/\*matrix full op\*/

#include<stdio.h>

#include<stdlib.h>

void add(int a[][5],int b[][5],int sum[][5],int row1,int col1,int row2,int col2);

void subtract(int a[][5],int b[][5],int sub[][5],int row1,int col1,int row2,int col2);

void multiplay(int a[][5],int b[][5],int res[][5],int row1,int col1,int row2,int col2);

void transpose(int a[][5],int trans\_mat[][5],int row1,int col1);

int main()

{

int row1,col1,row2,col2,ch;

int a[5][5],b[5][5],sum[5][5],sub[5][5],res[5][5],trans\_mat[5][5];

printf("enter the no of row of 1st mat\n");

scanf("%d",&row1);

printf("enter the no of col of 1st mat\n");

scanf("%d",&col1);

printf("enter the no of row of 2nd mat\n");

scanf("%d",&row2);

printf("enter the no of col of 2nd mat\n");

scanf("%d",&col2);

while(ch!=5)

{

printf("main menu\n");

printf("1.addition\n2.subtraction\n3.multiplication\n4.transpose\n5.exit\n");

printf("enter your ch\n");

scanf("%d",&ch);

switch(ch)

{

case 1:add(a,b,sum,row1,col1,row2,col2);

break;

case 2:subtract(a,b,sub,row1,col1,row2,col2);

break;

case 3:multiplay(a,b,res,row1,col1,row2,col2);

break;

case 4:transpose(a,trans\_mat,row1,col1);

break;

case 5:exit(0);

default:

printf("invalid ch\n");

}

}

}

void add(int a[][5],int b[][5],int sum[][5],int row1,int col1,int row2,int col2)

{

int i,j,row\_sum,col\_sum;

if(row1==row2 && col1==col2)

{

row\_sum=row1;

col\_sum=col1;

printf("enter the values of 1st matrix\n");

for(i=0;i<row1;i++)

{

for(j=0;j<col1;j++)

{

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

}

}

printf("enter the values of 2nd matrix\n");

for(i=0;i<row2;i++)

{

for(j=0;j<col2;j++)

{

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

}

}

for(i=0;i<row\_sum;i++)

{

for(j=0;j<col\_sum;j++)

{

sum[i][j]=a[i][j]+b[i][j];

}

}

printf("after addition the result is\n");

for(i=0;i<row\_sum;i++)

{

printf("\n");

for(j=0;j<col\_sum;j++)

printf("%d\t",sum[i][j]);

}

}

while(row1!=row2||col1!=col2)

{

printf("add not possible\n");

}

}

void subtract(int a[][5],int b[][5],int sub[][5],int row1,int col1,int row2,int col2)

{

int i,j,row\_sub,col\_sub;

if(row1==row2 && col1==col2)

{

row\_sub=row1;

col\_sub=col1;

printf("enter the values of 1st matrix\n");

for(i=0;i<row1;i++)

{

for(j=0;j<col1;j++)

{

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

}

}

printf("enter the values of 2nd matrix\n");

for(i=0;i<row2;i++)

{

for(j=0;j<col2;j++)

{

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

}

}

for(i=0;i<row\_sub;i++)

{

for(j=0;j<col\_sub;j++)

{

sub[i][j]=a[i][j]-b[i][j];

}

}

printf("after subtraction the result is\n");

for(i=0;i<row\_sub;i++)

{

printf("\n");

for(j=0;j<col\_sub;j++)

printf("%d\t",sub[i][j]);

}

}

while(row1!=row2||col1!=col2)

{

printf("subtract not possible\n");

}

}

void multiplay(int a[][5],int b[][5],int res[][5],int row1,int col1,int row2,int col2)

{

int i,j,k,res\_row,res\_col;

if(col1==row2)

{

res\_row=row1;

res\_col=col2;

printf("enter the values of 1st matrix\n");

for(i=0;i<row1;i++)

{

for(j=0;j<col1;j++)

{

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

}

}

printf("enter the values of 2nd matrix\n");

for(i=0;i<row2;i++)

{

for(j=0;j<col2;j++)

{

scanf("%d",&b[i][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]+(a[i][k]\*b[k][j]);

}

}

}

printf("after multiplication the result is\n");

for(i=0;i<res\_row;i++)

{

printf("\n");

for(j=0;j<res\_col;j++)

printf("%d\t",res[i][j]);

}

}

while(col1!=row2)

{

printf("multiplay not possible\n");

}

}

void transpose(int a[][5],int trans\_mat[][5],int row1,int col1)

{

int i,j;

printf("enter the values of 1st matrix\n");

for(i=0;i<row1;i++)

{

for(j=0;j<col1;j++)

{

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

}

}

for(i=0;i<row1;i++)

{

for(j=0;j<col1;j++)

{

trans\_mat[j][i]=a[i][j];

}

}

printf("after transpose the matrix is\n");

for(i=0;i<row1;i++)

{

printf("\n");

for(j=0;j<col1;j++)

printf("%d\t",trans\_mat[i][j]);

}

}

