Q.1 ) Write a program to calculate the sum of two matrices each of order 3x3.

#include <stdio.h>

int main(int argc, char \*argv[])

{

int count = 0, k = 0, i = 0;

int arr1[3][3];

int arr2[3][3];

int ans[3][3];

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

{

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

{

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

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

}

}

printf("\n\n");

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

{

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

{

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

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

}

}

printf("\n\nAnswer :-\n\n");

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

{

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

{

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

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

}

printf("\n");

}

return 0;

}

Q.2 ) Write a program to calculate the product of two matrices each of order 3x3.

#include <stdio.h>

int main(int argc, char \*argv[])

{

int count = 0, k = 0, i = 0;

int arr1[3][3];

int arr2[3][3];

int ans[3][3];

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

{

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

{

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

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

ans[i][j] = 0;

}

}

printf("\n\n");

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

{

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

{

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

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

}

}

printf("\n\nAnswer :-\n\n");

while (i < 3)

{

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

{

ans[i][k] = (arr1[i][j] \* arr2[j][k]) + ans[i][k];

}

printf("%d ", ans[i][k]);

if (count < 2)

{

k = k + 1;

count = count + 1;

}

else

{

i = i + 1;

k = 0;

count = 0;

printf("\n");

}

}

return 0;

}

Q.3 ) Write a program in C to find the transpose of a given matrix.

#include<stdio.h>

int main()

{

int row, col, i=0,j=0;

printf("How many row = ");

scanf("%d",&row);

printf("How many column = ");

scanf("%d",&col);

int arr[row][col];

int brr[col][row];

for(int i = 0; i<row; i++)

{

for(int j = 0; j<col; j++)

{

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

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

}

}

printf("\n\ntranspose matrix :- \n\n");

while(j<col)

{

brr[j][i] = arr[i][j];

if(i < (row-1))

i = i+1;

else

{

i=0;

j=j+1;

}

}

for(int x=0; x<col; x++)

{

for(int y = 0; y<row; y++)

printf("%d ",brr[x][y]);

printf("\n");

}

}

Q.4 ) Write a program in C to find the sum of right diagonals of a matrix.

#include<stdio.h>

int main()

{

int size, col, sum=0;

printf("Enter size to create matrix = ");

scanf("%d",&size);

col=size - 1;

int arr[size][size];

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

{

for(int j = 0; j<size; j++)

{

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

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

}

}

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

{

sum = sum + arr[i][col-i];

}

printf("\n\nsum of right diagonal = %d", sum);

}

Q.5 ) Write a program in C to find the sum of left diagonals of a matrix.

#include<stdio.h>

int main()

{

int size, col, sum=0;

printf("Enter size to create matrix = ");

scanf("%d",&size);

int arr[size][size];

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

{

for(int j = 0; j<size; j++)

{

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

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

}

}

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

{

sum = sum + arr[i][i];

}

printf("\n\nsum of left diagonal = %d", sum);

}

Q.6 ) Write a program in C to find the sum of rows and columns of a Matrix.

#include<stdio.h>

int main()

{

int size, col, SoR=0, SoC=0;

printf("Enter size to create matrix = ");

scanf("%d",&size);

int arr[size][size];

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

{

for(int j = 0; j<size; j++)

{

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

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

}

}

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

{

for(int j = 0; j<size; j++)

SoR = SoR + arr[i][j];

}

printf("\n\n\nSum of row = %d", SoR);

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

{

for(int j = 0; j<size; j++)

SoC = SoC + arr[j][i];

}

printf("\n\n\nSum of column = %d", SoC);

}

Q.7 ) Write a program in C to print or display the lower triangular of a given matrix.

#include<stdio.h>

int main()

{

int size, col, SoR=0, SoC=0;

printf("Enter size to create matrix = ");

scanf("%d",&size);

int arr[size][size];

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

{

for(int j = 0; j<size; j++)

{

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

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

}

}

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

{

for(int j = 0; j<=i; j++)

{

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

}

printf("\n");

}

}

Q.8 ) Write a program in C to print or display an upper triangular matrix.

#include<stdio.h>

int main()

{

int size, col, SoR=0, SoC=0;

printf("Enter size to create matrix = ");

scanf("%d",&size);

int arr[size][size];

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

{

for(int j = 0; j<size; j++)

{

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

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

}

}

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

{

for(int j = i; j<size; j++)

{

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

}

printf("\n");

}

}

Q.9 ) Write a program in C to accept a matrix and determine whether it is a sparse matrix.

#include<stdio.h>

int main()

{

int row, col, count = 0;

printf("Enter row = ");

scanf("%d",&row);

printf("\nEnter column = ");

scanf("%d",&col);

int arr[row][col];

for(int i = 0; i<row; i++)

{

for(int j = 0; j<col; j++)

{

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

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

if(arr[i][j] == 0)

{

count = count + 1 ;

}

}

}

if(count > (row\*col)/2)

{

printf("\n\nthis is sparce matrix");

}

else

{

printf("\n\nthis is not a sparce matrix");

}

}

Q.10 ) Write a program in C to find the row with maximum number of 1s.

#include<stdio.h>

int main()

{

int row, col, count = 0, max =0;

printf("Enter row = ");

scanf("%d",&row);

printf("\nEnter column = ");

scanf("%d",&col);

int arr[row][col];

for(int i = 0; i<row; i++)

{

for(int j = 0; j<col; j++)

{

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

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

if(arr[i][j] == 1)

{

count = count + 1 ;

}

}

if(count > max)

{

max = i;

}

count = 0;

}

printf("\n\nrow with maximum number of 1s = %d", max);

}