```
package applicationofdijkstras;

import java.util.*;


class Stack{
 int top=-1;
 int stackArray[]=new int[8];
 void push(int x)
 {
  stackArray[++top]=x;
 }
 int pop()
 {
  if(top==-1)
   return 0;
  return stackArray[top--];
 }
}


class ArrDepData{
 String Busname[]=new String[8];
 int BusNumber[]=new int[8];
 int BusCost[]=new int[8];
 ArrDepData(String A[],int flno[],int C[])
 {
  Busname=A;
  BusNumber=flno;
  BusCost=C;

 }
}




class VertexNames{
 String VertexNames[]=new String[8];
 VertexNames()
 {
  //LOCATIONS
  VertexNames[0]="BLR";//BANGALORE
  VertexNames[1]="MYS";//MYSORE
  VertexNames[2]="CML";//CHIKMANGALURU
  VertexNames[3]="UKA";//uTTAR KARNATAKA
  VertexNames[4]="BEL";//BELGAUM
  VertexNames[5]="GUL";//GULBURGA
  VertexNames[6]="RAI";//RAICHUR
  VertexNames[7]="DVG";//DAVANGERE
 }
 int getBusDepoasIndex(String DepBuspt)
 {
  int i=0;
  try {
   while(VertexNames[i].equalsIgnoreCase(DepBuspt)==false)
   {
    i++;
   }
   return i;
  }catch (Exception e)
  {
   System.out.println("Location not in the specific array or list of locations we have selected");
   System.exit(0);
  }
  return i;
 }
```

```java
 String getBusDepoName(String DepBust)
 {
  switch(DepBust)
  {
  case "BLR":
   return "Bangalore";

  case "MYS":
   return "Mysore";

  case "CML":
   return "Chikkamagalur";

  case "UKA":
   return "Uttar Kannada";

  case "BEL":
   return "Belgaum";

  case "GUL":
   return "Gulbarga";

  case "RAI":
   return "Raichur";

  case "DVG":
   return "Davangere";

  default: return "Not Found";
  }
 }

}
public class Buses {


 public static int tot_nodes=8;
 public static int tot_edges=12;
 public static int path[]=new int[8];
 static Scanner s=new Scanner(System.in);
 static VertexNames BUST=new VertexNames();
 static ArrDepData Schedule[]=new ArrDepData[8];
 static Stack Buffer=new Stack();
 static long MinimumTime;


 public static void main(String[] args){
  int i,j;
  //test
  long cost[][]=new long[8][8];
  long dist[]=new long[8];
  String DepartureBusTerminal;
  String ArrivalBusTerminal;
  System.out.print("\t\t\t\t\t\t\t-----BUS ROUTING System using Dijkstra's Algorithm----- \n\n");
  System.out.println("\t\t\t\t\t\t\t~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~\n");
  System.out.println("\t\t\t\t\t\t\t    --------------------------------------------\n");
  System.out.println("\t\t\t\t\t\t\t    ---Karnataka Bus Transportation Corporation---\n");
  System.out.println("\t\t\t\t\t\t\t    --------------------------------------------\n");
  System.out.println("\t\t\t\t\t\t\t    ---------------Destination codes--------------\n");
  System.out.println("\t\t\t\t\t         ------------------------------------------------------------------");

  System.out.print("\t\t\t\t\t\t\t\t\t   BLR->BANGALORE\n"
    + "\t\t\t\t\t\t\t\t\t   MYS->MYSORE\r\n"
    + "\t\t\t\t\t\t\t\t\t   CML->CHIKMANGALURU\r\n"
    + "\t\t\t\t\t\t\t\t\t   UKA->UTTAR KARNATAKA\r\n"
    + "\t\t\t\t\t\t\t\t\t   BEL->BELGAUM\r\n"
    + "\t\t\t\t\t\t\t\t\t   GUL->GULBURGA\r\n"
```

```
   + "\t\t\t\t\t\t\t\t\t   RAI->RAICHUR\r\n"
   + "\t\t\t\t\t\t\t\t\t   DVG->DAVANGERE\n\n");
 System.out.println("\t\t\t\t\t         ---------------------------------------------------------------------");
 System.out.println("\t\t\t    ----------[-o--o]    [-o--o]    [-o--o]    [-o--o]    [-o--o]    [-o--o]    [-o--o]    [-o--o]----------   \n");
 create(cost);
 System.out.println("-----------------------------------");
 System.out.println("-----------------------------------");
 System.out.print("Enter the Departure Bus Stand code: ");
 DepartureBusTerminal=s.next();
 i=BUST.getBusDepoasIndex(DepartureBusTerminal);
 System.out.print("Enter the Destination BusTerminal code: ");
 ArrivalBusTerminal=s.next();
 int A=BUST.getBusDepoasIndex(ArrivalBusTerminal);
 System.out.println("_____________________________________________________________");
 System.out.println("\nBuses departing from  "+(BUST.VertexNames[i])+" BusTerminal to "+(BUST.VertexNames[A])+" are: \n");
 j=A;
 Dijkstra(cost,i,dist);
 if(dist[i]==1441)
  System.out.println("\nNo Path from "+BUST.VertexNames[i]+" to "+BUST.VertexNames[j]);
 else
  display(i,j,dist);
}


public static void create(long cost[][])
{
 int i,j;
 String Busname[];
 int BusNumber[];
 int BusCost[];

 for(i=0;i<tot_nodes;i++)
 {
  for(j=0;j<tot_nodes;j++)
  {
   if(i==j)
    cost[i][j]=0;
   else
    cost[i][j]=1441;
  }
 }

 cost[0][1]=cost[1][0]=150;
 cost[0][3]=cost[3][0]=400;
 cost[0][4]=cost[4][0]=450;
 cost[0][7]=cost[7][0]=180;
 cost[1][2]=cost[2][1]=190;
 cost[1][7]=cost[7][1]=190;
 cost[2][3]=cost[3][2]=170;
 cost[2][5]=cost[5][2]=450;
 cost[3][6]=cost[6][3]=290;
 cost[4][5]=cost[5][4]=210;
 cost[5][6]=cost[6][5]=160;
 cost[6][7]=cost[7][6]=210;

 Busname=new String[] {"VolvoLines   ","bRed Busways ","VolvoLines   "};
 BusNumber=new int[] {784,486,777,-1};
 BusCost=new int[] {450,650,500,-1};
 Schedule[6]=new ArrDepData(Busname,BusNumber,BusCost);

 Busname=new String[] {"bRed Busways ","bRed Busways ","bRed Busways ","VolvoLines   "};
 BusNumber=new int[] {433,223,213,197,-1};
 BusCost=new int[] {800,650,700,500,-1};
 Schedule[7]=new ArrDepData(Busname,BusNumber,BusCost);

 Busname=new String[] {"WeRL Buslines", "bRed Busways ","VolvoLines   ", "bRed Busways "};
 BusNumber=new int[] {566,311,259,448,-1};
```

```
 BusCost=new int[] {900,350,500,600,-1};
 Schedule[4]=new ArrDepData(Busname,BusNumber,BusCost);

 Busname=new String[] {"VolvoLines   ","VolvoLines   ","bRed Busways ","bRed Busways ","VolvoLines   "};
 BusNumber=new int[] {648,448,742,445,287,-1};
 BusCost=new int[] {550,750,600,800,450,-1};
 Schedule[0]=new ArrDepData(Busname,BusNumber,BusCost);

 Busname=new String[] {"WeRL Buslines","VolvoLines   ","bRed Busways ","bRed Busways ","VolvoLines   "};
 BusNumber=new int[] {124,667,446,824,334,-1};
 BusCost=new int[] {450,650,500,1000,700,-1};
 Schedule[1]=new ArrDepData(Busname,BusNumber,BusCost);

 Busname=new String[] {"WeRL Buslines", "VolvoLines   ","WeRL Buslines","WeRL Buslines","bRed Busways "};
 BusNumber=new int[] {156,187,934,438,555,-1};
 BusCost=new int[] {450,650,500,1200,600,-1};
 Schedule[5]=new ArrDepData(Busname,BusNumber,BusCost);

 Busname=new String[] {"VolvoLines   ","bRed Busways ", "WeRL Buslines", "VolvoLines   ","bRed Busways ","VolvoLines   "};
 BusNumber=new int[] {789,963,846,748,225,499,-1};
 BusCost=new int[] {450,650,500,700,400,900,-1};
 Schedule[2]=new ArrDepData(Busname,BusNumber,BusCost);

 Busname=new String[] {"bRed Busways ","bRed Busways ","WeRL Buslines", "VolvoLines   ","VolvoLines   ","VolvoLines   "};
 BusNumber=new int[] {986,45,965,102,202,333,-1};
 BusCost=new int[] {450,650,500,1300,1000,500,-1};
 Schedule[3]=new ArrDepData(Busname,BusNumber,BusCost);
}

public static void Dijkstra(long[][] cost, int source, long[] dist)
{
 int i,j,v1,v2;
 long minD;
 int src[]=new int[10];
 for(i=0;i<tot_nodes;i++)
 {
  dist[i]=cost[source][i];
  src[i]=0;
  path[i]=source;
 }
 src[source]=1;
 for(i=1;i<tot_nodes;i++)
 {
  minD=9999;
  v1=-1;
  for(j=0;j<tot_nodes;j++)
  {
   if(src[j]==0)
   {
    if(dist[j]<minD)
    {
     minD=dist[j];
     v1=j;
    }
   }
  }
  src[v1]=1;
  for(v2=0;v2<tot_nodes;v2++)
  {
   if(src[v2]==0)
   {
    if((dist[v1]+cost[v1][v2])<dist[v2])
    {
     dist[v2]=dist[v1]+cost[v1][v2];
     path[v2]=v1;
    }
   }
```

```
   }
  }
 }

 public static void display(int Source,int Destination,long dist[])
 {
  int i;
  System.out.println("The route from "+BUST.VertexNames[Source]+" to "+BUST.VertexNames[Destination]+" is: \n");
  for(i=Destination;i!=Source;i=path[i])
  {
   System.out.print(BUST.VertexNames[i]+" <-- ");
   Buffer.push(i);
  }
  System.out.println(" "+BUST.VertexNames[i]);
  Buffer.push(i);
  System.out.println("\nThe Bus Details on your route are: \n");
  showData(Destination);
 }

 public static void showData(int dest)
 {
  int i=Buffer.pop();
  while(i!=dest)
  {
//   System.out.println(i);
   System.out.println("_____________________________________________________________________________\n");
   System.out.println("From BUS TERMINAL----> "+BUST.VertexNames[i]+"\n\nBUS TERMINAL\t      TRAVEL COST
DESTINATION CODE\t DESTINATION NAME\n");
   System.out.println("_____________________________________________________________________________");
   System.out.println();
   for(int j=0;Schedule[i].BusNumber[j]!=-1;j++)
   {
    int k=Buffer.pop();
    Buffer.push(k);
    System.out.println(Schedule[i].Busname[j]+""+Schedule[i].BusNumber[j]+"        Rs "+Schedule[i].BusCost[j]+"/-\t  -
"+BUST.VertexNames[k] + "-\t\t     " +  BUST.getBusDepoName(BUST.VertexNames[k]));
   }
   i=Buffer.pop();
  }

  System.out.println();
  Buffer.pop();
 }
}
```