

1- Your program will find the transpose of the 2x2 matrix. Elements of the matrix will be entered by the user.

```
#include<stdio.h>

int main()
{
    int matrix[2][2];
    int i,j;

    //FILL THE VALUES OF THE MATRIX
    for(i=0; i<2;i++)
    {
        for(j=0; j<2; j++)
        {
            printf("Enter the value of matrix[%d][%d]:",i,j);
            scanf("%d",&matrix[i][j]);
        }
    }

    //PRINT THE MATRIX
    printf("\n\nMatrix:\n");
    for(i=0; i<2; i++)
    {
        for(j=0; j<2; j++)
        {
            printf("%d ",matrix[i][j]);
        }
        printf("\n");
    }

    //PRINT THE TRANSPOSE OF THE MATRIX
    printf("\n\nTranspose of the matrix:\n");
    for(i=0; i<2; i++)
    {
        for(j=0; j<2; j++)
        {
            printf("%d ",matrix[j][i]);
        }
        printf("\n");
    }

    return 0;
}
```

**Output sample of the code:**

```
Enter the value of matrix[0][0]:1
Enter the value of matrix[0][1]:2
Enter the value of matrix[1][0]:3
Enter the value of matrix[1][1]:4

Matrix:
1 2
3 4

Transpose of the matrix:
1 3
2 4
```

2- Your program will find the addition of two 2x2 matrix. Elements of both matrices will be entered by the user.

```
#include<stdio.h>

int main()
{
    int i,j;
    int matrix1[2][2];
    int matrix2[2][2];

    //FILL THE VALUES OF 1.MATRIX
    for(i=0; i<2;i++)
    {
        for(j=0; j<2; j++)
        {
            printf("Enter the value of matrix1[%d][%d]:",i,j);
            scanf("%d",&matrix1[i][j]);
        }
    }

    //PRINT THE 1.MATRIX
    printf("Matrix1:\n");
    for(i=0; i<2; i++)
    {
        for(j=0; j<2; j++)
        {
            printf("%d ",matrix1[i][j]);
        }
        printf("\n");
    }

    //FILL THE VALUES OF 2.MATRIX
    for(i=0; i<2;i++)
    {
        for(j=0; j<2; j++)
        {
            printf("Enter the value of matrix2[%d][%d]:",i,j);
            scanf("%d",&matrix2[i][j]);
        }
    }

    //PRINT THE 2.MATRIX
    printf("Matrix2:\n");
    for(i=0; i<2; i++)
    {
        for(j=0; j<2; j++)
        {
            printf("%d ",matrix2[i][j]);
        }
        printf("\n");
    }

    //PRINT THE matrix1+matrix2
    printf("\nmatrix1+matrix2:\n");
    for(i=0; i<2; i++)
    {
        for(j=0; j<2; j++)
        {
            printf("%d ",matrix1[i][j]+matrix2[i][j]);
        }
        printf("\n");
    }

    return 0;
}
```

### Output sample of the code:

```
Enter the value of matrix1[0][0]:1
Enter the value of matrix1[0][1]:1
Enter the value of matrix1[1][0]:1
Enter the value of matrix1[1][1]:1
Matrix1:
1 1
1 1
Enter the value of matrix2[0][0]:2
Enter the value of matrix2[0][1]:2
Enter the value of matrix2[1][0]:2
Enter the value of matrix2[1][1]:2
Matrix2:
2 2
2 2
matrix1+matrix2:
3 3
3 3
```

**3-** Your program will find the multiplication of two 2x2 matrices. (The following code is written by using functions under functions link of this page.)

```
#include <stdio.h>

int main()
{
    int matrix1[2][2];
    int matrix2[2][2];
    int matrix3[2][2];

//ENTER THE VALUES OF THE 1. MATRIX
printf("ENTER MATRIX1\n");
for(int i=0;i<2;i++)
{
    for(int j=0;j<2;j++)
    {
        scanf("%d",&matrix1[i][j]);
    }
    printf("\n");
}
//THE VALUES OF THE 1. MATRIX ARE ENTERED

//START TO PRINT 1.MATRIX
printf("MATRIX1 \n");
for(int i=0;i<2;i++)
{
    for(int j=0;j<2;j++)
    {
        printf("%3d",matrix1[i][j]);
    }
    printf("\n\n");
}
//PRINTING OF THE 1. MATRIX IS FINISHED

//ENTER THE VALUES OF THE 2. MATRIX
printf("ENTER MATRIX2\n");
for(int i=0;i<2;i++)
{
    for(int j=0;j<2;j++)
    {
        scanf("%d",&matrix2[i][j]);
    }
    printf("\n");
}
//THE VALUES OF THE 2. MATRIX ARE ENTERED

//START TO PRINT 2.MATRIX
printf("MATRIX2 \n");
for(int i=0;i<2;i++)
{
    for(int j=0;j<2;j++)
    {
        printf("%3d",matrix2[i][j]);
    }
    printf("\n\n");
}
//PRINTING OF THE 1. MATRIX IS FINISHED

//FIND MATRIX1 x MATRIX2
for(int i=0;i<2;i++)
{
    for(int j=0;j<2;j++)
    {
        matrix3[i][j]=0;
        for(int k=0;k<2;k++)
        {
            matrix3[i][j]+=matrix1[i][k]*matrix2[k][j];
        }
    }
}
//MATRIX1 x MATRIX2 IS FOUND

//START TO PRINT MATRIX1 x MATRIX2
printf("MATRIX1 x MATRIX2 \n");
for(int i=0;i<2;i++)
{
    for(int j=0;j<2;j++)
    {
        printf("%3d ",matrix3[i][j]);
    }
    printf("\n");
}

//PRINTING OF THE MATRIX1 x MATRIX2 IS FINISHED

return 0;
}
```

**Output sample of the code:**

```
ENTER MATRIX1
1 2 3 4

MATRIX1
1 2
3 4

ENTER MATRIX2
5 6 7 8

MATRIX2
5 6
7 8

MATRIX1 x MATRIX2
19 22
43 50
```