14 JUNE 2016

Spark Use Case – Analyzing MovieLens Dataset

In this blog, we will discuss a use case involving MovieLens dataset and try to analyze how the movies fare on a rating scale of 1 to 5.

We will start our discussion with the data definition by considering a sample of four records.

196	242	3
186	302	3

Column 1: User ID

Column 2: Movie ID

Column 3: Rating

Column 4: Timestamp

You can download the input file from here.

Below is the code that is used to calculate the number of movies that are rated on a scale of 1 to 5.

```
1  from pyspark import SparkConf,SparkContext
2
3  import collections
4
5  my_lines = sc.textFile('/home/acadgild/ml-100k/u.data')
6
7  ratings = lines.map(lambda x : x.split()[2])
8
9  res = ratings.countByValue()
10
11 my_sortedres = collections.OrderedDict(sorted(res.items()))
12
13 for key,value in sortedres.items():
14
15 print ("%s %i" %(key,value))
```

The first two lines of the code import SparkConf ,SparkContext from pyspark libraries that are present in Spark.

SparkContext is the fundamental starting point in Spark that enables us to create RDDs.

Once the collections are imported [illegible] be sorted out.

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The statement in the screenshot below, loads the data file by creating the RDD through sc.textFile method. The data file is loaded into RDD my_lines and the textFile property breaks every line of text into a value in the RDD.

```
>>> my_lines = sc.textFile('/home/acadgild/ml-100k/u.data')
16/06/10 17:42:25 INFO MemoryStore: ensureFreeSpace(230688) called with curMem=1
792827, maxMem=560497950
16/06/10 17:42:25 INFO MemoryStore: Block broadcast_19 stored as values in memor
y (estimated size 225.3 KB, free 532.6 MB)
```

In the screenshot below, expression X is passed on to split function. The 3rd column is extracted and new RDD is created with the new results.

```
>>> ratings = my_lines.map(lambda x : x.split()[2])
>>>
```

In the screenshot below, the statement countByValue() is executed on ratings RDD to calculate the occurrence of each and every rating starting from 1 to 5 and results are stored in a new Python object *res.*

```
>>> res = ratings.countByValue()
16/06/10 17:45:05 INFO FileInputFormat: Total input paths to process : 1
16/06/10 17:45:05 INFO SparkContext: Starting job: countByValue at <stdin>:1
16/06/10 17:45:05 INFO DAGScheduler: Got job 11 (countByValue at <stdin>:1) with
 1 output partitions
16/06/10 17:45:05 INFO DAGScheduler: Final stage: ResultStage 11(countByValue at
 <stdin>:1)
```

Below is the sample output of the above action applied on ratings RDD.

```
>>> res
defaultdict(<class 'int'>, {'4': 34174, '1': 6110, '5': 21201, '3': 27145, '2':
11370})
>>>
```

The code below creates an ordered Dictionary to sort the results based on the key which is rating.

```
>>> my_sortedres = collections.Ordere
>>>
```

The Python code below iterates th

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```
...
1 6110
2 11370
3 27145
4 34174
5 21201
>>>
```

We hope this blog was helpful in understanding the use of Spark with Python. Keep visiting our site www.acadgild.com for more updates on Big data and other technologies.

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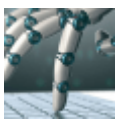

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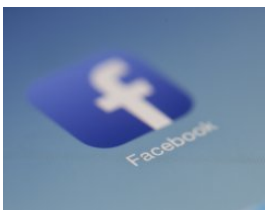

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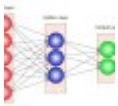

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Any sample projects which use Scala instead of python.

Thanks,
Rajesh

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