import java.util.Scanner;

public class tsp

{

public static void main(String[] args)

{

Scanner in = new Scanner(System.in);

int c[][]=new int[10][10], tour[]=new int[10];

int i, j,cost;

System.out.print("Enter No. of Cities: ");

int n = in.nextInt();

if(n==1)

{

System.out.println("Path is not possible");

System.exit(0);

}

System.out.println("Enter the Cost Matrix");

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

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

c[i][j] = in.nextInt();

System.out.println("\n\n\tTravelling Salesperson Problem\n");

System.out.println("\tThe Cost Matrix is\n");

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

{

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

{

System.out.print("\t"+c[i][j]);

}

System.out.println();

}

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

tour[i]=i;

cost = tspdp(c, tour, 1, n);

System.out.print("\n\n\tThe Optimal Tour is = ");

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

System.out.print(tour[i]+"->");

System.out.println("1");

System.out.print("\n\n\tMinimum Cost = "+cost);

}

static int tspdp(int c[][], int tour[], int start, int n)

{

int mintour[]=new int[10], temp[]=new int[10], mincost=999,

ccost, i, j, k;

if(start == n-1)

{

return (c[tour[n-1]][tour[n]] + c[tour[n]][1]);

}

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

{

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

temp[j] = tour[j];

temp[start+1] = tour[i];

temp[i] = tour[start+1];

if((c[tour[start]][tour[i]]+(ccost=tspdp(c,temp,start+1,n)))<mincost)

{

mincost = c[tour[start]][tour[i]] + ccost;

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

mintour[k] = temp[k];

}

}

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

tour[i] = mintour[i];

return mincost;

}