

## EXPERIMENT 9

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Class	TE IT
Subject	BDA

**AIM:** Download a real world dataset and find insights using map reduce.

**DATASET:** Netflix Movies and TV Shows

**KAGGLE LINK:** <https://www.kaggle.com/shivamb/netflix-shows/>

There are 8807 unique rows in the dataset chosen. Following are the 12 attributes in this dataset

Sr. No.	Attribute Name	Attribute Description	Datatype
1	Show Id	Unique ID for every Movie / Tv Show	String
2	Type	Identifier - A Movie or TV Show	String
3	Title	Title of the Movie / Tv Show	String
4	Director	Director of the Movie	String
5	Cast	Actors involved in the movie / show	String
6	Country	Country where the movie / show was produced	String
7	Date Added	Date it was added on Netflix	Date
8	Release Year	Actual Release year of the move / show	Integer
9	Rating	TV Rating of the movie / show	String
10	Duration	Total Duration - in minutes or number of seasons	String
11	Listed In	Genre of Movie / TV Show	String
12	Description	The summary description	String

## CODE:

### Mapper Code (mapper.py)

```
mapper.py X reducer.py
Jupyter > mapper.py > ...
1  import pandas as pd
2  import pickle
3
4  data = pd.read_csv('D:\PROJECT_AND_CODES\Jupyter\netflix_title.csv')
5  #Slicing Data
6  slice1 = data.iloc[0:1999,:]
7  slice2 = data.iloc[2000:3999,:]
8  slice3 = data.iloc[4000:5999,:]
9  slice4 = data.iloc[6000:,:]
10 map = {}
11 count=0
12 def mapper(data):
13     mapped = []
14     for index,row in data.iterrows():
15         # Appending Country name, and duration of movie
16         if(row['type']) == 'Movie':
17             mapped.append((row['country'],row['duration']))
18             map[row['country']] = [0]
19     return mapped
20
21 map1 = mapper(slice1)
22 map2 = mapper(slice2)
23 map3 = mapper(slice3)
24 map4 = mapper(slice4)
25
26 for i in [map1,map2,map3,map4]:
27     for j in i:
28         # print('Country :',j[0], ' Movie Durations:',j[1],len(shuffled[j[0]]))
29         map[j[0]].append(int(j[1]))
30
31 print("Mapping data")
32 print("Country mapped with movie durations is as follows:")
33 print(map)
34 file= open('D:\PROJECT_AND_CODES\Jupyter\mapped.pkl','ab')
35 pickle.dump(map,file)
36 file.close()
37 print("Data has been successfully mapped.")
```

### Reducer Code (reducer.py)

```
mapper.py X reducer.py X
Jupyter > reducer.py > ...
1  import pickle
2  file= open('D:\PROJECT_AND_CODES\Jupyter\mapped.pkl','rb')
3  shuffled = pickle.load(file)
4  def reduce(shuffled_dict):
5      reduced = {}
6      for i in shuffled_dict:
7          reduced[i] = sum(shuffled_dict[i])/len(shuffled_dict[i])
8      return reduced
9
10 final = reduce(shuffled)
11 print("Reducing Data")
12 print("Total unique countries/ group of countries :",len(shuffled))
13 print("Average duration of movies in different countries: ")
14 for i in final:
15     print(i,':',final[i],'mins')
```

# OUTPUT:

## Running mapper.py:

```
PS D:\PROJECT_AND_CODES> & C:/Users/AIM/AppData/Local/Programs/Python/Python38/python.exe d:/PROJECT_AND_CODES/Jupyter/mapper.py
Mapping data
Country mapped with movie durations is as follows:
{'United States': [0, 90, 104, 103, 97, 124, 116, 98, 91, 122, 106, 97, 80, 90, 117, 108, 120, 114, 104, 94, 94, 93, 97, 88, 105, 101, 106, 86, 121, 95, 98, 89, 120, 8
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],
Data has been successfully mapped.
PS D:\PROJECT_AND_CODES>
```

## Running reducer.py:

```
PS D:\PROJECT_AND_CODES> & C:/Users/AIM/AppData/Local/Programs/Python/Python38/python.exe d:/PROJECT_AND_CODES/Jupyter/reducer.py
Reducing Data
Total unique countries/ group of countries : 652
Average duration of movies in different countries:
United States : 90.59493670886076 mins
nan : 87.18367346938776 mins
United States, Ghana, Burkina Faso, United Kingdom, Germany, Ethiopia : 62.5 mins
Germany, Czech Republic : 63.5 mins
India : 126.7807606263982 mins
United States, India, France : 53.0 mins
China, Canada, United States : 85.75 mins
South Africa, United States, Japan : 57.5 mins
Japan : 97.18181818181819 mins
Nigeria : 105.80459770114942 mins
Spain, United States : 47.5 mins
France : 92.23684210526316 mins
United Kingdom, United States : 109.46875 mins
United Kingdom, Australia, France : 59.5 mins
United Kingdom, Australia, France, United States : 59.0 mins
United States, Canada : 88.98076923876923 mins
Germany, United States : 95.53846153846153 mins
South Africa, United States : 86.4 mins
United States, Mexico : 73.16666666666667 mins
United States, Italy, France, Japan : 56.5 mins
United States, Italy, Romania, United Kingdom : 77.0 mins
Australia, United States : 90.9090909090909 mins
Argentina, Venezuela : 50.0 mins
United States, United Kingdom, Canada : 60.0 mins
China, Hong Kong : 106.21428571428571 mins
Canada : 82.0569105691057 mins
Hong Kong : 94.88235294117646 mins
United States, China, Hong Kong : 74.33333333333333 mins
Italy, United States : 116.0 mins
United States, Germany : 103.27777777777777 mins
United Kingdom, Canada, United States : 84.85714285714286 mins
United States, United Kingdom : 103.94871794871794 mins
United Kingdom : 84.45893719806763 mins
India, Nepal : 41.0 mins
New Zealand, Australia, France, United States : 60.5 mins
Italy, Brazil, Greece : 55.0 mins
Colombia : 76.21428571428571 mins
United Arab Emirates : 82.28571428571429 mins
Mexico, France, Colombia : 48.5 mins
Netherlands : 85.625 mins
Spain : 99.03061224489795 mins
Sweden : 78.83333333333333 mins
Germany, United States, France : 49.5 mins
United States, Bulgaria : 87.6 mins
United Kingdom, France, Germany, United States : 87.33333333333333 mins
Syria, France, Lebanon, Qatar : 45.5 mins
Belgium, Netherlands : 53.5 mins
Mauritius : 45.0 mins
Canada, South Africa : 66.0 mins
Austria : 84.16666666666667 mins
Mexico, Brazil : 49.5 mins
France, United States : 80.28571428571429 mins
China : 106.13793103448276 mins
Turkey : 106.02597402597402 mins
Germany, France : 56.0 mins
United Kingdom, France, Spain, United States : 57.5 mins
United States, Australia : 97.9090909090909 mins
United States, United Kingdom, France : 88.8 mins
United States, Russia : 70.0 mins
United States, United Kingdom, New Zealand : 68.0 mins
Canada, Nigeria, United States : 43.0 mins
France, United States, United Kingdom, Canada : 66.0 mins
India, United Kingdom : 106.66666666666667 mins
Canada, United States, Mexico : 59.5 mins
United Kingdom, Germany, United States : 70.0 mins
Czech Republic, United Kingdom, United States : 63.5 mins
China, Taiwan : 83.33333333333333 mins
United States, China, United Kingdom : 43.0 mins
Cameroon : 71.5 mins
Lebanon, Palestine, Denmark, Qatar : 37.5 mins
Japan, United States : 84.0 mins
Egypt, Saudi Arabia : 48.0 mins
United Kingdom, France, Poland, Germany, United States : 74.5 mins
Ireland, Switzerland, United Kingdom, France, United States : 55.5 mins
China, United Kingdom : 36.5 mins
United Kingdom, South Africa, France : 70.5 mins
Ireland, United Kingdom, France, Germany : 47.5 mins
Russia, United States : 52.5 mins
Denmark, France, United States, Sweden : 45.0 mins
Australia, Iraq : 38.0 mins
China, Morocco, Hong Kong : 69.5 mins
Canada, United States, Germany : 45.0 mins
United Kingdom, Thailand : 52.5 mins
Venezuela, Colombia : 41.0 mins
France, Germany, Czech Republic, Belgium : 52.5 mins
Switzerland, Vatican City, Italy, Germany, France : 48.0 mins
Portugal, France, Poland, United States : 38.5 mins
India, Switzerland : 53.0 mins
Canada, India : 87.66666666666667 mins
United States, Morocco : 64.0 mins
Singapore, Japan, France : 45.0 mins
Canada, Mexico, Germany, South Africa : 47.5 mins
United Kingdom, United States, Canada : 56.0 mins
Germany, France, United States, Canada, United Kingdom : 48.5 mins
United States, Uruguay : 39.5 mins
India, Canada : 61.0 mins
Ireland, Canada, United Kingdom, United States : 59.0 mins
United States, Germany, Australia : 48.5 mins
Australia, France, Ireland : 36.0 mins
Australia, India : 72.5 mins
United States, United Kingdom, Canada, Japan : 56.0 mins
Sweden, United Kingdom, Finland : 43.0 mins
Hong Kong, Taiwan : 50.5 mins
```

**CONCLUSION:** In this experiment, I have successfully found insights using map reduce from the Netflix dataset. Mapper picks-up a record and emits country/ group of countries and total duration in minutes for that movie for that record. Mapper repeats this process for all the records. Reducer's role is to combine these pairs until all keys are unique and find the average duration for each country/ group of countries.