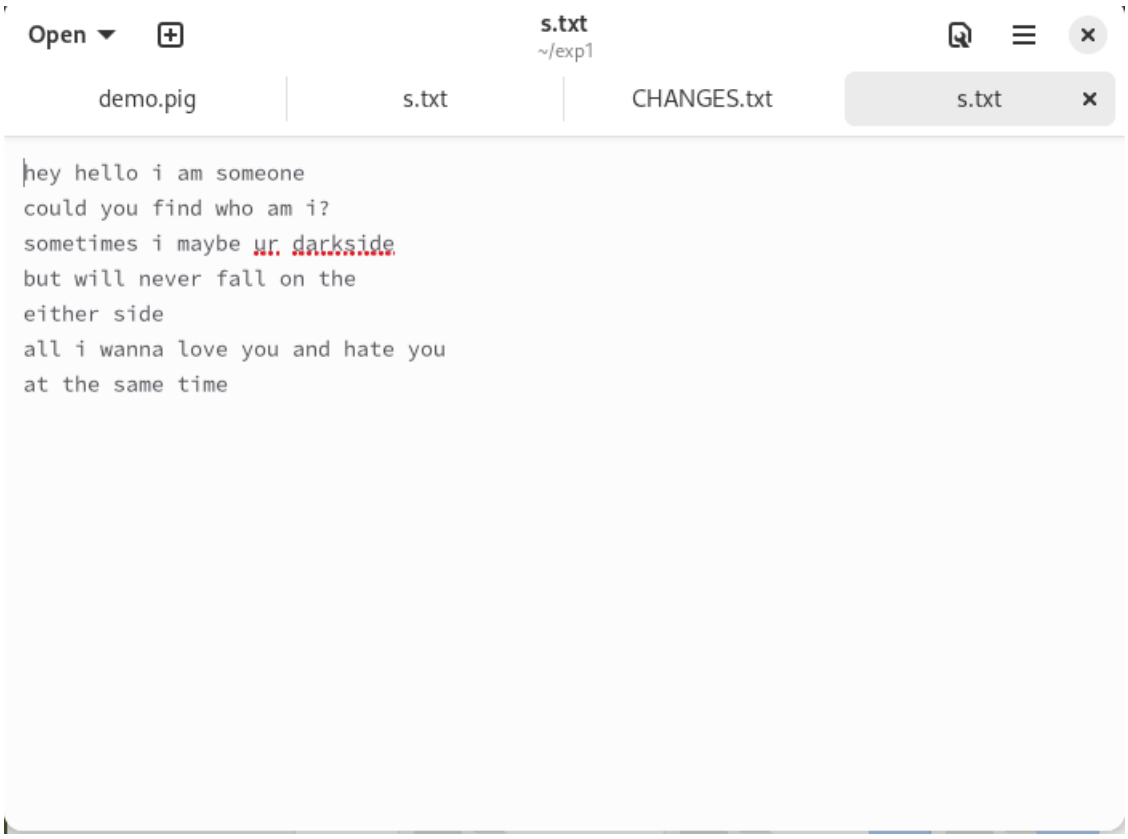
Exp. No : 2

Word Count Map Reduce program

1. Create word_count.txt file



2. Create mapper.py program

```
  GNU nano 7.2                    mapper.py
#!/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))

                          [ Read 9 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
```

3. Create reducer.py program.

```
  GNU nano 7.2                    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))


^G Help        ^O Write Out   ^W Where Is    ^K Cut         ^T Execute
^X Exit        ^R Read File   ^\ Replace     ^U Paste       ^J Justify
```

4. Running the Word Count program using Hadoop Streaming.

```
helen@fedora:~/exp1$ hadoop jar $HADOOP_STREAMING -input /exp1/data.txt -output /exp1/output -mapper ~/exp2/m
apper.py -reducer ~/exp3/reducer.py
packageJobJar: [/tmp/hadoop-unjar15351965686473805907/] [] /tmp/streamjob5641409443902651758.jar tmpDir=null
2024-10-12 07:43:42,110 INFO client.DefaultNoHARMFailoverProxyProvider: Connecting to ResourceManager at /0.0
.0.0:8032
2024-10-12 07:43:42,263 INFO client.DefaultNoHARMFailoverProxyProvider: Connecting to ResourceManager at /0.0
.0.0:8032
2024-10-12 07:43:42,414 ERROR streaming.StreamJob: Error Launching job : Output directory hdfs://localhost:90
00/exp1/output already exists
```

```
in uber mode : false
2024-08-26 19:13:20,920 INFO mapreduce.Job:  map 0% reduce 0%
2024-08-26 19:13:35,602 INFO mapreduce.Job:  map 100% reduce 0%
2024-08-26 19:13:51,310 INFO mapreduce.Job:  map 100% reduce 100%
2024-08-26 19:13:56,305 INFO mapreduce.Job: Job job_1724678733414_0001 complete
d successfully
2024-08-26 19:13:56,572 INFO mapreduce.Job: Counters: 54
        File System Counters
                FILE: Number of bytes read=97
                FILE: Number of bytes written=837208
                FILE: Number of read operations=0
                FILE: Number of large read operations=0
                FILE: Number of write operations=0
                HDFS: Number of bytes read=414
                HDFS: Number of bytes written=71
                HDFS: Number of read operations=11
                HDFS: Number of large read operations=0
                HDFS: Number of write operations=2
                HDFS: Number of bytes read erasure-coded=0
        Job Counters
                Launched map tasks=2
                Launched reduce tasks=1
                Data-local map tasks=2
                Total time spent by all maps in occupied slots (ms)=23927
                Total time spent by all reduces in occupied slots (ms)=12078
                Total time spent by all map tasks (ms)=23927
                Total time spent by all reduce tasks (ms)=12078
                Total vcore-milliseconds taken by all map tasks=23927
```

```
                Total vcore-milliseconds taken by all map tasks=23927
                Total vcore-milliseconds taken by all reduce tasks=12078
                Total megabyte-milliseconds taken by all map tasks=24501248
                Total megabyte-milliseconds taken by all reduce tasks=12367872
        Map-Reduce Framework
                Map input records=7
                Map output records=10
                Map output bytes=71
                Map output materialized bytes=103
                Input split bytes=186
                Combine input records=0
                Combine output records=0
                Reduce input groups=10
                Reduce shuffle bytes=103
                Reduce input records=10
                Reduce output records=10
                Spilled Records=20
                Shuffled Maps =2
                Failed Shuffles=0
                Merged Map outputs=2
                GC time elapsed (ms)=1759
                CPU time spent (ms)=8290
                Physical memory (bytes) snapshot=892342272
                Virtual memory (bytes) snapshot=7763681280
                Total committed heap usage (bytes)=687865856
                Peak Map Physical memory (bytes)=326397952
                Peak Map Virtual memory (bytes)=2586062848
                Peak Reduce Physical memory (bytes)=240001024
```

```
                Reduce output records=10
                Spilled Records=20
                Shuffled Maps =2
                Failed Shuffles=0
                Merged Map outputs=2
                GC time elapsed (ms)=1759
                CPU time spent (ms)=8290
                Physical memory (bytes) snapshot=892342272
                Virtual memory (bytes) snapshot=7763681280
                Total committed heap usage (bytes)=687865856
                Peak Map Physical memory (bytes)=326397952
                Peak Map Virtual memory (bytes)=2586062848
                Peak Reduce Physical memory (bytes)=240001024
                Peak Reduce Virtual memory (bytes)=2593050624
        Shuffle Errors
                BAD_ID=0
                CONNECTION=0
                IO_ERROR=0
                WRONG_LENGTH=0
                WRONG_MAP=0
                WRONG_REDUCE=0
        File Input Format Counters
                Bytes Read=228
        File Output Format Counters
                Bytes Written=71
2024-08-26 19:13:56,574 INFO streaming.StreamJob: Output directory: /exp2/outpu
t
```

Output :

```
helen@fedora:~
helen@fedora:~/exp2        helen@fedora:~
helen@fedora:~$ hdfs dfs -cat /exp1/output/part-00000
all     1
am      2
and     1
at      1
but     1
could   1
darkside        1
either  1
fall    1
find    1
hate    1
hello   1
hey     1
i       3
i?      1
love    1
maybe   1
never   1
on      1
same    1
side    1
someone 1
sometimes       1
the     2
time    1
ur      1
wanna   1
```