2. Design a distributed application using MapReduce which processes a log file of a system. List out the

users who have logged for maximum period on the system. Use simple log file from the Internet and

process it using a pseudo distribution mode on Hadoop platform.

logdriver.java

**import** java.io.IOException;

**import** java.util.StringTokenizer;

**import** org.apache.hadoop.conf.Configuration;

**import** org.apache.hadoop.fs.Path;

**import** org.apache.hadoop.io.IntWritable;

**import** org.apache.hadoop.io.Text;

**import** org.apache.hadoop.mapreduce.Job;

**import** org.apache.hadoop.mapreduce.Mapper;

**import** org.apache.hadoop.mapreduce.Reducer;

**import** org.apache.hadoop.mapreduce.lib.input.FileInputFormat;

**import** org.apache.hadoop.mapreduce.lib.output.FileOutputFormat;

**public** **class** logdriver {

**public** **static** **void** main(String[] args)**throws** Exception {

Configuration conf = **new** Configuration();

Job job = Job.*getInstance*(conf, "logdriver");

job.setJarByClass(logdriver.**class**);

job.setMapperClass(logmapper.**class**);

job.setReducerClass(logreducer.**class**);

job.setOutputKeyClass(Text.**class**);

job.setOutputValueClass(IntWritable.**class**);

FileInputFormat.*addInputPath*(job, **new** Path(args[0]));

FileOutputFormat.*setOutputPath*(job, **new** Path(args[1]));

System.*exit*(job.waitForCompletion(**true**) ? 0 : 1);

}

}

logmapper.java

**import** java.io.IOException;

**import** java.util.StringTokenizer;

**import** org.apache.hadoop.conf.Configuration;

**import** org.apache.hadoop.fs.Path;

**import** org.apache.hadoop.io.IntWritable;

**import** org.apache.hadoop.io.LongWritable;

**import** org.apache.hadoop.io.Text;

**import** org.apache.hadoop.mapreduce.Job;

**import** org.apache.hadoop.mapreduce.Mapper;

**import** org.apache.hadoop.mapreduce.Reducer;

**import** org.apache.hadoop.mapreduce.Mapper.Context;

**import** org.apache.hadoop.mapreduce.lib.input.FileInputFormat;

**import** org.apache.hadoop.mapreduce.lib.output.FileOutputFormat;

**public** **class** logmapper **extends** Mapper<LongWritable, Text, Text, IntWritable> {

**private** **final** **static** IntWritable *one* = **new** IntWritable(1);

**public** **void** map(LongWritable key, Text value,Context context) **throws** IOException, InterruptedException {

//Text word = new Text();

String valueString = value.toString();

String[] SingleCountryData = valueString.split("-");

//word=new Text(SingleCountryData[0]);

context.write(**new** Text(SingleCountryData[0]), *one*);

// context.write(word, one);

}

}

logreducer.java

**import** java.io.IOException;

**import** org.apache.hadoop.fs.Path;

**import** org.apache.hadoop.io.IntWritable;

**import** org.apache.hadoop.io.Text;

**import** org.apache.hadoop.mapreduce.Job;

**import** org.apache.hadoop.mapreduce.Mapper;

**import** org.apache.hadoop.mapreduce.Reducer;

**import** org.apache.hadoop.mapreduce.lib.input.FileInputFormat;

**import** org.apache.hadoop.mapreduce.lib.output.FileOutputFormat;

**public** **class** logreducer **extends** Reducer<Text, IntWritable, Text, IntWritable> {

**public** **void** reduce(Text t\_key, Iterable<IntWritable> values, Context context) **throws** IOException, InterruptedException {

Text key = t\_key;

**int** frequencyForCountry = 0;

**for** (IntWritable val : values) {

// replace type of value with the actual type of our value

frequencyForCountry += val.get();

}

//output.collect(key, new IntWritable(frequencyForCountry));

context.write(key, **new** IntWritable(frequencyForCountry));

}

}

OUTPUT

root@rishabh-Inspiron-5559:/home/rishabh# hadoop fs -mkdir /log

root@rishabh-Inspiron-5559:/home/rishabh# hadoop fs -put logs.csv /log

root@rishabh-Inspiron-5559:/home/rishabh# hadoop jar log.jar /log/logs.csv /log/output

18/04/05 13:01:48 INFO client.RMProxy: Connecting to ResourceManager at /0.0.0.0:8032

18/04/05 13:01:49 WARN mapreduce.JobResourceUploader: Hadoop command-line option parsing not performed. Implement the Tool interface and execute your application with ToolRunner to remedy this.

18/04/05 13:01:49 INFO input.FileInputFormat: Total input paths to process : 1

18/04/05 13:01:49 INFO mapreduce.JobSubmitter: number of splits:1

18/04/05 13:01:49 INFO mapreduce.JobSubmitter: Submitting tokens for job: job\_1522912236350\_0002

18/04/05 13:01:50 INFO impl.YarnClientImpl: Submitted application application\_1522912236350\_0002

18/04/05 13:01:50 INFO mapreduce.Job: The url to track the job: http://rishabh-Inspiron-5559:8088/proxy/application\_1522912236350\_0002/

18/04/05 13:01:50 INFO mapreduce.Job: Running job: job\_1522912236350\_0002

18/04/05 13:01:54 INFO mapreduce.Job: Job job\_1522912236350\_0002 running in uber mode : false

18/04/05 13:01:54 INFO mapreduce.Job: map 0% reduce 0%

18/04/05 13:01:58 INFO mapreduce.Job: map 100% reduce 0%

18/04/05 13:02:02 INFO mapreduce.Job: map 100% reduce 100%

18/04/05 13:02:03 INFO mapreduce.Job: Job job\_1522912236350\_0002 completed successfully

18/04/05 13:02:03 INFO mapreduce.Job: Counters: 49

File System Counters

FILE: Number of bytes read=26793

FILE: Number of bytes written=282729

FILE: Number of read operations=0

FILE: Number of large read operations=0

FILE: Number of write operations=0

HDFS: Number of bytes read=158761

HDFS: Number of bytes written=3838

HDFS: Number of read operations=6

HDFS: Number of large read operations=0

HDFS: Number of write operations=2

Job Counters

Launched map tasks=1

Launched reduce tasks=1

Data-local map tasks=1

Total time spent by all maps in occupied slots (ms)=1729

Total time spent by all reduces in occupied slots (ms)=2093

Total time spent by all map tasks (ms)=1729

Total time spent by all reduce tasks (ms)=2093

Total vcore-seconds taken by all map tasks=1729

Total vcore-seconds taken by all reduce tasks=2093

Total megabyte-seconds taken by all map tasks=1770496

Total megabyte-seconds taken by all reduce tasks=2143232

Map-Reduce Framework

Map input records=1295

Map output records=1295

Map output bytes=24197

Map output materialized bytes=26793

Input split bytes=99

Combine input records=0

Combine output records=0

Reduce input groups=227

Reduce shuffle bytes=26793

Reduce input records=1295

Reduce output records=227

Spilled Records=2590

Shuffled Maps =1

Failed Shuffles=0

Merged Map outputs=1

GC time elapsed (ms)=95

CPU time spent (ms)=1320

Physical memory (bytes) snapshot=444657664

Virtual memory (bytes) snapshot=3930443776

Total committed heap usage (bytes)=318767104

Shuffle Errors

BAD\_ID=0

CONNECTION=0

IO\_ERROR=0

WRONG\_LENGTH=0

WRONG\_MAP=0

WRONG\_REDUCE=0

File Input Format Counters

Bytes Read=158662

File Output Format Counters

Bytes Written=3838

root@rishabh-Inspiron-5559:/home/rishabh# hadoop fs -ls /log/output

Found 2 items

-rw-r--r-- 1 root supergroup 0 2018-04-05 13:02 /log/output/\_SUCCESS

-rw-r--r-- 1 root supergroup 3838 2018-04-05 13:02 /log/output/part-r-00000

root@rishabh-Inspiron-5559:/home/rishabh# hadoop fs -cat /log/output/part-r-00000

10.1.1.236 7

10.1.181.142 14

10.1.232.31 5

10.10.55.142 14

10.102.101.66 1

10.103.184.104 1

10.103.190.81 53

10.103.63.29 1

10.104.73.51 1

10.105.160.183 1

10.108.91.151 1

10.109.21.76 1

10.11.131.40 1

10.111.71.20 8

10.112.227.184 6

10.114.74.30 1

10.115.118.78 1

10.117.224.230 1

10.117.76.22 12

10.118.19.97 1

10.118.250.30 7

10.119.117.132 23

10.119.33.245 1

10.119.74.120 1

10.12.113.198 2

10.12.219.30 1

10.120.165.113 1

10.120.207.127 4

10.123.124.47 1

10.123.35.235 1

10.124.148.99 1

10.124.155.234 1

10.126.161.13 7

10.127.162.239 1

10.128.11.75 10

10.13.42.232 1

10.130.195.163 8

10.130.70.80 1

10.131.163.73 1

10.131.209.116 5

10.132.19.125 2

10.133.222.184 12

10.134.110.196 13

10.134.242.87 1

10.136.84.60 5

10.14.2.86 8

10.14.4.151 2

10.140.139.116 1

10.140.141.1 9

10.140.67.116 1

10.141.221.57 5

10.142.203.173 7

10.143.126.177 32

10.144.147.8 1

10.15.208.56 1

10.15.23.44 13

10.150.212.239 14

10.150.227.16 1

10.150.24.40 13

10.152.195.138 8

10.153.23.63 2

10.153.239.5 25

10.155.95.124 9

10.156.152.9 1

10.157.176.158 1

10.164.130.155 1

10.164.49.105 8

10.164.95.122 10

10.165.106.173 14

10.167.1.145 19

10.169.158.88 1

10.170.178.53 1

10.171.104.4 1

10.172.169.53 18

10.174.246.84 3

10.175.149.65 1

10.175.204.125 15

10.177.216.164 6

10.179.107.170 2

10.181.38.207 13

10.181.87.221 1

10.185.152.140 1

10.186.56.126 16

10.186.56.183 1

10.187.129.140 6

10.187.177.220 1

10.187.212.83 1

10.187.28.68 1

10.19.226.186 2

10.190.174.142 10

10.190.41.42 5

10.191.172.11 1

10.193.116.91 1

10.194.174.4 7

10.198.138.192 1

10.199.103.248 2

10.199.189.15 1

10.2.202.135 1

10.200.184.212 1

10.200.237.222 1

10.200.9.128 2

10.203.194.139 10

10.205.72.238 2

10.206.108.96 2

10.206.175.236 1

10.206.73.206 7

10.207.190.45 17

10.208.38.46 1

10.208.49.216 4

10.209.18.39 9

10.209.54.187 3

10.211.47.159 10

10.212.122.173 1

10.213.181.38 7

10.214.35.48 1

10.215.222.114 1

10.216.113.172 48

10.216.134.214 1

10.216.227.195 16

10.217.151.145 10

10.217.32.16 1

10.218.16.176 8

10.22.108.103 4

10.220.112.1 34

10.221.40.89 5

10.221.62.23 13

10.222.246.34 1

10.223.157.186 11

10.225.137.152 1

10.225.234.46 1

10.226.130.133 1

10.229.60.23 1

10.230.191.135 6

10.231.55.231 1

10.234.15.156 1

10.236.231.63 1

10.238.230.235 1

10.239.100.52 1

10.239.52.68 4

10.24.150.4 5

10.24.67.131 13

10.240.144.183 15

10.240.170.50 1

10.241.107.75 1

10.241.9.187 1

10.243.51.109 5

10.244.166.195 5

10.245.208.15 20

10.246.151.162 3

10.247.111.104 9

10.247.175.65 1

10.247.229.13 1

10.248.24.219 1

10.248.36.117 3

10.249.130.132 3

10.25.132.238 2

10.25.44.247 6

10.250.166.232 1

10.27.134.23 1

10.30.164.32 1

10.30.47.170 8

10.31.225.14 7

10.32.138.48 11

10.32.247.175 4

10.32.55.216 12

10.33.181.9 8

10.34.233.107 1

10.36.200.176 1

10.39.45.70 2

10.39.94.109 4

10.4.59.153 1

10.4.79.47 15

10.41.170.233 9

10.41.40.17 1

10.42.208.60 1

10.43.81.13 1

10.46.190.95 10

10.48.81.158 5

10.5.132.217 1

10.5.148.29 1

10.50.226.223 9

10.50.41.216 3

10.52.161.126 1

10.53.58.58 1

10.54.242.54 10

10.54.49.229 1

10.56.48.40 16

10.59.42.194 11

10.6.238.124 6

10.61.147.24 1

10.61.161.218 1

10.61.23.77 8

10.61.232.147 3

10.62.78.165 2

10.63.233.249 7

10.64.224.191 13

10.66.208.82 2

10.69.20.85 26

10.70.105.238 1

10.70.238.46 6

10.72.137.86 6

10.72.208.27 1

10.73.134.9 4

10.73.238.200 1

10.73.60.200 1

10.73.64.91 1

10.74.218.123 1

10.75.116.199 1

10.76.143.30 1

10.76.68.178 16

10.78.95.24 8

10.80.10.131 10

10.80.215.116 17

10.81.134.180 1

10.82.30.199 63

10.82.64.235 1

10.84.236.242 1

10.87.209.46 1

10.87.88.214 1

10.88.204.177 1

10.89.178.62 1

10.89.244.42 1

10.94.196.42 1

10.95.136.211 4

10.95.232.88 1

10.98.156.141 1

10.99.228.224 1