Kaustubh Shrikant Kabra

ERP Number :- 38

TE Comp 1

Java WordCount.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 WordCount {

  public static class TokenizerMapper
       extends Mapper<Object, Text, Text, IntWritable>{

    private final static IntWritable one = new IntWritable(1);
    private Text word = new Text();

    public void map(Object key, Text value, Context context
                    ) throws IOException, InterruptedException {
      StringTokenizer itr = new StringTokenizer(value.toString());
      while (itr.hasMoreTokens()) {
        word.set(itr.nextToken());
        context.write(word, one);
      }
    }
  }

  public static class IntSumReducer
       extends Reducer<Text,IntWritable,Text,IntWritable> {
    private IntWritable result = new IntWritable();

    public void reduce(Text key, Iterable<IntWritable> values,
                       Context context
                       ) throws IOException, InterruptedException {
      int sum = 0;
      for (IntWritable val : values) {
        sum += val.get();
      }
      result.set(sum);
      context.write(key, result);
    }
  }
  public static void main(String[] args) throws Exception {
    Configuration conf = new Configuration();
    Job job = Job.getInstance(conf, "word count");
    job.setJarByClass(WordCount.class);
    job.setMapperClass(TokenizerMapper.class);
    job.setCombinerClass(IntSumReducer.class);
    job.setReducerClass(IntSumReducer.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);
  }
}
```

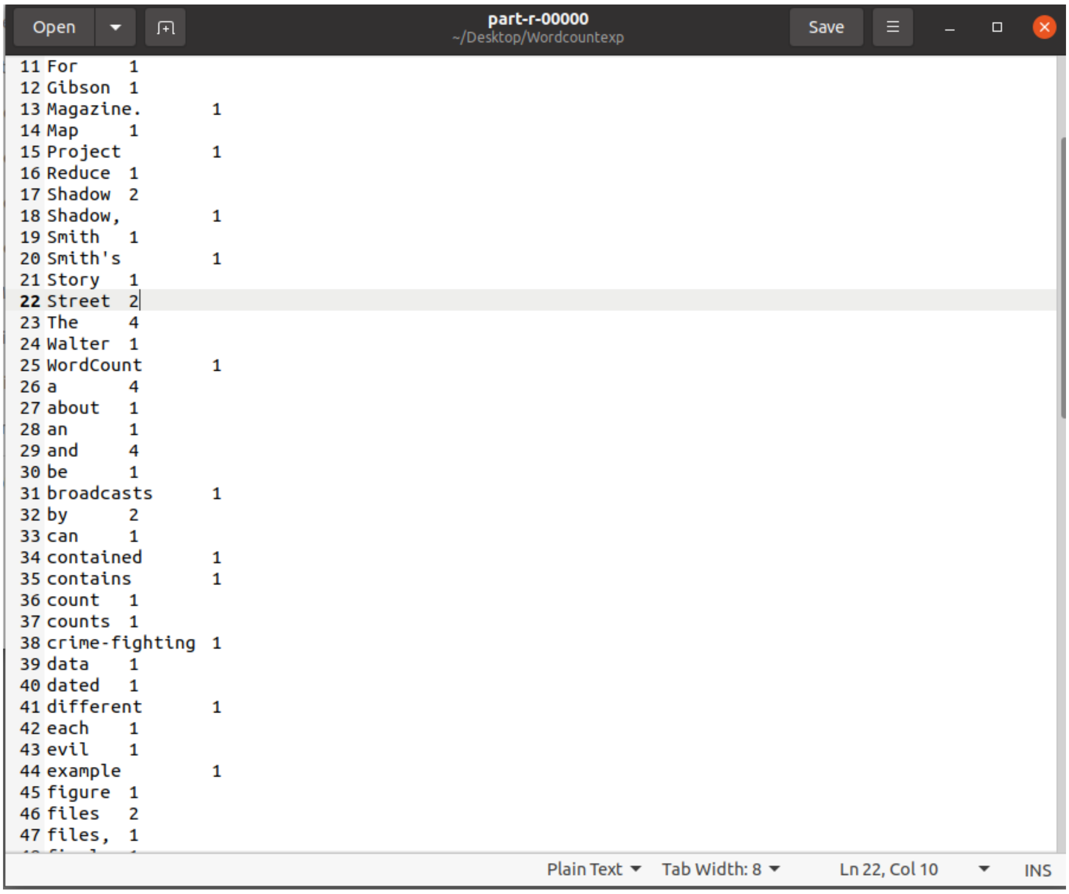
Input: input.txt

WordCount example reads text files and counts how often words occur. The input is text files, and the output is text files, each line of which contains a word and the count of how often it occurred, separated by a tab.

Map Reduce Project that works on weather data and process it, the final outcome of the project can be processed further to find similarities on different weather stations

The Shadow was an American pulp magazine published by Street & Smith from 1931 to 1949. Each issue contained a novel about The Shadow, a mysterious crime-fighting figure who spoke the line "Who knows what evil lurks in the hearts of men? The Shadow knows" in radio broadcasts of stories from Street & Smith's Detective Story Magazine. For the first issue, dated April 1931, Walter Gibson wrote the lead novel,

Output: output file (part-r-00000)

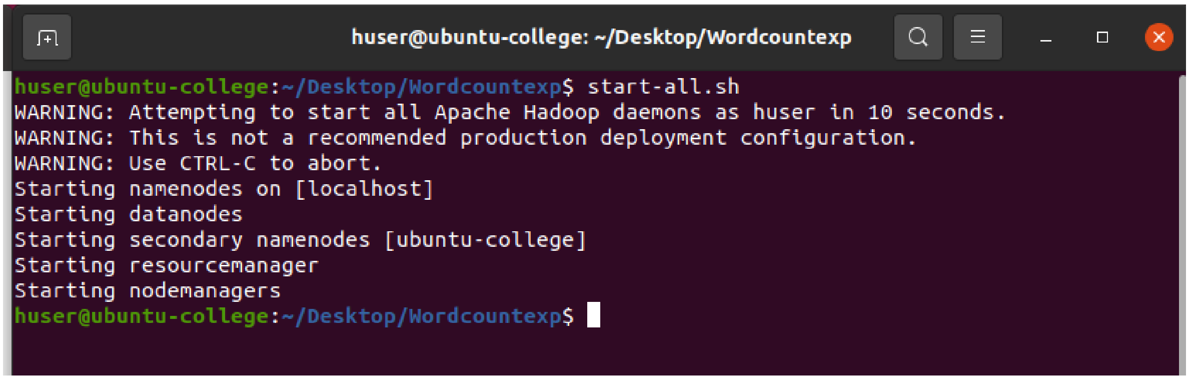


```
For	1
Gibson	1
Magazine.	1
Map	1
Project	1
Reduce	1
Shadow	2
Shadow,	1
Smith	1
Smith's	1
Story	1
Street	2
The	4
Walter	1
WordCount	1
a	4
about	1
an	1
and	4
be	1
broadcasts	1
by	2
can	1
contained	1
contains	1
count	1
counts	1
crime-fighting	1
data	1
dated	1
different	1
each	1
evil	1
example	1
figure	1
files	2
files,	1
```

Wordcount Steps to run:

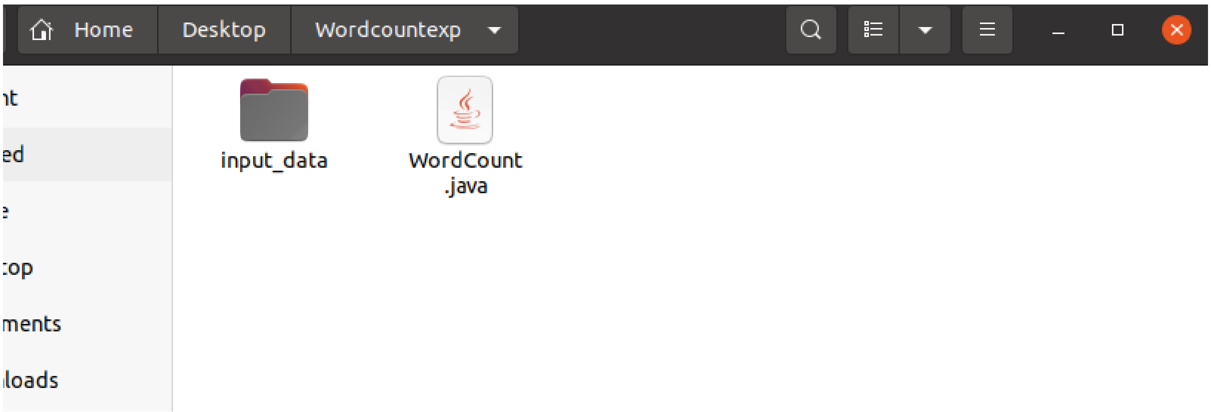
1. Starting Hadoop

   start-all.sh

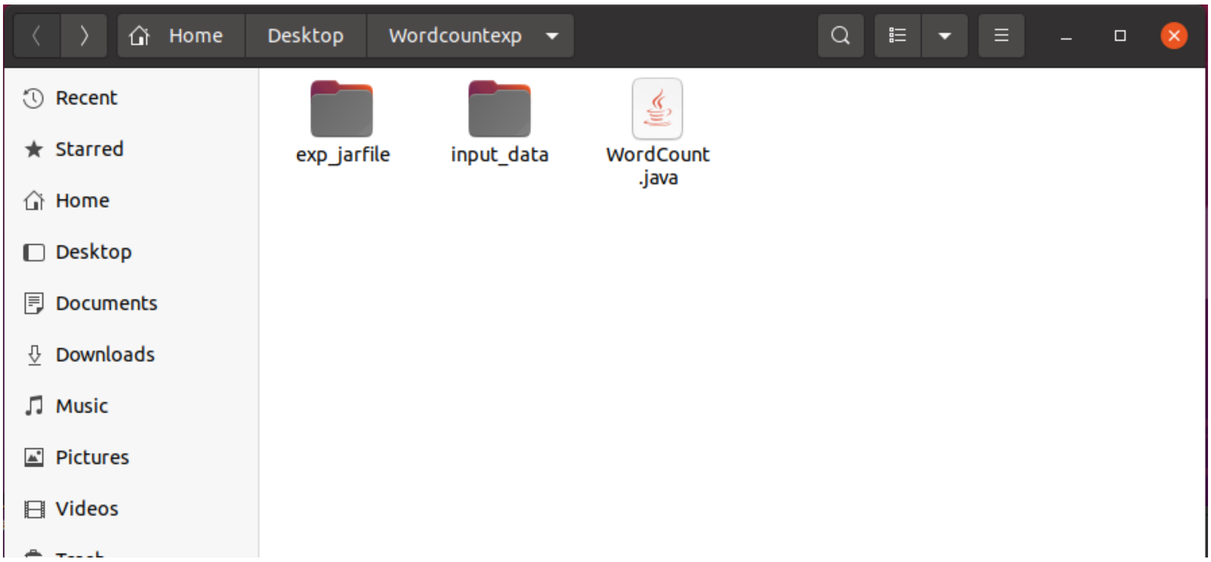


```
huser@ubuntu-college:~/Desktop/Wordcountexp$ start-all.sh
WARNING: Attempting to start all Apache Hadoop daemons as huser in 10 seconds.
WARNING: This is not a recommended production deployment configuration.
WARNING: Use CTRL-C to abort.
Starting namenodes on [localhost]
Starting datanodes
Starting secondary namenodes [ubuntu-college]
Starting resourcemanager
Starting nodemanagers
huser@ubuntu-college:~/Desktop/Wordcountexp$
```

2. Made A folder “wordcountexp” and write WordCount.java code.
3. Create new folder for input data.



4. Add input text file in the input data folder.
5. Create new folder to hold java class files.



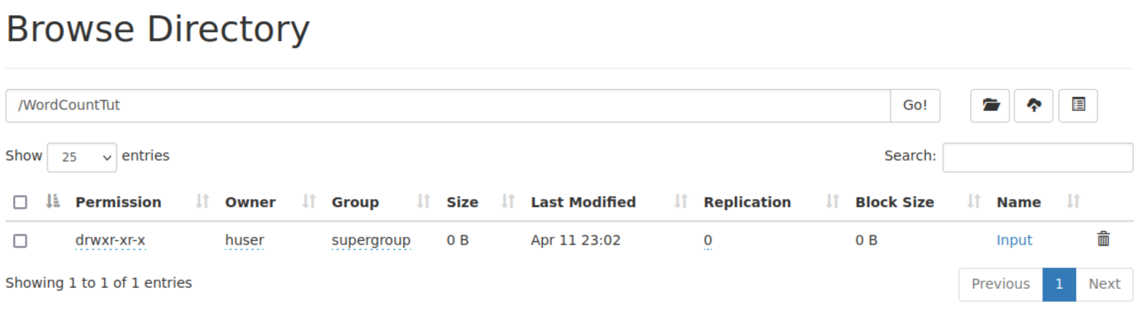
6. Set HADOOP_CLASSPATH environment variable.

```
export HADOOP_CLASSPATH=$(hadoop classpath)
```

7. Create a directory on HDFS

```
hdfs dfs -mkdir /WordCountTut
hdfs dfs -mkdir /WordCountTut/Input
```

8. Checking on localhost:9870



Browse Directory

/WordCountTut Go!

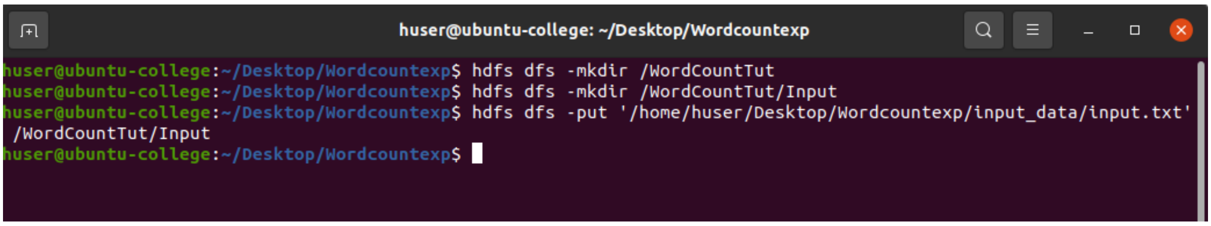
Show 25 entries Search:

☐	Permission	Owner	Group	Size	Last Modified	Replication	Block Size	Name	
☐	drwxr-xr-x	huser	supergroup	0 B	Apr 11 23:02	0	0 B	Input	🗑

Showing 1 to 1 of 1 entries

9. Upload the input file (device) to that directory.

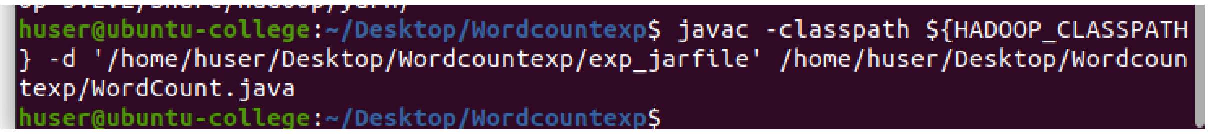
hdfs dfs -put <Input file > <hdfs input dir>



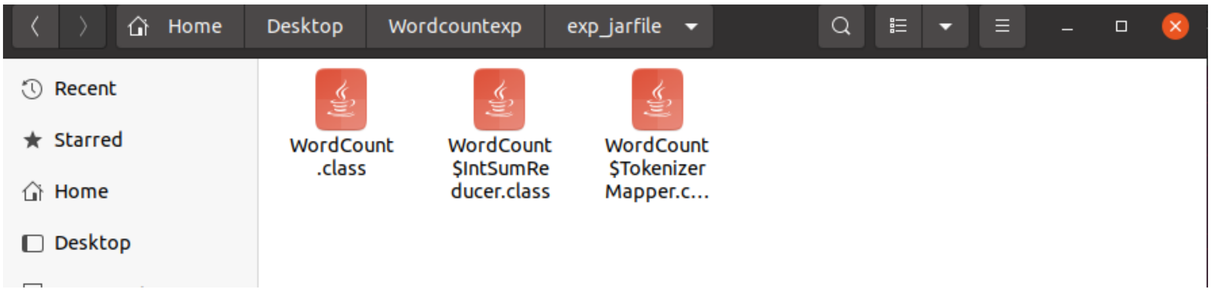
```
huser@ubuntu-college:~/Desktop/Wordcountexp$ hdfs dfs -mkdir /WordCountTut
huser@ubuntu-college:~/Desktop/Wordcountexp$ hdfs dfs -mkdir /WordCountTut/Input
huser@ubuntu-college:~/Desktop/Wordcountexp$ hdfs dfs -put '/home/huser/Desktop/Wordcountexp/input_data/input.txt'
 /WordCountTut/Input
huser@ubuntu-college:~/Desktop/Wordcountexp$ 
```

10. Compile the java code:

javac -classpath $(HADOOP_CLASSPATH) -d <Classes_folder> <java file>

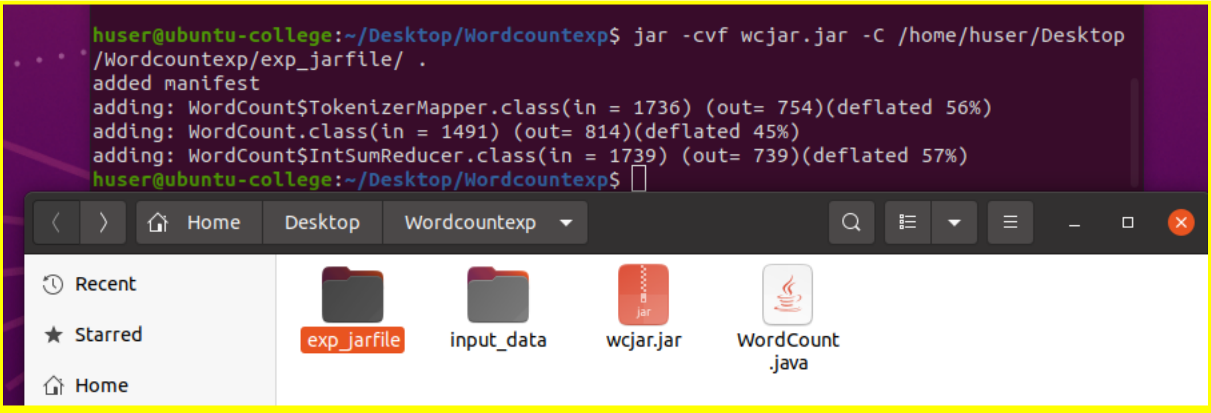


```
huser@ubuntu-college:~/Desktop/Wordcountexp$ javac -classpath ${HADOOP_CLASSPATH
} -d '/home/huser/Desktop/Wordcountexp/exp_jarfile' /home/huser/Desktop/Wordcoun
texp/WordCount.java
huser@ubuntu-college:~/Desktop/Wordcountexp$
```



11. Creation .jar file of classes:

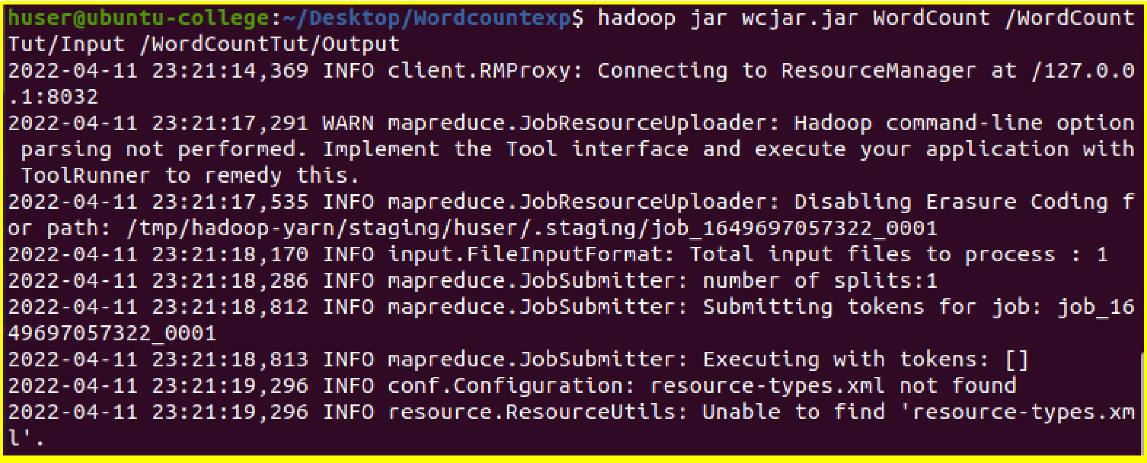
jar -cvf <jar file name > -C <classes folder> .



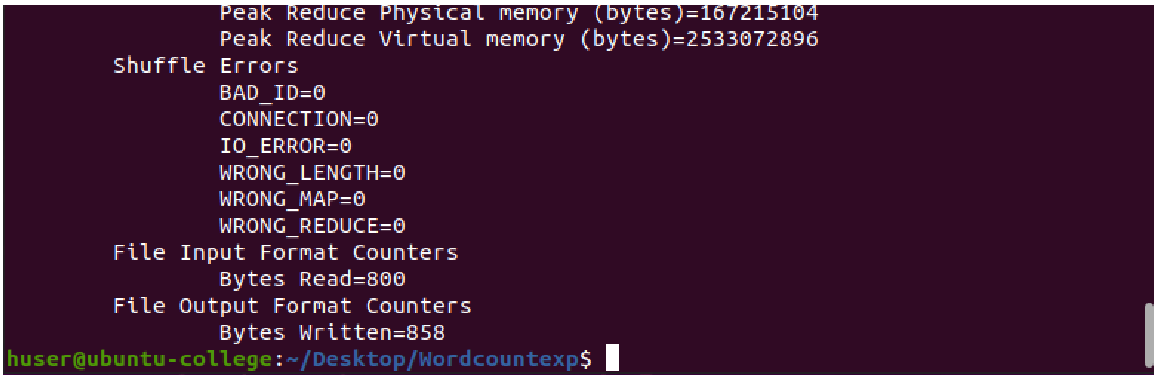
```
huser@ubuntu-college:~/Desktop/Wordcountexp$ jar -cvf wcjar.jar -C /home/huser/Desktop
/Wordcountexp/exp_jarfile/ .
added manifest
adding: WordCount$TokenizerMapper.class(in = 1736) (out= 754)(deflated 56%)
adding: WordCount.class(in = 1491) (out= 814)(deflated 45%)
adding: WordCount$IntSumReducer.class(in = 1739) (out= 739)(deflated 57%)
huser@ubuntu-college:~/Desktop/Wordcountexp$ 
```

12.Running the jar file on Hadoop

hadoop jar <jar file> <class name> <hdfs input dir> <hdfs output dir>

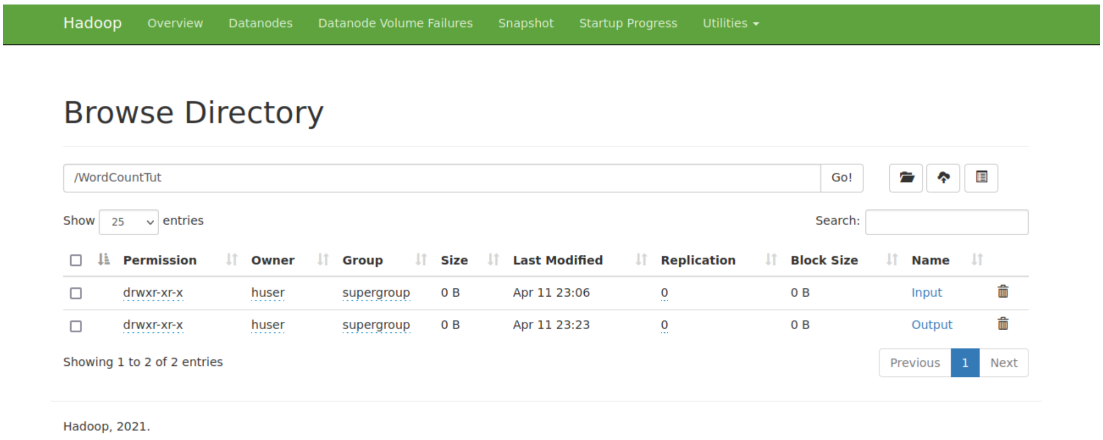


```
huser@ubuntu-college:~/Desktop/Wordcountexp$ hadoop jar wcjar.jar WordCount /WordCount
Tut/Input /WordCountTut/Output
2022-04-11 23:21:14,369 INFO client.RMProxy: Connecting to ResourceManager at /127.0.0
.1:8032
2022-04-11 23:21:17,291 WARN mapreduce.JobResourceUploader: Hadoop command-line option
 parsing not performed. Implement the Tool interface and execute your application with
 ToolRunner to remedy this.
2022-04-11 23:21:17,535 INFO mapreduce.JobResourceUploader: Disabling Erasure Coding f
or path: /tmp/hadoop-yarn/staging/huser/.staging/job_1649697057322_0001
2022-04-11 23:21:18,170 INFO input.FileInputFormat: Total input files to process : 1
2022-04-11 23:21:18,286 INFO mapreduce.JobSubmitter: number of splits:1
2022-04-11 23:21:18,812 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_16
49697057322_0001
2022-04-11 23:21:18,813 INFO mapreduce.JobSubmitter: Executing with tokens: []
2022-04-11 23:21:19,296 INFO conf.Configuration: resource-types.xml not found
2022-04-11 23:21:19,296 INFO resource.ResourceUtils: Unable to find 'resource-types.xm
l'.
```



```
                Peak Reduce Physical memory (bytes)=167215104
                Peak Reduce Virtual memory (bytes)=2533072896
        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=800
        File Output Format Counters
                Bytes Written=858
huser@ubuntu-college:~/Desktop/Wordcountexp$ 
```

13.Check output on localhost:9870 /localhost:50070



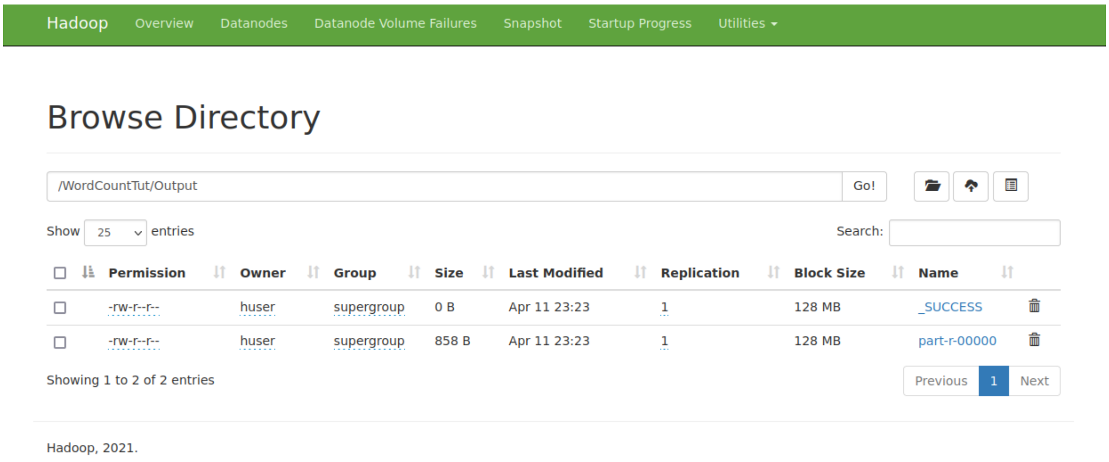
Browse Directory

/WordCountTut

☐	Permission	Owner	Group	Size	Last Modified	Replication	Block Size	Name
☐	drwxr-xr-x	huser	supergroup	0 B	Apr 11 23:06	0	0 B	Input
☐	drwxr-xr-x	huser	supergroup	0 B	Apr 11 23:23	0	0 B	Output

Showing 1 to 2 of 2 entries

Hadoop, 2021.



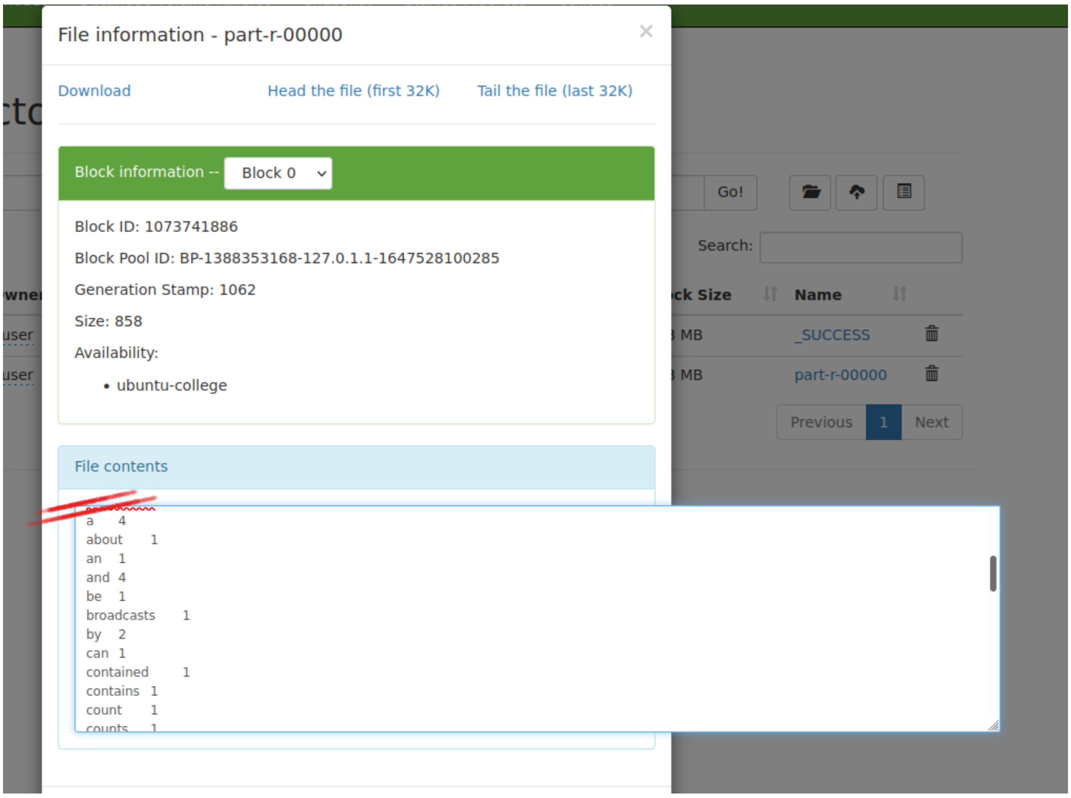
Browse Directory

/WordCountTut/Output

☐	Permission	Owner	Group	Size	Last Modified	Replication	Block Size	Name
☐	-rw-r--r--	huser	supergroup	0 B	Apr 11 23:23	1	128 MB	_SUCCESS
☐	-rw-r--r--	huser	supergroup	858 B	Apr 11 23:23	1	128 MB	part-r-00000

Showing 1 to 2 of 2 entries

Hadoop, 2021.



File information - part-r-00000

Block information -- Block 0

Block ID: 1073741886

Block Pool ID: BP-1388353168-127.0.1.1-1647528100285

Generation Stamp: 1062

Size: 858

Availability:

- ubuntu-college

File contents

```
a	4
about	1
an	1
and	4
be	1
broadcasts	1
by	2
can	1
contained	1
contains	1
count	1
counts	1
```