AI Assignment-2

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For DFS, I have modified the csv as per the use. And then used the DFS Algorithm.

Code use for the generation of csv in DFS

```
def dfs_csv():
   pd.set_option('display.expand_frame_repr', False)
   data=pd.read_csv('/content/drive/MyDrive/AI Assignment-2
csv/roaddistance.csv',header=None)
   data=data.drop(columns=22,axis=1)
   data=data.drop(columns=0,axis=1)
   data=data.drop(0)
   row,col=data.shape
   dfs=[]
   for i in range(2,row+1):
       for j in range(2,col+1):
           if str(data[1][i])==str(data[j][1]):
               dfs.append([data[1][i],data[j][1],0])
               # print(str(data[1][i])+" "+str(data[j][1])+" "+str(0))
           else:
               dfs.append([data[1][i],data[j][1],data[j][i]])
               dfs.append([data[j][1],data[1][i],data[j][i]])
               # print(str(data[1][i])+" "+str(data[j][1])+"
"+str(data[j][i]))
               # print(str(data[j][1])+" "+str(data[1][i])+"
"+str(data[j][i]))
   df=pd.DataFrame(dfs)
   df.to_csv("/content/drive/MyDrive/AI Assignment-2
csv/dfs.csv",header=False,index=False)
   print(df)
```

For BFS, I have generate the heuristic as I calculated the distance between the each cities as per the city name and city location using python modules

```
def bfs_csv():
   pd.set_option('display.expand_frame_repr', False)
```

```
   distances=pd.read_csv('/content/drive/MyDrive/AI Assignment-2
csv/roaddistance.csv',header=None)
   distances=distances.drop(columns=21,axis=1)
   distances=distances.drop(columns=0,axis=1)
   distances=distances.drop(0)
   print(distances)

   l2=list(distances.iloc[0])
   del l2[-1]
   del l2[0]
   print(l2)

   l1=list(distances[1])
   del l1[0]
   print(l1)

   s1 = set().union(l1, l2)
   city_names = list(s1)
   df = []
   for city in city_names:
       print(city)
       location = geolocator.geocode(city)
       lat = location.latitude
       lon = location.longitude
       df.append([city, lon, lat])

   finalData = []
   for i in range(len(df)):
       city_name = df[i][0]
       city_lat = df[i][1]
       city_long = df[i][2]

       for j in range(len(df)):
           sec_name = df[j][0]
           sec_lat = df[j][1]
           sec_long = df[j][2]

           c1 = (city_long, city_lat)
           c2 = (sec_long, sec_lat)
           dist = int(geopy.distance.distance(c1, c2).km)
```

```
            finalData.append([city_name, sec_name, dist])

    finalDF = pd.DataFrame(finalData)
    finalDF.to_csv('/content/drive/MyDrive/AI Assignment-2
csv/heuristics.csv')
    # files.download("heuristics.csv")

bfs_csv()
```