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HADOOP DEMONSTRATE THE MAP REDUCE PROGRAMMING MODEL BY COUNTING THE NUMBER OF WORDS IN A FILE

AIM:

To demonstrate the MAP REDUCE programming model for counting the number of words in a file.

PROCEDURE

Step 1 - Open Terminal

\$ su hduser

Password:

Step 2 - Start dfs and mapreduce services

\$ cd /usr/local/hadoop/hadoop-2.7.2/sbin

\$ start-dfs.sh

\$ start-yarn.sh

\$ jps

Step 3 - Check Hadoop through web UI

// Go to browser type http://localhost:8088 – All Applications Hadoop Cluster

// Go to browser type http://localhost:50070 – Hadoop Namenode

Step 4 – Open New Terminal

\$ cd Desktop/

\$ mkdir inputdata

\$ cd inputdata/

\$ echo "Hai, Hello, How are you? How is your health?" >> hello.txt

\$ cat>> hello.txt

Step 5 – Go back to old Terminal

\$ hadoop fs -copyFromLocal /home/hduser/Desktop/inputdata/hello.txt

/folder/hduser // Check in hello.txt in Namenode using Web UI

Step 6 – Download and open eclipse by creating workspace

Create a new java project.

Step 7 – Add jar to the project

You need to remove dependencies by adding jar files in the hadoop source folder. Now Click on Project tab and go to Properties. Under Libraries tab, click Add External JARs and select all the jars in the folder (click on 1st jar, and Press Shift and Click on last jat to select all jars in between and click ok)

/usr/local/hadoop/hadoop-2.7.2/share/hadoop/commonand

/usr/local/hadoop/hadoop-2.7.2/share/hadoop/mapreduce folders.

Step -8 – WordCount Program

Create 3 java files named

- WordCount.java
- WordCountMapper.java
- WordCountReducer.java

WordCount.java

import org.apache.hadoop.conf.Configured;

import org.apache.hadoop.fs.Path;

import org.apache.hadoop.io.IntWritable;

import org.apache.hadoop.mapred.FileInputFormat;

import org.apache.hadoop.mapred.FileOutputFormat;

import org.apache.hadoop.mapred.JobClient; import

org.apache.hadoop.mapred.JobConf;

import org.apache.hadoop.util.Tool;

import org.apache.hadoop.util.ToolRunner;

import org.apache.hadoop.io.Text;

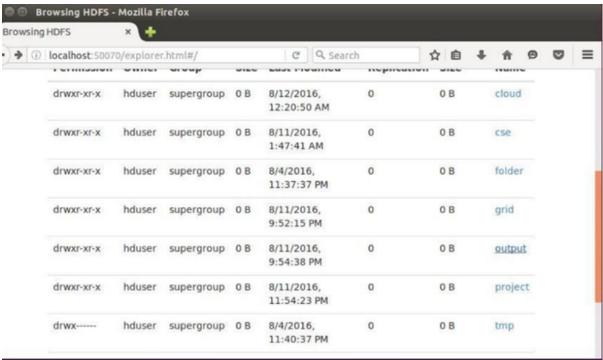
```
public class WordCount extends Configured implements Tool {
@Override
public int run(String[] arg0) throws Exception {
// TODO Auto-generated method
stub if(arg0.length<2)
System.out.println("check the command line arguments");
JobConf conf=new JobConf(WordCount.class);
FileInputFormat.setInputPaths(conf, new Path(arg0[0]));
FileOutputFormat.setOutputPath(conf, new
Path(arg0[1])); conf.setMapperClass(WordMapper.class);
conf.setReducerClass(WordReducer.class);
conf.setOutputKeyClass(Text.class);
conf.setOutputValueClass(IntWritable.class);
conf.setOutputKeyClass(Text.class);
conf.setOutputValueClass(IntWritable.class);
JobClient.runJob(conf);
return 0;
public static void main(String args[]) throws Exception
int exitcode=ToolRunner.run(new WordCount(),
args); System.exit(exitcode);
}
```

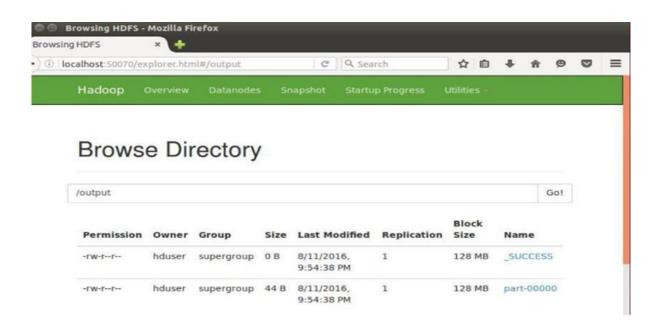
```
WordCountMapper.java
import java.io.IOException;
import org.apache.hadoop.io.IntWritable;
import org.apache.hadoop.io.LongWritable;
import org.apache.hadoop.mapred.MapReduceBase;
import org.apache.hadoop.mapred.OutputCollector;
import org.apache.hadoop.mapred.Reporter;
import org.apache.hadoop.io.Text;
import org.apache.hadoop.mapred.Mapper;
public class WordCountMapper extends MapReduceBase implements
Mapper<LongWritable,Text,Text,IntWritable>
@Override
public void map(LongWritable arg0, Text arg1, OutputCollector<Text,
IntWritable> arg2, Reporter arg3)
throws IOException {
// TODO Auto-generated method stub
String s=arg1.toString();
for(String word:s.split(" "))
arg2.collect(new Text(word),new IntWritable(1));
}
WordCountReducer.java
import java.io.IOException;
```

```
import java.util.Iterator;
import org.apache.hadoop.io.IntWritable;
import org.apache.hadoop.mapred.JobConf;
import org.apache.hadoop.mapred.OutputCollector;
import org.apache.hadoop.mapred.Reducer;
import org.apache.hadoop.mapred.Reporter;
import org.apache.hadoop.io.Text;
public class WordCountReducer implements
Reducer<Text,IntWritable,Text,IntWritable> { @Override
public void configure(JobConf arg0) {
// TODO Auto-generated method stub
}
@Override
public void close() throws IOException {
// TODO Auto-generated method stub
}
@Override
public void reduce(Text arg0, Iterator<IntWritable> arg1,
OutputCollector<Text, IntWritable> arg2, Reporter arg3)
throws IOException {
// TODO Auto-generated method
stub int count=0;
while(arg1.hasNext())
IntWritable i=arg1.next();
count+=i.get();
```

```
}
arg2.collect(arg0,new IntWritable(count));
}
Step 9 - Create JAR file
Now Click on the Run tab and click Run-Configurations. Click on New Configuration
button on the left top side and Apply after filling the following properties.
Step 10 - Export JAR file
Now click on File tab and select Export. under Java, select Runnable Jar.
In Launch Config – select the config fie you created in Step 9 (WordCountConfig).
➤ Select an export destination (let's say desktop.)
➤ Under Library handling, select Extract Required Libraries into generated JAR and click
Finish. ➤ Right-Click the jar file, go to Properties and under Permissions tab, Check
Allow executing file
as a program. and give Read and Write access to all the users
Step 11 – Go back to old Terminal for Execution of WordCount Program $\$hadoop jar
wordcount.jar/usr/local/hadoop/input/usr/local/hadoop/output
Step 12 – To view results in old Terminal
$hdfs dfs -cat /usr/local/hadoop/output/part-r-00000
Step 13 - To Remove folders created using hdfs
$ hdfs dfs -rm -R /usr/local/hadoop/output
```

OUTPUT





RESULT:
Thus the map reduce programming model for counting the number of words in a file has been
executed successfully.
executed successfully.