

Lab 1

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Aim: Word Count Using Map Reduce

Objectives:

1. To run Java command.
2. Copy Data file from Local to HDFS.
3. Generate a Word count query.
4. Display Word count of the file

Code & Output:

WCDriver

```
//Driver:

// Importing libraries
import java.io.IOException;

import org.apache.hadoop.conf.Configured;

import org.apache.hadoop.fs.Path;

import org.apache.hadoop.io.IntWritable;

import org.apache.hadoop.io.Text;

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;

public class WCDriver extends Configured implements Tool {

    public int run(String args[]) throws IOException
    {
        if (args.length < 2)
        {
            System.out.println("Please give valid inputs");

            return -1;
        }
    }
}
```

```

        JobConf conf = new JobConf(WCDriver.class);

        FileInputFormat.setInputPaths(conf, new Path(args[0]));

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

        conf.setMapperClass(WCMapper.class);

        conf.setReducerClass(WCReducer.class);

        conf.setMapOutputKeyClass(Text.class);

        conf.setMapOutputValueClass(IntWritable.class);

        conf.setOutputKeyClass(Text.class);

        conf.setOutputValueClass(IntWritable.class);

        JobClient.runJob(conf);

        return 0;
    }

    // Main Method

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

        int exitCode = ToolRunner.run(new WCDriver(), args);

        System.out.println(exitCode);

    }
}

```

WCMapper

Mapper:

```

// Importing libraries

import java.io.IOException;

import org.apache.hadoop.io.IntWritable;

import org.apache.hadoop.io.LongWritable;

import org.apache.hadoop.io.Text;

import org.apache.hadoop.mapred.MapReduceBase;

import org.apache.hadoop.mapred.Mapper;

import org.apache.hadoop.mapred.OutputCollector;

import org.apache.hadoop.mapred.Reporter;

public class WCMapper extends MapReduceBase implements Mapper<LongWritable,
        Text, Text, IntWritable> {

```

```

// Map function

public void map(LongWritable key, Text value, OutputCollector<Text,
    IntWritable> output, Reporter rep) throws IOException
{
    String line = value.toString();

    // Splitting the line on spaces
    for (String word : line.split(" "))
    {
        if (word.length() > 0)
        {
            output.collect(new Text(word), new IntWritable(1));
        }
    }
}

```

WCReducer

//Reducer:

```

// Importing libraries

import java.io.IOException;

import java.util.Iterator;

import org.apache.hadoop.io.IntWritable;

import org.apache.hadoop.io.Text;

import org.apache.hadoop.mapred.MapReduceBase;

import org.apache.hadoop.mapred.OutputCollector;

import org.apache.hadoop.mapred.Reducer;

import org.apache.hadoop.mapred.Reporter;

public class WCReducer extends MapReduceBase implements Reducer<Text,
    IntWritable, Text, IntWritable> {

    // Reduce function

    public void reduce(Text key, Iterator<IntWritable> value,
        OutputCollector<Text, IntWritable> output,
        Reporter rep) throws IOException

```

```

    {

        int count = 0;

        // Counting the frequency of each words

        while (value.hasNext())

        {

            IntWritable i = value.next();

            count += i.get();

        }

        output.collect(key, new IntWritable(count));

    }
}

```

```

hive> CREATE TABLE FILES1 (line STRING);
OK
Time taken: 0.099 seconds
hive> LOAD DATA INPATH 'random2.txt' OVERWRITE INTO TABLE FILES1;
Loading data to table default.files1
chgrp: changing ownership of 'hdfs://quickstart.cloudera:8020/user/hive/warehouse/files1/random2.txt': User does not belong to supergroup
Table default.files1 stats: [numFiles=1, numRows=0, totalSize=152, rawDataSize=0]
OK
Time taken: 0.507 seconds

```

```

cloudera@quickstart:~
File Edit View Search Terminal Help
[cloudera@quickstart workspace]$ hadoop jar WordCount.jar WCDriver random4.txt W
COutput
21/02/27 10:18:30 INFO client.RMProxy: Connecting to ResourceManager at /0.0.0.0
:8032
21/02/27 10:18:31 INFO client.RMProxy: Connecting to ResourceManager at /0.0.0.0
:8032
21/02/27 10:18:32 WARN mapreduce.JobResourceUploader: Hadoop command-line option
parsing not performed. Implement the Tool interface and execute your applicatio
n with ToolRunner to remedy this.
21/02/27 10:18:32 INFO mapred.FileInputFormat: Total input paths to process : 1
21/02/27 10:18:32 WARN hdfs.DFSClient: Caught exception
java.lang.InterruptedException
    at java.lang.Object.wait(Native Method)
    at java.lang.Thread.join(Thread.java:1281)
    at java.lang.Thread.join(Thread.java:1355)
    at org.apache.hadoop.hdfs.DFSOutputStream$DataStreamer.closeResponder(DF
SOutputStream.java:967)
    at org.apache.hadoop.hdfs.DFSOutputStream$DataStreamer.endBlock(DFSOutpu
tStream.java:705)
    at org.apache.hadoop.hdfs.DFSOutputStream$DataStreamer.run(DFSOutputStre
am.java:894)
21/02/27 10:18:32 WARN hdfs.DFSClient: Caught exception
java.lang.InterruptedException
    at java.lang.Object.wait(Native Method)
    at java.lang.Thread.join(Thread.java:1281)
    at java.lang.Thread.join(Thread.java:1355)
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```

```

cloudera@quickstart:~/workspace
File Edit View Search Terminal Help
This      2
a          2
hive      1
is        2
spark     1
tutorial  1
tutorial. 1
[cloudera@quickstart workspace]$
[cloudera@quickstart workspace]$

```

