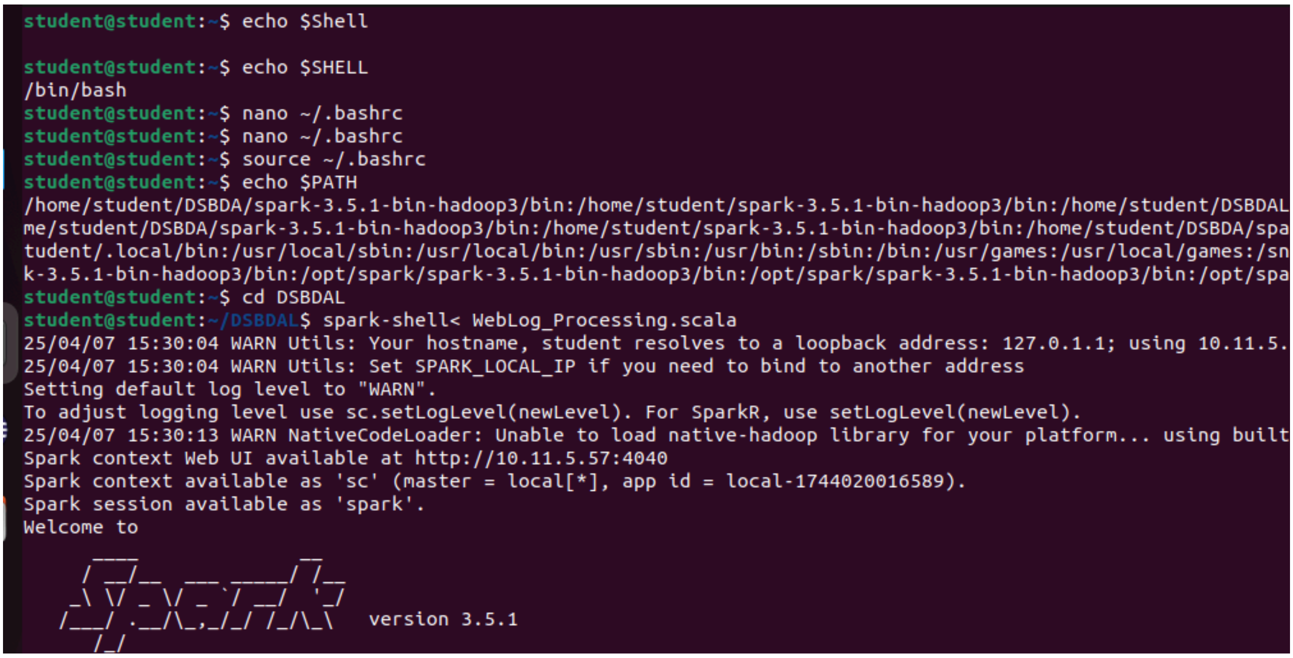
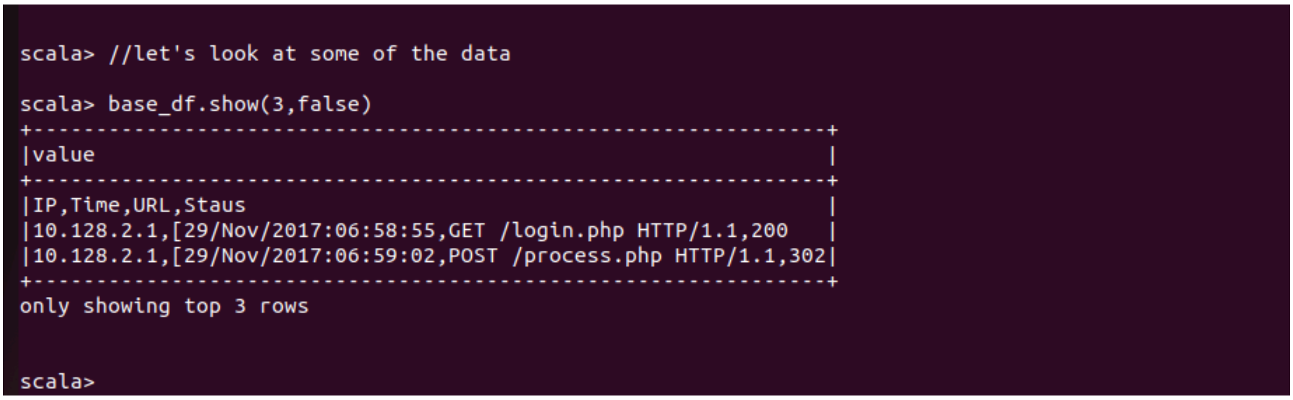
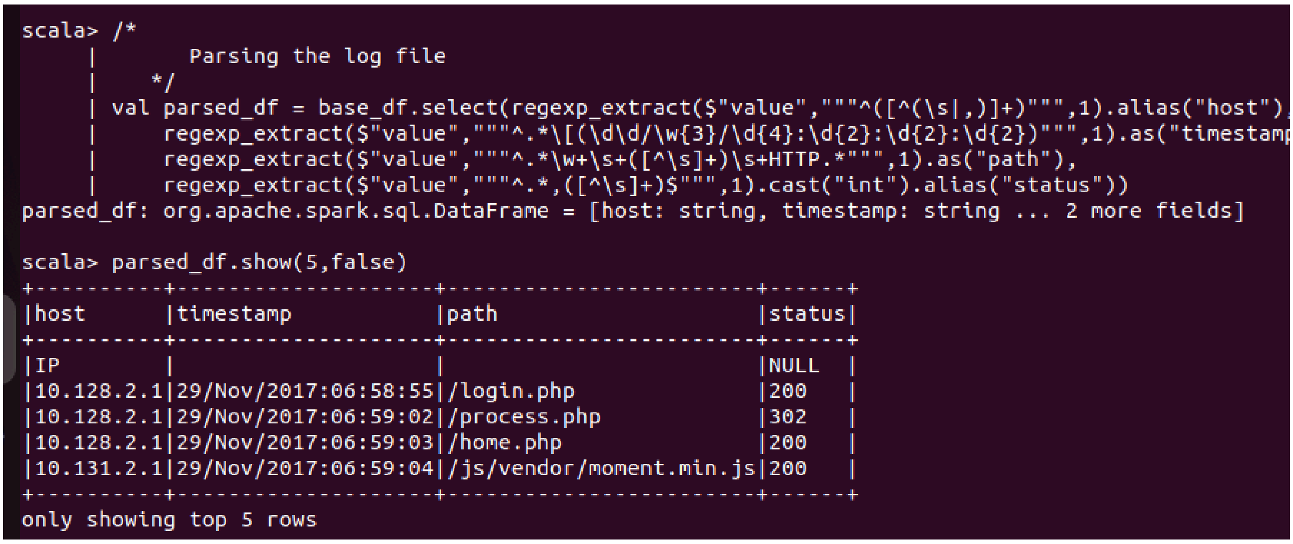
B2 :DISTRIBUTED APPLICATION USING MAPREDUCE WHICH PROCESSES A LOG FILE OF A SYSTEM



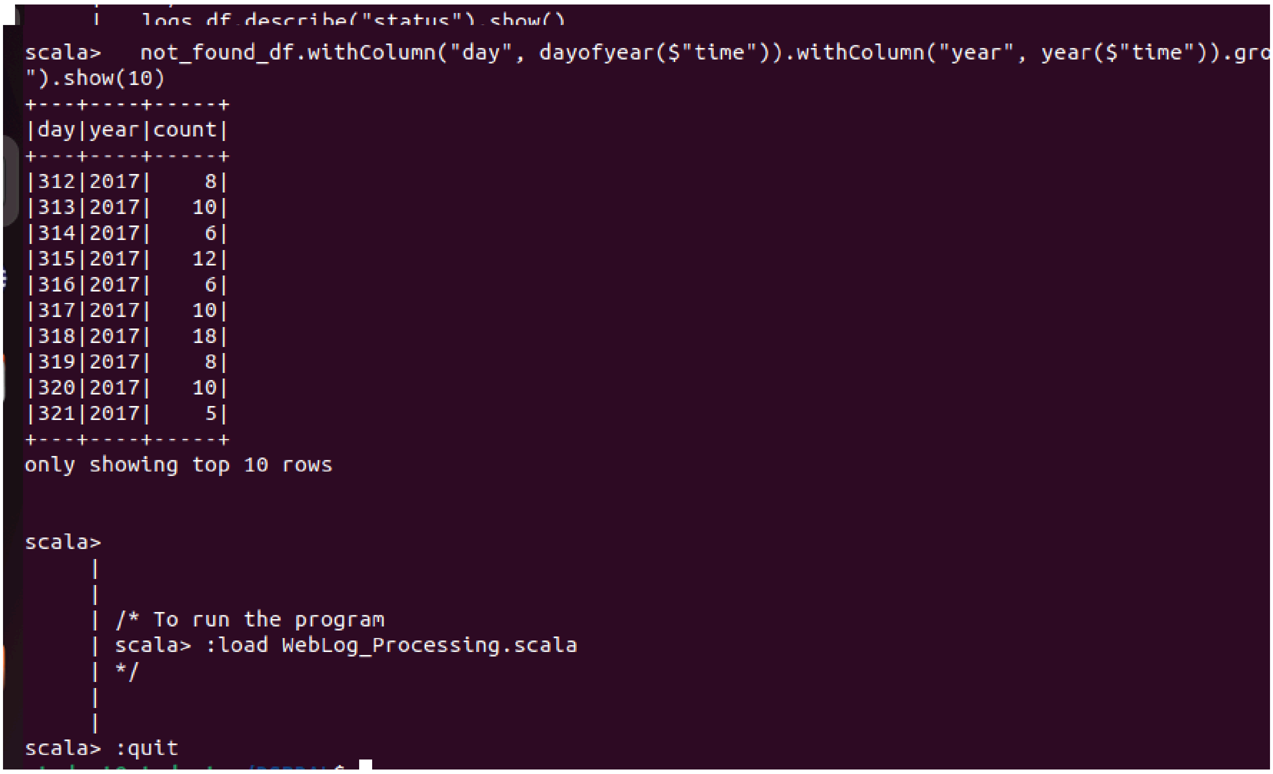
```
student@student:~$ echo $Shell

student@student:~$ echo $SHELL
/bin/bash
student@student:~$ nano ~/.bashrc
student@student:~$ nano ~/.bashrc
student@student:~$ source ~/.bashrc
student@student:~$ echo $PATH
/home/student/DSBDA/spark-3.5.1-bin-hadoop3/bin:/home/student/spark-3.5.1-bin-hadoop3/bin:/home/student/DSBDAL
me/student/DSBDA/spark-3.5.1-bin-hadoop3/bin:/home/student/spark-3.5.1-bin-hadoop3/bin:/home/student/DSBDA/spa
tudent/.local/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/sn
k-3.5.1-bin-hadoop3/bin:/opt/spark/spark-3.5.1-bin-hadoop3/bin:/opt/spark/spark-3.5.1-bin-hadoop3/bin:/opt/spa
student@student:~$ cd DSBDAL
student@student:~/DSBDAL$ spark-shell< WebLog_Processing.scala
25/04/07 15:30:04 WARN Utils: Your hostname, student resolves to a loopback address: 127.0.1.1; using 10.11.5.
25/04/07 15:30:04 WARN Utils: Set SPARK_LOCAL_IP if you need to bind to another address
Setting default log level to "WARN".
To adjust logging level use sc.setLogLevel(newLevel). For SparkR, use setLogLevel(newLevel).
25/04/07 15:30:13 WARN NativeCodeLoader: Unable to load native-hadoop library for your platform... using built
Spark context Web UI available at http://10.11.5.57:4040
Spark context available as 'sc' (master = local[*], app id = local-1744020016589).
Spark session available as 'spark'.
Welcome to
      ____              __
     / __/__  ___ _____/ /__
    _\ \/ _ \/ _ `/ __/  '_/
   /___/ .__/\_,_/_/ /_/\_\   version 3.5.1
      /_/
```



```
scala> //let's look at some of the data

scala> base_df.show(3,false)
+---------------------------------------------------------------+
|value                                                          |
+---------------------------------------------------------------+
|IP,Time,URL,Staus                                              |
|10.128.2.1,[29/Nov/2017:06:58:55,GET /login.php HTTP/1.1,200   |
|10.128.2.1,[29/Nov/2017:06:59:02,POST /process.php HTTP/1.1,302|
+---------------------------------------------------------------+
only showing top 3 rows


scala>
```



```
scala> /*
     |       Parsing the log file
     |    */
     | val parsed_df = base_df.select(regexp_extract($"value","""^([^(\s|,)]+)""",1).alias("host"),
     |     regexp_extract($"value","""^.*\[(\d\d/\w{3}/\d{4}:\d{2}:\d{2}:\d{2})""",1).as("timestamp
     |     regexp_extract($"value","""^.*\w+\s+([^\s]+)\s+HTTP.*""",1).as("path"),
     |     regexp_extract($"value","""^.*,([^\s]+)$""",1).cast("int").alias("status"))
parsed_df: org.apache.spark.sql.DataFrame = [host: string, timestamp: string ... 2 more fields]

scala> parsed_df.show(5,false)
+----------+--------------------+------------------------+------+
|host      |timestamp           |path                    |status|
+----------+--------------------+------------------------+------+
|IP        |                    |                        |NULL  |
|10.128.2.1|29/Nov/2017:06:58:55|/login.php              |200   |
|10.128.2.1|29/Nov/2017:06:59:02|/process.php            |302   |
|10.128.2.1|29/Nov/2017:06:59:03|/home.php               |200   |
|10.131.2.1|29/Nov/2017:06:59:04|/js/vendor/moment.min.js|200   |
+----------+--------------------+------------------------+------+
only showing top 5 rows
```



```
     |   logs_df.describe("status").show()

scala>   not_found_df.withColumn("day", dayofyear($"time")).withColumn("year", year($"time")).gro
").show(10)
+---+----+-----+
|day|year|count|
+---+----+-----+
|312|2017|    8|
|313|2017|   10|
|314|2017|    6|
|315|2017|   12|
|316|2017|    6|
|317|2017|   10|
|318|2017|   18|
|319|2017|    8|
|320|2017|   10|
|321|2017|    5|
+---+----+-----+
only showing top 10 rows


scala>
     |
     |
     | /* To run the program
     | scala> :load WebLog_Processing.scala
     | */
     |
     |
scala> :quit
```