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Spark Use Case – Travel Data Analysis

In this blog, we will discuss on the analysis of travel dataset and gain insights from the dataset using Apache Spark.

The travel dataset is publically available and the contents are detailed under the heading, 'Travel Sector Dataset Description'.

Based on the data, we will find the top 20 destination people travel the most, top 20 locations from where people travel the most, top 20 cities that generate high airline revenues for travel, based on booked trip count.

Travel Sector Dataset Description

Column 1: City pair (Combination of *from* and *to*): String

Column 2: From location: String

Column 3: To Location: String

Column 4: Product type: Integer (1=Air, 2=Car, 3 =Air+Car, 4 =Hotel, 5=Air+Hotel, 6=Hotel +Car, 7 =Air+Hotel+Car)

Column 7: Children traveling: Integer

Column 8: Youth traveling: Integer

Column 9: Infant traveling: Integer

Column 10: Date of travel: String

Column 11: Time of travel: String

Column 12: Date of Return: String

Column 13: Time of Return: String

Column 14: Price of booking: Float

Column 15: Hotel name: String

You can download the dataset from the link below:

https://drive.google.com/open?id=0ByJLBTmJojjzZEg2bXpYa0dyd1k

Problem Statement 1

Top 20 destination people travel the most: Based on the given data, we can find the most popular destination that people travel frequently. There are many destinations out of which we will find only first 20, based on trips booked for particular destinations.

Source Code

```
val textFile = sc.textFile("hdfs://localhost:9000/TravelData.txt")
```

```
3
val split = textFile.map(lines=>lines.split('\t')).map(x=>(x(2),1)).reduceByKey(_+_).map(item => item.swap).sortByKey(false).take(20)
```

Description of the above code

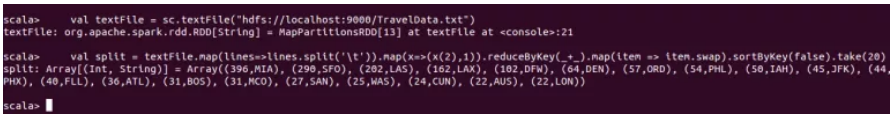
Line 1: We are creating an RDD by loading a new dataset which is in HDFS.

Line 2: We have split each record by taking the delimiter as *tab* because the data is tab separated. We are creating the key-value pair, where key is the *destination* that is in 3rd column and the value is 1. Since we need to count the cities which are popular, we are using the reduceByKey method to count them. After counting the destinations, we are swapping the key-value pairs. The sortByKey method sorts the data with keys and *false* stands for descending order. Once the sorting is complete, we are considering the top 20 destinations.

Output

(396,MIA), (290,SFO), (202,LAS), (162,LAX), (102,DFW), (64,DEN), (57,ORD), (54,PHL), (50,IAH), (45,JFK), (44,PHX), (40,FLL), (36,ATL), (31,BOS), (31,MCO), (27,SAN), (25,WAS), (24,CUN), (22,AUS), (22,LON)

You can see the same in the below screen shot.



Problem Statement 2

Top 20 locations from where people travel the most: We can find the places from where most of the trips are undertaken, based on the booked trip count.

Source Code

```
1 val textFile = sc.textFile("hdfs://localhost:9000/TravelData.tx
2 t")
3
  val split = textFile.map(lines=>lines.split('\t')).map(x=>(x(1),
  1)).reduceByKey(_+_).map(item => item.swap).sortByKey(fal
  se).take(20)
```

Description of the above code

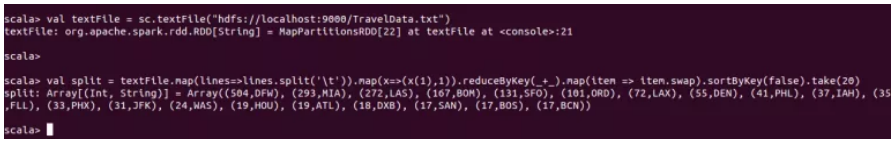
Line 1: We are creating an RDD by loading a new dataset which is in HDFS.

Line 2: We have split each record by taking the delimiter as *tab* since the data is tab separated. We are creating the key-value pair, where key is the *location from where people start,* that is in the 2nd column and the value is 1. Since we need to count the cities which are popular locations from where people undertake the trips, we are using the reduceByKey method to count them. After counting the locations, we are swapping the key-value pairs. We are using the sortByKey method which sorts the data with keys where *false* stands for descending order. Once the sorting is complete, we are taking the top 20 locations from where people undertake the trips.

Output

(504,DFW), (293,MIA), (272,LAS), (167,BOM), (131,SFO), (101,ORD), (72,LAX), (55,DEN), (41,PHL), (37,IAH), (35,FLL), (33,PHX), (31,JFK), (24,WAS), (19,HOU), (19,ATL), (18,DXB), (17,SAN), (17,BOS), (17,BCN)

You can see the same in the below screen shot.



Problem Statement 3

Top 20 cities that generate high airline revenues for travel, so that the site can concentrate on offering discount on booking, to those cities to attract more bookings.

Source Code

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```
1 val textFile = sc.textFile("hdfs://localhost:9000/TravelData.tx
2 t")
3
4 val fil = textFile.map(x=>x.split('\t')).filter(x=>{if((x(3).match
5 es(("1")))) true else false })

  val cnt = fil.map(x=>(x(2),1)).reduceByKey(_+_).map(item =
  > item.swap).sortByKey(false).take(20)
```

Description of the above code

Line 1: We are creating an RDD by loading a new dataset which is in HDFS.

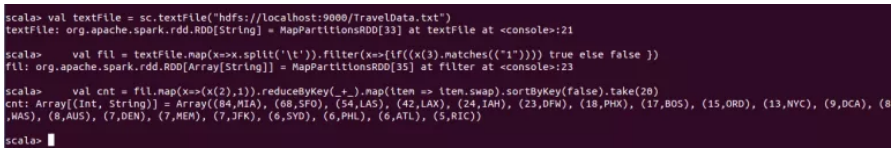
Line 2: We are splitting each record based on the delimiter tab as the data is tab separated. From this, we are filtering the records based on the mode of travel. Here, we need the count of people who travelled by flight which is denoted by **1** (1=Air, 2=Car, 3 =Air+Car, 4 =Hotel, 5=Air+Hotel, 6=Hotel +Car, 7 =Air+Hotel+Car).

Line 3: We are creating the key-value pairs for those people who travelled by air, where key is the *destination* which is in 3rd column and value is 1. Since we need to count the popular cities, we are counting them by using the reduceByKey method. After counting the destinations, we are swapping the key-value pairs. We are using the sortByKey method to sort the data with keys where *false* stands for descending order. Once sorting is completed, we are considering top 20 cities that generate high airline revenues for travel.

Output:

(84,MIA), (68,SFO), (54,LAS), (42,LAX), (24,IAH), (23,DFW), (18,PHX), (17,BOS), (15,ORD), (13,NYC), (9,DCA), (8,WAS), (8,AUS), (7,DEN), (7,MEM), (7,JFK), (6,SYD), (6,PHL), (6,ATL), (5,RIC)

You can see the same in the below screen shot.



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KIRAN KRISHNA

Kiran Krishna Innamuri is a Passionate Big Data enthusiast with 2 + years of experience in Hadoop and Spark Development. He is a passionate Java and scala programmer. AcadGild was founded with the vision of "Learn. Do. Earn". We provide skill development courses based on current industry needs. But what sets us apart is earning opportunities we provide after successful completion of course. We also provide live mentoring and 24x7 support. Our mentors are industry thought leaders in their respective fields. We provide courses for Android Programming, Big Data, Front End, Full Stack, AngularJS, NodeJS and Android Programming for children.

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