

SSN COLLEGE OF ENGINEERING
Department of Computer Science and Engineering
CS6712 Grid and Cloud Computing Laboratory

Assignment -10 : Installation of Single Node Hadoop and Executing WordCount Program

Assigned Date: 21.08.2017.

Due Date: 05.09.2017 & 05.09.2017

I. Pre-requisites

1. Operating System: Ubuntu 14.04/15.04 LTS (64-Bit only) OS
2. Installation Mode : Install in Guest OS (**Note:** Virtual Machine can be slower to work when Hadoop Cluster starts)
3. Java: jdk 1.8
4. Download Apache Hadoop 2.8.1 package
5. Eclipse Luna 64-bit for Linux (Can be downloaded from SSN Intranet – Tech Support). Install Eclipse. (If Necessary)
6. Create a Virtual Machine and install Ubuntu 16.04 Desktop amd64.iso in VM. Name the VM as HadoopVM and set network configuration.

II. Create user named as hduser and add hduser in a group named Hadoop.
Login as hduser using `jsu – hduser` command

III. Generate ssh key-pairs and move id_rsa.pub key to authorized_keys

IV. Install [openssh-server](#) and [openssh-client](#) packages using root privilege.

V. Download [Hadoop](#) and [Java](#) packages from internet and move them to the path [/usr/local/hadoop](#)

VI. Install Java and set path in ~/.bashrc file.
(Take utmost care while making changes in ~/.bashrc file)
To check java version: `jsjava –version`

VII. Install Hadoop and set path in ~/.bashrc file
To check Hadoop version: `js hadoop version`

VIII. Make changes in following Configuration files.
1. core-site.xml
2. yarn-site.xml
3. mapred-site.xml
4. hdfs-site.xml

IX. Login to hadoop / hduser user. Format the namenode

- X. Start all Hadoop service.
- XI. Check the running services in Web Interface.
- XII. Managing files in HDFS. Follow below link.

Create an input file with few sentences in it. Upload input file into HDFS using put command / copyFromLocal command

put command to store file in HDFS, **get** command to read / retrieve file from HDFS.

```
hduser    ]$    /usr/local/hadoop/bin/hadoop    dfs    -copyFromLocal
/tmp/MapReduceInput /user/hduser/MapReduceInput
```

```
hduser    ]$    /usr/local/hadoop/bin/hadoop    dfs    -ls    /tmp/MapReduceInput
/user/hduser/MapReduceInput
```

<https://hadoop.apache.org/docs/r2.4.1/hadoop-project-dist/hadoop-common/FileSystemShell.html>

- XIII. Write word count program in Java using Map and Reduce functions. Create word count program into a jar file using Eclipse.
Follow link in reference section. Either download wordcount.jar file and execute it or use Eclipse IDE to export java program into a .jar file.

https://hadoop.apache.org/docs/stable/hadoop-mapreduce-client/hadoop-mapreduce-client-core/MapReduceTutorial.html#Example:_WordCount_v2.0

<http://hortonworks.com/hadoop-tutorial/using-commandline-manage-files-hdfs/>

- XIV. Execute the word count program's jar file using below command in hduser.

```
hduser]$ ls /usr/local/hadoop/
```

```
hduser ]$ /usr/local/hadoop/bin/hadoop jar /usr/local/Hadoop/Hadoop-examples-
2.7.1.jar wordcount /user/hduser/MapReduceInput
/user/hduser/MapReduce.output
```

OR

```
hadoop jar wordcount.jar /usr/local/hadoop/input /usr/local/hadoop/output
```

```
hduser ]$ /usr/local/hadoop/bin/hadoop dfs -ls /user/hduser
```

```
hduser ]$ /usr/local/hadoop/bin/hadoop dfs -ls /user/hduser/ MapReduce.output
```

```
hduser    ]$    /usr/local/hadoop/bin/hadoop    dfs    -cat    /user/hduser/
MapReduce.output/part-r-00000
```

Finally stop all Hadoop services.