1.

A program to find the sum of column numbers in matrix.

#include<stdio.h> //Header file

int main ()

{

int i,j,rows,cols,sum; //row and column declaration

int a[6][6]; //matrix initialization

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

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

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

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

{

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

scanf("%d",&a[rows][cols]); //read the input of row and column

}

for(rows=0;rows<i;rows++) //i for iteration of row

{

sum=0; //addition initialization

for(cols=0;cols<j;cols++){ //j for iteration of column

sum=sum+a[cols][rows]; //adding of column elements

}

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

}

return 0; //end the program

}

APPLICATIONS :

* Used for study of electrical circuits, quantum mechanics and optics , calculation of battery power outputs, resistor conversion of electrical energy into another useful energy.
* Provide a compact way of representing a system of equations.

2.

A program to find number of the same numbers(blackbox) and unique numbers(whitebox) in the matrix/

#include <stdio.h> //Header file

int main() {

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

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

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

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

int arrstore[4\*4]; // to minimize the time but it occupy some spaces

//Matrix input

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

{

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

{

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

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) //checks the elements if its unique or not

{

whitebox++;

}

}

}

blackbox =blackbox-whitebox; //to find the number of blackbox in the matrix where it is whitebox subtract with blackbox

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

printf("White box : %d\n", whitebox); // 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) //check the elements whether same or not

{

cnt++;

}

}

if(cnt == 1)

{

return 1; //it returns the above for loop

}

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

}

APPLICATION :

* Analyze the internal structures the used data structures ,internal design,code structure.
* It is a method of test the every level of software testing like unit,integration,system and acceptance.