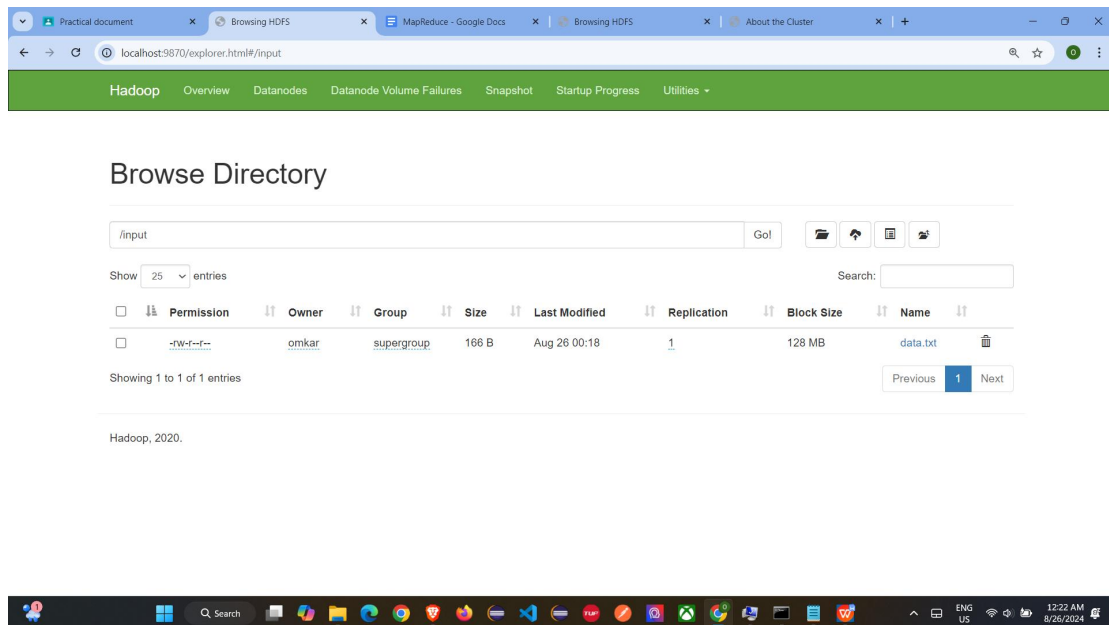
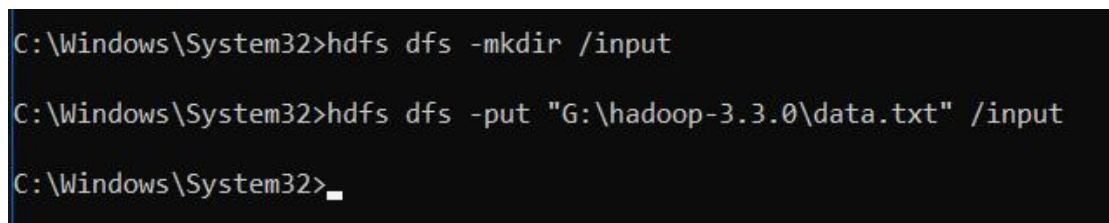
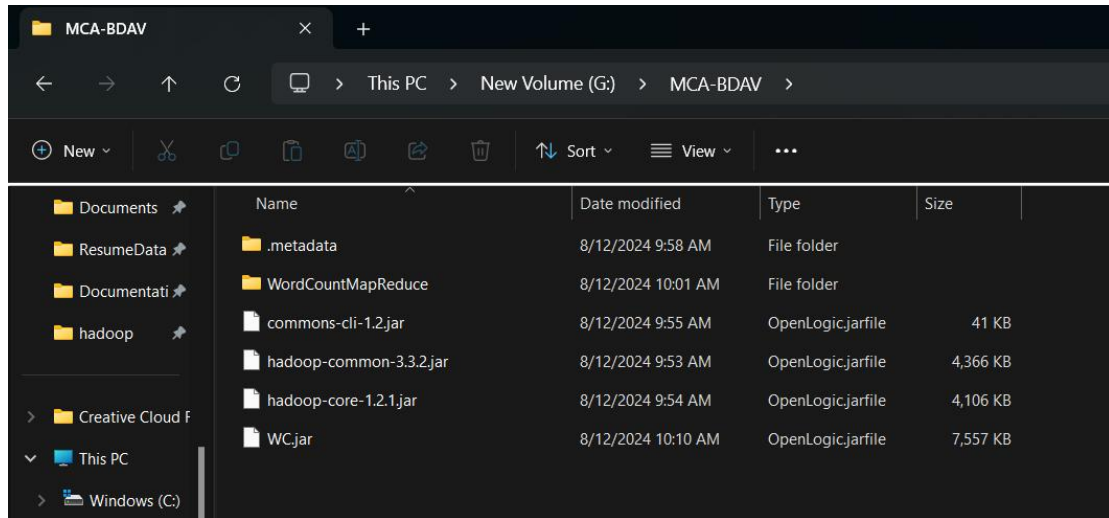


## Practical No. 02

### Map Reduce using Hadoop

#### Location :



**WordCountMapReduce.java**

```

package trial;

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 WordCountDemo {

    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(WordCountDemo.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);
}
```

## WC.jar

```
Administrator: Command Prompt
JAR does not exist or is not a normal file: G:\hadoop-3.3.0\share\hadoop\mapreduce\hadoop-mapreduce-examples-3.3.0-jar

C:\Windows\System32>hadoop jar "G:\hadoop-3.3.0\share\hadoop\mapreduce\hadoop-mapreduce-examples-3.3.0-jar" wordcount /input /output
2024-08-26 00:32:42,106 INFO client.DefaultHadoopFailoverProxyProvider: Connecting to ResourceManager at /0.0.0.0:8032
2024-08-26 00:32:42,603 INFO mapreduce.JobResourceUploader: Disabling Erasure Coding for path: /tmp/hadoop-yarn/staging/omkar/.staging/job_1724610565019_0001
2024-08-26 00:32:42,652 INFO mapreduce.JobSubmitter: number of splits:1
2024-08-26 00:32:42,976 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_1724610565019_0001
2024-08-26 00:32:42,977 INFO mapreduce.JobSubmitter: Executing with tokens: []
2024-08-26 00:32:43,009 INFO conf.Configuration: resource-types.xml not found
2024-08-26 00:32:43,099 INFO resource.ResourceUtils: Unable to find 'resource-types.xml'.
2024-08-26 00:32:43,458 INFO impl.YarnClientImpl: Submitted application application_1724610565019_0001
2024-08-26 00:32:43,490 INFO mapreduce.Job: The url to track the job: http://PS1:8088/proxy/application_1724610565019_0001/
2024-08-26 00:32:43,491 INFO mapreduce.Job: Running Job: job_1724610565019_0001
2024-08-26 00:32:48,620 INFO mapreduce.Job: Job job_1724610565019_0001 running in uber mode : false
2024-08-26 00:32:48,624 INFO mapreduce.Job: map 0% reduce 0%
2024-08-26 00:32:48,693 INFO mapreduce.Job: Job job_1724610565019_0001 failed with state FAILED due to: Application application_1724610565019_0001_000002 exited with exitcode: 9009
Failing this attempt.Diagnostics: [2024-08-26 00:32:48.011]Exception from container-launch.
Container id: container_1724610565019_0001_02_000001
Exit code: 9009
Exception message: 'are' is not recognized as an internal or external command,
operable program or batch file.
The system cannot find the path specified.
'rl' is not recognized as an internal or external command,
operable program or batch file.
'oop' is not recognized as an internal or external command,
operable program or batch file.
Shell output:
  1 file(s) moved.
  "Setting up env variables"
C:\tmp\hadoop-omkar\rm-local-dir\usercache\omkar\appcache\application_1724610565019_0001\container_1724610565019_0001_02_000001\are\hadoop\mapreduce\lib/*;HAD
C:\tmp\hadoop-omkar\rm-local-dir\usercache\omkar\appcache\application_1724610565019_0001\container_1724610565019_0001_02_000001\oop_HOME\hadoop-3.3.0\share\hadoop\yar
C:\tmp\hadoop-omkar\rm-local-dir\usercache\omkar\appcache\application_1724610565019_0001\container_1724610565019_0001_02_000001\n/*;G:\hadoop-3.3.0\share\had
C:\tmp\hadoop-omkar\rm-local-dir\usercache\omkar\appcache\application_1724610565019_0001\container_1724610565019_0001_02_000001\oop\hdfs/*;job.jar/*;job.jar\lib/*;/tmp/hadoop-omkar\rm-local-dir\usercache\omkar/a
ppcache\application_1724610565019_0001\container_1724610565019_0001_02_000001/*

[2024-08-26 00:32:48.013]Container exited with a non-zero exit code 9009.
[2024-08-26 00:32:48.014]Container exited with a non-zero exit code 9009.
For more detailed output, check the application tracking page: http://PS1:8088/cluster/app/application_1724610565019_0001 Then click on links to logs of each attempt.
Failing the application.
2024-08-26 00:32:48,731 INFO mapreduce.Job: Counters: 0

C:\Windows\System32>
```

```
*****
SHUTDOWN_MSG: Shutting down DataNode at MSI/172.16.4.54
*****

C:\Windows\System32>jps
12400 ResourceManager
26144 NameNode
23012 DataNode
12492 Jps
24860 NodeManager

C:\Windows\System32>hdfs dfs -mkdir /input

C:\Windows\System32>hdfs dfs -put "G:\hadoop-3.3.0\data.txt" /input

C:\Windows\System32>hadoop jar "G:\hadoop-3.3.0\share\hadoop\mapreduce\hadoop-mapreduce-examples-3.3.0-jar" wordcount /input /output
2024-08-12 09:41:09,572 INFO impl.MatrixConfia: Loaded properties from hadoop-matrix.properties
2024-08-12 09:41:09,109 INFO mapred.Task: Final Counters for attempt_local1102331969_0001_m_000000_0: Counters: 24

File System Counters
  FILE: Number of bytes read=281429
  FILE: Number of bytes written=898848
  FILE: Number of read operations=0
  FILE: Number of large read operations=0
  FILE: Number of write operations=0
  HDFS: Number of bytes read=26
  HDFS: Number of bytes written=0
  HDFS: Number of read operations=5
  HDFS: Number of large read operations=0
  HDFS: Number of write operations=1
  HDFS: Number of bytes read erasure-coded=0

Map-Reduce Framework
  Map input records=1
  Map output records=1
  Map output bytes=31
  Map output materialized bytes=39
  Input split bytes=101
  Combine input records=1
  Combine output records=1
  Spilled Records=1
  Failed Shuffles=0
  Merged Map outputs=0
  GC time elapsed (ms)=9
  Total committed heap usage (bytes)=333971456

File Input Format Counters
  Bytes Read=26
2024-08-12 09:41:09,110 INFO mapred.LocalJobRunner: Finishing task: attempt_local1102331969_0001_m_000000_0
```

```
C:\Windows\System32>hdfs dfs -cat /output/part-r-00000
Yyuyhcnhdhchtvfhfhfhfhfhrh 1
```

```

    Reduce output records=0
    Spilled Records=0
    Shuffled Maps =0
    Failed Shuffles=0
    Merged Map outputs=0
    GC time elapsed (ms)=0
    Total committed heap usage (bytes)=228065280
Shuffle Errors
    BAD_ID=0
    CONNECTION=0
    IO_ERROR=0
    WRONG_LENGTH=0
    WRONG_MAP=0
    WRONG_REDUCE=0
File Output Format Counters
    Bytes Written=0
2024-08-12 10:15:49,020 INFO mapred.LocalJobRunner: Finishing task: attempt_local1309731849_0001_r_000000_0
2024-08-12 10:15:49,021 INFO mapred.LocalJobRunner: reduce task executor complete.
2024-08-12 10:15:49,623 INFO mapreduce.Job: Job job_local1309731849_0001 running in uber mode : false
2024-08-12 10:15:49,627 INFO mapreduce.Job: map 0% reduce 100%
2024-08-12 10:15:49,631 INFO mapreduce.Job: Job job_local1309731849_0001 completed successfully
2024-08-12 10:15:49,669 INFO mapreduce.Job: Counters: 30
File System Counters
    FILE: Number of bytes read=7737941
    FILE: Number of bytes written=8413056
    FILE: Number of read operations=0
    FILE: Number of large read operations=0
    FILE: Number of write operations=0
C:\Windows\System32>hadoop jar "G:/MCA-BDAV/WC.jar" /input2 /output2
2024-08-12 10:15:47,931 INFO impl.MetricsConfig: Loaded properties from hadoop-metrics2.properties
2024-08-12 10:15:47,985 INFO impl.MetricsSystemImpl: Scheduled Metric snapshot period at 10 second(s).
2024-08-12 10:15:47,986 INFO impl.MetricsSystemImpl: JobTracker metrics system started
2024-08-12 10:15:48,265 WARN mapreduce.JobResourceUploader: Hadoop command-line option parsing not performed. Implement
the Tool interface and execute your application with ToolRunner to remedy this.
2024-08-12 10:15:48,366 INFO input.FileInputFormat: Total input files to process : 0
2024-08-12 10:15:48,383 INFO mapreduce.JobSubmitter: number of splits:0
2024-08-12 10:15:48,445 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_local1309731849_0001
2024-08-12 10:15:48,445 INFO mapreduce.JobSubmitter: Executing with tokens: []
2024-08-12 10:15:48,606 INFO mapreduce.Job: The url to track the job: http://localhost:8080/
2024-08-12 10:15:48,607 INFO mapreduce.Job: Running job: job_local1309731849_0001
2024-08-12 10:15:48,610 INFO mapred.LocalJobRunner: OutputCommitter set in config null
2024-08-12 10:15:48,619 INFO output.FileOutputCommitter: File Output Committer Algorithm version is 2
2024-08-12 10:15:48,619 INFO output.FileOutputCommitter: FileOutputCommitter skip cleanup _temporary folders under outpu

```

```
C:\Windows\System32>hdfs dfsadmin -safemode leave
Safe mode is OFF
```

```
C:\Windows\System32>hdfs dfs -mkdir /input
mkdir: `/input': File exists
```

```
C:\Windows\System32>hdfs dfs -mkdir /input2
```

```
C:\Windows\System32>hdfs dfs -put "G:/hadoop-3.3.0/data.txt" /input2
put: `/hadoop-3.3.0/data.txt': No such file or directory
```

```
C:\Windows\System32>hdfs dfs -put "G:/hadoop-3.3.0/data.txt" /input2
put: `/hadoop-3.3.0/data.txt': No such file or directory
```

```

    bytes written=100
2024-08-12 10:27:01,934 INFO mapred.LocalJobRunner: Finishing task: attempt_local1010835030_0001_r_000000_0
2024-08-12 10:27:01,935 INFO mapred.LocalJobRunner: reduce task executor complete.
2024-08-12 10:27:02,821 INFO mapreduce.Job: map 100% reduce 100%
2024-08-12 10:27:02,822 INFO mapreduce.Job: Job job_local1010835030_0001 completed successfully
2024-08-12 10:27:02,831 INFO mapreduce.Job: Counters: 36
File System Counters
    FILE: Number of bytes read=15476710
    FILE: Number of bytes written=16827194
    FILE: Number of read operations=0
    FILE: Number of large read operations=0
    FILE: Number of write operations=0

```



```
at org.apache.hadoop.util.RunJar.main(RunJar.java:230)

C:\Windows\System32>hadoop jar "G:/MCA-BDAV/WC.jar" /input2 /output3
2024-08-12 10:26:59,822 INFO impl.MetricsConfig: Loaded properties from
2024-08-12 10:26:59,891 INFO impl.MetricsSystemImpl: Scheduled Metric s
2024-08-12 10:26:59,892 INFO impl.MetricsSystemImpl: JobTracker metrics
C:\Windows\System32>hdfs dfs -put "G:\hadoop-3.3.0\spidy.txt" /input2

C:\Windows\System32>hdfs dfs -cat /output3/part-r-00000
Great      2
Ho         2
Jai        2
Man.       1
Onkar      1
Power      1
Responsibilities.      1
Spider     2
Text       1
This       2
Who        1
comes      1
day        1
demons     1
file.      2
great      1
is         3
is!        1
it         1
man?       1
the        1
with       1

C:\Windows\System32>_
```