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EX 2 IMPLEMENT WORD COUNT PROGRAMS USING MAPREDUCE

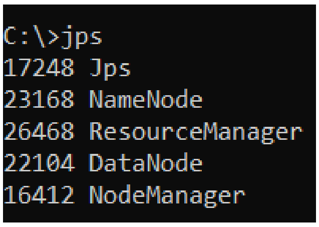
Aim:

To implement word count/frequency program using mapReduce in Hadoop.

Procedure:

1. Start the Hadoop namenode and datanode using the command
   start-dfs.cmd
   start-yarn.cmd

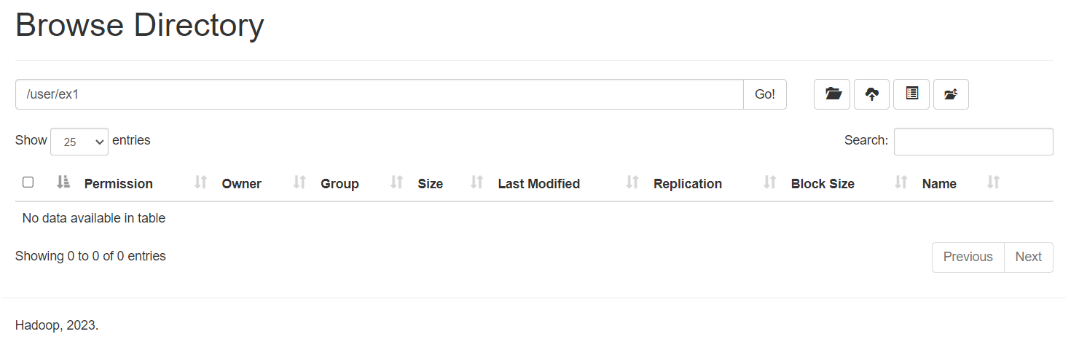
   Check if namenode and datanode are running using the comman
   jps



```
C:\>jps
17248 Jps
23168 NameNode
26468 ResourceManager
22104 DataNode
16412 NodeManager
```

2. Create a directory in the Hadoop filesystem using the command

   hadoop fs -mkdir /user/ex1



Browse Directory

/user/ex1 Go!

Show 25 entries Search:

Permission	Owner	Group	Size	Last Modified	Replication	Block Size	Name
No data available in table							

Showing 0 to 0 of 0 entries

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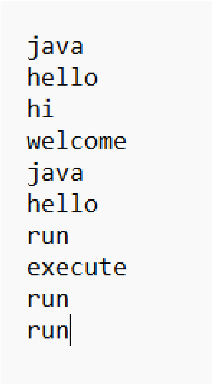
Empty directory is created.

3. Insert the input file into the directory using the command

   hadoop fs -put C:\Users\jawah\OneDrive\Desktop\LathikaDA\input.txt /user/ex1

   //input.txt



```
java
hello
hi
welcome
java
hello
run
execute
run
run
```

4. The MapReduce Program is written to count the frequency of word in the input file.

//mapper.py

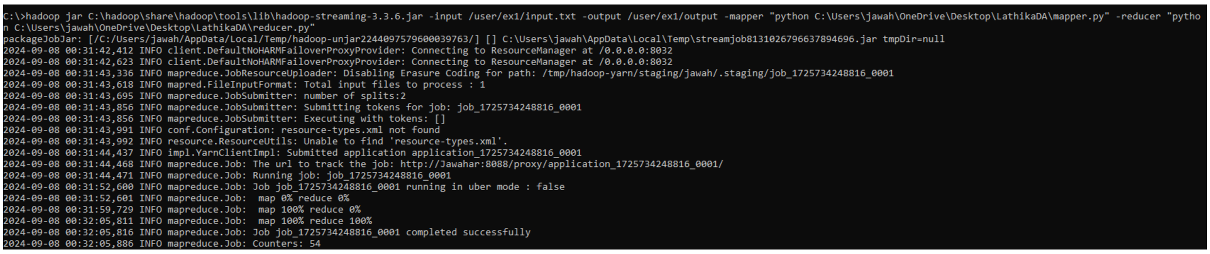
```
#!/usr/bin/env python
import sys
# Input comes from STDIN (standard input)
for line in sys.stdin:
    # Remove leading and trailing whitespace
    line = line.strip()
    # Split the line into words
    words = line.split()
    # Output each word with a count of 1
    for word in words:
        print(f'{word}\t1')
```

//reducer.py

```
#!/usr/bin/env python
import sys
current_word = None
current_count = 0
word = None
for line in sys.stdin:
    line = line.strip()
    word, count = line.split('\t', 1)
    try:
        count = int(count)
    except ValueError:
        continue
    if current_word == word:
        current_count += count
    else:
        if current_word:
            print(f'{current_word}\t{current_count}')
        current_count = count
        current_word = word
if current_word == word:
    print(f'{current_word}\t{current_count}')
```

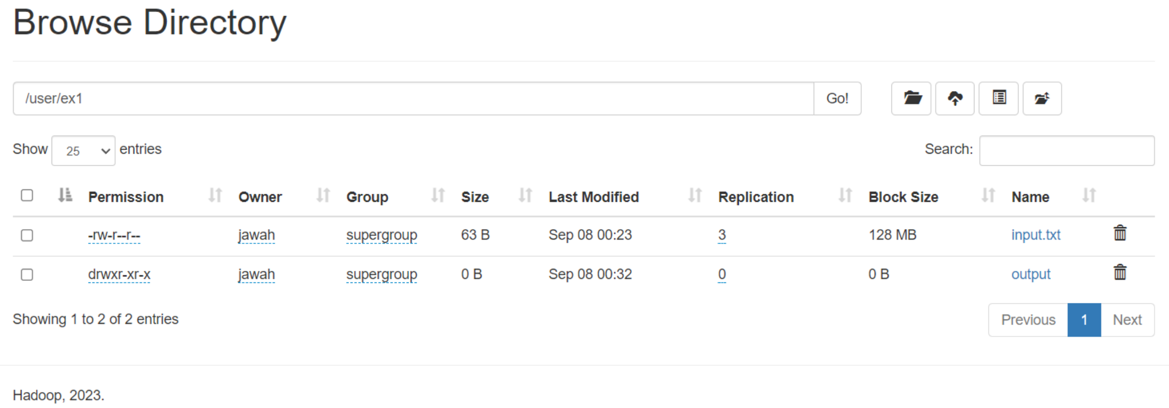
5. The mapper reducer program is executed by the following command

hadoop jar C:\hadoop\share\hadoop\tools\lib\hadoop-streaming-3.3.6.jar -input /user/ex1/input.txt -output /user/ex1/output -mapper "python C:\Users\jawah\OneDrive\Desktop\LathikaDA\mapper.py" -reducer "python C:\Users\jawah\OneDrive\Desktop\LathikaDA\reducer.py"



```
C:\>hadoop jar C:\hadoop\share\hadoop\tools\lib\hadoop-streaming-3.3.6.jar -input /user/ex1/input.txt -output /user/ex1/output -mapper "python C:\Users\jawah\OneDrive\Desktop\LathikaDA\mapper.py" -reducer "pytho
n C:\Users\jawah\OneDrive\Desktop\LathikaDA\reducer.py"
packageJobJar: [/C:/Users/jawah/AppData/Local/Temp/hadoop-unjar2244097579600039763/] [] C:\Users\jawah\AppData\Local\Temp\streamjob8131026796637894696.jar tmpDir=null
2024-09-08 00:31:42,412 INFO client.DefaultNoHARMFailoverProxyProvider: Connecting to ResourceManager at /0.0.0.0:8032
2024-09-08 00:31:42,623 INFO client.DefaultNoHARMFailoverProxyProvider: Connecting to ResourceManager at /0.0.0.0:8032
2024-09-08 00:31:43,336 INFO mapreduce.JobResourceUploader: Disabling Erasure Coding for path: /tmp/hadoop-yarn/staging/jawah/.staging/job_1725734248816_0001
2024-09-08 00:31:43,618 INFO mapred.FileInputFormat: Total input files to process : 1
2024-09-08 00:31:43,695 INFO mapreduce.JobSubmitter: number of splits:2
2024-09-08 00:31:43,856 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_1725734248816_0001
2024-09-08 00:31:43,856 INFO mapreduce.JobSubmitter: Executing with tokens: []
2024-09-08 00:31:43,991 INFO conf.Configuration: resource-types.xml not found
2024-09-08 00:31:43,992 INFO resource.ResourceUtils: Unable to find 'resource-types.xml'.
2024-09-08 00:31:44,437 INFO impl.YarnClientImpl: Submitted application application_1725734248816_0001
2024-09-08 00:31:44,468 INFO mapreduce.Job: The url to track the job: http://Jawahar:8088/proxy/application_1725734248816_0001/
2024-09-08 00:31:44,471 INFO mapreduce.Job: Running job: job_1725734248816_0001
2024-09-08 00:31:52,600 INFO mapreduce.Job: Job job_1725734248816_0001 running in uber mode : false
2024-09-08 00:31:52,601 INFO mapreduce.Job:  map 0% reduce 0%
2024-09-08 00:31:59,729 INFO mapreduce.Job:  map 100% reduce 0%
2024-09-08 00:32:05,811 INFO mapreduce.Job:  map 100% reduce 100%
2024-09-08 00:32:05,816 INFO mapreduce.Job: Job job_1725734248816_0001 completed successfully
2024-09-08 00:32:05,886 INFO mapreduce.Job: Counters: 54
```

Thus the output directory is created.



Browse Directory

/user/ex1

Show 25 entries

Search:

□	Permission	Owner	Group	Size	Last Modified	Replication	Block Size	Name	
□	-rw-r--r--	jawah	supergroup	63 B	Sep 08 00:23	3	128 MB	input.txt	🗑
□	drwxr-xr-x	jawah	supergroup	0 B	Sep 08 00:32	0	0 B	output	🗑

Showing 1 to 2 of 2 entries

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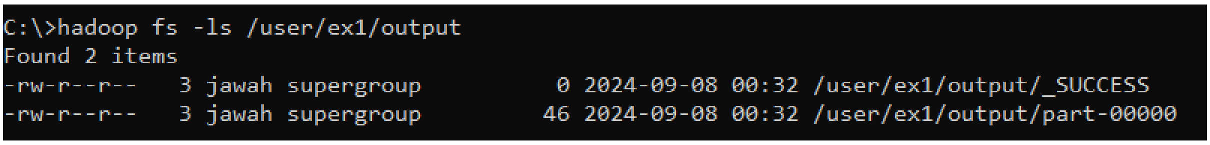
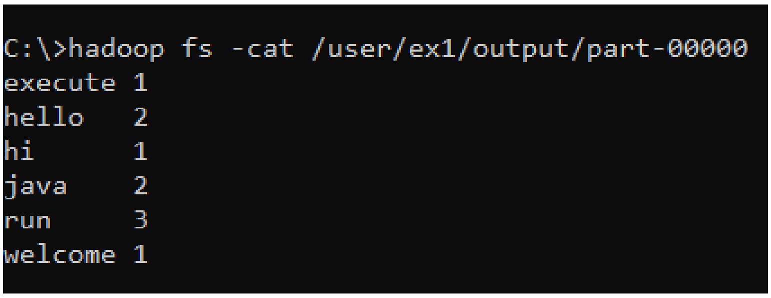
6. To view the output files



```
C:\>hadoop fs -ls /user/ex1/output
Found 2 items
-rw-r--r--   3 jawah supergroup          0 2024-09-08 00:32 /user/ex1/output/_SUCCESS
-rw-r--r--   3 jawah supergroup         46 2024-09-08 00:32 /user/ex1/output/part-00000
```

hadoop fs -cat /user/ex1/output/part-00000



```
C:\>hadoop fs -cat /user/ex1/output/part-00000
execute 1
hello   2
hi      1
java    2
run     3
welcome 1
```

7. Stop the Hadoop namenode and datanode

stop-all.cmd

Result:

Thus the MapReduce Program to find the word count of a input file is completed successfully