1)

A program find the sum of column numbers in matrix.

#include<stdio.h>//Header file//

int main ()

{

int i,j,rows,columns,a[4][4],sum;//row column declaration and matrix declaration//

printf("please Enter the number of rows and columns : ");

scanf("%d %d",&i,&j);//row and column initialization//

printf("Please Enter matrix rows and column elements\n");

for(rows=0;rows<i;rows++)//matrix initialization//

{

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

{

scanf("%d",&a[rows][columns]);// to read inputs of the matrix//

}

}

for(rows=0;rows<i;rows++)//here rows are varying whereas columns stay constant//

{

sum=0;

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

{

sum=sum+a[columns][rows];

}

printf("The sum of column elements of the matrix=%d\n",sum);//to display the sum of columns//

}

return 0;//To terminate the program//

}

Application :

For plotting graph,statistics,to do scientific studies in various fields

2)

A program to find number of same numbers (blackbox) and unique numbers (whitebox) present in a matrix.

#include <stdio.h>

int main() {

int matrix[4][4];//matrix declaration//

int i,j,k=0;//rows and columns declarations//

int blackbox = 4\*4; //m\*n of matrix

int whitebox = 0;//refers to unique elements present in the matrix//

int arrstore[4\*4];// to save time but it take some space//

//Matrix input

for(i =0; i<4; i++)

{

for(j=0; j<4; j++)

{

scanf("%d",&matrix[i][j]);//to get the matrix elements//

arrstore[k++] = matrix[i][j];

}

}

for(i=0; i<4; i++)

{

for(j=0; j<4; j++)

{

if(isUnique(arrstore,matrix[i][j], 4\*4) == 1)//it checks whether the element is unique or not//

{

whitebox++;

}

}

}

blackbox = blackbox-whitebox;//since we get all elements in the whitebox so we subtract it with blackbox to find no of blackbox//

printf("Black box : %d\n",blackbox);// to display the number of same elements present in the matrix//

printf("White box : %d\n", whitebox);// to display the number of unique elements present in the matrix//

return 0;

}

int isUnique(int arr[], int key, int size)//function declaration//

{

int i,cnt=0;

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

{

if(arr[i] == key)//to check whether the elements are same or not//-

{

cnt++;

}

}

if(cnt == 1)

{

return 1;// it returns the above for loop//

}

return -1;// it is a false statement so it run the program from the start//

}

Application :

Examine the functionality of the application

Used for software testing

To Analyse data structures

To analyse internal design