```
/*matrix add,subtract,mul,transpose*/
#include<stdio.h>
void add(int a1[][5],int b1[][5],int sum[][5],int row1,int row2,int col1,int col2);
void sub(int a1[][5],int b1[][5],int subtract[][5],int row1,int row2,int col1,int col2);
void multiply(int a1[][5],int b1[][5],int res[][5],int row1,int row2,int col1,int col2);
void transpose(int a1[][5],int trans_mat[][5],int row1,int col1);
int main()
{
    int row1,col1,row2,col2;
    int a[5][5],b[5][5],sum[5][5],subtract1[5][5],res[5][5],trans_mat[5][5];
    printf("enter the no of rows in 1st matrix\n");
    scanf("%d",&row1);
    printf("enter the no of cols in 1st matrix\n");
    scanf("%d",&col1);
    printf("enter the no of rows in 2nd matrix\n");
    scanf("%d",&row2);
    printf("enter the no of cols in 2nd matrix\n");
    scanf("%d",&col2);
    add(a,b,sum,row1,row2,col1,col2);
    sub(a,b,subtract1,row1,row2,col1,col2);
    multiply(a,b,res,row1,row2,col1,col2);
    transpose(a,trans_mat,row1,col1);
    return 0;
}
void add(int a1[][5],int b1[][5],int sum[][5],int row1,int row2,int col1,int col2)
{
    int i,j,row_sum,col_sum;
    while(row1==row2 && col1==col2)
    {
        row_sum=row1;
        col_sum=col1;
    printf("enter the elements of 1st matrix\n");
    for(i=0;i<row1;i++)
    {
        for(j=0;j<col1;j++)
        {
            scanf("%d",&a1[i][j]);
        }
    }
    printf("enter the elements of 2nd matrix\n");
    for(i=0;i<row2;i++)
    {
        for(j=0;j<col2;j++)
        {
            scanf("%d",&b1[i][j]);
        }
    }
    for(i=0;i<row_sum;i++)
    {
        for(j=0;j<col_sum;j++)
        {
            sum[i][j]=a1[i][j]+b1[i][j];
        }
    }
    printf("the resultant matrix is(for sum)\n");
    for(i=0;i<row_sum;i++)
    {
        printf("\n");
        for(j=0;j<col_sum;j++)
        printf("%d\t",sum[i][j]);
    }
}
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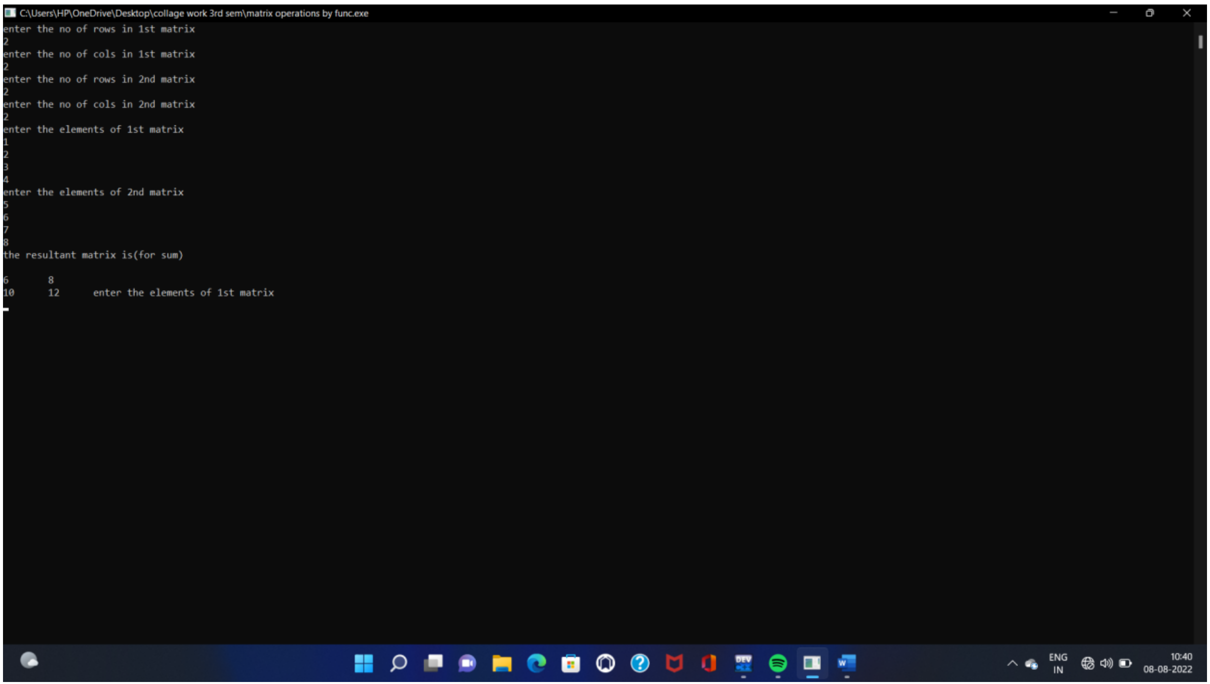
```
        if(row1!=row2||col1!=col2)
        {
                printf("addition not possible\n");
        }
}
void sub(int a1[][5],int b1[][5],int subtract1[][5],int row1,int row2,int col1,int col2)
{
        int i,j,row_sub,col_sub;
        while(row1==row2 && col1==col2)
        {
                row_sub=row1;
                col_sub=col1;
                printf("enter the elements of 1st matrix\n");
                for(i=0;i<row1;i++)
                {
                        for(j=0;j<col1;j++)
                        {
                                scanf("%d",&a1[i][j]);
                        }
                }
                printf("enter the elements of 2nd matrix\n");
                for(i=0;i<row2;i++)
                {
                        for(j=0;j<col2;j++)
                        {
                                scanf("%d",&b1[i][j]);
                        }
                }
                for(i=0;i<row_sub;i++)
                {
                        for(j=0;j<col_sub;j++)
                {
                    subtract1[i][j]=a1[i][j]-b1[i][j];
                }
            }
            printf("the resultant matrix is(for sub)\n");
            for(i=0;i<row_sub;i++)
            {
                printf("\n");
                for(j=0;j<col_sub;j++)
                printf("%d\t",subtract1[i][j]);
            }
    }
    if(row1!=row2||col1!=col2)
    {
            printf("subtraction not possible\n");
    }
}
void multiply(int a1[][5],int b1[][5],int res[][5],int row1,int row2,int col1,int col2)
{
    int i,j,k,res_row,res_col;
    while(col1==row2)
    {
            res_row=row1;
            res_col=col2;
            printf("enter the elements of 1st matrix\n");
            for(i=0;i<row1;i++)
            {
                for(k=0;k<col1;k++)
                {
                    scanf("%d",&a1[i][k]);
                }
```

```
        }
        printf("enter the elements of 2nd matrix\n");
        for(k=0;k<row2;k++)
        {
            for(j=0;j<col2;j++)
            {
                scanf("%d",&b1[k][j]);
            }
        }
        for(i=0;i<res_row;i++)
        {
            for(j=0;j<res_col;j++)
            {
                res[i][j]=0;
                for(k=0;k<res_col;k++)
                res[i][j]=res[i][j]+(a1[i][k]*b1[k][i]);
            }
        }
        printf("the resultant matrix is(for mul)\n");
        for(i=0;i<res_row;i++)
        {
            printf("\n");
            for(j=0;j<res_col;j++)
            printf("%d\t",res[i][j]);
        }
    }
    if(row1!=row2||col1!=col2)
    {
        printf("multiplication not possible\n");
    }
}
```

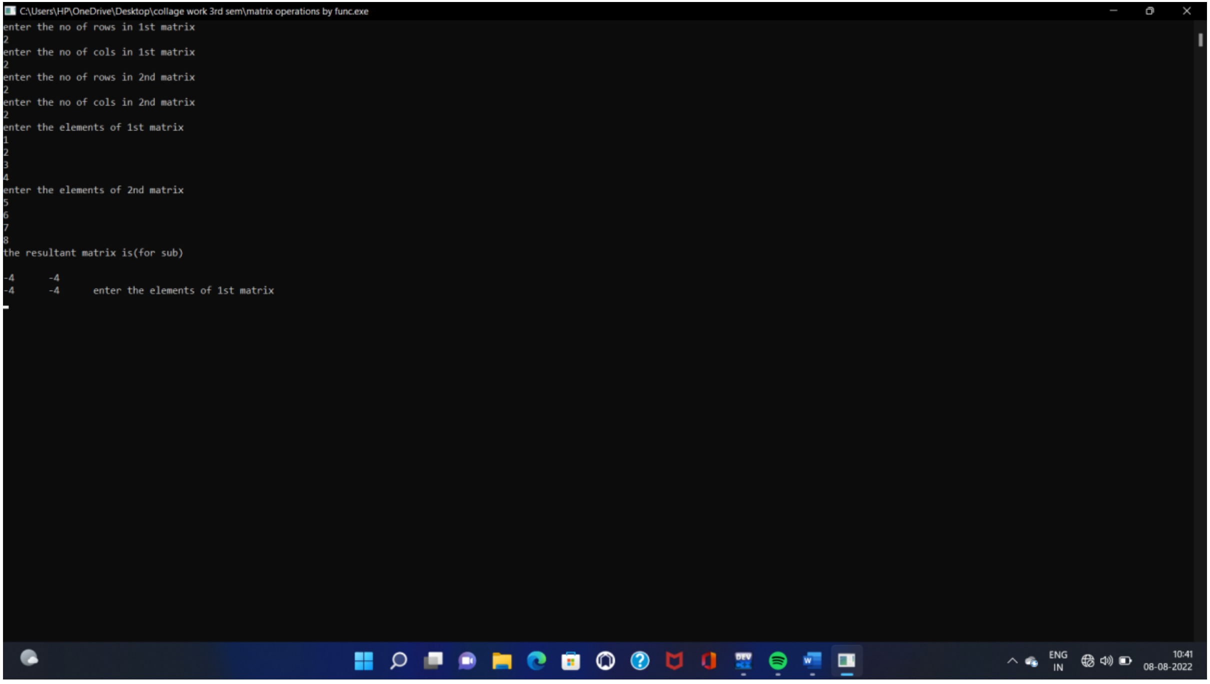
```c
void transpose(int a1[][5],int trans_mat[][5],int row1,int col1)
{
	int i,j;
		printf("enter the elements of 1st matrix\n");
		for(i=0;i<row1;i++)
		{
			for(j=0;j<col1;j++)
			{
				scanf("%d",&a1[i][j]);
			}
		}
		printf("the elements of the matrix are\n");
		for(i=0;i<row1;i++)
		{
			printf("\n");
			for(j=0;j<col1;j++)
			printf("%d\t",a1[i][j]);
		}
		for(i=0;i<row1;i++)
		{
			for(j=0;j<col1;j++)
			{
				trans_mat[j][i]=a1[i][j];
			}
		}
		printf("the resultant matrix is(for transpose)\n");
		for(i=0;i<row1;i++)
		{
			printf("\n");
			for(j=0;j<col1;j++)
			printf("%d\t",trans_mat[i][j]);
```

```
                    }

          }
```



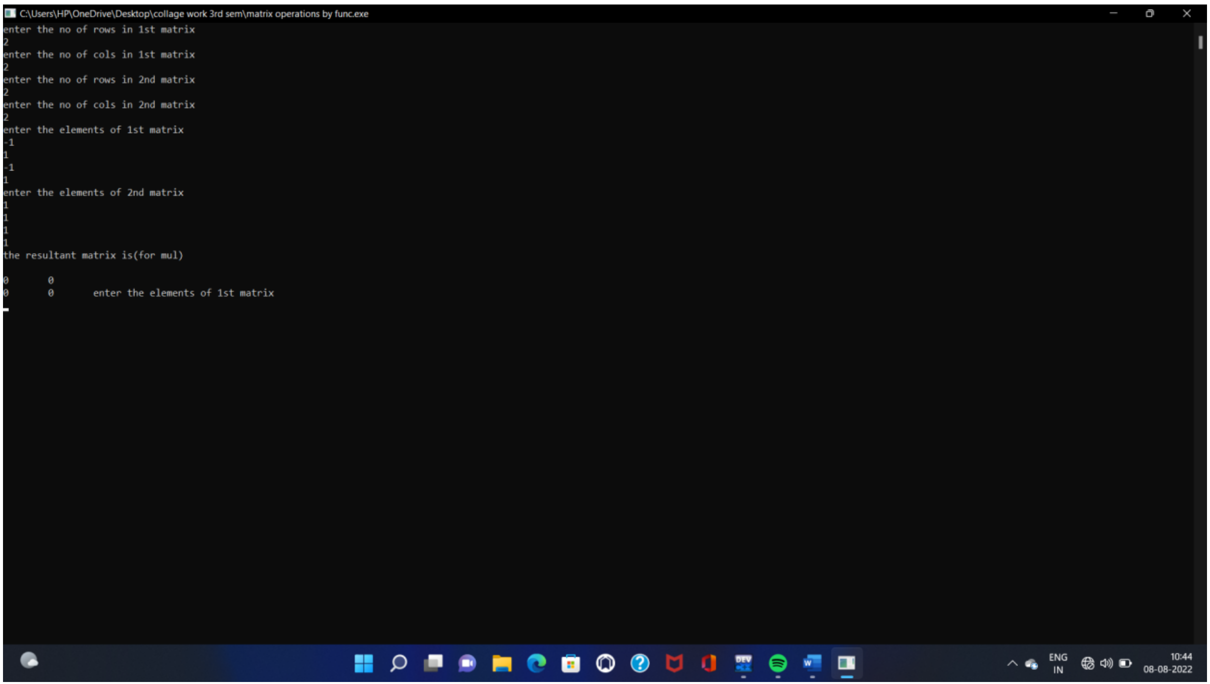
C:\Users\HP\OneDrive\Desktop\collage work 3rd sem\matrix operations by func.exe

```
enter the no of rows in 1st matrix
2
enter the no of cols in 1st matrix
2
enter the no of rows in 2nd matrix
2
enter the no of cols in 2nd matrix
2
enter the elements of 1st matrix
1
2
3
4
enter the elements of 2nd matrix
5
6
7
8
the resultant matrix is(for sum)

6       8
10      12      enter the elements of 1st matrix
_
```



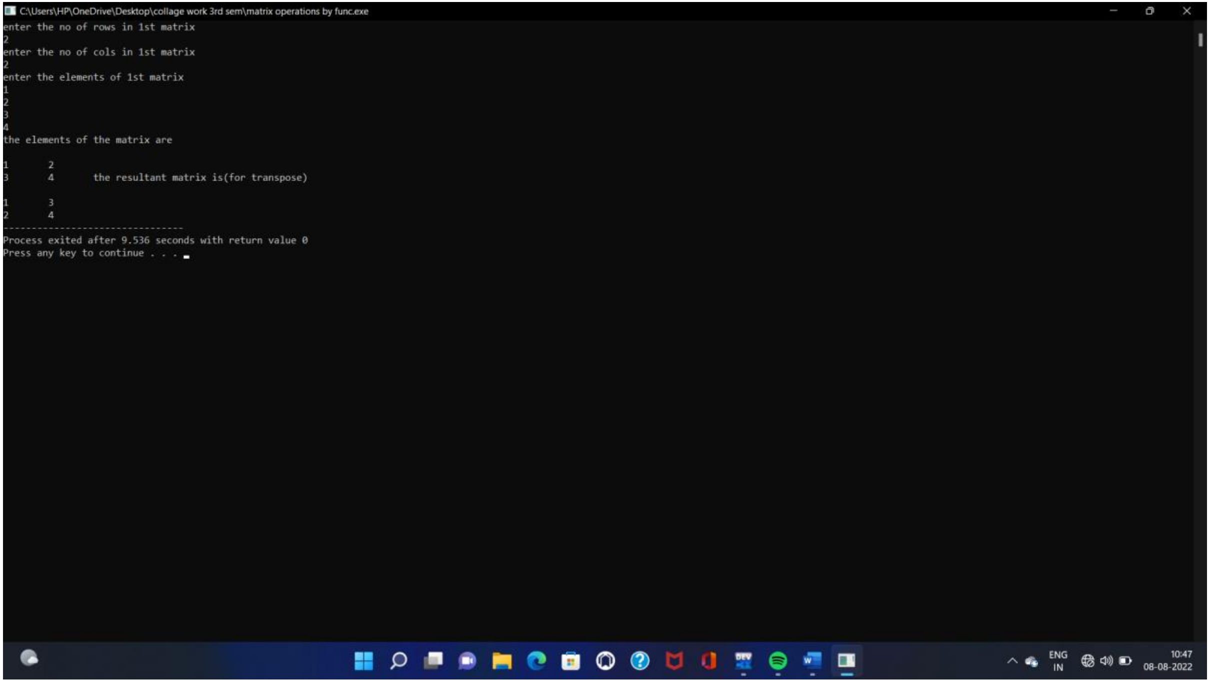
C:\Users\HP\OneDrive\Desktop\collage work 3rd sem\matrix operations by func.exe

```
enter the no of rows in 1st matrix
2
enter the no of cols in 1st matrix
2
enter the no of rows in 2nd matrix
2
enter the no of cols in 2nd matrix
2
enter the elements of 1st matrix
1
2
3
4
enter the elements of 2nd matrix
5
6
7
8
the resultant matrix is(for sub)

-4      -4
-4      -4      enter the elements of 1st matrix
_
```



C:\Users\HP\OneDrive\Desktop\collage work 3rd sem\matrix operations by func.exe
ENG
IN
10:44
08-08-2022

```
enter the no of rows in 1st matrix
2
enter the no of cols in 1st matrix
2
enter the no of rows in 2nd matrix
2
enter the no of cols in 2nd matrix
2
enter the elements of 1st matrix
-1
1
-1
1
enter the elements of 2nd matrix
1
1
1
1
the resultant matrix is(for mul)

0       0
0       0       enter the elements of 1st matrix
```



C:\Users\HP\OneDrive\Desktop\collage work 3rd sem\matrix operations by func.exe
ENG
IN
10:47
08-08-2022

```
enter the no of rows in 1st matrix
2
enter the no of cols in 1st matrix
2
enter the elements of 1st matrix
1
2
3
4
the elements of the matrix are

1       2
3       4       the resultant matrix is(for transpose)

1       3
2       4
--------------------------------
Process exited after 9.536 seconds with return value 0
Press any key to continue . . .
```