

**MapReduce Screen Shots:**

1. Load the input file and jar file of MapReduce program into the server using FileZilla.
2. Using Putty login into the server.
3. Create a directory and load the input and jar files into that specific directory

```
$ cd Nihar
$ ls
FB_Friends_input.txt  MapReduce_MutualFriends.jar
```

4. Copy the jar file and input file into Hadoop File System
5. Run the MapReduce Algorithm on the input file.

```
$ hadoop fs -put FB_Friends_input.txt FB_Friends_input.txt
$ hadoop jar MapReduce_MutualFriends.jar MutualFriends FB_Friends_input.txt outp
ut Mutual
16/02/22 01:05:09 INFO client.RMProxy: Connecting to ResourceManager at KC-SCE-C
S5542-1/172.16.2.241:8032
16/02/22 01:05:09 WARN mapreduce.JobResourceUploader: Hadoop command-line option
 parsing not performed. Implement the Tool interface and execute your applicatio
n with ToolRunner to remedy this.
16/02/22 01:05:10 INFO input.FileInputFormat: Total input paths to process : 1
16/02/22 01:05:10 INFO mapreduce.JobSubmitter: number of splits:1
16/02/22 01:05:10 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_14
55690915780_0035
16/02/22 01:05:10 INFO impl.YarnClientImpl: Submitted application application_14
55690915780_0035
16/02/22 01:05:10 INFO mapreduce.Job: The url to track the job: http://KC-SCE-CS
5542-1:8088/proxy/application_1455690915780_0035/
16/02/22 01:05:10 INFO mapreduce.Job: Running job: job_1455690915780_0035
16/02/22 01:05:19 INFO mapreduce.Job: Job job_1455690915780_0035 running in uber
mode : false
16/02/22 01:05:19 INFO mapreduce.Job: map 0% reduce 0%
16/02/22 01:05:26 INFO mapreduce.Job: map 100% reduce 0%
16/02/22 01:05:34 INFO mapreduce.Job: map 100% reduce 50%
16/02/22 01:05:41 INFO mapreduce.Job: map 100% reduce 100%
16/02/22 01:05:42 INFO mapreduce.Job: Job job_1455690915780_0035 completed succe
ssfully
16/02/22 01:05:42 INFO mapreduce.Job: Counters: 49
    File System Counters
        FILE: Number of bytes read=172
        FILE: Number of bytes written=345034
        FILE: Number of read operations=0
        FILE: Number of large read operations=0
        FILE: Number of write operations=0
        HDFS: Number of bytes read=174
        HDFS: Number of bytes written=57
        HDFS: Number of read operations=9
        HDFS: Number of large read operations=0
        HDFS: Number of write operations=4
```

#### Job Counters

Launched map tasks=1  
Launched reduce tasks=2  
Data-local map tasks=1  
Total time spent by all maps in occupied slots (ms)=5542  
Total time spent by all reduces in occupied slots (ms)=11103  
Total time spent by all map tasks (ms)=5542  
Total time spent by all reduce tasks (ms)=11103  
Total vcore-seconds taken by all map tasks=5542  
Total vcore-seconds taken by all reduce tasks=11103  
Total megabyte-seconds taken by all map tasks=5675008  
Total megabyte-seconds taken by all reduce tasks=11369472

#### Map-Reduce Framework

Map input records=5  
Map output records=18  
Map output bytes=138  
Map output materialized bytes=164  
Input split bytes=125  
Combine input records=0  
Combine output records=0  
Reduce input groups=9  
Reduce shuffle bytes=164  
Reduce input records=18  
Reduce output records=9  
Spilled Records=36  
Shuffled Maps =2  
Failed Shuffles=0  
Merged Map outputs=2  
GC time elapsed (ms)=120  
CPU time spent (ms)=2960  
Physical memory (bytes) snapshot=841510912  
Virtual memory (bytes) snapshot=4173414400  
Total committed heap usage (bytes)=989331456

#### 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=49

#### File Output Format Counters

Bytes Written=57

## 6. Print the output

```
$ hadoop fs -ls -R
drwx----- - group9 supergroup          0 2016-02-22 01:05 .staging
-rw-r--r--  3 group9 supergroup          49 2016-02-22 01:03 FB_Friends_input.txt
-rw-r--r--  3 group9 supergroup          49 2016-02-22 00:22 FB_input.txt
-rw-r--r--  3 group9 supergroup       5567 2016-02-22 00:38 MapReduce_MutualFriends.jar
-rw-r--r--  3 group9 supergroup       5567 2016-02-21 21:31 MutualFriends.jar
-rw-r--r--  3 group9 supergroup       5567 2016-02-21 21:33 MutualFriendsMapReduce-1.0-SNAPSHOT.jar
-rw-r--r--  3 group9 supergroup       5567 2016-02-22 00:11 MutualFriends_FB.jar
drwxr-xr-x - group9 supergroup          0 2016-02-21 21:10 Output1
-rw-r--r--  3 group9 supergroup          49 2016-02-21 21:32 input.txt
drwxr-xr-x - group9 supergroup          0 2016-02-21 20:40 output
drwxr-xr-x - group9 supergroup          0 2016-02-21 21:34 output2
-rw-r--r--  3 group9 supergroup          0 2016-02-21 21:34 output2/_SUCCESS
-rw-r--r--  3 group9 supergroup        38 2016-02-21 21:34 output2/part-r-00000
-rw-r--r--  3 group9 supergroup        19 2016-02-21 21:34 output2/part-r-00001
drwxr-xr-x - group9 supergroup          0 2016-02-22 00:26 output_FB
-rw-r--r--  3 group9 supergroup          0 2016-02-22 00:26 output_FB/_SUCCESS
-rw-r--r--  3 group9 supergroup        38 2016-02-22 00:25 output_FB/part-r-00000
-rw-r--r--  3 group9 supergroup        19 2016-02-22 00:26 output_FB/part-r-00001
drwxr-xr-x - group9 supergroup          0 2016-02-22 01:05 output_Mutual
-rw-r--r--  3 group9 supergroup          0 2016-02-22 01:05 output_Mutual/_SUCCESS
-rw-r--r--  3 group9 supergroup        38 2016-02-22 01:05 output_Mutual/part-r-00000
-rw-r--r--  3 group9 supergroup        19 2016-02-22 01:05 output_Mutual/part-r-00001
$ hadoop fs -cat output_Mutual/part-r-00000
AB      CD
AD      BC
BC      ADE
BE      CD
CD      ABE
DE      BC
$ hadoop fs -cat output_Mutual/part-r-00001
AC      BD
BD      ACE
CE      BD
```