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**Practical – 6: Program to implement Two-Dimensional Array**

1. Write a program in C to enter some value in 2D array and display it using any loop

void main()

{

int a[3][3],i,j;

printf("enter the element of matrix:");

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

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

}

}

printf("element of matrix A is\n:");

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

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

}

printf("\n")

}

}

1. Program to add and multiply two matrices of order n x n

#include<stdio.h>

void main()

{

int a[3][3],b[3][3],c[3][3], d[3][3],i,j,k;

printf("enter the element of first matrix:");

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

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

}

}

printf("enter the element of second matrix:");

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

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

}

}

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

c[i][j]=a[i][j]+b[i][j];

}

}

printf("resultant addition matrix is:\n");

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

printf("%d\t",c[i][j]);

}

printf("\n");

}

printf("Multiplication of given two matrices is:\n");

for (int i = 0; i <3; i++) {

for (int j = 0; j <3; j++) {

d[i][j] = 0;

for (int k = 0; k <3; k++) {

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

}

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

}

printf("\n");

}

}

1. Program that finds the sum of diagonal elements of a m x n matrix.

#include<stdio.h>

void main()

{

int a[3][3],i,j,sum=0;

printf("enter the element of matrix:");

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

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

}

}

printf("element of matrix A is:\n");

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

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

}

printf("\n");

}

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

if(i==j)

{

sum=sum+a[i][j];

}

}

}

printf("\n sum of diagonal elents is :%d",sum);

}

1. Program to find the transpose of a matrix.

#include<stdio.h>

void main()

{

int a[3][3],t[3][3],i,j,sum=0;

printf("enter the element of matrix:");

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

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

}

}

printf("matrix A is:\n");

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

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

}

printf("\n");

}

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

t[j][i]=a[i][j];

}

}

printf("transpose of matrix A is:\n");

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

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

}

printf("\n");

}

}

1. Program to find the row sum and the column sum of a matrix of order m x n.

#include <stdio.h>

void main()

{

int a[3][3],i,j,sum1,sum2,b;

printf("Enter the elements of matrix A:-\n");

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

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

}

}

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

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

}

printf("\n");

}

for(i=0;i<3;i++)

{

sum1=0;

sum2=0;

for(j=0;j<3;j++)

{

sum1=sum1+a[i][j];

sum2=sum2+a[j][i];

b=i+1;

}

printf("sum of %d row is %d\n",b,sum1 );

printf("sum of %d column is %d\n",b,sum2 );

}

}