

Running WordCount.java:

Folder Structure:

_hadoophw→

src → WordCount.java

Build → compiled .class files

Data → file1.txt, file2.txt –input files

Installation and configuration document gives detailed instruction on how to install and configure hadoop.

Check the hadoop classpath:

hadoop classpath

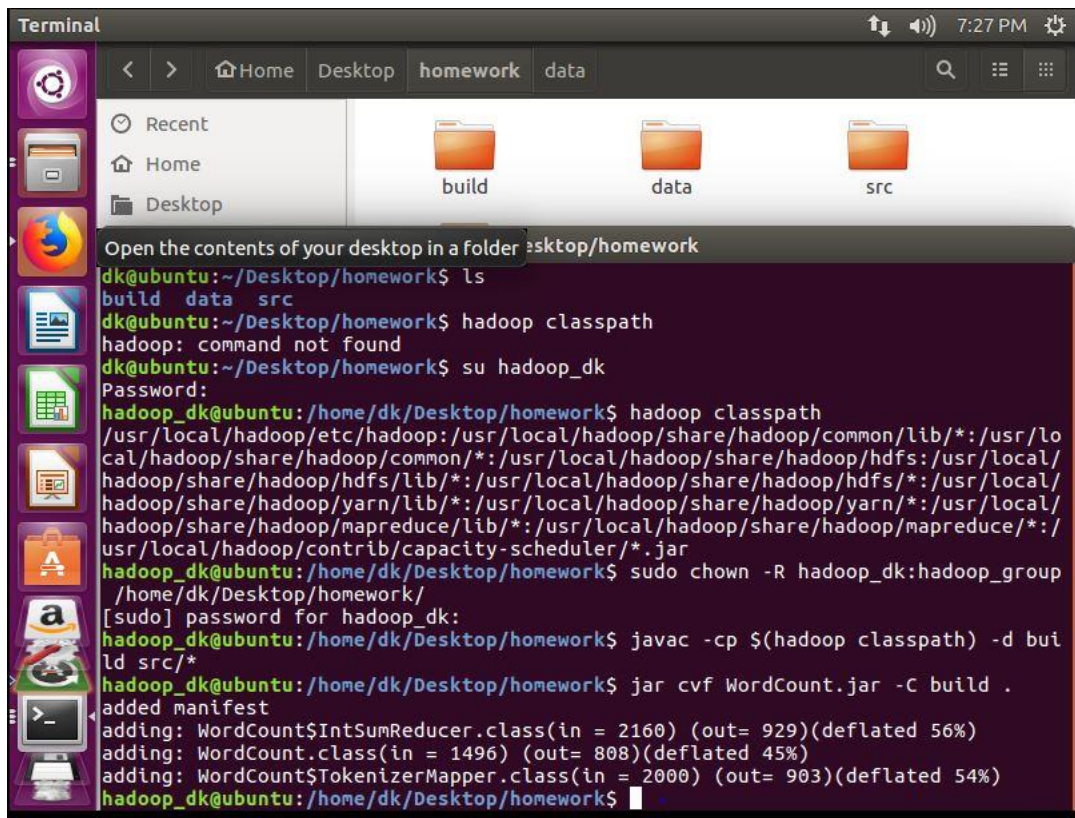
Compile java program and build jar:

Javac -cp \$(hadoop classpath) -d build src/*

The above step creates .class files in build folder

Jar cvf WordCount.jar -C build .

The above command builds jar from compiled files and saves in current directory.

A screenshot of a terminal window on a Linux system. The terminal shows a series of commands and their outputs. The user starts in the directory ~/Desktop/homework. They list the contents of the directory, which are build, data, and src. They then attempt to run the 'hadoop classpath' command, but it fails with 'command not found'. They then switch to the 'hadoop_dk' user using 'su hadoop_dk'. The 'hadoop classpath' command is run again, showing the Hadoop classpath. Next, they run 'sudo chown -R hadoop_dk:hadoop_group /home/dk/Desktop/homework/'. They then run 'javac -cp \$(hadoop classpath) -d build src/*'. Finally, they run 'jar cvf WordCount.jar -C build .' which creates a WordCount.jar file. The terminal output shows the progress of the jar creation, including adding the manifest and the class files.

```
Terminal
7:27 PM

Open the contents of your desktop in a folder desktop/homework
dk@ubuntu:~/Desktop/homework$ ls
build data src
dk@ubuntu:~/Desktop/homework$ hadoop classpath
hadoop: command not found
dk@ubuntu:~/Desktop/homework$ su hadoop_dk
Password:
hadoop_dk@ubuntu:/home/dk/Desktop/homework$ hadoop classpath
/usr/local/hadoop/etc/hadoop:/usr/local/hadoop/share/hadoop/common/lib/*:/usr/local/hadoop/share/hadoop/common/*:/usr/local/hadoop/share/hadoop/hdfs/lib/*:/usr/local/hadoop/share/hadoop/hdfs/*:/usr/local/hadoop/share/hadoop/yarn/lib/*:/usr/local/hadoop/share/hadoop/yarn/*:/usr/local/hadoop/share/hadoop/mapreduce/lib/*:/usr/local/hadoop/share/hadoop/mapreduce/*:/usr/local/hadoop/contrib/capacity-scheduler/*.jar
hadoop_dk@ubuntu:/home/dk/Desktop/homework$ sudo chown -R hadoop_dk:hadoop_group /home/dk/Desktop/homework/
[sudo] password for hadoop_dk:
hadoop_dk@ubuntu:/home/dk/Desktop/homework$ javac -cp $(hadoop classpath) -d build src/*
hadoop_dk@ubuntu:/home/dk/Desktop/homework$ jar cvf WordCount.jar -C build .
added manifest
adding: WordCount$IntSumReducer.class(in = 2160) (out= 929)(deflated 56%)
adding: WordCount.class(in = 1496) (out= 808)(deflated 45%)
adding: WordCount$TokenizerMapper.class(in = 2000) (out= 903)(deflated 54%)
hadoop_dk@ubuntu:/home/dk/Desktop/homework$
```

Copy input files to hadoop file system:

hdfs dfs -put <input file location in local file system> <hdfs location to store input files>

hdfs dfs -put '/home/dk/Desktop/homework/data/file1.txt' /word-count/input

hdfs dfs -put '/home/dk/Desktop/homework/data/file1.txt' /word-count/input

```

hadoop_dk@ubuntu: /home/dk/Desktop/homework
put: '/home/dk/Desktop/homework/data/*': No such file or directory
hadoop_dk@ubuntu: /home/dk/Desktop/homework$ hdfs dfs -put '/home/dk/Desktop/homework/data/file1.txt' /word-count/input
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by org.apache.hadoop.security.authentication.util.KerberosUtil (file:/usr/local/hadoop/share/hadoop/common/lib/hadoop-auth-2.8.3.jar) to method sun.security.krb5.Config.getInstance()
WARNING: Please consider reporting this to the maintainers of org.apache.hadoop.security.authentication.util.KerberosUtil
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
hadoop_dk@ubuntu: /home/dk/Desktop/homework$ hdfs dfs -put '/home/dk/Desktop/homework/data/file2.txt' /word-count/input
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by org.apache.hadoop.security.authentication.util.KerberosUtil (file:/usr/local/hadoop/share/hadoop/common/lib/hadoop-auth-2.8.3.jar) to method sun.security.krb5.Config.getInstance()
WARNING: Please consider reporting this to the maintainers of org.apache.hadoop.security.authentication.util.KerberosUtil
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
hadoop_dk@ubuntu: /home/dk/Desktop/homework$

```

Execute jar by reading input files from hdfs and storing output to hdfs:

hadoop jar WordCount.jar WordCount <hdfs input files directory> <hdfs output file dir>

hadoop jar WordCount.jar WordCount /word-count/input /word-count/output

```

hadoop_dk@ubuntu: /home/dk/Desktop/homework
-rw-r--r-- 1 hadoop_dk supergroup 68 2018-03-22 19:32 /word-count/input/file2.txt
hadoop_dk@ubuntu: /home/dk/Desktop/homework$ jps
9905 ResourceManager
9716 SecondaryNameNode
9511 DataNode
9351 NameNode
13579 Jps
10031 NodeManager
hadoop_dk@ubuntu: /home/dk/Desktop/homework$ hadoop jar WordCount.jar WordCount /word-count/input /word-count/output
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by org.apache.hadoop.security.authentication.util.KerberosUtil (file:/usr/local/hadoop/share/hadoop/common/lib/hadoop-auth-2.8.3.jar) to method sun.security.krb5.Config.getInstance()
WARNING: Please consider reporting this to the maintainers of org.apache.hadoop.security.authentication.util.KerberosUtil
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
18/03/22 19:37:17 INFO client.RMProxy: Connecting to ResourceManager at /0.0.0.0:8032
18/03/22 19:37:18 WARN mapreduce.JobResourceUploader: Hadoop command-line option parsing not performed. Implement the Tool interface and execute your application

```

Verify output as follows:

Hdfs dfs -cat /word-count/output/part-r-00000

```
hadoop_dk@ubuntu: /home/dk/Desktop/homework
util.KerberosUtil (file:/usr/local/hadoop/share/hadoop/common/lib/hadoop-auth-2.8.3.jar) to method sun.security.krb5.Config.getInstance()
WARNING: Please consider reporting this to the maintainers of org.apache.hadoop.security.authentication.util.KerberosUtil
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
cat: `/word-count/output': Is a directory
hadoop_dk@ubuntu:/home/dk/Desktop/homework$ hdfs dfs -cat /word-count/output/part-r-00000
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by org.apache.hadoop.security.authentication.util.KerberosUtil (file:/usr/local/hadoop/share/hadoop/common/lib/hadoop-auth-2.8.3.jar) to method sun.security.krb5.Config.getInstance()
WARNING: Please consider reporting this to the maintainers of org.apache.hadoop.security.authentication.util.KerberosUtil
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
melbourne      2
miami          2
orlando        2
tampa          2
hadoop_dk@ubuntu:/home/dk/Desktop/homework$
```