INSTALLATION OF HADOOP

AIM:

To study the procedure for installation of hadoop.

PROCEDURE:

Update

fdp17@fdp17-Veriton-M200-H81:~$ **sudo apt-get update**

Install JDK

fdp17@fdp17-Veriton-M200-H81:~$ **sudo apt-get install default-jdk**

Check Version

fdp17@fdp17-Veriton-M200-H81:~$ **java -version**
openjdk version "1.8.0_131"
OpenJDK Runtime Environment (build 1.8.0_131-8u131-b11-0ubuntu1.16.04.2-b11)
OpenJDK 64-Bit Server VM (build 25.131-b11, mixed mode)

k@laptop:~$ sudo addgroup hadoop
Adding group `hadoop' (GID 1002) ...
Done.

Creating Hadoop Group and hduser

fdp17@fdp17-Veriton-M200-H81:~$ **sudo adduser --ingroup hadoop hduser**
Adding user `hduser' ...
Adding new user `hduser' (1001) with group `hadoop' ...
Creating home directory `/home/hduser' ...
Copying files from `/etc/skel' ...
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Changing the user information for hduser
Enter the new value, or press ENTER for the default
Full Name []:
Room Number []:
Work Phone []:

- Home Phone []:

        - Other []:
    - Is the information correct? [Y/n]
    -
    -
    - Install SSH
    -
    - fdp17@fdp17-Veriton-M200-H81:~$ **sudoapt-get install ssh**
    - Reading package lists... Done
    - Building dependency tree

Reading state information... Done
The following additional packages will be installed:
 ncurses-term openssh-client openssh-server openssh-sftp-server ssh-import-id
Suggested packages:
 ssh-askpass libpam-ssh keychain monkeysphere rssh molly-guard
The following NEW packages will be installed:
 ncurses-term openssh-server openssh-sftp-server ssh ssh-import-id
The following packages will be upgraded:
 openssh-client
1 upgraded, 5 newly installed, 0 to remove and 178 not upgraded.
Need to get 1,230 kB of archives.
After this operation, 5,244 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://in.archive.ubuntu.com/ubuntu xenial-updates/main amd64 openssh-client amd64 1:7.2p2-4ubuntu2.2 [587 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu xenial-updates/main amd64 openssh-sftp-server amd64 1:7.2p2-4ubuntu2.2 [38.7 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu xenial-updates/main amd64 openssh-server amd64 1:7.2p2-4ubuntu2.2 [338 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu xenial-updates/main amd64 ssh all 1:7.2p2-4ubuntu2.2 [7,076 B]
Get:5 http://in.archive.ubuntu.com/ubuntu xenial/main amd64 ncurses-term all 6.0+20160213-1ubuntu1 [249 kB]
Get:6 http://in.archive.ubuntu.com/ubuntu xenial/main amd64 ssh-import-id all 5.5-0ubuntu1 [10.2 kB]
Fetched 1,230 kB in 2s (583 kB/s)
Preconfiguring packages ...
(Reading database ... 188613 files and directories currently installed.)
Preparing to unpack .../openssh-client_1%3a7.2p2-4ubuntu2.2_amd64.deb ...
Unpacking openssh-client (1:7.2p2-4ubuntu2.2) over (1:7.2p2-4ubuntu2.1) ...
Selecting previously unselected package openssh-sftp-server.
Preparing to unpack .../openssh-sftp-server_1%3a7.2p2-4ubuntu2.2_amd64.deb ...
Unpacking openssh-sftp-server (1:7.2p2-4ubuntu2.2) ...
Selecting previously unselected package openssh-server.
Preparing to unpack .../openssh-server_1%3a7.2p2-4ubuntu2.2_amd64.deb ...

Unpacking openssh-server (1:7.2p2-4ubuntu2.2) ...
Selecting previously unselected package ssh.
Preparing to unpack .../ssh_1%3a7.2p2-4ubuntu2.2_all.deb ...
Unpacking ssh (1:7.2p2-4ubuntu2.2) ...
Selecting previously unselected package ncurses-term.
Preparing to unpack .../ncurses-term_6.0+20160213-1ubuntu1_all.deb ...
Unpacking ncurses-term (6.0+20160213-1ubuntu1) ...
Selecting previously unselected package ssh-import-id.
Preparing to unpack .../ssh-import-id_5.5-0ubuntu1_all.deb ...
Unpacking ssh-import-id (5.5-0ubuntu1) ...
Processing triggers for man-db (2.7.5-1) ...
Processing triggers for ufw (0.35-0ubuntu2) ...
Processing triggers for systemd (229-4ubuntu16) ...
Processing triggers for ureadahead (0.100.0-19) ...
ureadahead will be reprofiled on next reboot
Setting up openssh-client (1:7.2p2-4ubuntu2.2) ...
Setting up openssh-sftp-server (1:7.2p2-4ubuntu2.2) ...
Setting up openssh-server (1:7.2p2-4ubuntu2.2) ...
Creating SSH2 RSA key; this may take some time ...
2048 SHA256:ENIl49vMNmyHFQMWhQ+7wfyERkQOA6XUx3TpTVzBkgk root@fdp17-Veriton-M200-H81 (RSA)
Creating SSH2 DSA key; this may take some time ...
1024 SHA256:m8uM/6fhMPV7Ac0+4ROrlQcR36TA5tbT07/OKd7Sv3o root@fdp17-Veriton-M200-H81 (DSA)
Creating SSH2 ECDSA key; this may take some time ...
256 SHA256:x+7TNccRUWPACHLzqvB8dfQ99i7/QzGY8lkE2G1bDHM root@fdp17-Veriton-M200-H81 (ECDSA)
Creating SSH2 ED25519 key; this may take some time ...
256 SHA256:SYNVzUtPB8yy3U01cxQ7OfKZ6Wi7i5hcEpzdXEx6K5Q root@fdp17-Veriton-M200-H81 (ED25519)
Setting up ssh (1:7.2p2-4ubuntu2.2) ...
Setting up ncurses-term (6.0+20160213-1ubuntu1) ...
Setting up ssh-import-id (5.5-0ubuntu1) ...
Processing triggers for systemd (229-4ubuntu16) ...
Processing triggers for ureadahead (0.100.0-19) ...
Processing triggers for ufw (0.35-0ubuntu2) ...

CHECK ssh and sshd
fdp17@fdp17-Veriton-M200-H81:~$ **which ssh**
/usr/bin/ssh
fdp17@fdp17-Veriton-M200-H81:~$ **which sshd**

/usr/sbin/sshd

Switch user to hduser and generate Key

fdp17@fdp17-Veriton-M200-H81:~$ **su hduser**
Password:
hduser@fdp17-Veriton-M200-H81:/home/fdp17$ **ssh-keygen -t rsa -P ""**
Generating public/private rsa key pair.
Enter file in which to save the key (/home/hduser/.ssh/id_rsa):
Created directory '/home/hduser/.ssh'.
Your identification has been saved in /home/hduser/.ssh/id_rsa.
Your public key has been saved in /home/hduser/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:/xOGOuWDb/rGI1l07EQq8b2siNTQcTmpfDyYNLAPeKU hduser@fdp17-Veriton-M200-H81
The key's randomart image is:
+---[RSA 2048]----+
| ... o |
| . += = . |
| . E+ @ * |
| ..oB B = |
| oS+ B . |
| . ..+ * |
| . . X.o . |
| . B O.. |
| .Ooo.. |
+----[SHA256]-----+

KEy Transfer
hduser@fdp17-Veriton-M200-H81:/home/fdp17$ **cat /home/hduser/.ssh/id_rsa.pub >> /home/hduser/.ssh/authorized_keys**

The second command adds the newly created key to the list of authorized keys so that Hadoop can use ssh without prompting for a password.
We can check if ssh works:

hduser@fdp17-Veriton-M200-H81:/home/fdp17$ **ssh localhost**
The authenticity of host 'localhost (127.0.0.1)' can't be established.
ECDSA key fingerprint is SHA256:x+7TNccRUWPACHLzqvB8dfQ99i7/QzGY8lkE2G1bDHM.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'localhost' (ECDSA) to the list of known hosts.

Welcome to Ubuntu 16.04.2 LTS (GNU/Linux 4.8.0-36-generic x86_64)

* Documentation: https://help.ubuntu.com
* Management: https://landscape.canonical.com
* Support: https://ubuntu.com/advantage

180 packages can be updated.
116 updates are security updates.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

Downloadd Hadoop 2.7.3
fdp17@fdp17-Veriton-M200-H81:~$ **wget**
http://redrockdigimark.com/apachemirror/hadoop/common/hadoop-2.7.3/hadoop-2.7.3.tar.gz

fdp17@fdp17-Veriton-M200-H81:~$ **tar xvzf hadoop-2.7.3.tar.gz**

Add hduser to sudo

fdp17@fdp17-Veriton-M200-H81:~$ **sudo adduser hduser sudo**
Adding user `hduser' to group `sudo' ...
Adding user hduser to group sudo
Done.

Move files to /usr/local/hadoop
hduser@fdp17-Veriton-M200-H81:~/hadoop-2.7.3$ **ls**
bin include libexec NOTICE.txt sbin
etc lib LICENSE.txt README.txt share
hduser@fdp17-Veriton-M200-H81:~/hadoop-2.7.3$ **sudo mv * /usr/local/hadoop/**

Grant Priviledges
hduser@fdp17-Veriton-M200-H81:~$ **sudo chown -R hduser:hadoop /usr/local/hadoop/**

Check Java
hduser@fdp17-Veriton-M200-H81:~$ **update-alternatives --config java**

There is only one alternative in link group java (providing /usr/bin/java): /usr/lib/jvm/java-8-openjdk-amd64/jre/bin/java
Nothing to configure

Now we can append the following to the end of ~/.bashrc:
hduser@laptop:~$ **nano ~/.bashrc**

#HADOOP VARIABLES START
export JAVA_HOME=/usr/lib/jvm/java-8-openjdk-amd64
export HADOOP_INSTALL=/usr/local/hadoop
export PATH=$PATH:$HADOOP_INSTALL/bin
export PATH=$PATH:$HADOOP_INSTALL/sbin
export HADOOP_MAPRED_HOME=$HADOOP_INSTALL
export HADOOP_COMMON_HOME=$HADOOP_INSTALL
export HADOOP_HDFS_HOME=$HADOOP_INSTALL
export YARN_HOME=$HADOOP_INSTALL
export HADOOP_COMMON_LIB_NATIVE_DIR=$HADOOP_INSTALL/lib/native
export HADOOP_OPTS="-Djava.library.path=$HADOOP_INSTALL/lib"
#HADOOP VARIABLES END

hduser@laptop:~$ **source ~/.bashrc**
note that the JAVA_HOME should be set as the path just before the '.../bin/':
hduser@ubuntu-VirtualBox:~$ **javac -version**
javac 1.7.0_75

hduser@ubuntu-VirtualBox:~$ **which javac**
/usr/bin/javac

hduser@ubuntu-VirtualBox:~$ **readlink -f /usr/bin/javac**
/usr/lib/jvm/java-7-openjdk-amd64/bin/javac

2. /usr/local/hadoop/etc/hadoop/hadoop-env.sh
We need to set JAVA_HOME by modifying hadoop-env.sh file.
export JAVA_HOME=/usr/lib/jvm/java-8-openjdk-amd64
Adding the above statement in the hadoop-env.sh file ensures that the value of JAVA_HOME variable will be available to Hadoop whenever it is started up.

3. /usr/local/hadoop/etc/hadoop/core-site.xml:

The /usr/local/hadoop/etc/hadoop/core-site.xml file contains configuration properties that Hadoop uses when starting up.
This file can be used to override the default settings that Hadoop starts with.
hduser@laptop:~$ **sudo mkdir -p /app/hadoop/tmp**
hduser@laptop:~$ **sudo chown hduser:hadoop /app/hadoop/tmp**
Open the file and enter the following in between the <configuration></configuration> tag:
hduser@laptop:~$ **vi /usr/local/hadoop/etc/hadoop/core-site.xml**

```
<configuration>
<property>
 <name>hadoop.tmp.dir</name>
 <value>/app/hadoop/tmp</value>
 <description>A base for other temporary directories.</description>
</property>

<property>
 <name>fs.default.name</name>
 <value>hdfs://localhost:54310</value>
 <description>The name of the default file system.  A URI whose
 scheme and authority determine the FileSystem implementation.  The
 uri's scheme determines the config property (fs.SCHEME.impl) naming
 the FileSystem implementation class.  The uri's authority is used to
 determine the host, port, etc. for a filesystem.</description>
</property>
</configuration>
```

4. /usr/local/hadoop/etc/hadoop/mapred-site.xml
By default, the /usr/local/hadoop/etc/hadoop/ folder contains
/usr/local/hadoop/etc/hadoop/mapred-site.xml.template
file which has to be renamed/copied with the name mapred-site.xml:

hduser@laptop:~$ **cp /usr/local/hadoop/etc/hadoop/mapred-site.xml.template /usr/local/hadoop/etc/hadoop/mapred-site.xml**

The mapred-site.xml file is used to specify which framework is being used for MapReduce.
We need to enter the following content in between the <configuration></configuration> tag:

```
<configuration>
<property>
 <name>mapred.job.tracker</name>
 <value>localhost:54311</value>
 <description>The host and port that the MapReduce job tracker runs
 at.  If "local", then jobs are run in-process as a single map
```

and reduce task.
</description>
</property>
</configuration>

5. /usr/local/hadoop/etc/hadoop/hdfs-site.xml
The /usr/local/hadoop/etc/hadoop/hdfs-site.xml file needs to be configured for each host in the cluster that is being used.
It is used to specify the directories which will be used as the namenode and the datanode on that host.
Before editing this file, we need to create two directories which will contain the namenode and the datanode for this Hadoop installation.
This can be done using the following commands:

hduser@laptop:~$ **sudo mkdir -p /usr/local/hadoop_store/hdfs/namenode**
hduser@laptop:~$ **sudo mkdir -p /usr/local/hadoop_store/hdfs/datanode**
hduser@laptop:~$ **sudo chown -R hduser:hadoop /usr/local/hadoop_store**

Open the file and enter the following content in between the <configuration></configuration> tag:
hduser@laptop:~$ **nano /usr/local/hadoop/etc/hadoop/hdfs-site.xml**

<configuration>
<property>
<name>dfs.replication</name>
<value>1</value>
<description>Default block replication.
The actual number of replications can be specified when the file is created.
The default is used if replication is not specified in create time.
</description>
</property>
<property>
<name>dfs.namenode.name.dir</name>
<value>file:/usr/local/hadoop_store/hdfs/namenode</value>
</property>
<property>
<name>dfs.datanode.data.dir</name>
<value>file:/usr/local/hadoop_store/hdfs/datanode</value>
</property>
</configuration>

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Format the New Hadoop Filesystem

Now, the Hadoop file system needs to be formatted so that we can start to use it. The format command should be issued with write permission since it creates current directory under /usr/local/hadoop_store/hdfs/namenode folder:

hduser@laptop:~$ **hadoop namenode -format**

DEPRECATED: Use of this script to execute hdfs command is deprecated.
Instead use the hdfs command for it.

15/04/18 14:43:03 INFO namenode.NameNode: STARTUP_MSG:
/**
STARTUP_MSG: Starting NameNode
STARTUP_MSG: host = laptop/192.168.1.1
STARTUP_MSG: args = [-format]
STARTUP_MSG: version = 2.6.0
STARTUP_MSG: classpath = /usr/local/hadoop/etc/hadoop
...
STARTUP_MSG: java = 1.7.0_65
**/
15/04/18 14:43:03 INFO namenode.NameNode: registered UNIX signal handlers for [TERM, HUP, INT]
15/04/18 14:43:03 INFO namenode.NameNode: createNameNode [-format]
15/04/18 14:43:07 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where applicable
Formatting using clusterid: CID-e2f515ac-33da-45bc-8466-5b1100a2bf7f
15/04/18 14:43:09 INFO namenode.FSNamesystem: No KeyProvider found.
15/04/18 14:43:09 INFO namenode.FSNamesystem: fsLock is fair:true
15/04/18 14:43:10 INFO blockmanagement.DatanodeManager: dfs.block.invalidate.limit=1000
15/04/18 14:43:10 INFO blockmanagement.DatanodeManager: dfs.namenode.datanode.registration.ip-hostname-check=true
15/04/18 14:43:10 INFO blockmanagement.BlockManager: dfs.namenode.startup.delay.block.deletion.sec is set to 000:00:00:00.000
15/04/18 14:43:10 INFO blockmanagement.BlockManager: The block deletion will start around 2015 Apr 18 14:43:10
15/04/18 14:43:10 INFO util.GSet: Computing capacity for map BlocksMap
15/04/18 14:43:10 INFO util.GSet: VM type = 64-bit
15/04/18 14:43:10 INFO util.GSet: 2.0% max memory 889 MB = 17.8 MB
15/04/18 14:43:10 INFO util.GSet: capacity = 2^21 = 2097152 entries
15/04/18 14:43:10 INFO blockmanagement.BlockManager: dfs.block.access.token.enable=false
15/04/18 14:43:10 INFO blockmanagement.BlockManager: defaultReplication = 1
15/04/18 14:43:10 INFO blockmanagement.BlockManager: maxReplication = 512
15/04/18 14:43:10 INFO blockmanagement.BlockManager: minReplication = 1
15/04/18 14:43:10 INFO blockmanagement.BlockManager: maxReplicationStreams = 2
15/04/18 14:43:10 INFO blockmanagement.BlockManager: shouldCheckForEnoughRacks = false
15/04/18 14:43:10 INFO blockmanagement.BlockManager: replicationRecheckInterval = 3000

15/04/18 14:43:10 INFO blockmanagement.BlockManager: encryptDataTransfer = false
15/04/18 14:43:10 INFO blockmanagement.BlockManager: maxNumBlocksToLog
= 1000
15/04/18 14:43:10 INFO namenode.FSNamesystem: fsOwner = hduser (auth:SIMPLE)
15/04/18 14:43:10 INFO namenode.FSNamesystem: supergroup = supergroup
15/04/18 14:43:10 INFO namenode.FSNamesystem: isPermissionEnabled = true
15/04/18 14:43:10 INFO namenode.FSNamesystem: HA Enabled: false
15/04/18 14:43:10 INFO namenode.FSNamesystem: Append Enabled: true
15/04/18 14:43:11 INFO util.GSet: Computing capacity for map INodeMap
15/04/18 14:43:11 INFO util.GSet: VM type = 64-bit
15/04/18 14:43:11 INFO util.GSet: 1.0% max memory 889 MB = 8.9 MB
15/04/18 14:43:11 INFO util.GSet: capacity = 2^20 = 1048576 entries
15/04/18 14:43:11 INFO namenode.NameNode: Caching file names occuring more than 10 times
15/04/18 14:43:11 INFO util.GSet: Computing capacity for map cachedBlocks
15/04/18 14:43:11 INFO util.GSet: VM type = 64-bit
15/04/18 14:43:11 INFO util.GSet: 0.25% max memory 889 MB = 2.2 MB
15/04/18 14:43:11 INFO util.GSet: capacity = 2^18 = 262144 entries
15/04/18 14:43:11 INFO namenode.FSNamesystem: dfs.namenode.safemode.threshold-pct =
0.9990000128746033
15/04/18 14:43:11 INFO namenode.FSNamesystem: dfs.namenode.safemode.min.datanodes = 0
15/04/18 14:43:11 INFO namenode.FSNamesystem: dfs.namenode.safemode.extension = 30000
15/04/18 14:43:11 INFO namenode.FSNamesystem: Retry cache on namenode is enabled
15/04/18 14:43:11 INFO namenode.FSNamesystem: Retry cache will use 0.03 of total heap and
retry cache entry expiry time is 600000 millis
15/04/18 14:43:11 INFO util.GSet: Computing capacity for map NameNodeRetryCache
15/04/18 14:43:11 INFO util.GSet: VM type = 64-bit
15/04/18 14:43:11 INFO util.GSet: 0.029999999329447746% max memory 889 MB = 273.1 KB
15/04/18 14:43:11 INFO util.GSet: capacity = 2^15 = 32768 entries
15/04/18 14:43:11 INFO namenode.NNConf: ACLs enabled? false
15/04/18 14:43:11 INFO namenode.NNConf: XAttrs enabled? true
15/04/18 14:43:11 INFO namenode.NNConf: Maximum size of an xattr: 16384
15/04/18 14:43:12 INFO namenode.FSImage: Allocated new BlockPoolId: BP-130729900-
192.168.1.1-1429393391595
15/04/18 14:43:12 INFO common.Storage: Storage directory
/usr/local/hadoop_store/hdfs/namenode has been successfully formatted.
15/04/18 14:43:12 INFO namenode.NNStorageRetentionManager: Going to retain 1 images with
txid >= 0
15/04/18 14:43:12 INFO util.ExitUtil: Exiting with status 0
15/04/18 14:43:12 INFO namenode.NameNode: SHUTDOWN_MSG:
/**
SHUTDOWN_MSG: Shutting down NameNode at laptop/192.168.1.1
**/

Note that hadoop namenode -format command should be executed once before we start using Hadoop.

If this command is executed again after Hadoop has been used, it'll destroy all the data on the Hadoop file system.
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Starting Hadoop
Now it's time to start the newly installed single node cluster.
We can use start-all.sh or (start-dfs.sh and start-yarn.sh)
k@laptop:~$ **cd /usr/local/hadoop/sbin**

k@laptop:/usr/local/hadoop/sbin$ **ls**
distribute-exclude.sh start-all.cmd stop-balancer.sh
hadoop-daemon.sh start-all.sh stop-dfs.cmd
hadoop-daemons.sh start-balancer.sh stop-dfs.sh
hdfs-config.cmd start-dfs.cmd stop-secure-dns.sh
hdfs-config.sh start-dfs.sh stop-yarn.cmd
httpfs.sh start-secure-dns.sh stop-yarn.sh
kms.sh start-yarn.cmd yarn-daemon.sh
mr-jobhistory-daemon.sh start-yarn.sh yarn-daemons.sh
refresh-namenodes.sh stop-all.cmd
slaves.sh stop-all.sh

k@laptop:/usr/local/hadoop/sbin$ **sudo su hduser**

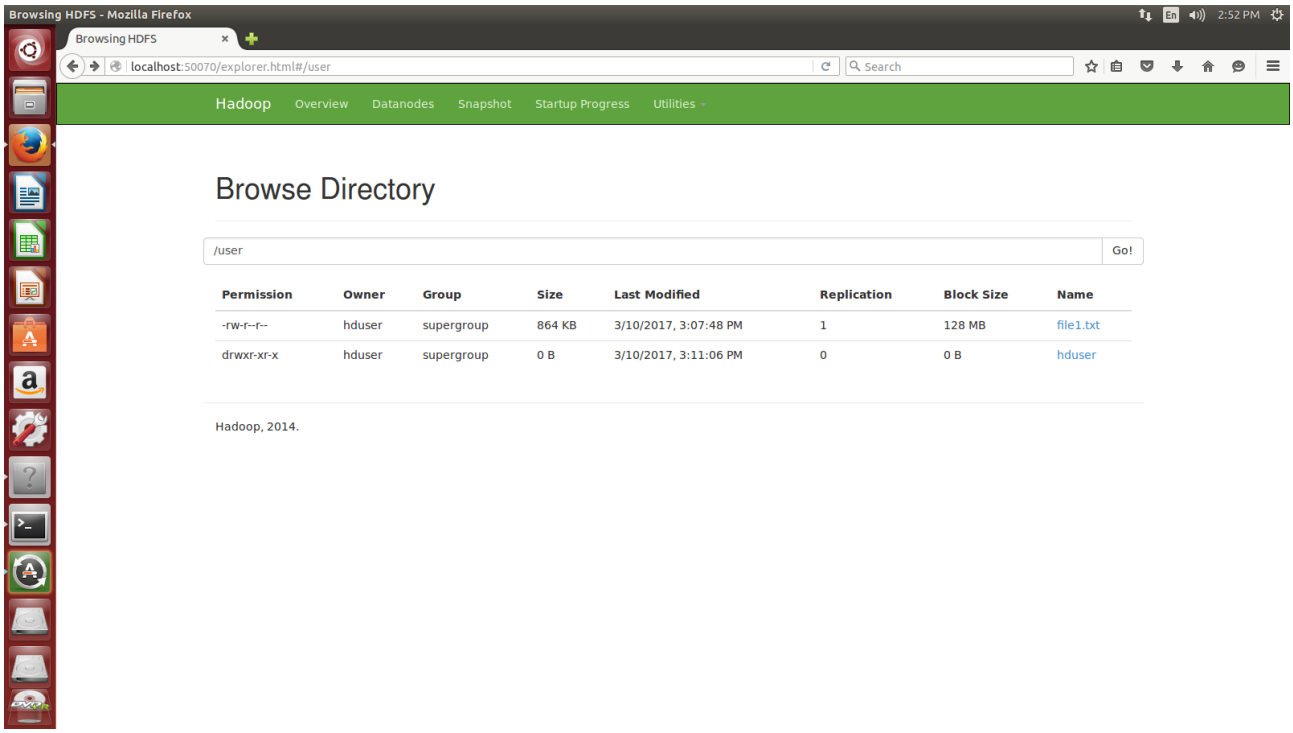
hduser@laptop:/usr/local/hadoop/sbin$ **start-all.sh**
hduser@laptop:~$ **start-all.sh**
This script is Deprecated. Instead use start-dfs.sh and start-yarn.sh
15/04/18 16:43:13 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where applicable
Starting namenodes on [localhost]
localhost: starting namenode, logging to /usr/local/hadoop/logs/hadoop-hduser-namenode-laptop.out
localhost: starting datanode, logging to /usr/local/hadoop/logs/hadoop-hduser-datanode-laptop.out
Starting secondary namenodes [0.0.0.0]
0.0.0.0: starting secondarynamenode, logging to /usr/local/hadoop/logs/hadoop-hduser-secondarynamenode-laptop.out
15/04/18 16:43:58 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where applicable
starting yarn daemons
starting resourcemanager, logging to /usr/local/hadoop/logs/yarn-hduser-resourcemanager-laptop.out
localhost: starting nodemanager, logging to /usr/local/hadoop/logs/yarn-hduser-nodemanager-laptop.out
We can check if it's really up and running:

hduser@laptop:/usr/local/hadoop/sbin$ **jps**
9026 NodeManager
f7348 NameNode
9766 Jps
8887 ResourceManager
7507 DataNode
The output means that we now have a functional instance of Hadoop running on our VPS (Virtual private server).
Another way to check is using netstat:
hduser@laptop:~$ **netstat -plten | grep java**
(Not all processes could be identified, non-owned process info
will not be shown, you would have to be root to see it all.)

tcp	0	0 0.0.0.0:50020	0.0.0.0:*	LISTEN	1001	1843372	10605/java
tcp	0	0 127.0.0.1:54310	0.0.0.0:*	LISTEN	1001	1841277	10447/java
tcp	0	0 0.0.0.0:50090	0.0.0.0:*	LISTEN	1001	1841130	10895/java
tcp	0	0 0.0.0.0:50070	0.0.0.0:*	LISTEN	1001	1840196	10447/java
tcp	0	0 0.0.0.0:50010	0.0.0.0:*	LISTEN	1001	1841320	10605/java
tcp	0	0 0.0.0.0:50075	0.0.0.0:*	LISTEN	1001	1841646	10605/java
tcp6	0	0 :::8040	:::*	LISTEN	1001	1845543	11383/java
tcp6	0	0 :::8042	:::*	LISTEN	1001	1845551	11383/java
tcp6	0	0 :::8088	:::*	LISTEN	1001	1842110	11252/java
tcp6	0	0 :::49630	:::*	LISTEN	1001	1845534	11383/java
tcp6	0	0 :::8030	:::*	LISTEN	1001	1842036	11252/java
tcp6	0	0 :::8031	:::*	LISTEN	1001	1842005	11252/java
tcp6	0	0 :::8032	:::*	LISTEN	1001	1842100	11252/java
tcp6	0	0 :::8033	:::*	LISTEN	1001	1842162	11252/java

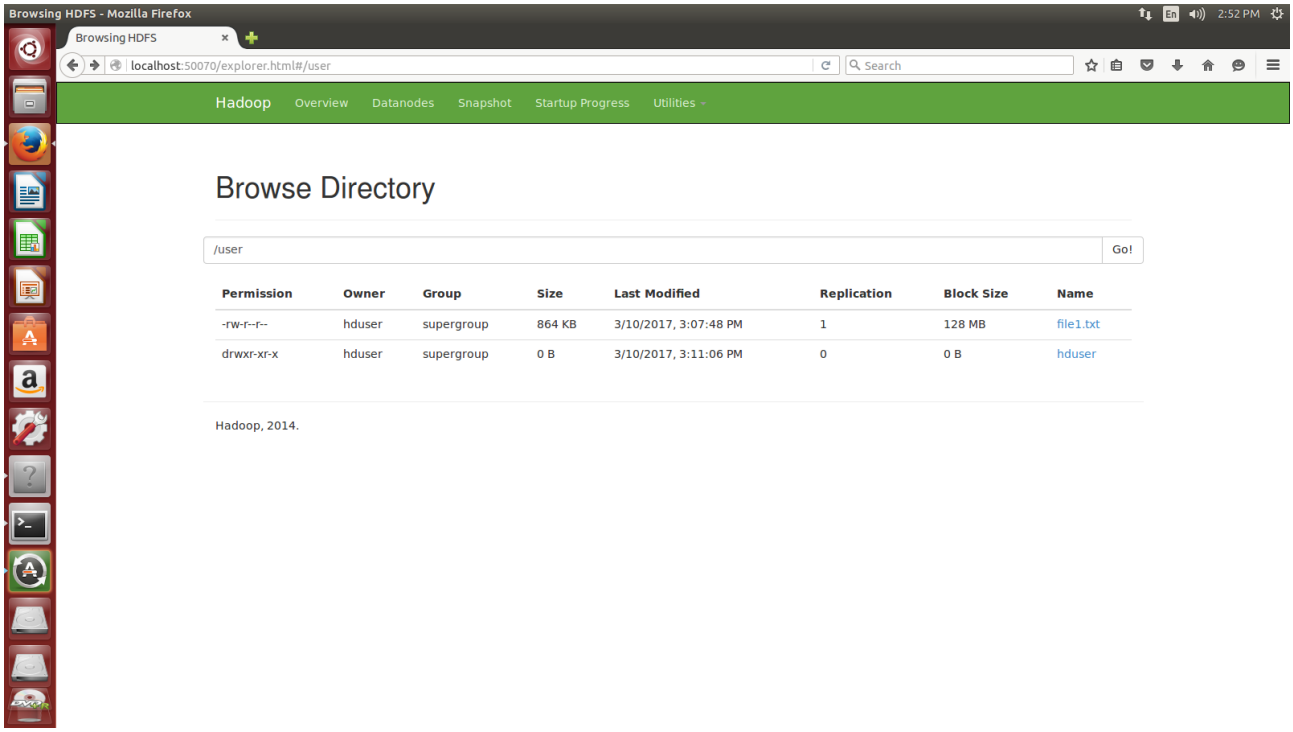
Stopping Hadoop
$ **pwd**
/usr/local/hadoop/sbin
Running an inbuilt mapreduce example
hduser@fdp17-Veriton-M200-H81:~$ **hadoop jar**
/usr/local/hadoop/share/hadoop/mapreduce/hadoop-mapreduce-examples-2.7.3.jar pi 2 5

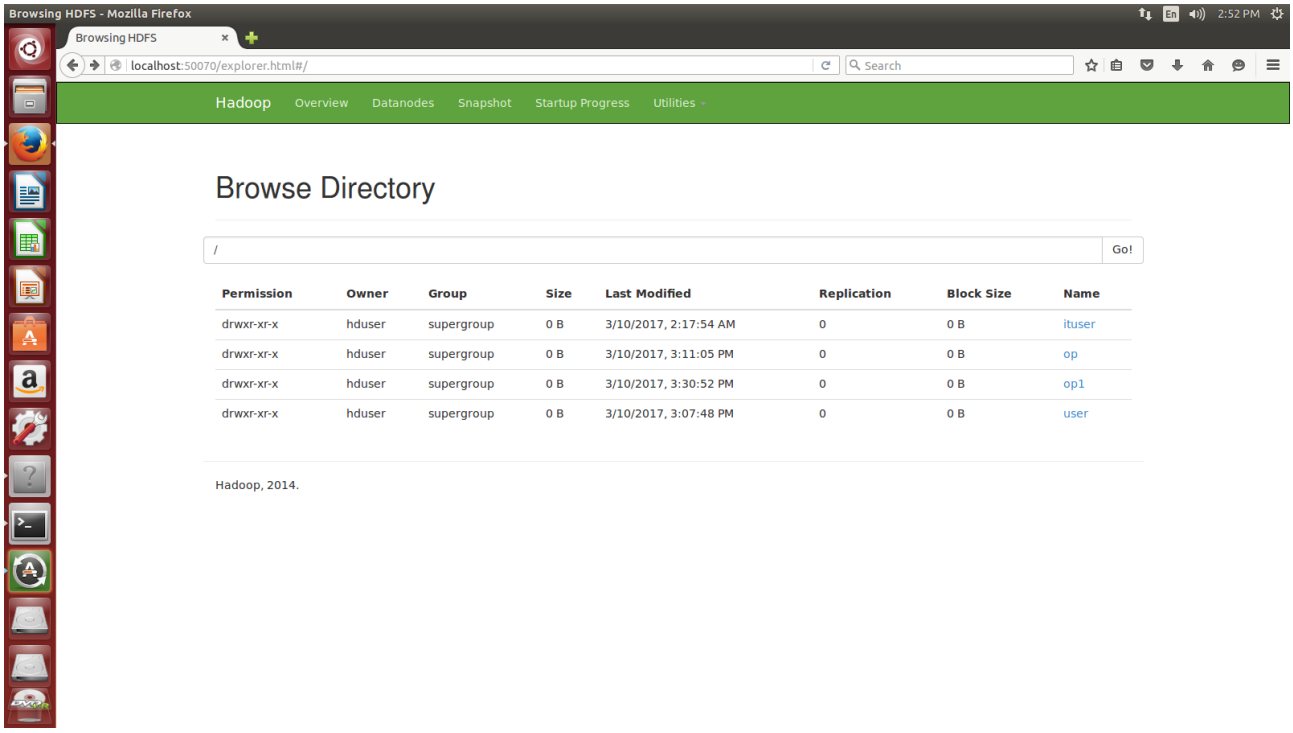
Giving permission to folder to execute java program
sudo chmod -R 777 wordcount/

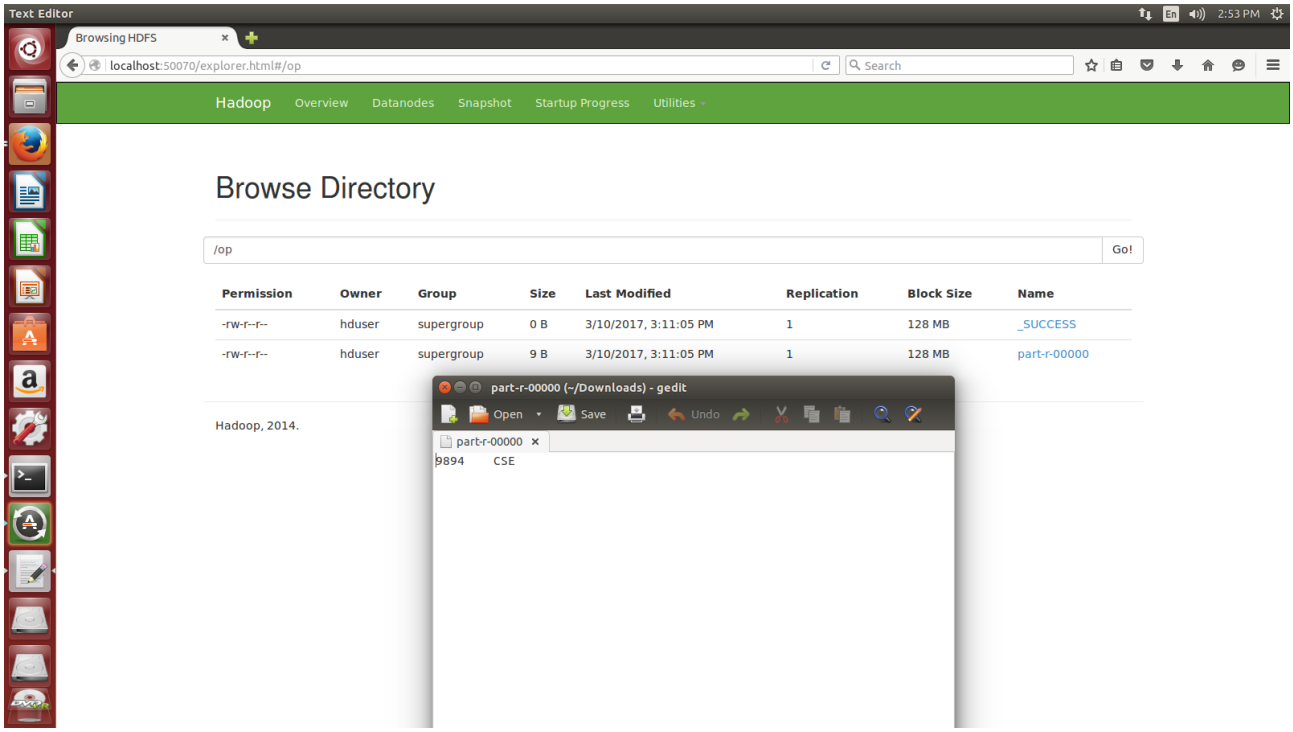


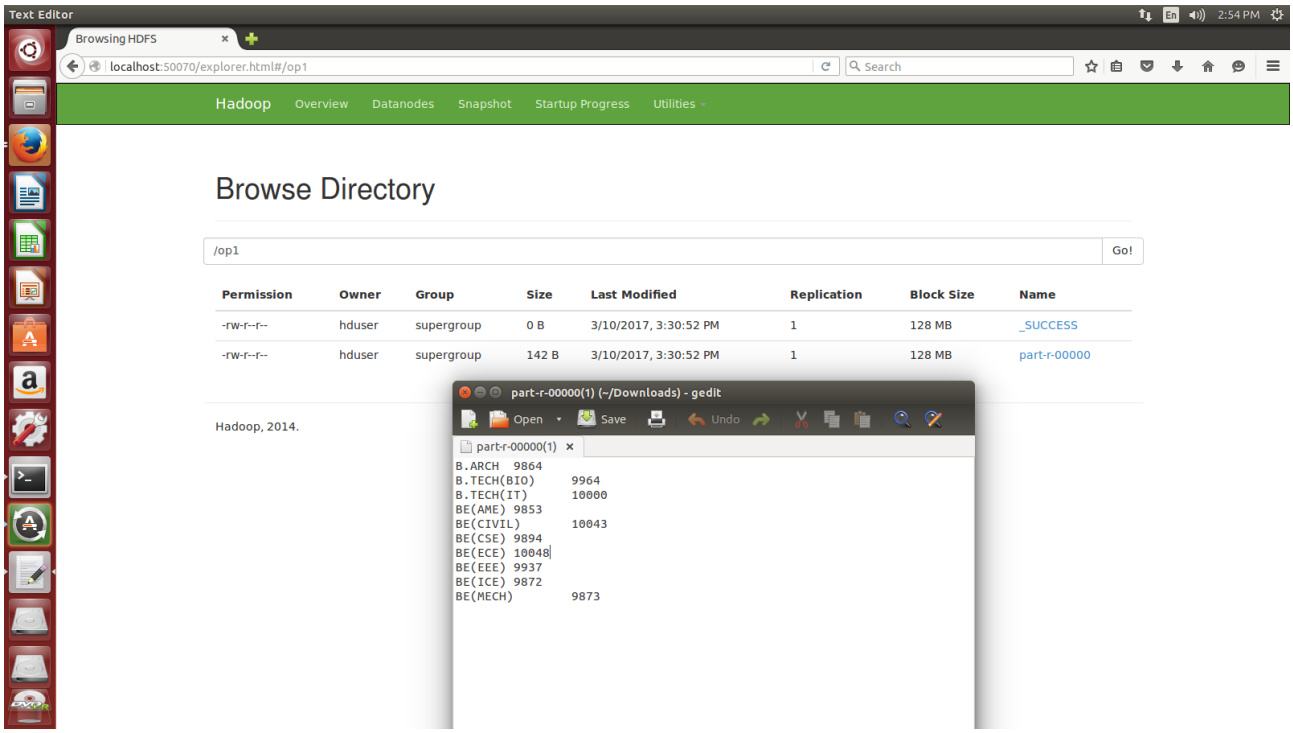
RESULT:

Thus the installation of hadoop procedure has been studied.


Browsing HDFS - Mozilla Firefox
2:52 PM
Browsing HDFS
localhost:50070/explorer.html#/user
Search
Hadoop
Overview
Datanodes
Snapshot
Startup Progress
Utilities
Browse Directory
/user
Go!
Permission
Owner
Group
Size
Last Modified
Replication
Block Size
Name
-rw-r--r--
hduser
supergroup
864 KB
3/10/2017, 3:07:48 PM
1
128 MB
file1.txt
drwxr-xr-x
hduser
supergroup
0 B
3/10/2017, 3:11:06 PM
0
0 B
hduser
Hadoop, 2014.


Browsing HDFS - Mozilla Firefox
2:52 PM
Browsing HDFS
localhost:50070/explorer.html#/
Search
Hadoop
Overview
Datanodes
Snapshot
Startup Progress
Utilities
Browse Directory
/
Go!
Permission
Owner
Group
Size
Last Modified
Replication
Block Size
Name
drwxr-xr-x
hduser
supergroup
0 B
3/10/2017, 2:17:54 AM
0
0 B
ituser
drwxr-xr-x
hduser
supergroup
0 B
3/10/2017, 3:11:05 PM
0
0 B
op
drwxr-xr-x
hduser
supergroup
0 B
3/10/2017, 3:30:52 PM
0
0 B
op1
drwxr-xr-x
hduser
supergroup
0 B
3/10/2017, 3:07:48 PM
0
0 B
user
Hadoop, 2014.


Text Editor
2:53 PM
Browsing HDFS
localhost:50070/explorer.html#/op
Search
Hadoop
Overview
Datanodes
Snapshot
Startup Progress
Utilities
Browse Directory
/op
Go!
Permission
Owner
Group
Size
Last Modified
Replication
Block Size
Name
-rw-r--r--
hduser
supergroup
0 B
3/10/2017, 3:11:05 PM
1
128 MB
_SUCCESS
-rw-r--r--
hduser
supergroup
9 B
3/10/2017, 3:11:05 PM
1
128 MB
part-r-00000
Hadoop, 2014.
part-r-00000 (~/Downloads) - gedit
Open
Save
Undo
part-r-00000
9894 CSE


Text Editor
2:54 PM
Browsing HDFS
localhost:50070/explorer.html#/op1
Search
Hadoop
Overview
Datanodes
Snapshot
Startup Progress
Utilities
Browse Directory
/op1
Go!
Permission
Owner
Group
Size
Last Modified
Replication
Block Size
Name
-rw-r--r--
hduser
supergroup
0 B
3/10/2017, 3:30:52 PM
1
128 MB
_SUCCESS
-rw-r--r--
hduser
supergroup
142 B
3/10/2017, 3:30:52 PM
1
128 MB
part-r-00000
Hadoop, 2014.
part-r-00000(1) (~/Downloads) - gedit
Open
Save
Undo
part-r-00000(1)
B.ARCH 9864
B.TECH(BIO) 9964
B.TECH(IT) 10000
BE(AME) 9853
BE(CIVIL) 10043
BE(CSE) 9894
BE(ECE) 10048
BE(EEE) 9937
BE(ICE) 9872
BE(MECH) 9873