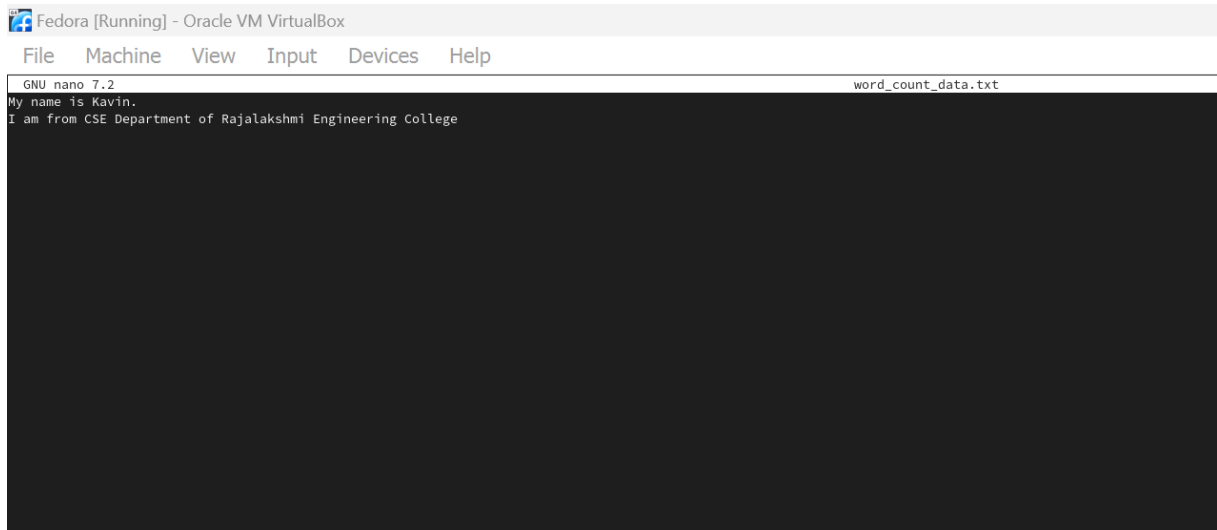


Exp No: 2**Run a basic Word Count Map Reduce program to understand Map Reduce Paradigm Aim:**

To Run a basic Word Count MapReduce program to understand Map Reduce Paradigm.

Procedure:**Step 1: Create Data File:**

Create a file named "word_count_data.txt" and populate it with text data that you wish to analyze.
Login with your Hadoop user.

**Step 2: Mapper Logic - mapper.py:**

Create a file named "mapper.py" to implement the logic for the mapper. The mapper will read input data from STDIN, split lines into words, and output each word with its count.

```
nano mapper.py
```

```
# Copy and paste the mapper.py code
```

```
#!/usr/bin/env python3
```

```
# import sys because we need to read and write data to STDIN and STDOUT
```

```
#!/usr/bin/python3
```

```
import sys for line
```

```
in sys.stdin:
```

```
    line = line.strip()
```

```
    # remove leading and trailing whitespace
```

```
    words = line.split()
```

```
    # split the line into words for word in words:
```

```
        nano word_count.txt print( '%s\t%s' % (word, 1))
```

Step 3: Reducer Logic - reducer.py:

Create a file named "reducer.py" to implement the logic for the reducer. The reducer will aggregate the occurrences of each word and generate the final output.

nano reducer.py

```
# Copy and paste the reducer.py code
reducer.py #!/usr/bin/python3 from
operator import itemgetter 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( '%s\t%s' % (current_word, current_count))
        current_count = count
        current_word = word if
current_word == word:
        print( '%s\t%s' % (current_word, current_count))
```

Step 4: Prepare Hadoop Environment:

Start the Hadoop daemons and create a directory in HDFS to store your data.

start-all.sh

hdfsdfs -mkdir /word_count_in_python hdfsdfs -copyFromLocal

/path/to/word_count.txt/word_count_in_python

Step 5: Make Python Files Executable:

Give executable permissions to your mapper.py and reducer.py files. chmod

777 mapper.py reducer.py

Step 6: Run Word Count using Hadoop Streaming:

Download the latest hadoop-streaming jar file and place it in a location you can easily access.

Then run the Word Count program using Hadoop Streaming.

hadoop jar /path/to/hadoop-streaming-3.3.6.jar \

-input /word_count_in_python/word_count_data.txt \

-output /word_count_in_python/new_output \

-mapper /path/to/mapper.py \

-reducer /path/to/reducer.py

```

haresh@fedora:~/hadoop$ hadoop jar share/hadoop/mapreduce/hadoop-mapreduce-examples-3.3.6.jar wordcount /exp2/word_count.txt /out
2024-09-01 20:43:28,943 INFO client.DefaultNoHARMAFailoverProxyProvider: Connecting to ResourceManager at /0.0.0.0:8032
2024-09-01 20:43:29,386 INFO mapreduce.JobResourceUploader: Disabling Erasure Coding for path: /tmp/hadoop-yarn/staging/haresh/.staging/job_1725202815687_0001
2024-09-01 20:43:30,297 INFO input.FileInputFormat: Total input files to process : 1
2024-09-01 20:43:30,907 INFO mapreduce.JobSubmitter: number of splits:1
2024-09-01 20:43:31,221 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_1725202815687_0001
2024-09-01 20:43:31,221 INFO mapreduce.JobSubmitter: Executing with tokens: []
2024-09-01 20:43:31,445 INFO conf.Configuration: resource-types.xml not found
2024-09-01 20:43:31,445 INFO resource.ResourceUtils: Unable to find 'resource-types.xml'.
2024-09-01 20:43:31,761 INFO impl.YarnClientImpl: Submitted application application_1725202815687_0001
2024-09-01 20:43:31,863 INFO mapreduce.Job: The url to track the job: http://fedora:8088/proxy/application_1725202815687_0001/
2024-09-01 20:43:31,864 INFO mapreduce.Job: Running job: job_1725202815687_0001
2024-09-01 20:43:41,091 INFO mapreduce.Job: Job job_1725202815687_0001 running in uber mode : false
2024-09-01 20:43:41,093 INFO mapreduce.Job:  map 0% reduce 0%
2024-09-01 20:43:46,236 INFO mapreduce.Job:  map 100% reduce 0%
2024-09-01 20:43:51,322 INFO mapreduce.Job:  map 100% reduce 100%
2024-09-01 20:43:53,406 INFO mapreduce.Job: Job job_1725202815687_0001 completed successfully
2024-09-01 20:43:53,499 INFO mapreduce.Job: Counters: 54
    File System Counters
      FILE: Number of bytes read=242
      FILE: Number of bytes written=555051
      FILE: Number of read operations=0

```

Step 8: Check Output:

Check the output of the Word Count program in the specified HDFS output directory. hdfs

dfs -cat /word_count_in_python/new_output/part-00000

```

kavinmanoharan@fedora:~/expl$ hdfs dfs -ls /expl
Found 2 items
drwxr-xr-x - kavinmanoharan supergroup          0 2024-09-14 09:44 /expl/output
-rw-r--r-- 1 kavinmanoharan supergroup          78 2024-09-14 09:43 /expl/word_count_data.txt
kavinmanoharan@fedora:~/expl$ hdfs dfs -cat /expl/output/part-00000
CSE      1
College  1
Department      1
Engineering     1
I              1
Kavin.         1
My            1
Rajalakshmi    1
am            1
from          1
is            1
name          1
of            1
kavinmanoharan@fedora:~/expl$

```

Result:

Thus, the program for basic Word Count Map Reduce has been executed successfully.

