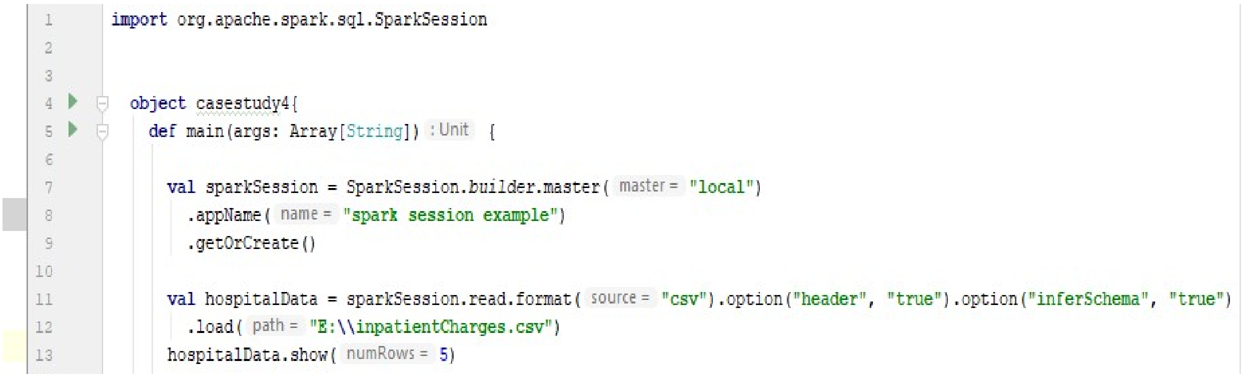
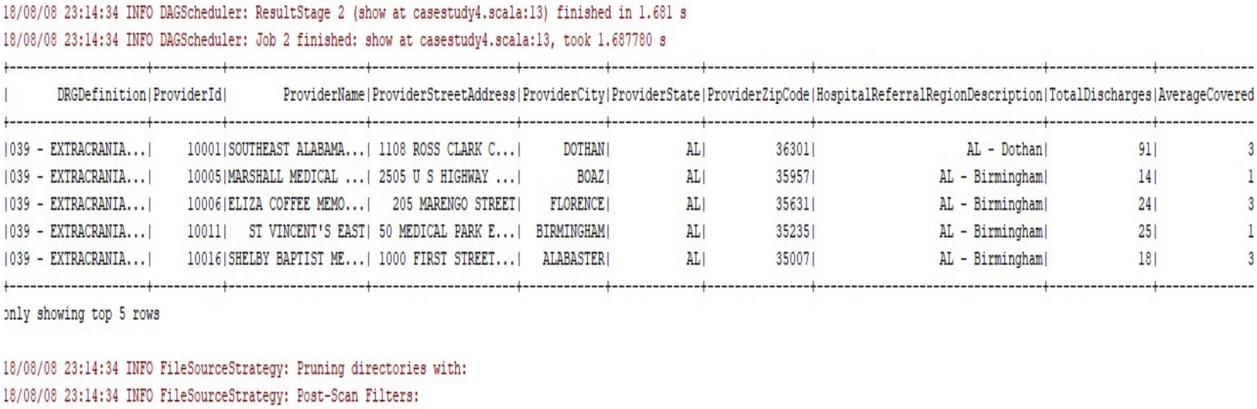
<u>Hospital CASE STUDY 4</u>

Obj -1

- <u>**Load file into spark**</u>



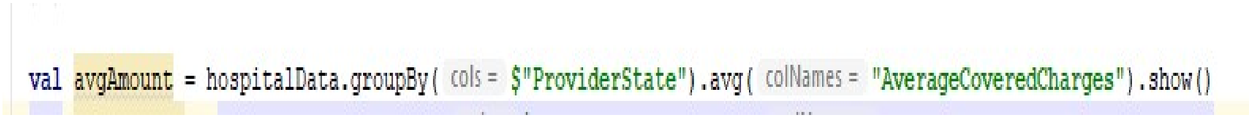
```
import org.apache.spark.sql.SparkSession


 object casestudy4{
   def main(args: Array[String]) : Unit  {

     val sparkSession = SparkSession.builder.master( master = "local")
       .appName( name = "spark session example")
       .getOrCreate()

     val hospitalData = sparkSession.read.format( source = "csv").option("header", "true").option("inferSchema", "true")
       .load( path = "E:\\inpatientCharges.csv")
     hospitalData.show( numRows = 5)
```



```
18/08/08 23:14:34 INFO DAGScheduler: ResultStage 2 (show at casestudy4.scala:13) finished in 1.681 s
18/08/08 23:14:34 INFO DAGScheduler: Job 2 finished: show at casestudy4.scala:13, took 1.687780 s
+--------------------+----------+--------------------+---------------------+------------+-------------+---------------+--------------------------------+---------------+--------------
|       DRGDefinition|ProviderId|        ProviderName|ProviderStreetAddress|ProviderCity|ProviderState|ProviderZipCode|HospitalReferralRegionDescription|TotalDischarges|AverageCovered
+--------------------+----------+--------------------+---------------------+------------+-------------+---------------+--------------------------------+---------------+--------------
|039 - EXTRACRANIA...|     10001|SOUTHEAST ALABAMA...| 1108 ROSS CLARK C...|      DOTHAN|           AL|          36301|                     AL - Dothan|             91|             3
|039 - EXTRACRANIA...|     10005|MARSHALL MEDICAL ...| 2505 U S HIGHWAY ...|        BOAZ|           AL|          35957|                 AL - Birmingham|             14|             1
|039 - EXTRACRANIA...|     10006|ELIZA COFFEE MEMO...|   205 MARENGO STREET|    FLORENCE|           AL|          35631|                 AL - Birmingham|             24|             3
|039 - EXTRACRANIA...|     10011|   ST VINCENT'S EAST| 50 MEDICAL PARK E...|  BIRMINGHAM|           AL|          35235|                 AL - Birmingham|             25|             1
|039 - EXTRACRANIA...|     10016|SHELBY BAPTIST ME...| 1000 FIRST STREET...|   ALABASTER|           AL|          35007|                 AL - Birmingham|             18|             3
+--------------------+----------+--------------------+---------------------+------------+-------------+---------------+--------------------------------+---------------+--------------
only showing top 5 rows

18/08/08 23:14:34 INFO FileSourceStrategy: Pruning directories with:
18/08/08 23:14:34 INFO FileSourceStrategy: Post-Scan Filters:
```

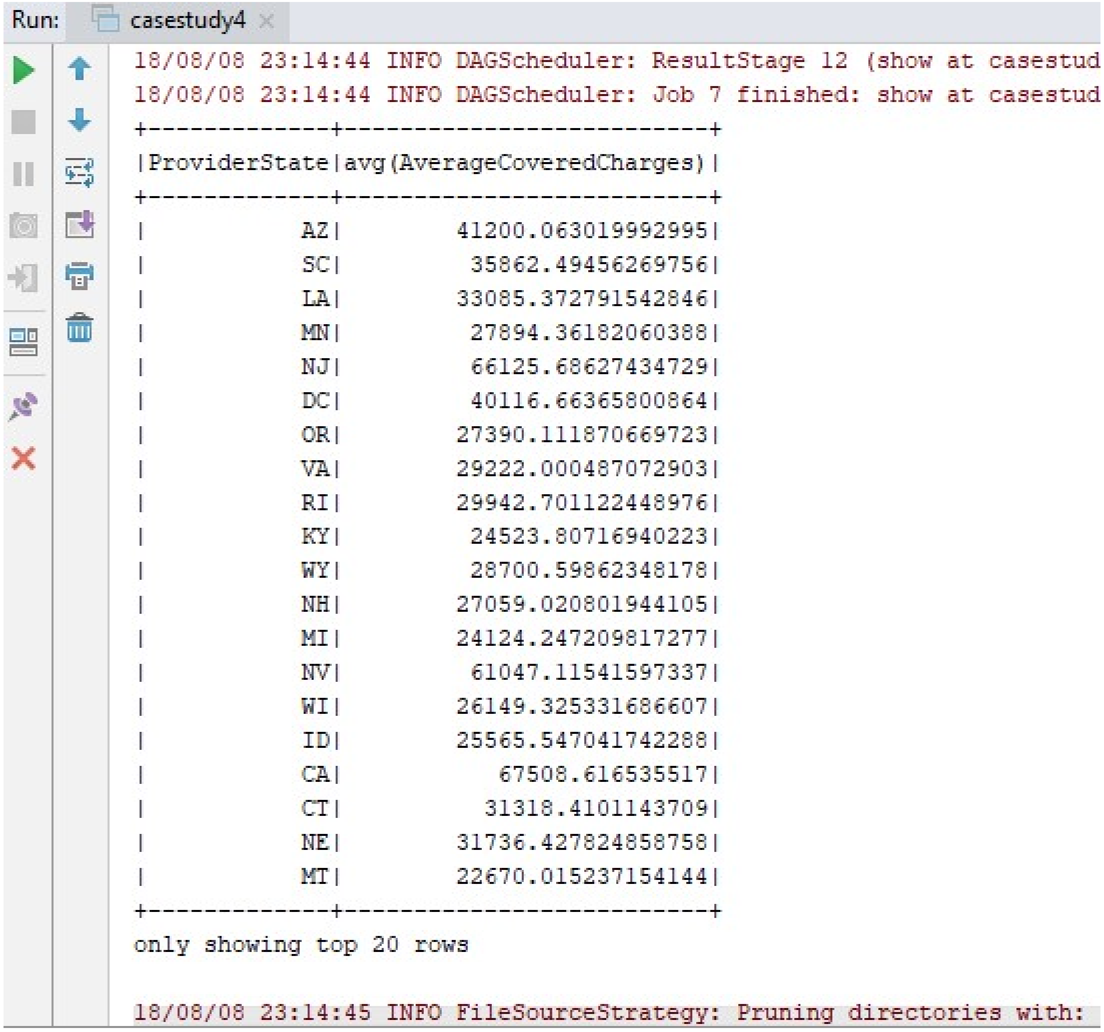
<u>OBJ-2</u>

- <u>**What is the average amount of AverageCoveredCharges per state**</u>



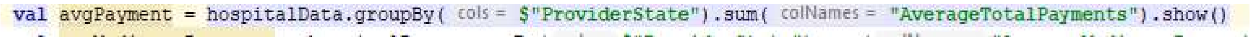
```
val avgAmount = hospitalData.groupBy( cols = $"ProviderState").avg( colNames = "AverageCoveredCharges").show()
```

Output



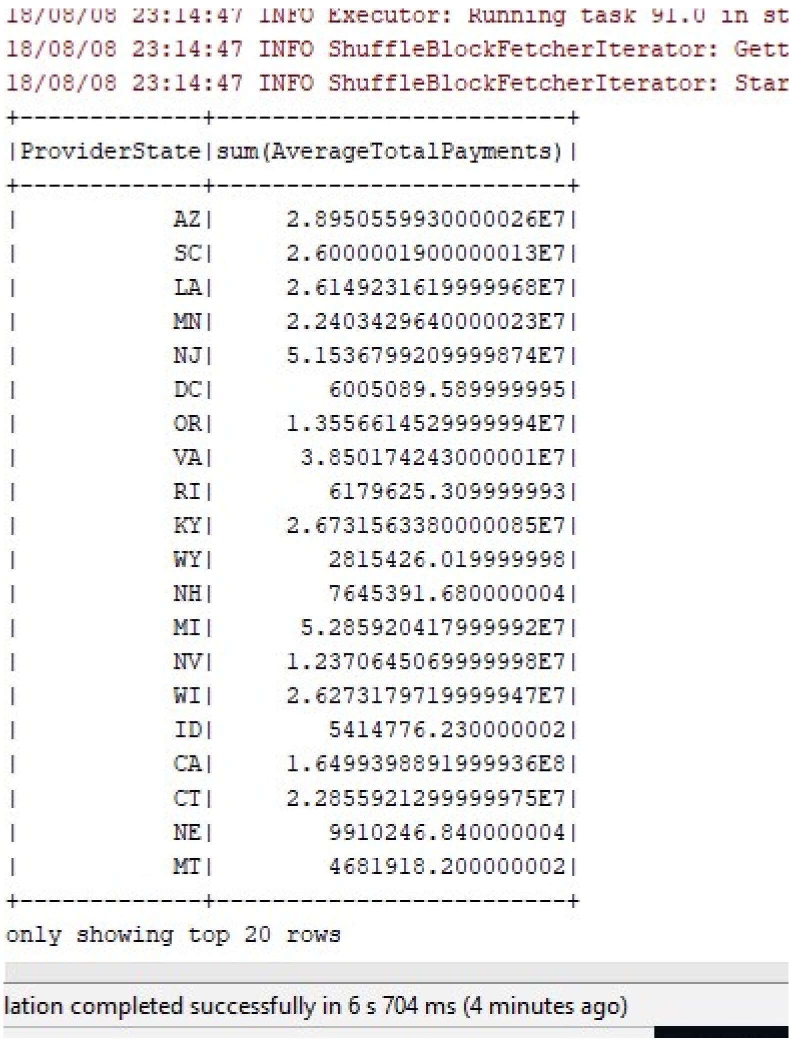
```
18/08/08 23:14:44 INFO DAGScheduler: ResultStage 12 (show at casestud
18/08/08 23:14:44 INFO DAGScheduler: Job 7 finished: show at casestud
+-------------+------------------------+
|ProviderState|avg(AverageCoveredCharges)|
+-------------+------------------------+
|           AZ|       41200.063019992995|
|           SC|        35862.49456269756|
|           LA|       33085.372791542846|
|           MN|        27894.36182060388|
|           NJ|        66125.68627434729|
|           DC|        40116.66365800864|
|           OR|       27390.111870669723|
|           VA|       29222.000487072903|
|           RI|       29942.701122448976|
|           KY|        24523.80716940223|
|           WY|        28700.59862348178|
|           NH|       27059.020801944105|
|           MI|       24124.247209817277|
|           NV|        61047.11541597337|
|           WI|       26149.325331686607|
|           ID|       25565.547041742288|
|           CA|          67508.616535517|
|           CT|         31318.4101143709|
|           NE|       31736.427824858758|
|           MT|       22670.015237154144|
+-------------+------------------------+
only showing top 20 rows

18/08/08 23:14:45 INFO FileSourceStrategy: Pruning directories with:
```

- ➢ **find out the AverageTotalPayments charges per state**



```
val avgPayment = hospitalData.groupBy( cols = $"ProviderState").sum( colNames = "AverageTotalPayments").show()
```

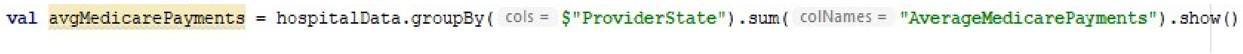
output



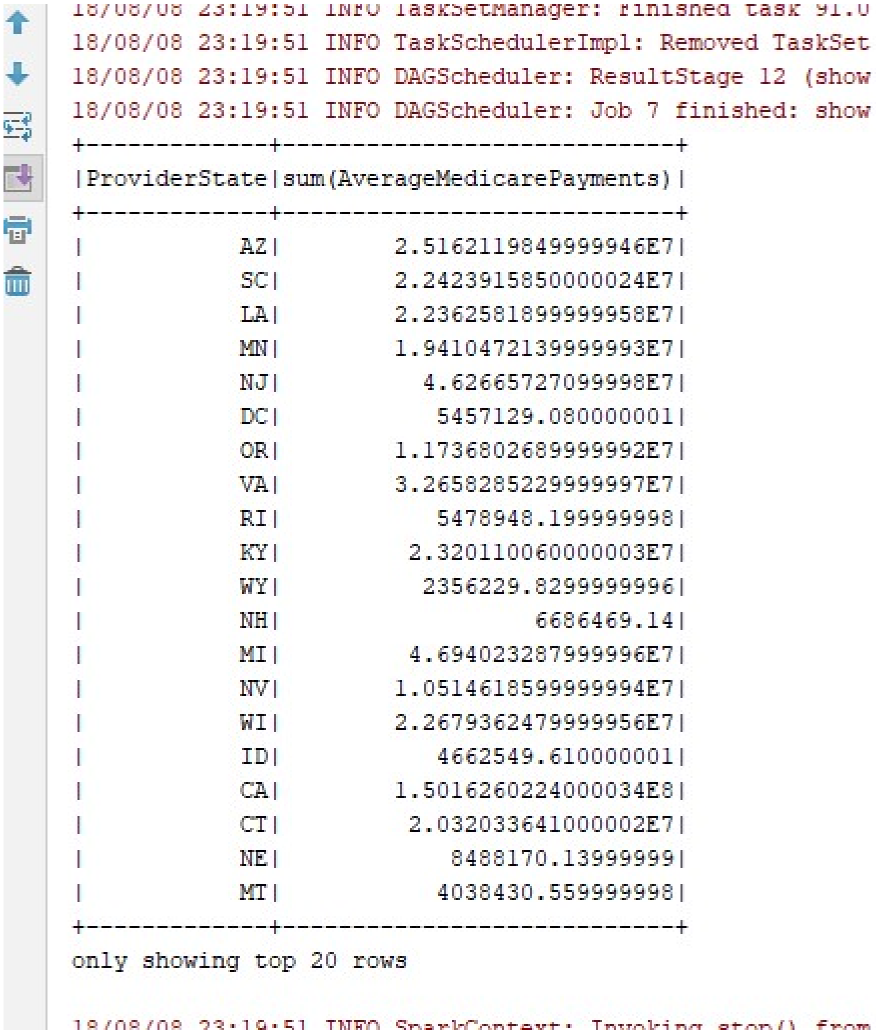
```
18/08/08 23:14:47 INFO Executor: Running task 91.0 in st
18/08/08 23:14:47 INFO ShuffleBlockFetcherIterator: Gett
18/08/08 23:14:47 INFO ShuffleBlockFetcherIterator: Star
+-------------+------------------------+
|ProviderState|sum(AverageTotalPayments)|
+-------------+------------------------+
|           AZ|     2.8950559930000026E7|
|           SC|     2.6000001900000013E7|
|           LA|     2.614923161999968E7|
|           MN|     2.2403429640000023E7|
|           NJ|     5.153679920999874E7|
|           DC|        6005089.589999995|
|           OR|     1.355661452999994E7|
|           VA|      3.850174243000001E7|
|           RI|        6179625.309999993|
|           KY|     2.6731563380000085E7|
|           WY|        2815426.019999998|
|           NH|        7645391.680000004|
|           MI|      5.285920417999992E7|
|           NV|     1.2370645069999998E7|
|           WI|     2.6273179719999947E7|
|           ID|        5414776.230000002|
|           CA|     1.6499398891999936E8|
|           CT|     2.2855921299999975E7|
|           NE|        9910246.840000004|
|           MT|        4681918.200000002|
+-------------+------------------------+
only showing top 20 rows
```

lation completed successfully in 6 s 704 ms (4 minutes ago)

- **find out the AverageMedicarePayments charges per state.**



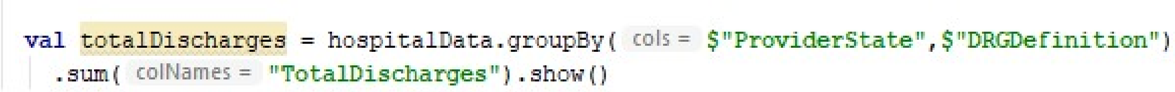
```
val avgMedicarePayments = hospitalData.groupBy( cols = $"ProviderState").sum( colNames = "AverageMedicarePayments").show()
```



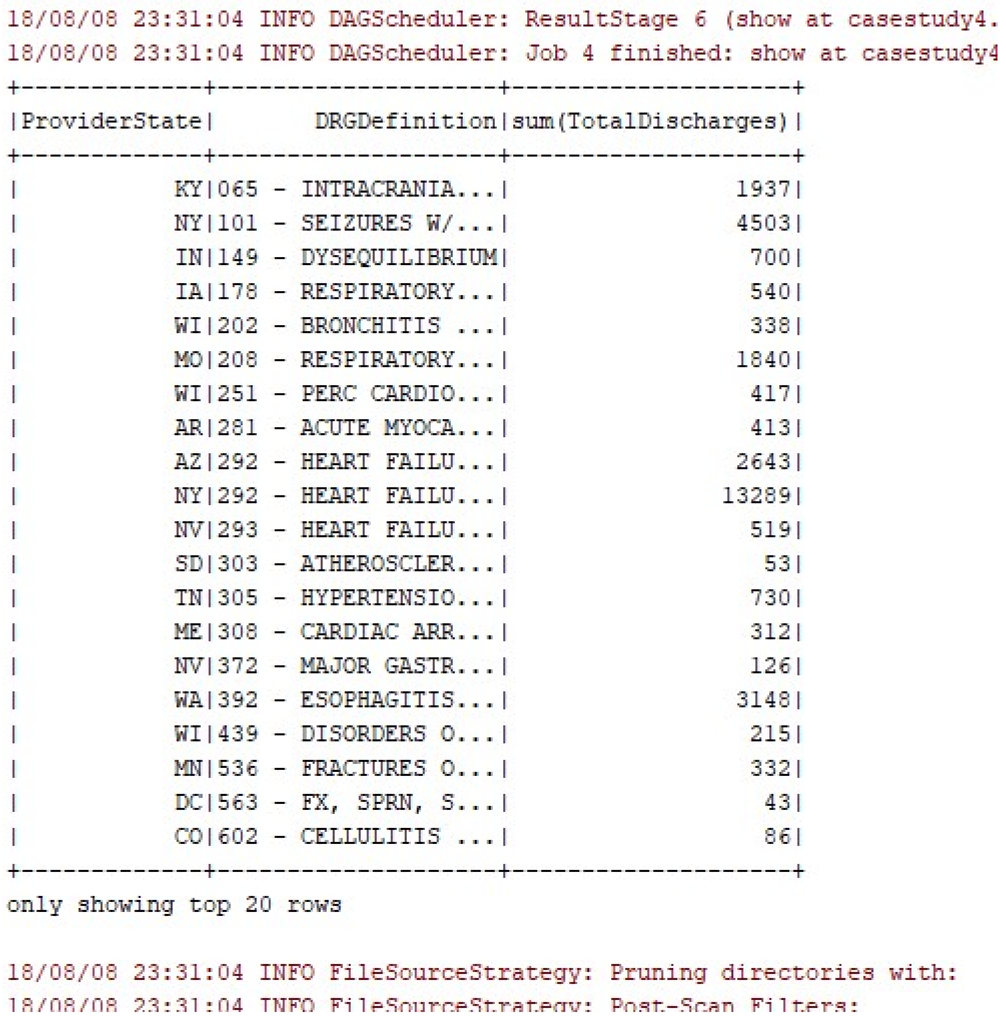
```
18/08/08 23:19:51 INFO TaskSetManager: Finished task 91.0
18/08/08 23:19:51 INFO TaskSchedulerImpl: Removed TaskSet
18/08/08 23:19:51 INFO DAGScheduler: ResultStage 12 (show
18/08/08 23:19:51 INFO DAGScheduler: Job 7 finished: show
+-------------+---------------------------+
|ProviderState|sum(AverageMedicarePayments)|
+-------------+---------------------------+
|           AZ|       2.5162119849999946E7|
|           SC|       2.2423915850000024E7|
|           LA|       2.2362581899999958E7|
|           MN|       1.9410472139999993E7|
|           NJ|         4.62665727099998E7|
|           DC|          5457129.080000001|
|           OR|       1.1736802689999992E7|
|           VA|       3.2658285229999997E7|
|           RI|          5478948.199999998|
|           KY|        2.320110060000003E7|
|           WY|         2356229.8299999996|
|           NH|                 6686469.14|
|           MI|        4.694023287999996E7|
|           NV|       1.0514618599999994E7|
|           WI|       2.2679362479999956E7|
|           ID|          4662549.610000001|
|           CA|       1.5016260224000034E8|
|           CT|        2.032033641000002E7|
|           NE|           8488170.13999999|
|           MT|          4038430.559999998|
+-------------+---------------------------+
only showing top 20 rows

18/08/08 23:19:51 INFO SparkContext: Invoking stop() from
```

OBJ-3

Find out the total number of Discharges per state and for each disease

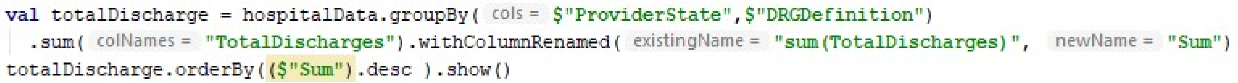


```
val totalDischarges = hospitalData.groupBy( cols = $"ProviderState",$"DRGDefinition")
  .sum( colNames = "TotalDischarges").show()
```

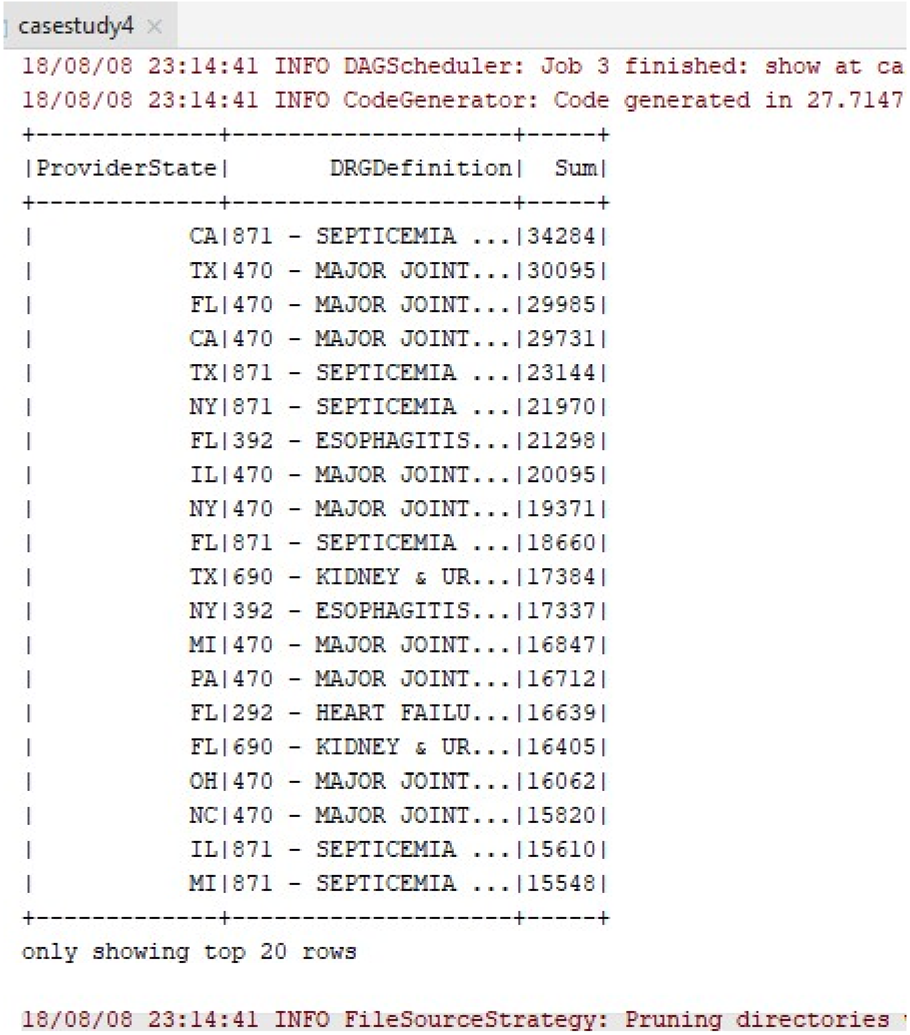


```
18/08/08 23:31:04 INFO DAGScheduler: ResultStage 6 (show at casestudy4.
18/08/08 23:31:04 INFO DAGScheduler: Job 4 finished: show at casestudy4
+-------------+--------------------+--------------------+
|ProviderState|       DRGDefinition|sum(TotalDischarges)|
+-------------+--------------------+--------------------+
|           KY|065 - INTRACRANIA...|                1937|
|           NY|101 - SEIZURES W/...|                4503|
|           IN|149 - DYSEQUILIBRIUM|                 700|
|           IA|178 - RESPIRATORY...|                 540|
|           WI|202 - BRONCHITIS ...|                 338|
|           MO|208 - RESPIRATORY...|                1840|
|           WI|251 - PERC CARDIO...|                 417|
|           AR|281 - ACUTE MYOCA...|                 413|
|           AZ|292 - HEART FAILU...|                2643|
|           NY|292 - HEART FAILU...|               13289|
|           NV|293 - HEART FAILU...|                 519|
|           SD|303 - ATHEROSCLER...|                  53|
|           TN|305 - HYPERTENSIO...|                 730|
|           ME|308 - CARDIAC ARR...|                 312|
|           NV|372 - MAJOR GASTR...|                 126|
|           WA|392 - ESOPHAGITIS...|                3148|
|           WI|439 - DISORDERS O...|                 215|
|           MN|536 - FRACTURES O...|                 332|
|           DC|563 - FX, SPRN, S...|                  43|
|           CO|602 - CELLULITIS ...|                  86|
+-------------+--------------------+--------------------+
only showing top 20 rows

18/08/08 23:31:04 INFO FileSourceStrategy: Pruning directories with:
18/08/08 23:31:04 INFO FileSourceStrategy: Post-Scan Filters:
```

- **Sort the output in descending order of totalDischarges**



```
val totalDischarge = hospitalData.groupBy( cols = $"ProviderState",$"DRGDefinition")
  .sum( colNames = "TotalDischarges").withColumnRenamed( existingName = "sum(TotalDischarges)",  newName = "Sum")
totalDischarge.orderBy(($"Sum").desc ).show()
```



```
18/08/08 23:14:41 INFO DAGScheduler: Job 3 finished: show at ca
18/08/08 23:14:41 INFO CodeGenerator: Code generated in 27.7147
+-------------+--------------------+-----+
|ProviderState|       DRGDefinition|  Sum|
+-------------+--------------------+-----+
|           CA|871 - SEPTICEMIA ...|34284|
|           TX|470 - MAJOR JOINT...|30095|
|           FL|470 - MAJOR JOINT...|29985|
|           CA|470 - MAJOR JOINT...|29731|
|           TX|871 - SEPTICEMIA ...|23144|
|           NY|871 - SEPTICEMIA ...|21970|
|           FL|392 - ESOPHAGITIS...|21298|
|           IL|470 - MAJOR JOINT...|20095|
|           NY|470 - MAJOR JOINT...|19371|
|           FL|871 - SEPTICEMIA ...|18660|
|           TX|690 - KIDNEY & UR...|17384|
|           NY|392 - ESOPHAGITIS...|17337|
|           MI|470 - MAJOR JOINT...|16847|
|           PA|470 - MAJOR JOINT...|16712|
|           FL|292 - HEART FAILU...|16639|
|           FL|690 - KIDNEY & UR...|16405|
|           OH|470 - MAJOR JOINT...|16062|
|           NC|470 - MAJOR JOINT...|15820|
|           IL|871 - SEPTICEMIA ...|15610|
|           MI|871 - SEPTICEMIA ...|15548|
+-------------+--------------------+-----+
only showing top 20 rows

18/08/08 23:14:41 INFO FileSourceStrategy: Pruning directories
```