n - 1; i++)

arr[i] = arr[i+1];

printf("Resultant array:\n");

for (i = 0; i < n - 1; i++)

printf("%d\n", arr[i]);

}

return 0;

}

**OUTPUT:**

Enter number of elements in array

5

Enter a number: 2

Enter a number: 4

Enter a number: 6

Enter a number: 8

Enter a number: 10

Enter the location where you wish to delete element

4

Resultant array:

2

4

6

10

1. Find the second largest element in an array.

**PROGRAM:**#include <stdio.h>

int main(){

int n,i,j,temp=0;

printf("enter size of array :: ");

scanf("%d",&n);

int arr[n];

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

printf("Input number in array :: ");

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

}

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

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

if(arr[i] < arr[j]){

temp = arr[i];

arr[i] = arr[j];

arr[j] = temp;

}

}

}

printf("Second largest value = %d",arr[n-2]);

return 0;

}

**OUTPUT:**

enter size of array :: 6

Input number in array :: 3

Input number in array :: 4

Input number in array :: 8

Input number in array :: 9

Input number in array :: 7

Input number in array :: 2

Second largest value = 8

1. Multiplication of two square Matrices.

**PROGRAM:**

#include <stdio.h>

int main(){

int n,i=0,j=0,k;

printf("enter size of array :: ");

scanf("%d",&n);

int arr1[n][n],arr2[n][n],mul[n][n];

printf("Enter elements in first array -->\n");

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

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

printf("Enter a number :: ");

scanf("%d",&arr1[i][j]);

}

}

printf("Enter elements in second array -->\n");

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

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

printf("Enter a number :: ");

scanf("%d",&arr2[i][j]);

}

}

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

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

mul[i][j]=0;

for(k=0;k<n;k++){

mul[i][j] += arr1[i][k] \* arr2[k][j] ;

}

}

}

printf("Multiplication of the given matrix --> \n");

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

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

printf("%d ",mul[i][j]);

}

printf("\n");

}

return 0;

}

**OUTPUT:**

enter size of array :: 2

Enter elements in first array -->

Enter a number :: 4

Enter a number :: 2

Enter a number :: 2

Enter a number :: 4

Enter elements in second array -->

Enter a number :: 2

Enter a number :: 2

Enter a number :: 2

Enter a number :: 2

Multiplication of the given matrix -->

12 12

1. 2

12.Find transpose of a given matrix.

**PROGRAM:**

#include <stdio.h>

int main(){

int n,i=0,j=0,k;

printf("enter size of array :: ");

scanf("%d",&n);

int arr1[n][n],arr2[n][n];

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

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

printf("Enter a number :: ");

scanf("%d",&arr1[i][j]);

}

}

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

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

arr2[i][j] = arr1[j][i];

}

}

printf("Inserted matrix -->\n");

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

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

printf("%d ",arr1[i][j]);

}

printf("\n");

}

printf("Transpose of this given matrix is -->\n");

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

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

printf("%d ",arr2[i][j]);

}

printf("\n");

}

return 0;

}

**OUTPUT:**

enter size of array :: 3

Enter a number :: 1

Enter a number :: 2

Enter a number :: 3

Enter a number :: 4

Enter a number :: 5

Enter a number :: 6

Enter a number :: 7

Enter a number :: 8

Enter a number :: 9

Inserted matrix -->

1 2 3

4 5 6

7 8 9

Transpose of this given matrix is -->

1 4 7

2 5 8

3 6 9

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

**PROGRAM:**

#include <stdio.h>

int main(){

int n,i,j,sum=0;

printf("enter size of array :: ");

scanf("%d",&n);

int arr[n][n];

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

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

printf("Enter a number :: ");

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

}

}

printf("Inserted matrix -->\n");

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

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

printf("%d ",arr[i][j]);

}

printf("\n");

}

printf("sum of left diagonals ");

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

j=i;

printf("%d ",arr[i][j]);

}

printf("is :: ");

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

j=i;

sum += arr[i][j];

}

printf("%d",sum);

return 0;

}

**OUTPUT:**

enter size of array :: 3

Enter a number :: 1

Enter a number :: 2

Enter a number :: 3

Enter a number :: 4

Enter a number :: 5

Enter a number :: 6

Enter a number :: 7

Enter a number :: 8

Enter a number :: 9

Inserted matrix -->

1 2 3

4 5 6

7 8 9

sum of left diagonals 1 5 9 is :: 15

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

**PROGRAM:**

#include<stdio.h>

int main()

{

int i, j, rows, columns, a[10][10], Flag = 1;

printf("\n enter the Number of rows and columns : ");

scanf("%d %d", &i, &j);

printf("\n enter the Matrix Elements \n");

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

{

for(columns = 0; columns < j; columns++)

{

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

}

}

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

{

for(columns = 0; columns < j; columns++)

{

if(a[rows][columns] != 1 && a[columns][rows] != 0)

{

Flag = 0;

break;

}

}

}

if(Flag == 1)

{

printf("\n the matrix that you entered is an Identity Matrix ");

}

else

{

printf("\n the matrix that you entered is Not an Identity Matrix ");

}

return 0;

}

**OUTPUT:**

Output:-

enter the Number of rows and columns : 2

2

enter the Matrix Elements

1

2

3

4

the matrix that you entered is Not an Identity Matrix

enter the Number of rows and columns : 2

2

enter the Matrix Elements

1

0

0

1

the matrix that you entered is an Identity Matrix