#include <stdio.h>

#define INF 9999

int main( )

{

int cost[10][10];

int i, j, k, n ;

int arr[10][10] ;

int a, b;

printf("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*BML MUNJAL UNIVERSITY\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\n");

printf("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*DSA PROJECT-SEMESTER 3\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\n");

printf("\nGROUP MEMBERS : \n \*\*\*Payal Singhal \n \*\*\*Kartik Sharma \n \*\*\*Rohan Srivastava\n\n");

printf("SUBMITTED TO : \n \*\*\*Dr. Rajesh Yadav (Professor, SOET)\n\n\n\n");

printf( "INPUT THE NUMBER OF VERTICES PLEASE :- \n \n");

scanf( "%d", &n);

printf( "INPUT THE COST MATRIX PLEASE :- \n(Input 0 if the two vertices has no direct connections)\n(Press x when done)\n");

for ( i = 0 ; i <= n-1 ; i++ )

{

for ( j = 0; j <= n-1 ; j++ )

scanf ( "%d\t", &cost[i][j] ) ;

}

fflush(stdin);

/\* for ( i = 0 ; i < n ; i++ )

{

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

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

printf ( "\n" ) ;

}\*/

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

{

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

{

if ( ( cost[i][j] == 0 ) && ( i != j ) )

arr[i][j] = INF ;

else

arr[i][j] = cost[i][j] ;

}

}

printf ( "\nAdjacency matrix of cost of edges is :\n" ) ;

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

{

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

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

printf ( "\n" ) ;

}

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

{

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

{

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

{

if ( arr[i][j] > arr[i][k] + arr[k][j] )

arr[i][j] = arr[i][k] + arr[k][j];

}

}

}

fflush(stdin);

printf ( "\nAdjacency matrix of lowest cost between the vertices:\n" ) ;

for ( i = 0 ; i < n ; i++ ) {

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

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

printf ( "\n" ) ;

}

printf ( "\n\nTO FIND THE SHORTEST PATH \n\n\nInput the starting point please : ");

scanf ( "%d", &a);

printf ( "Input the ending point please : ");

scanf ( "%d", &b);

printf ( "\n\n\n\n\n\nTHE SHORTEST PATH BETWEEN %c AND %c WILL BE %d ", 64+a, 64+b, arr[a-1][b-1]);

printf("\n\n\n\nTHANK YOU FOR USING OUR PROGRAM\nHAVE A GOOD DAY\*\*\*\*\*\*\*\*\*");

return 0;

}