

# Lab 1 Part 2 Cloudera

## Task 1

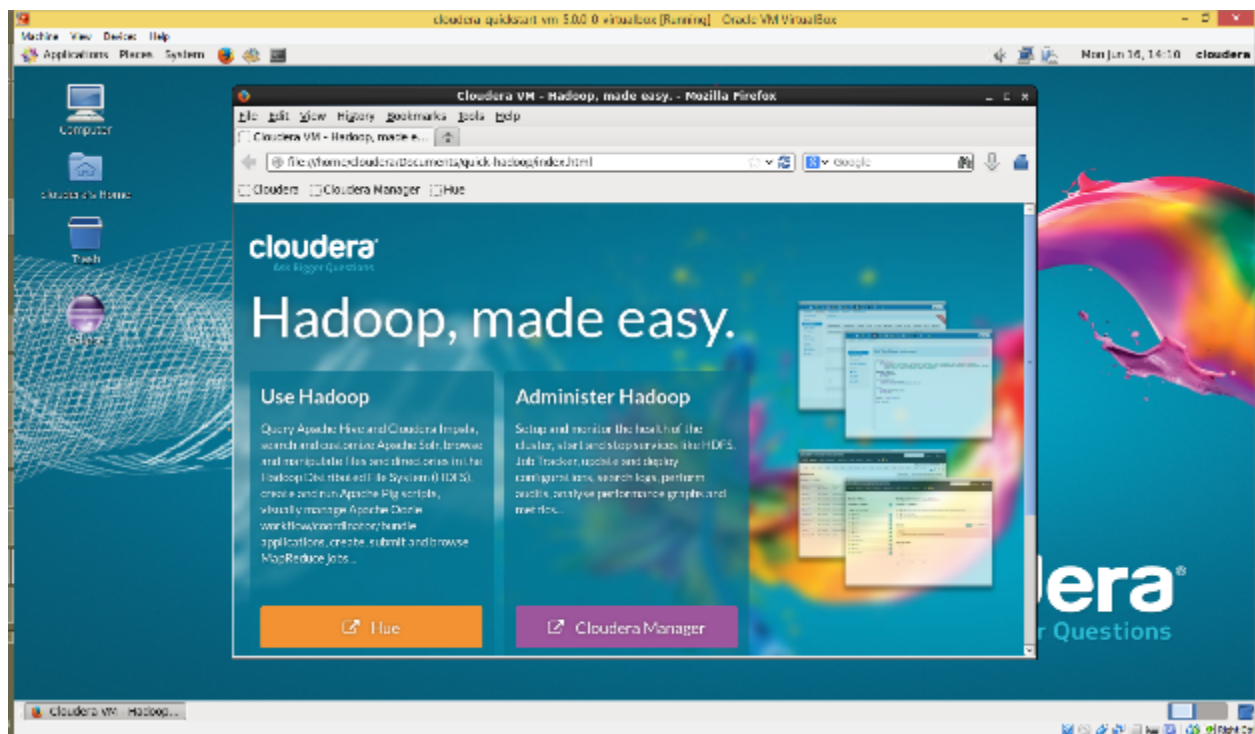
## Task 2

### Installing Cloudera on LocalMachine

A Cloudera 5.0 VM image is download from

[http://www.cloudera.com/content/support/en/downloads/quickstart\\_vms/cdh-5-0-x.html](http://www.cloudera.com/content/support/en/downloads/quickstart_vms/cdh-5-0-x.html)

Now the VM is booted up from **VirtualBox** and is ready to perform Hadoop jobs.



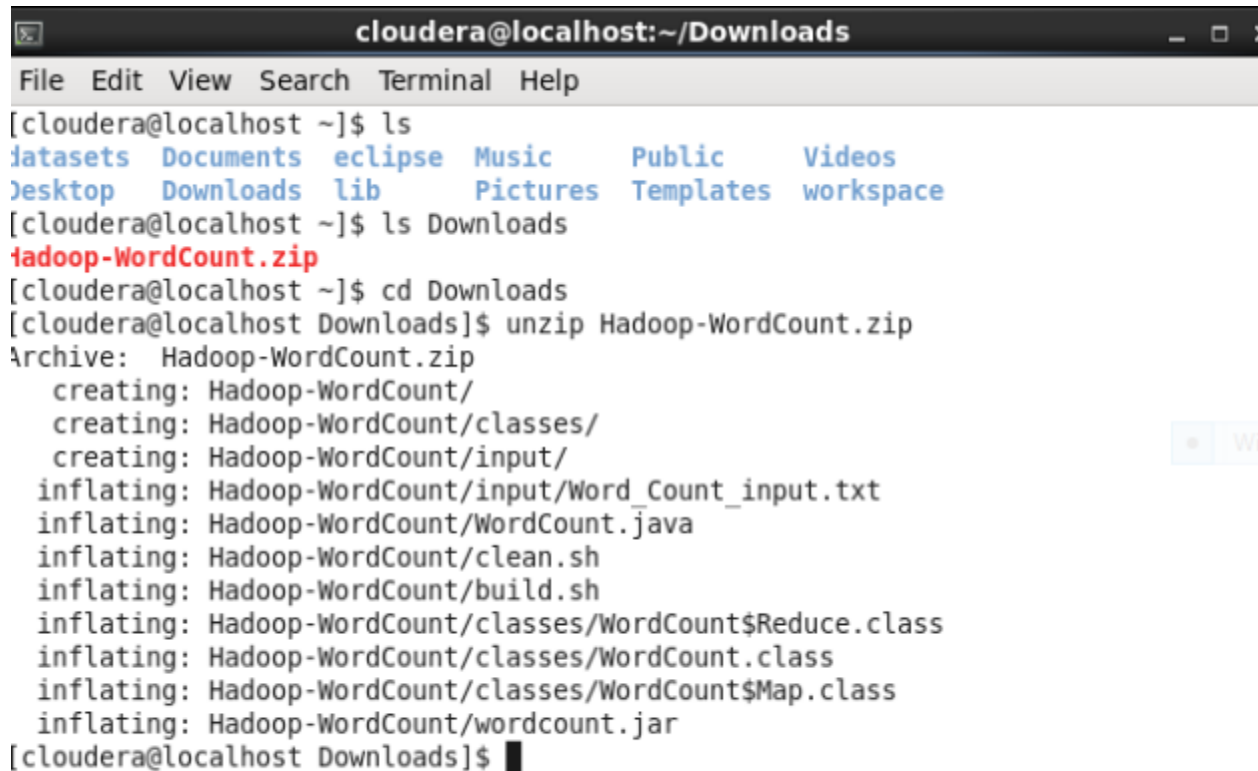
## Task 3

## Transferring files to Hadoop

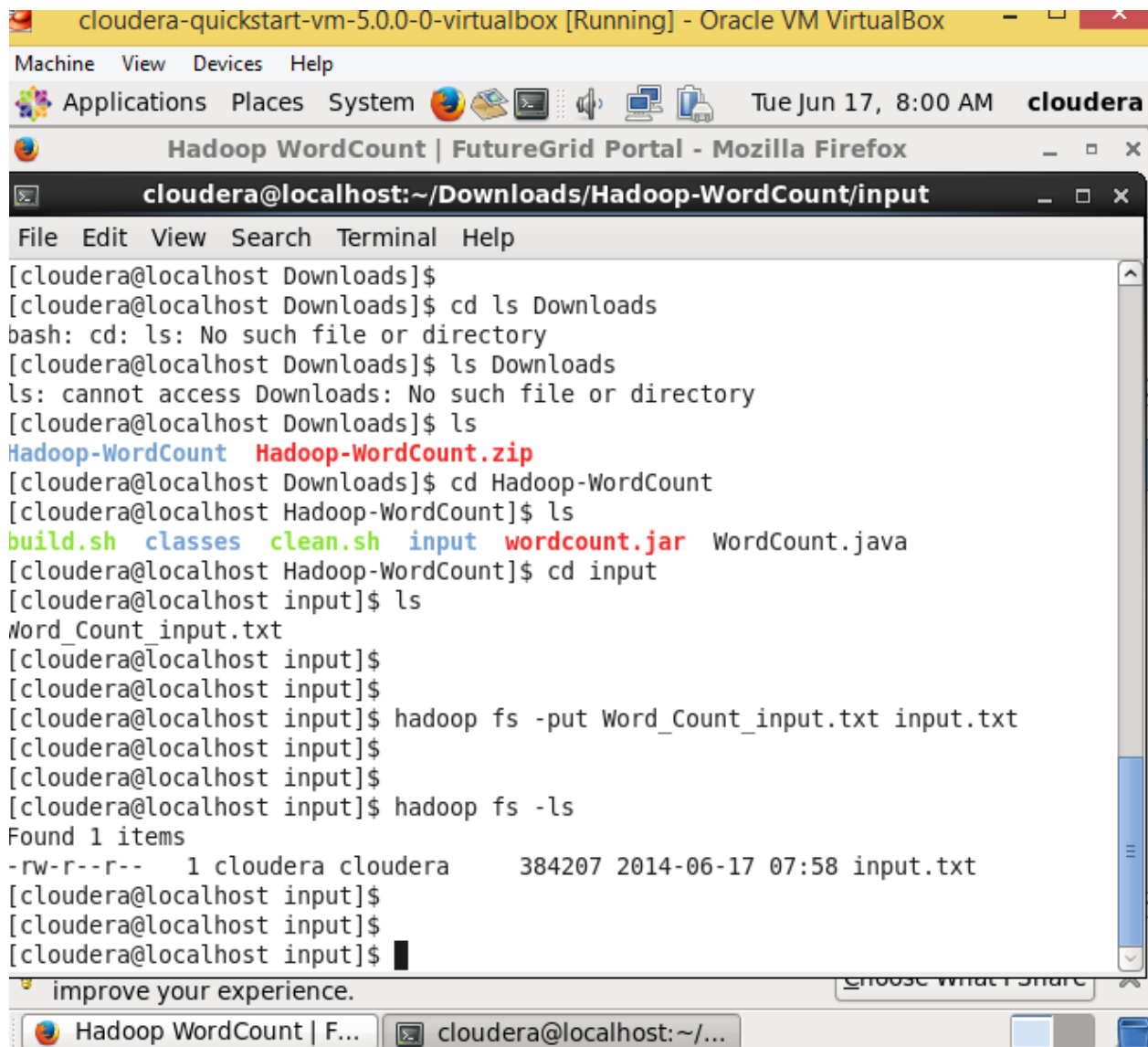
Every Command on Hadoop can be performed by

`hadoop -fs`

command, and is same as Unix (Linux) Command

A terminal window titled 'cloudera@localhost:~/Downloads' with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal shows the following commands and output:

```
[cloudera@localhost ~]$ ls
datasets Documents eclipse Music Public Videos
Desktop Downloads lib Pictures Templates workspace
[cloudera@localhost ~]$ ls Downloads
Hadoop-WordCount.zip
[cloudera@localhost ~]$ cd Downloads
[cloudera@localhost Downloads]$ unzip Hadoop-WordCount.zip
Archive: Hadoop-WordCount.zip
  creating: Hadoop-WordCount/
  creating: Hadoop-WordCount/classes/
  creating: Hadoop-WordCount/input/
  inflating: Hadoop-WordCount/input/Word_Count_input.txt
  inflating: Hadoop-WordCount/WordCount.java
  inflating: Hadoop-WordCount/clean.sh
  inflating: Hadoop-WordCount/build.sh
  inflating: Hadoop-WordCount/classes/WordCount$Reduce.class
  inflating: Hadoop-WordCount/classes/WordCount.class
  inflating: Hadoop-WordCount/classes/WordCount$Map.class
  inflating: Hadoop-WordCount/wordcount.jar
[cloudera@localhost Downloads]$
```



```
cloudera-quickstart-vm-5.0.0-0-virtualbox [Running] - Oracle VM VirtualBox
Machine View Devices Help
Applications Places System Tue Jun 17, 8:00 AM cloudera
Hadoop WordCount | FutureGrid Portal - Mozilla Firefox
cloudera@localhost:~/Downloads/Hadoop-WordCount/input
File Edit View Search Terminal Help
[cloudera@localhost Downloads]$
[cloudera@localhost Downloads]$ cd ls Downloads
bash: cd: ls: No such file or directory
[cloudera@localhost Downloads]$ ls Downloads
ls: cannot access Downloads: No such file or directory
[cloudera@localhost Downloads]$ ls
Hadoop-WordCount Hadoop-WordCount.zip
[cloudera@localhost Downloads]$ cd Hadoop-WordCount
[cloudera@localhost Hadoop-WordCount]$ ls
build.sh classes clean.sh input wordcount.jar WordCount.java
[cloudera@localhost Hadoop-WordCount]$ cd input
[cloudera@localhost input]$ ls
Word_Count_input.txt
[cloudera@localhost input]$
[cloudera@localhost input]$
[cloudera@localhost input]$ hadoop fs -put Word_Count_input.txt input.txt
[cloudera@localhost input]$
[cloudera@localhost input]$
[cloudera@localhost input]$ hadoop fs -ls
Found 1 items
-rw-r--r-- 1 cloudera cloudera 384207 2014-06-17 07:58 input.txt
[cloudera@localhost input]$
[cloudera@localhost input]$
[cloudera@localhost input]$
```

For running WordCount Example, Two files from **Local FileSystem** to **HDFS** are transferred

```
hadoop fs -put Word_Count_input.txt input.txt
```

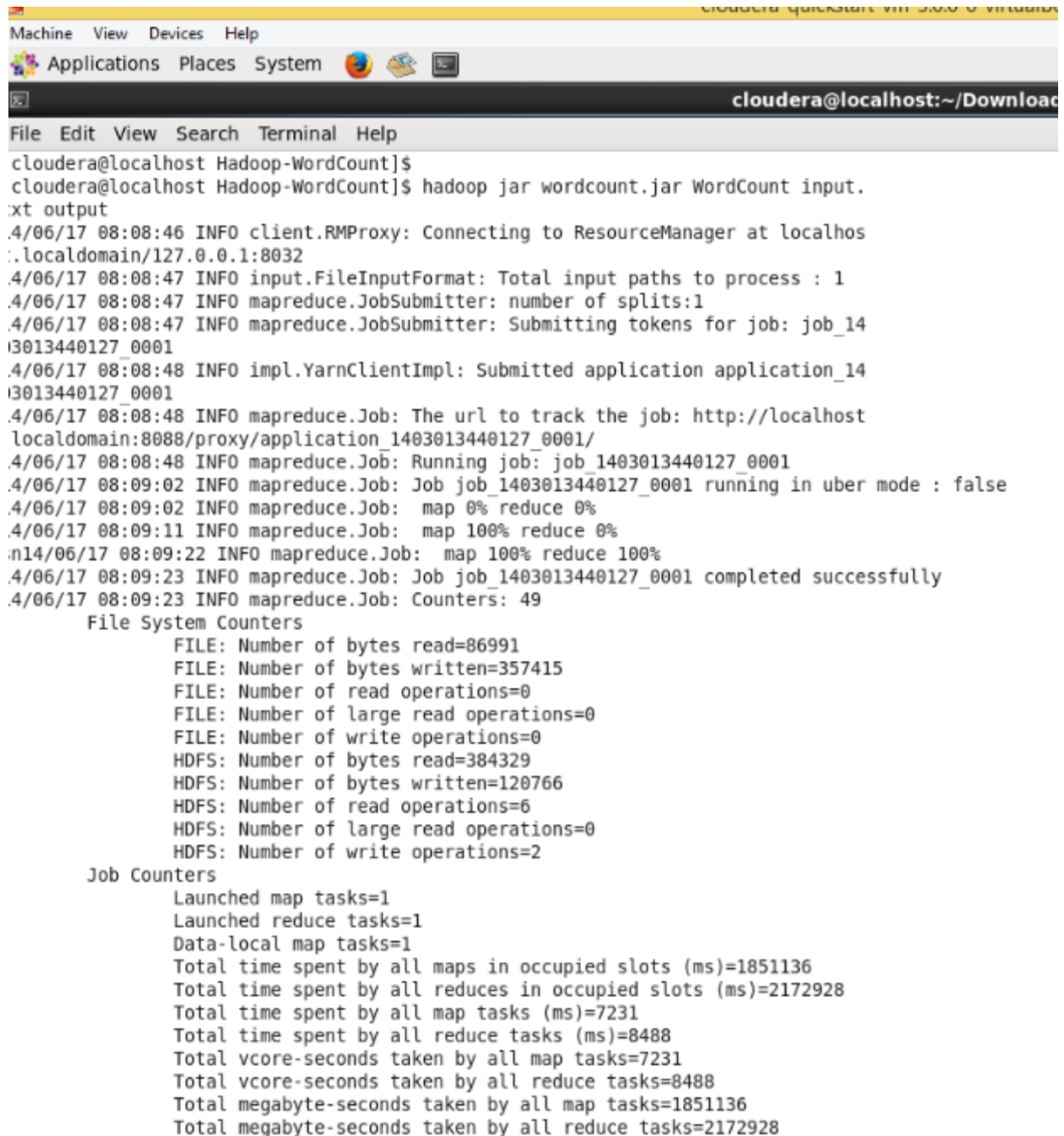
```
hadoop fs -put wordcount.jar wordcount.jar
```

## Task 4

### Running WordCount Program on Cloudera

Now as both the files required are moved to HDFS, we're ready to run the program

```
hadoop jar wordcount.jar WordCount input.txt output
```



```
cloudera@localhost:~/Download
File Edit View Search Terminal Help
cloudera@localhost Hadoop-WordCount]$
cloudera@localhost Hadoop-WordCount]$ hadoop jar wordcount.jar WordCount input.
.txt output
4/06/17 08:08:46 INFO client.RMPProxy: Connecting to ResourceManager at localhos
.localdomain/127.0.0.1:8032
4/06/17 08:08:47 INFO input.FileInputFormat: Total input paths to process : 1
4/06/17 08:08:47 INFO mapreduce.JobSubmitter: number of splits:1
4/06/17 08:08:47 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_14
13013440127_0001
4/06/17 08:08:48 INFO impl.YarnClientImpl: Submitted application application_14
13013440127_0001
4/06/17 08:08:48 INFO mapreduce.Job: The url to track the job: http://localhost
.localdomain:8088/proxy/application_1403013440127_0001/
4/06/17 08:08:48 INFO mapreduce.Job: Running job: job_1403013440127_0001
4/06/17 08:09:02 INFO mapreduce.Job: Job job_1403013440127_0001 running in uber mode : false
4/06/17 08:09:02 INFO mapreduce.Job: map 0% reduce 0%
4/06/17 08:09:11 INFO mapreduce.Job: map 100% reduce 0%
4/06/17 08:09:22 INFO mapreduce.Job: map 100% reduce 100%
4/06/17 08:09:23 INFO mapreduce.Job: Job job_1403013440127_0001 completed successfully
4/06/17 08:09:23 INFO mapreduce.Job: Counters: 49
    File System Counters
        FILE: Number of bytes read=86991
        FILE: Number of bytes written=357415
        FILE: Number of read operations=0
        FILE: Number of large read operations=0
        FILE: Number of write operations=0
        HDFS: Number of bytes read=384329
        HDFS: Number of bytes written=120766
        HDFS: Number of read operations=6
        HDFS: Number of large read operations=0
        HDFS: Number of write operations=2
    Job Counters
        Launched map tasks=1
        Launched reduce tasks=1
        Data-local map tasks=1
        Total time spent by all maps in occupied slots (ms)=1851136
        Total time spent by all reduces in occupied slots (ms)=2172928
        Total time spent by all map tasks (ms)=7231
        Total time spent by all reduce tasks (ms)=8488
        Total vcore-seconds taken by all map tasks=7231
        Total vcore-seconds taken by all reduce tasks=8488
        Total megabyte-seconds taken by all map tasks=1851136
        Total megabyte-seconds taken by all reduce tasks=2172928
```

```
Machine View Devices Help
Applications Places System
cloudera@localhost:~/Downloads
File Edit View Search Terminal Help

Launched reduce tasks=1
Data-local map tasks=1
Total time spent by all maps in occupied slots (ms)=1851136
Total time spent by all reduces in occupied slots (ms)=2172928
Total time spent by all map tasks (ms)=7231
Total time spent by all reduce tasks (ms)=8488
Total vcore-seconds taken by all map tasks=7231
Total vcore-seconds taken by all reduce tasks=8488
Total megabyte-seconds taken by all map tasks=1851136
Total megabyte-seconds taken by all reduce tasks=2172928
Map-Reduce Framework
  Map input records=9488
  Map output records=67825
  Map output bytes=643386
  Map output materialized bytes=86987
  Input split bytes=122
  Combine input records=67825
  Combine output records=11900
  Reduce input groups=11900
  Reduce shuffle bytes=86987
  Reduce input records=11900
  Reduce output records=11900
  Spilled Records=23800
  Shuffled Maps =1
  Failed Shuffles=0
  Merged Map outputs=1
  GC time elapsed (ms)=149
  CPU time spent (ms)=3740
  Physical memory (bytes) snapshot=416579584
  Virtual memory (bytes) snapshot=1801097216
  Total committed heap usage (bytes)=350224384
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=384207
File Output Format Counters
  Bytes Written=120766
[cloudera@localhost Hadoop-WordCount]$
```

The word count is run on the input.txt and the Output is generated on output folder

```
hadoop fs -cat output/*
```

```
cloudera@localhost:~/Downloads/Hadoop-WordCount
File Edit View Search Terminal Help
ways      2
ways,     1
ways--you've 1
ways.     1
ways:     1
we        25
we'll     3
we're     3
we?"      2
weak      2
weak,     1
weak.     1
weakly    1
weakness, 1
wealth    1
wear      4
wear,"    1
wearied   2
wearies   1
wearily   2
wearin'   1
weariness 1
weariness. 2
wearing   3
wears     2
weary     2
weather   1
weather,  1
weather.  3
wedding   1
weed      2
week      16
week!     1
week's    5
week,     3
week,"    3
week--"   1
week-end  2
week-ends. 1
```

The Terminal Shows the output, occurrence count of every word form the input.txt

## Task 5

## Task 6