***Assignment No.2A***

Represent matrix using two dimensional arrays and perform following operations without pointers:

I. Addition II. Multiplication

III. Transpose IV. Saddle point

ROLL NO.: 66

Batch: - S3

#include<stdio.h>

#include<stdlib.h>

int create(int a[10][10],int m,int n);

void add(int a[10][10],int b[10][10],int c[10][10],int m1,int n1);

void mul(int a[10][10],int b[10][10],int c[10][10],int m1,int n1);

void transpose(int a[10][10],int c[10][10],int m1,int n1);

int saddle(int a[][10],int m,int n);

int main()

{

int a[10][10],b[10][10],c[10][10],m1,n1,m2,n2,ch;

do

{

printf("\n\t\*\*\*\*\*\*\*\*MENU\*\*\*\*\*\*\*\*");

printf("\n\t1.ADDITION");

printf("\n\t2.MULTIPLICATION");

printf("\n\t3.TRANSPOSE");

printf("\n\t4.SADDLE POINT");

printf("\n\t5.QUIT");

printf("\n\n\tEnter your choice:");

scanf("%d",&ch);

switch(ch)

{

case 1:

printf("\nEnter the size of first the Matrix:");

scanf("%d%d",&m1,&n1);

create(a,m1,n1);

printf("\nEnter the size of seocnd the Matrix:");

scanf("%d%d",&m2,&n2);

create(b,m1,n1);

if(m1==m2 & n1==n2)

add(a,b,c,m1,n1);

else

printf("Can not Add");

break;

case 2:

printf("\nEnter the size of first the Matrix:");

scanf("%d%d",&m1,&n1);

create(a,m1,n1);

printf("\nEnter the size of seocnd the Matrix:");

scanf("%d%d",&m2,&n2);

create(b,m1,n1);

if(n1==m2)

mul(a,b,c,m1,n1);

else

printf("Can not Multiply");

break;

case 3:

printf("\nEnter the size of the Matrix:");

scanf("%d%d",&m1,&n1);

create(a,m1,n1);

if(m1==n1)

transpose(a,c,m1,n1);

else

printf("Not a square matrix :");

break;

case 4:

printf(" Enter the size of the 1st matrix:");

scanf("%d%d",&m1,&n1);

create(a,m1,n1);

saddle(a,m1,n1);

break;

case 5:exit(0);

default:

printf("\n!! Invalid Choice !!");

break;

}}while(ch!=5);

return 0;

}

int create(int a[10][10],int m,int n)

{

int i,j;

printf("\nEnter your data");

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

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

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

}

void add(int a[10][10],int b[10][10],int c[10][10],int m,int n)

{

printf("\nAddition of Matrix:\n");

int i,j;

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

{

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

{

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

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

}

printf("\n");

}

}

void mul(int a[10][10],int b[10][10],int c[10][10],int m,int n)

{

printf("\nMultiplication of Matrix:\n");

int i,j,k=0;

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

{

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

{

a[i][j]=0;

for(k=0;k<m;k++)

{

c[i][j]=c[i][j]+a[i][j]\*b[i][j];

}

}

}

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

{

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

{

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

}

printf("\n");

}

}

void transpose(int a[10][10],int c[10][10],int m,int n)

{

printf("\nTranspose of Matrix:\n");

int i,j;

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

{

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

{

//c[i][j]=a[j][i];

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

}

printf("\n");

}

}

int saddle(int a[][10],int m,int n)

{

int i,j,small,large,col\_of\_small,row\_of\_large;

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

{

small=a[i][0];

col\_of\_small=0;

for(j=1;j<n;j++)

if(a[i][j] < small)

{

small=a[i][j];

col\_of\_small=j;

}

large= a[0][col\_of\_small];

row\_of\_large=0;

for(j=1;j<m;j++)

if(a[j][col\_of\_small]>large)

{

large=a[j][col\_of\_small];

row\_of\_large=j;

}

if(i==row\_of\_large)

{

printf(" Saddle point exist at (%d,%d) with value as %d",i,col\_of\_small,a[i][col\_of\_small]);

return(1);

}

}

printf("Saddle point does not exist ");

return(0);

}

--------------OUTPUT--------------

\*\*\*\*\*\*\*\*MENU\*\*\*\*\*\*\*\*

1.ADDITION

2.MULTIPLICATION

3.TRANSPOSE

4.SADDLE POINT

5.QUIT

Enter your choice:1

Enter the size of first the Matrix:2

2

Enter your data5

1

3

0

Enter the size of seocnd the Matrix:2

2

Enter your data4

6

2

8

Addition of Matrix:

9 7

5 8

\*\*\*\*\*\*\*\*MENU\*\*\*\*\*\*\*\*

1.ADDITION

2.MULTIPLICATION

3.TRANSPOSE

4.SADDLE POINT

5.QUIT

Enter your choice:2

Enter the size of first the Matrix:2

2

Enter your data5

3

1

4

Enter the size of seocnd the Matrix:2

2

Enter your data6

4

5

3

Multiplication of Matrix:

9 7

5 8

\*\*\*\*\*\*\*\*MENU\*\*\*\*\*\*\*\*

1.ADDITION

2.MULTIPLICATION

3.TRANSPOSE

4.SADDLE POINT

5.QUIT

Enter your choice:3

Enter the size of the Matrix:2

2

Enter your data5

4

6

1

Transpose of Matrix:

5 6

4 1

\*\*\*\*\*\*\*\*MENU\*\*\*\*\*\*\*\*

1.ADDITION

2.MULTIPLICATION

3.TRANSPOSE

4.SADDLE POINT

5.QUIT

Enter your choice:4

Enter the size of the 1st matrix:2

2

Enter your data3

6

1

5

Saddle point exist at (0,0) with value as 3

\*\*\*\*\*\*\*\*MENU\*\*\*\*\*\*\*\*

1.ADDITION

2.MULTIPLICATION

3.TRANSPOSE

4.SADDLE POINT

5.QUIT

Enter your choice:5