**Roll No:- 04**

**Assignment No:-**

**Assignment Name:-Write a program to find shortest path using all pair path.**

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#include<iostream.h>

#include<conio.h>

#include<stdlib.h>

class GRAPH

{

private:

int n,COST[10][10],A[10][10];

public:

GRAPH(int);

void READ\_GRAPH();

void SHOW\_GRAPH();

void ALL\_PAIR();

};

GRAPH::GRAPH(int par)

{

n=par;

}

void GRAPH::READ\_GRAPH()

{

cout<<"\nEnter cost Matrix:";

for(int i=1;i<=n;i++)

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

cin>>COST[i][j];

cout<<endl;

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

{

cout<<endl;

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

cout<<COST[i][j]<<" ";

}

}

void GRAPH::SHOW\_GRAPH()

{

cout<<endl;

for(int i=1;i<=n;i++)

{

cout<<endl;

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

cout<<A[i][j]<<" ";

}

}

int MIN(int a,int b)

{

if(a<b) return a; else return b;

}

void GRAPH::ALL\_PAIR()

{

for(int i=1;i<=n;i++)

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

A[i][j]=COST[i][j];

for(int k=1;k<=n;k++)

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

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

A[i][j]=MIN(A[i][j],A[i][k]+A[k][j]);

}

void main()

{

int n;

clrscr();

cout<<"\nEnter no of nodes : ";

cin>>n;

GRAPH obj(n);

obj.READ\_GRAPH();

obj.ALL\_PAIR();

obj.SHOW\_GRAPH();

getch();

}