**ASSIGNMENT NO:2(Part B-With Using Pointers)**

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

i. Addition

ii. multiplication

iii. transpose

iv. Saddle point

Roll No.-82

#include<stdio.h>

voidaddmat(int \*p,int \*q,int \*r,int r1,int r2,int c1,int c2);

voidmul(int \*p,int \*q,int \*r,int r1,int r2,int c1,int c2);

void transpose(int \*p,int \*q,int r1,int c1);

voidsaddlep(int \*p,int r1,int c1);

void main()

{

int a[10][10],b[10][10],c[10][10],i,j,r1,r2,c1,c2,ch;

int \*p,\*q,\*r;

p=&a[0][0];

q=&b[0][0];

r=&c[0][0];

printf("\n Enter the no.s of rows and columns of 1st matrix=");

scanf("%d %d",&r1,&c1);

printf("\n Enter the no.s of rows and columns of 2nd matrix=");

scanf("%d %d",&r2,&c2);

printf("\n Enter the elements of 1st matrix=");

for(i=0;i<r1;i++)

{

for(j=0;j<c1;j++)

{

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

}

}

printf("\n Enter the elements of 2nd matrix=");

for(i=0;i<r2;i++)

{

for(j=0;j<c2;j++)

{

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

}

}

printf("\n Matrix A=\n");

for(i=0;i<r1;i++)

{

for(j=0;j<c1;j++)

{

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

}

printf("\n");

}

printf("\n Matrix B=\n");

for(i=0;i<r2;i++)

{

for(j=0;j<c2;j++)

{

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

}

printf("\n");

}

do

{

printf("\n1.Addition\n2.Multiplication\n3.Transpose\n4.Saddle point");

printf("\n Enter your choice=");

scanf("%d",&ch);

switch(ch)

{

case 1:addmat(p,q,r,r1,r2,c1,c2);

break;

case 2:mul(p,q,r,r1,r2,c1,c2);

break;

case 3:transpose(p,q,r1,c1);

break;

case 4:saddlep(p,r1,c1);

break;

default:printf("\n Invalid choice");

}

printf("Do you want to continue?");

}while(ch!=0);

}

voidaddmat(int \*p,int \*q,int \*r,int r1,int r2,int c1,int c2)

{

inti,j;

if(r1==r2 && c1==c2)

{

for(i=0;i<r1;i++)

{

for(j=0;j<c1;j++)

{

\*(r+(i\*10)+j)= \*(p+(i\*10)+j)+\*(q+(i\*10)+j);

}

}

printf("\n sum of matrix=\n");

for(i=0;i<r1;i++)

{

for(j=0;j<c1;j++)

{

printf("%d ",\*(r+(i\*10)+j));

}

printf("\n");

}

}

else

{

printf("\n Size of both matrix is not matching");

}

}

voidmul(int \*p,int \*q,int \*r,int r1,int r2,int c1,int c2)

{

inti,j,k;

if(c1==r2)

{

for(i=0;i<r1;i++)

{

for(j=0;j<c2;j++)

{

\*(r+(i\*10)+j)=0;

}

}

}

for(i=0;i<r1;i++)

{

for(j=0;j<c2;j++)

{

for(k=0;k<c1;k++)

{

\*(r+(i\*10)+j)=\*(r+(i\*10)+j)+\*(p+(i\*10)+k)\*\*(q+(k\*10)+j);

}

}

}

printf("\n multiplication of matrix=\n");

for(i=0;i<r1;i++)

{

for(j=0;j<c1;j++)

{

printf("%d ",\*(r+(i\*10)+j));

}

printf("\n");

}

}

void transpose(int \*p,int \*q,int r1,int c1)

{

int i=0,j=0;

for(i=0;i<r1;i++)

{

for(j=0;j<c1;j++)

{

\*(q+(i\*10)+j)=\*(p+(j\*10)+i);

}

}

printf("\n Transpose of matrix=\n");

for(i=0;i<r1;i++)

{

for(j=0;j<c1;j++)

{

printf("%d ",\*(q+(i\*10)+j));

}

printf("\n");

}

}

voidsaddlep(int \*p,int r1,int c1)

{

inti,j,k,min,max,col;

for(i=0;i<r1;i++)

{

min=\*(p+(i\*10)+0);

for(j=0;j<c1;j++)

{

if(\*(p+(i\*10)+j)<=min)

{

min=\*(p+(i\*10)+j);

col=j;

}

}

}

max=\*(p+(0\*10)+col);

for(k=0;k<r1;k++)

{

if(\*(p+(k\*10)+col)>=max)

{

max=\*(p+(k\*10)+col);

}

}

if(min==max)

{

printf("\nsaddle point is (%d, %d)",i,col+1);

printf("\nsaddle point is =%d",max);

}

else

{

printf("No saddle point");

}

}

**Output:**

[root@localhost ~]# gccAsg2B.c

[root@localhost ~]# ./a.out

Enter the no.s of rows and columns of 1st matrix=3

3

Enter the no.s of rows and columns of 2nd matrix=3

3

Enter the elements of 1st matrix=1

2

3

4

5

6

7

8

9

Enter the elements of 2nd matrix=1

2

3

4

5

6

7

8

9

Matrix A=

1 2 3

4 5 6

7 8 9

Matrix B=

1 2 3

4 5 6

7 8 9

1.Addition

2.Multiplication

3.Transpose

4.Saddle point

Enter your choice=1

sum of matrix=

2 4 6

8 10 12

14 16 18

Do you want to continue?

1.Addition

2.Multiplication

3.Transpose

4.Saddle point

Enter your choice=2

multiplication of matrix=

30 36 42

66 81 96

102 126 150

Do you want to continue?

1.Addition

2.Multiplication

3.Transpose

4.Saddle point

Enter your choice=3

Transpose of matrix=

1 4 7

2 5 8

3 6 9

Do you want to continue?

1.Addition

2.Multiplication

3.Transpose

4.Saddle point

Enter your choice=4

saddle point is (3, 1)

saddle point is =7Do you want to continue?