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Class ID:4

Lab Assignment 5 and 6:

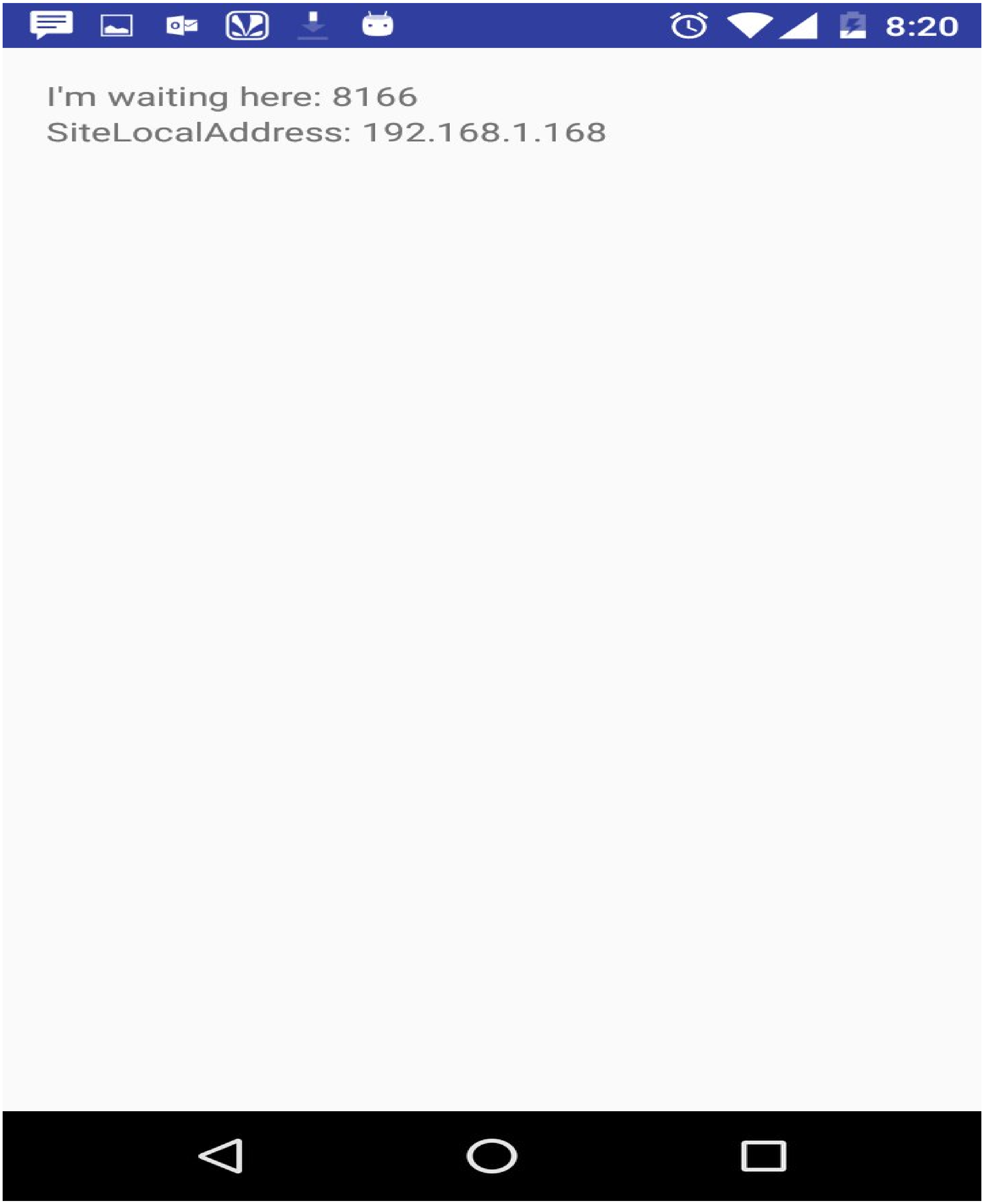
Question 1: Spark and Smartphone/Watch Application:

Implement a smart application with big data analytics related to your project showing the collaboration between Spark and Smart Apps. Implement Twitter Streaming and perform word count on it and publish the results and showcase it in your Smart Phone/Watch Application

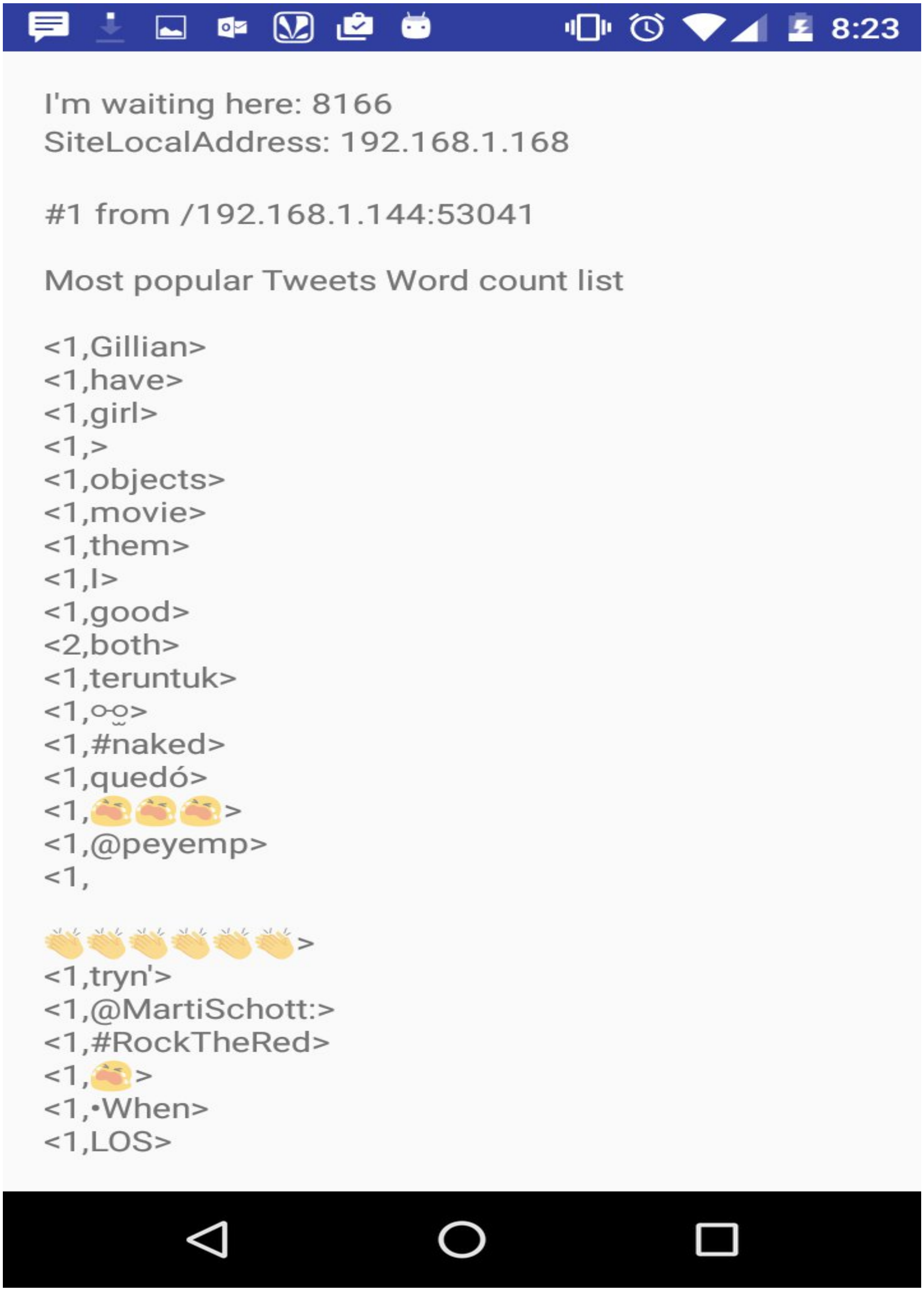
Description:

Here we created a spark streaming context to retrieve the streaming data from the twitter api and based on the map and reduce functions that we have written in the spark we could achieve the word count of the words in the tweet.

Screenshots:



```
I'm waiting here: 8166
SiteLocalAddress: 192.168.1.168
```



```
I'm waiting here: 8166
SiteLocalAddress: 192.168.1.168

#1 from /192.168.1.144:53041

Most popular Tweets Word count list

<1,Gillian>
<1,have>
<1,girl>
<1,>
<1,objects>
<1,movie>
<1,them>
<1,I>
<1,good>
<2,both>
<1,teruntuk>
<1,○-○͜>
<1,#naked>
<1,quedó>
<1,😫😫😫>
<1,@peyemp>
<1,

👏👏👏👏👏👏>
<1,tryn'>
<1,@MartiSchott:>
<1,#RockTheRed>
<1,😫>
<1,•When>
<1,LOS>
```

Question 2: Spark ML Lib Application

Perform a machine learning algorithm with the Twitter Streaming data to categorize each Tweet

1) Training datasets: Collect different categories of Tweets related to your project.(Categories can be based on Hashtags /Subjects etc.)
2) Test data: the upcoming twitter stream.

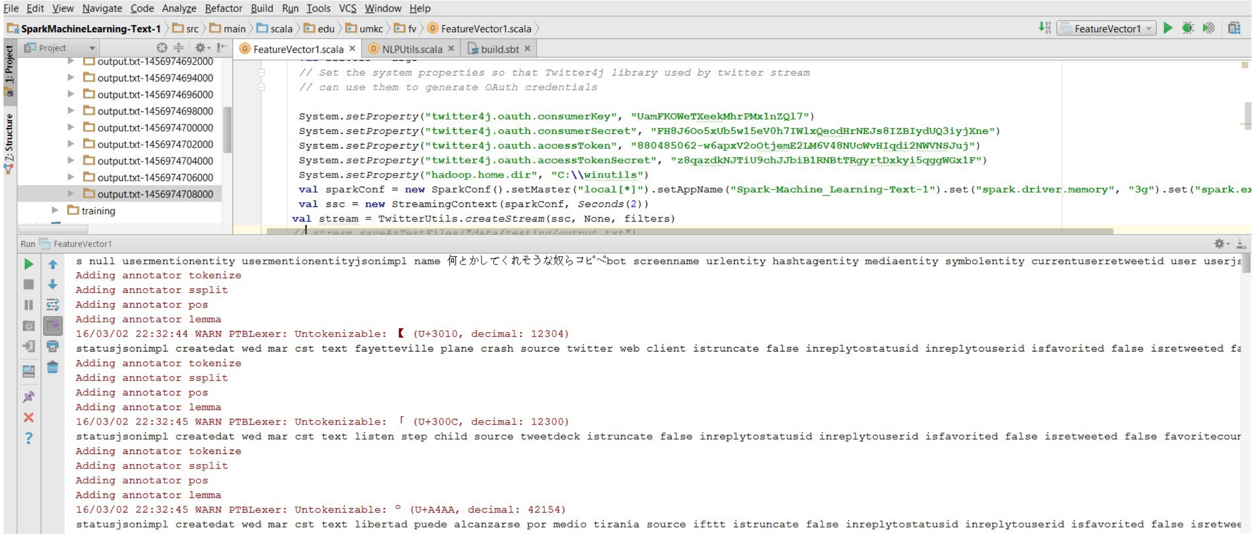
Description:

So the model used here is a naïve bayes model and I have collected the outputs based on the the below 3 hash tags which was used as a training set.

a) “health”
b) “android”
c) “jobs”

Screenshots:

Tokenizing and lemmentizing the training data:

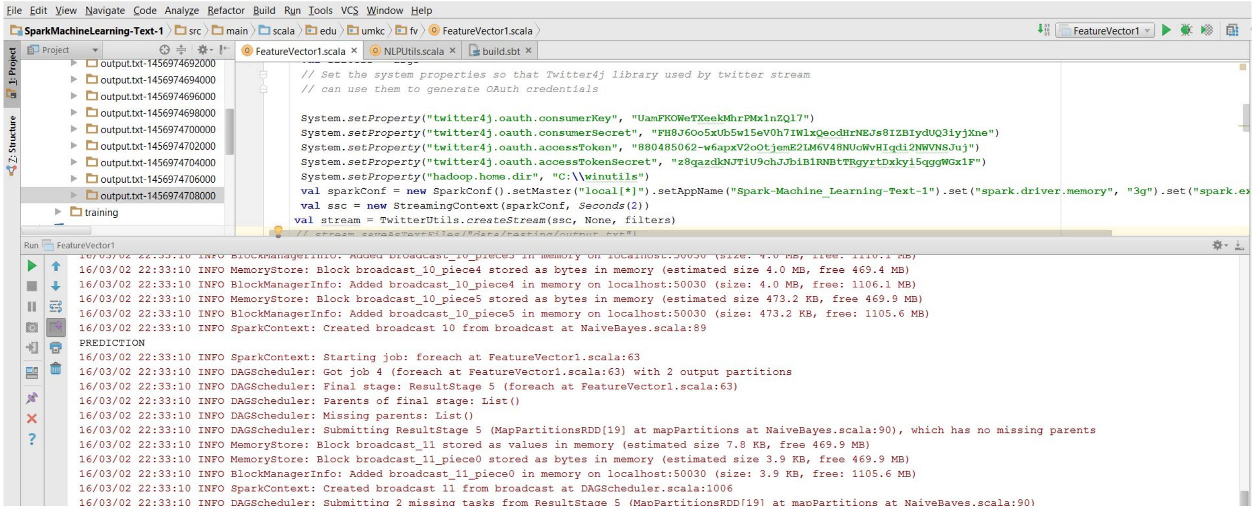


```
    // Set the system properties so that Twitter4j library used by twitter stream
    // can use them to generate OAuth credentials

    System.setProperty("twitter4j.oauth.consumerKey", "UamFKOWeTXeekMhrPMx1nZQl7")
    System.setProperty("twitter4j.oauth.consumerSecret", "FH8J6Oo5xUb5w15eV0h7IWlxQeodHrNEJs8IZBIydUQ3iyjXne")
    System.setProperty("twitter4j.oauth.accessToken", "880485062-w6apxV2oOtjemE2LM6V48NUcWvHIqdi2NWVNSJuj")
    System.setProperty("twitter4j.oauth.accessTokenSecret", "z8qazdkNJTiU9chJJbiB1RNBtTRgyrtDxkyi5qggWGx1F")
    System.setProperty("hadoop.home.dir", "C:\\winutils")
    val sparkConf = new SparkConf().setMaster("local[*]").setAppName("Spark-Machine_Learning-Text-1").set("spark.driver.memory", "3g").set("spark.ex
    val ssc = new StreamingContext(sparkConf, Seconds(2))
   val stream = TwitterUtils.createStream(ssc, None, filters)
   // stream.saveAsTextFiles("data/testing/output.txt")
```

```
s null usermentionentity usermentionentityjsonimpl name 何とかしてくれそうな奴らコピペbot screenname urlentity hashtagentity mediaentity symbolentity currentuserretweetid user userjs
Adding annotator tokenize
Adding annotator ssplit
Adding annotator pos
Adding annotator lemma
16/03/02 22:32:44 WARN PTBLexer: Untokenizable: 【 (U+3010, decimal: 12304)
statusjsonimpl createdat wed mar cst text fayetteville plane crash source twitter web client istruncate false inreplytostatusid inreplytouserid isfavorited false isretweeted fa
Adding annotator tokenize
Adding annotator ssplit
Adding annotator pos
Adding annotator lemma
16/03/02 22:32:45 WARN PTBLexer: Untokenizable: 「 (U+300C, decimal: 12300)
statusjsonimpl createdat wed mar cst text listen step child source tweetdeck istruncate false inreplytostatusid inreplytouserid isfavorited false isretweeted false favoritecour
Adding annotator tokenize
Adding annotator ssplit
Adding annotator pos
Adding annotator lemma
16/03/02 22:32:45 WARN PTBLexer: Untokenizable: ꒪ (U+A4AA, decimal: 42154)
statusjsonimpl createdat wed mar cst text libertad puede alcanzarse por medio tiranía source ifttt istruncate false inreplytostatusid inreplytouserid isfavorited false isretwee
```

Predicting:



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    System.setProperty("twitter4j.oauth.accessToken", "880485062-w6apxV2oOtjemE2LM6V48NUcWvHIqdi2NWVNSJuj")
    System.setProperty("twitter4j.oauth.accessTokenSecret", "z8qazdkNJTiU9chJJbiB1RNBtTRgyrtDxkyi5qggWGx1F")
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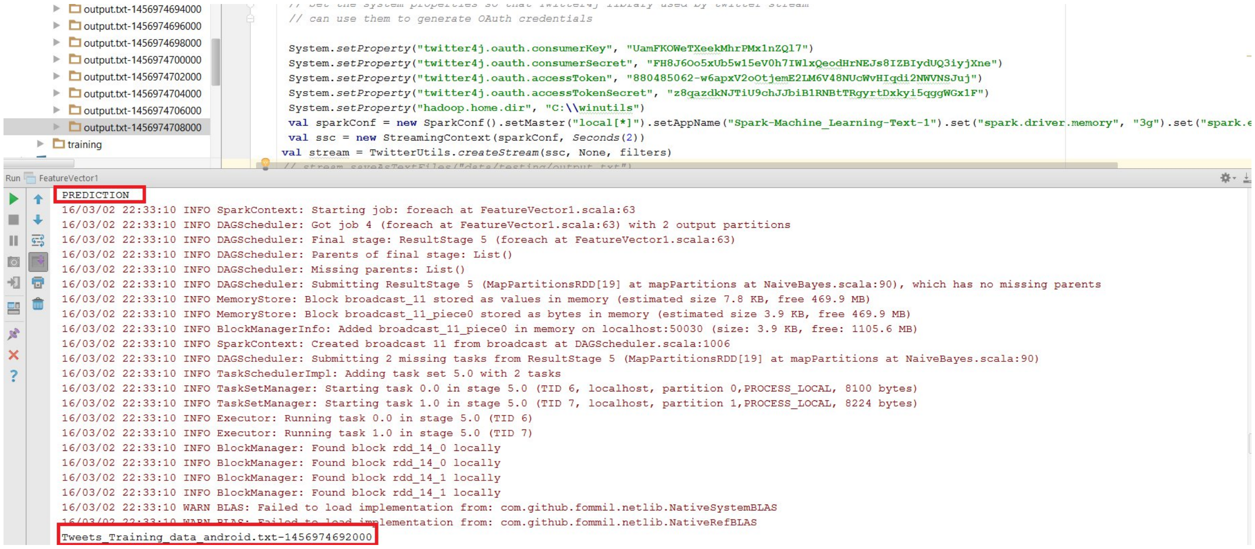
    val sparkConf = new SparkConf().setMaster("local[*]").setAppName("Spark-Machine_Learning-Text-1").set("spark.driver.memory", "3g").set("spark.ex
    val ssc = new StreamingContext(sparkConf, Seconds(2))
   val stream = TwitterUtils.createStream(ssc, None, filters)
   // stream.saveAsTextFiles("data/testing/output.txt")
```

```
16/03/02 22:33:10 INFO MemoryStore: Block broadcast_10_piece4 stored as bytes in memory (estimated size 4.0 MB, free 469.4 MB)
16/03/02 22:33:10 INFO BlockManagerInfo: Added broadcast_10_piece4 in memory on localhost:50030 (size: 4.0 MB, free: 1106.1 MB)
16/03/02 22:33:10 INFO MemoryStore: Block broadcast_10_piece5 stored as bytes in memory (estimated size 473.2 KB, free 469.9 MB)
16/03/02 22:33:10 INFO BlockManagerInfo: Added broadcast_10_piece5 in memory on localhost:50030 (size: 473.2 KB, free: 1105.6 MB)
16/03/02 22:33:10 INFO SparkContext: Created broadcast 10 from broadcast at NaiveBayes.scala:89
PREDICTION
16/03/02 22:33:10 INFO SparkContext: Starting job: foreach at FeatureVector1.scala:63
16/03/02 22:33:10 INFO DAGScheduler: Got job 4 (foreach at FeatureVector1.scala:63) with 2 output partitions
16/03/02 22:33:10 INFO DAGScheduler: Final stage: ResultStage 5 (foreach at FeatureVector1.scala:63)
16/03/02 22:33:10 INFO DAGScheduler: Parents of final stage: List()
16/03/02 22:33:10 INFO DAGScheduler: Missing parents: List()
16/03/02 22:33:10 INFO DAGScheduler: Submitting ResultStage 5 (MapPartitionsRDD[19] at mapPartitions at NaiveBayes.scala:90), which has no missing parents
16/03/02 22:33:10 INFO MemoryStore: Block broadcast_11 stored as values in memory (estimated size 7.8 KB, free 469.9 MB)
16/03/02 22:33:10 INFO MemoryStore: Block broadcast_11_piece0 stored as bytes in memory (estimated size 3.9 KB, free 469.9 MB)
16/03/02 22:33:10 INFO BlockManagerInfo: Added broadcast_11_piece0 in memory on localhost:50030 (size: 3.9 KB, free: 1105.6 MB)
16/03/02 22:33:10 INFO SparkContext: Created broadcast 11 from broadcast at DAGScheduler.scala:1006
16/03/02 22:33:10 INFO DAGScheduler: Submitting 2 missing tasks from ResultStage 5 (MapPartitionsRDD[19] at mapPartitions at NaiveBayes.scala:90)
```



```
   // can use them to generate OAuth credentials

   System.setProperty("twitter4j.oauth.consumerKey", "UamFKOWeTXeekMhrPMx1nZQl7")
   System.setProperty("twitter4j.oauth.consumerSecret", "FH8J6Oo5xUb5w15eV0h7IWlxQeodHrNEJs8IZBIydUQ3iyjXne")
   System.setProperty("twitter4j.oauth.accessToken", "880485062-w6apxV2oOtjemE2LM6V48NUcWvHIqdi2NWVNSJuj")
   System.setProperty("twitter4j.oauth.accessTokenSecret", "z8qazdkNJTiU9chJJbiB1RNBtTRgyrtDxkyi5qggWGx1F")
   System.setProperty("hadoop.home.dir", "C:\\winutils")
   val sparkConf = new SparkConf().setMaster("local[*]").setAppName("Spark-Machine_Learning-Text-1").set("spark.driver.memory", "3g").set("spark.e
   val ssc = new StreamingContext(sparkConf, Seconds(2))
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```

```
PREDICTION
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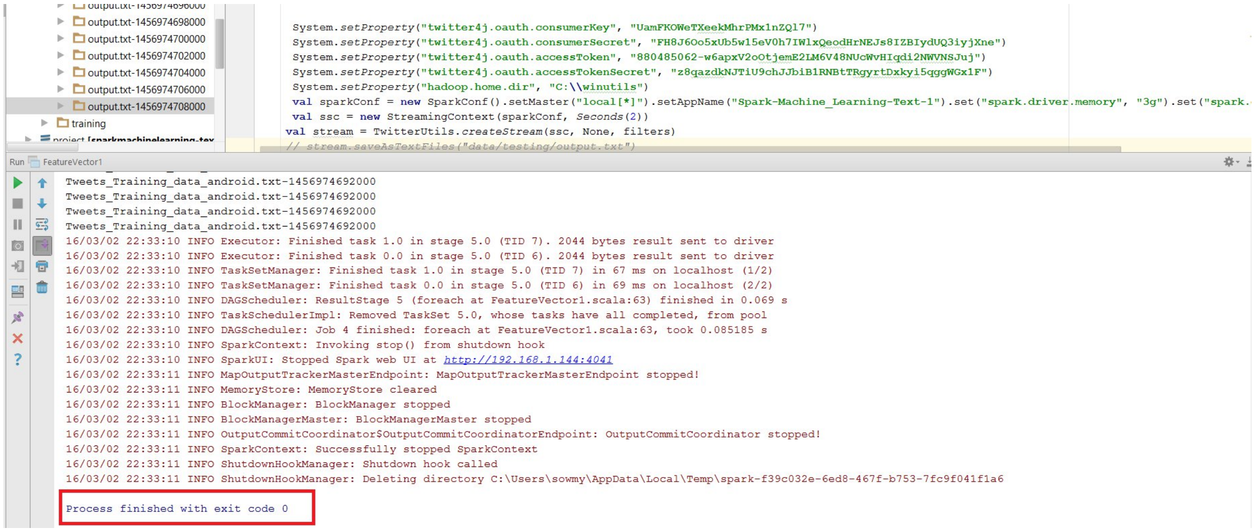
16/03/02 22:33:10 INFO DAGScheduler: Final stage: ResultStage 5 (foreach at FeatureVector1.scala:63)
16/03/02 22:33:10 INFO DAGScheduler: Parents of final stage: List()
16/03/02 22:33:10 INFO DAGScheduler: Missing parents: List()
16/03/02 22:33:10 INFO DAGScheduler: Submitting ResultStage 5 (MapPartitionsRDD[19] at mapPartitions at NaiveBayes.scala:90), which has no missing parents
16/03/02 22:33:10 INFO MemoryStore: Block broadcast_11 stored as values in memory (estimated size 7.8 KB, free 469.9 MB)
16/03/02 22:33:10 INFO MemoryStore: Block broadcast_11_piece0 stored as bytes in memory (estimated size 3.9 KB, free 469.9 MB)
16/03/02 22:33:10 INFO BlockManagerInfo: Added broadcast_11_piece0 in memory on localhost:50030 (size: 3.9 KB, free: 1105.6 MB)
16/03/02 22:33:10 INFO SparkContext: Created broadcast 11 from broadcast at DAGScheduler.scala:1006
16/03/02 22:33:10 INFO DAGScheduler: Submitting 2 missing tasks from ResultStage 5 (MapPartitionsRDD[19] at mapPartitions at NaiveBayes.scala:90)
16/03/02 22:33:10 INFO TaskSchedulerImpl: Adding task set 5.0 with 2 tasks
16/03/02 22:33:10 INFO TaskSetManager: Starting task 0.0 in stage 5.0 (TID 6, localhost, partition 0,PROCESS_LOCAL, 8100 bytes)
16/03/02 22:33:10 INFO TaskSetManager: Starting task 1.0 in stage 5.0 (TID 7, localhost, partition 1,PROCESS_LOCAL, 8224 bytes)
16/03/02 22:33:10 INFO Executor: Running task 0.0 in stage 5.0 (TID 6)
16/03/02 22:33:10 INFO Executor: Running task 1.0 in stage 5.0 (TID 7)
16/03/02 22:33:10 INFO BlockManager: Found block rdd_14_0 locally
16/03/02 22:33:10 INFO BlockManager: Found block rdd_14_0 locally
16/03/02 22:33:10 INFO BlockManager: Found block rdd_14_1 locally
16/03/02 22:33:10 INFO BlockManager: Found block rdd_14_1 locally
16/03/02 22:33:10 WARN BLAS: Failed to load implementation from: com.github.fommil.netlib.NativeSystemBLAS
16/03/02 22:33:10 WARN BLAS: Failed to load implementation from: com.github.fommil.netlib.NativeRefBLAS
Tweets_Training_data_android.txt-1456974692000
```

Execution Successful:



```
 System.setProperty("twitter4j.oauth.consumerKey", "UamFKOWeTXeekMhrPMx1nZQ17")
 System.setProperty("twitter4j.oauth.consumerSecret", "FH8J6Oo5xUb5w15eV0h7IWlxQeodHrNEJs8IZBIydUQ3iyjXne")
 System.setProperty("twitter4j.oauth.accessToken", "880485062-w6apxV2oOtjemE2LM6V48NUcWvHIqdi2NWVNSJuj")
 System.setProperty("twitter4j.oauth.accessTokenSecret", "z8qazdkNJTiU9chJJbiB1RNBtTRgyrtDxkyi5qggWGx1F")
 System.setProperty("hadoop.home.dir", "C:\\winutils")
 val sparkConf = new SparkConf().setMaster("local[*]").setAppName("Spark-Machine_Learning-Text-1").set("spark.driver.memory", "3g").set("spark.
 val ssc = new StreamingContext(sparkConf, Seconds(2))
val stream = TwitterUtils.createStream(ssc, None, filters)
// stream.saveAsTextFiles("data/testing/output.txt")
```

```
Tweets_Training_data_android.txt-1456974692000
Tweets_Training_data_android.txt-1456974692000
Tweets_Training_data_android.txt-1456974692000
Tweets_Training_data_android.txt-1456974692000
16/03/02 22:33:10 INFO Executor: Finished task 1.0 in stage 5.0 (TID 7). 2044 bytes result sent to driver
16/03/02 22:33:10 INFO Executor: Finished task 0.0 in stage 5.0 (TID 6). 2044 bytes result sent to driver
16/03/02 22:33:10 INFO TaskSetManager: Finished task 1.0 in stage 5.0 (TID 7) in 67 ms on localhost (1/2)
16/03/02 22:33:10 INFO TaskSetManager: Finished task 0.0 in stage 5.0 (TID 6) in 69 ms on localhost (2/2)
16/03/02 22:33:10 INFO DAGScheduler: ResultStage 5 (foreach at FeatureVector1.scala:63) finished in 0.069 s
16/03/02 22:33:10 INFO TaskSchedulerImpl: Removed TaskSet 5.0, whose tasks have all completed, from pool
16/03/02 22:33:10 INFO DAGScheduler: Job 4 finished: foreach at FeatureVector1.scala:63, took 0.085185 s
16/03/02 22:33:10 INFO SparkContext: Invoking stop() from shutdown hook
16/03/02 22:33:10 INFO SparkUI: Stopped Spark web UI at http://192.168.1.144:4041
16/03/02 22:33:11 INFO MapOutputTrackerMasterEndpoint: MapOutputTrackerMasterEndpoint stopped!
16/03/02 22:33:11 INFO MemoryStore: MemoryStore cleared
16/03/02 22:33:11 INFO BlockManager: BlockManager stopped
16/03/02 22:33:11 INFO BlockManagerMaster: BlockManagerMaster stopped
16/03/02 22:33:11 INFO OutputCommitCoordinator$OutputCommitCoordinatorEndpoint: OutputCommitCoordinator stopped!
16/03/02 22:33:11 INFO SparkContext: Successfully stopped SparkContext
16/03/02 22:33:11 INFO ShutdownHookManager: Shutdown hook called
16/03/02 22:33:11 INFO ShutdownHookManager: Deleting directory C:\Users\sowmy\AppData\Local\Temp\spark-f39c032e-6ed8-467f-b753-7fc9f041f1a6

Process finished with exit code 0
```