EX : 02 **REG.NO :**210701290

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

AIM:

To run a basic Word Count MapReduce program.

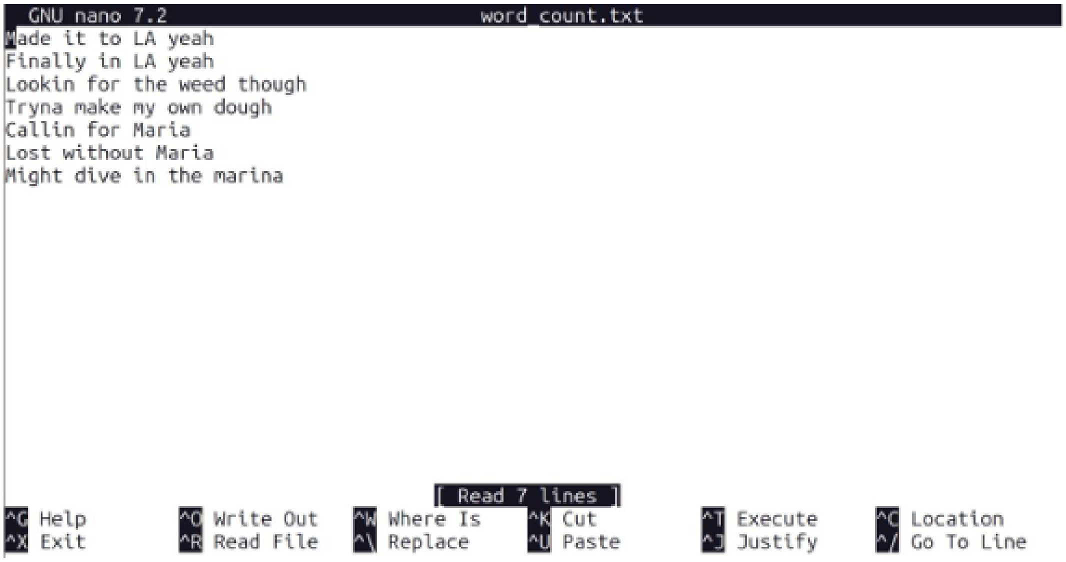
Procedure:

Step 1: Create Data File:

Create a file named "word_count_data.txt" and populate it with text data that you wish to analyse.

Login with your hadoop user.

Output: Type the below content in word_count.txt



```
  GNU nano 7.2                         word_count.txt
Made it to LA yeah
Finally in LA yeah
Lookin for the weed though
Tryna make my own dough
Callin for Maria
Lost without Maria
Might dive in the marina









                                        [ Read 7 lines ]
^G Help         ^O Write Out    ^W Where Is     ^K Cut          ^T Execute      ^C Location
^X Exit         ^R Read File    ^\ Replace      ^U Paste        ^J Justify      ^/ Go To Line
```

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:

        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.

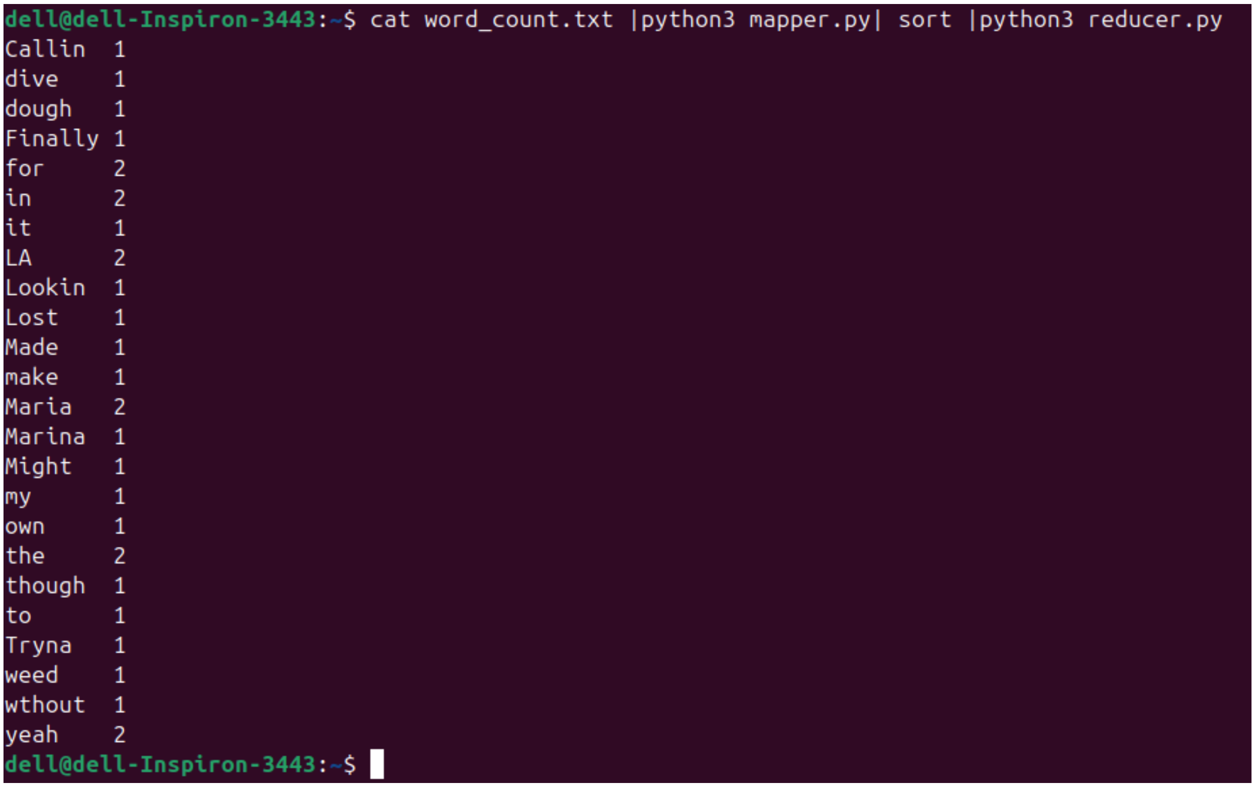
```
hadoop jar /path/to/hadoop-streaming-3.3.6.jar \
    -input /word_count_in_python/word_count_data.txt \
    -output /word_count_in_python/new_output \
    -mapper /path/to/mapper.py \

    -reducer /path/to/reducer.py
```

Step 7: 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
```



```
dell@dell-Inspiron-3443:~$ cat word_count.txt |python3 mapper.py| sort |python3 reducer.py
Callin  1
dive    1
dough   1
Finally 1
for     2
in      2
it      1
LA      2
Lookin  1
Lost    1
Made    1
make    1
Maria   2
Marina  1
Might   1
my      1
own     1
the     2
though  1
to      1
Tryna   1
weed    1
wthout  1
yeah    2
dell@dell-Inspiron-3443:~$ 
```

Result:

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