Exp No: 2

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

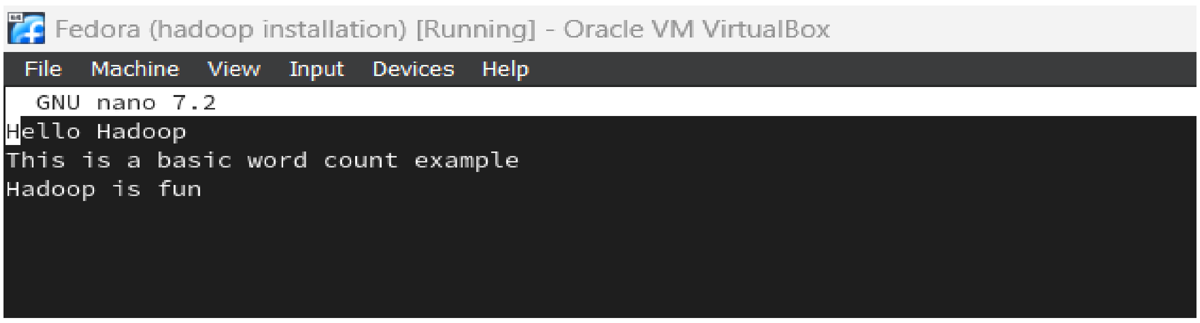
Aim:

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.


Fedora (hadoop installation) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

```
  GNU nano 7.2
Hello Hadoop
This is a basic word count example
Hadoop is fun
```

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.

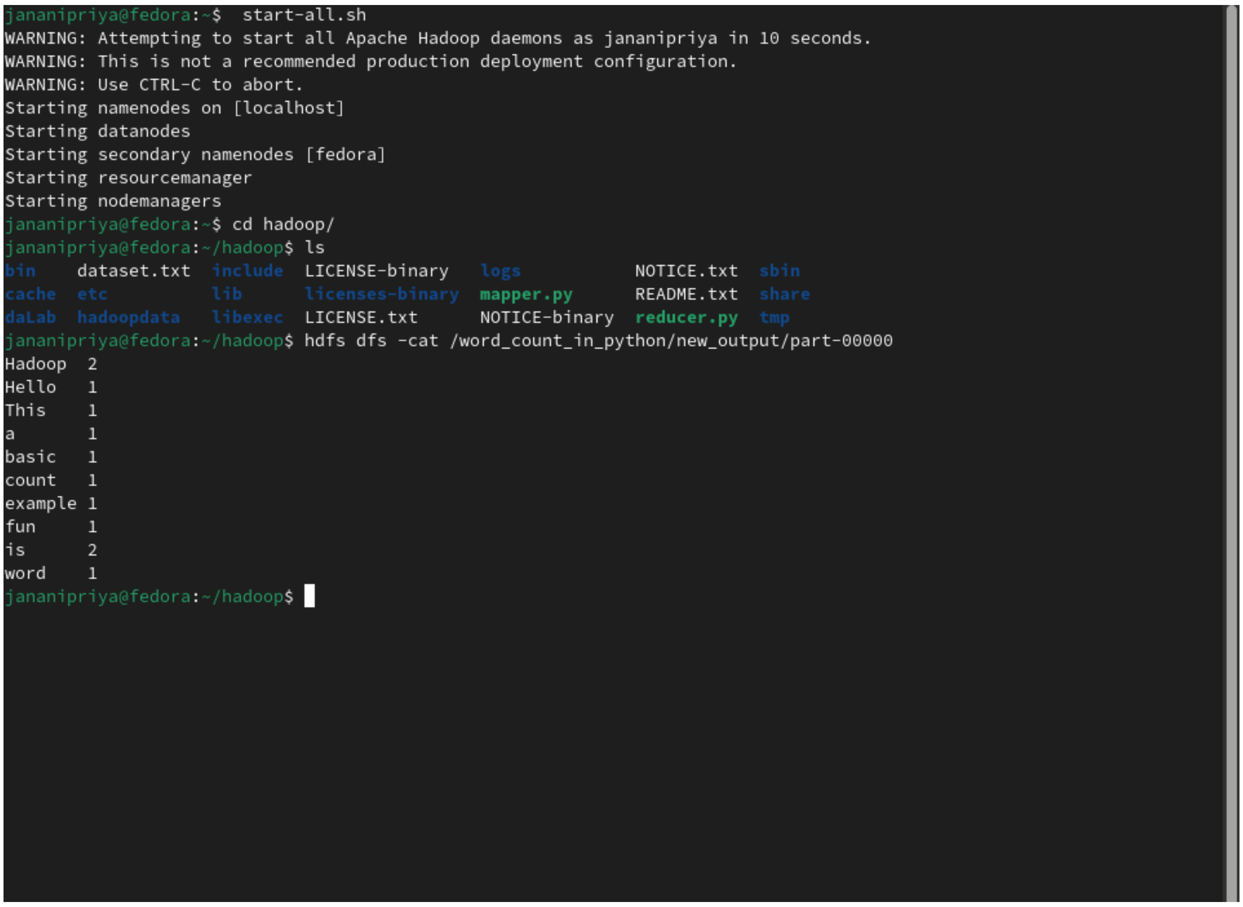
Then run the Word Count program using Hadoop Streaming.

```
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
```

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
```



```
jananipriya@fedora:~$  start-all.sh
WARNING: Attempting to start all Apache Hadoop daemons as jananipriya 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 [fedora]
Starting resourcemanager
Starting nodemanagers
jananipriya@fedora:~$ cd hadoop/
jananipriya@fedora:~/hadoop$ ls
bin    dataset.txt  include  LICENSE-binary   logs           NOTICE.txt  sbin
cache  etc          lib      licenses-binary  mapper.py      README.txt  share
daLab  hadoopdata   libexec  LICENSE.txt      NOTICE-binary  reducer.py  tmp
jananipriya@fedora:~/hadoop$ hdfs dfs -cat /word_count_in_python/new_output/part-00000
Hadoop  2
Hello   1
This    1
a       1
basic   1
count   1
example 1
fun     1
is      2
word    1
jananipriya@fedora:~/hadoop$ 
```

Result:

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