22.install Hadoop 2.x and configure the Name Node and Data Node

Aim:

To configure the Hadoop environment and to format the name node and data node.

Procedure:

Step 7 - Modify Hadoop config files
//Hadoop Environmental variable setting – The following files will be modified

1. ~/.bashrc
2. /usr/local/hadoop/hadoop-2.7.2/etc/hadoop/hadoop-env.sh
3. /usr/local/hadoop/hadoop-2.7.2/etc/hadoop/core-site.xml
4. /usr/local/hadoop/hadoop-2.7.2/etc/hadoop/hdfs-site.xml
5. /usr/local/hadoop/hadoop-2.7.2/etc/hadoop/yarn-site.xml
6. /usr/local/hadoop/hadoop-2.7.2/etc/hadoop/mapred-site.xml.template

$ sudo nano ~/.bashrc

// Add the following lines at the end of the file

```
export JAVA_HOME=/usr/lib/jvm/java-8-oracle
export HADOOP_HOME=/usr/local/hadoop/hadoop-2.7.2
export PATH=$PATH:$HADOOP_HOME/bin
export PATH=$PATH:$HADOOP_HOME/sbin
export HADOOP_MAPRED_HOME=$HADOOP_HOME
export HADOOP_COMMON_HOME=$HADOOP_HOME
export HADOOP_HDFS_HOME=$HADOOP_HOME
export YARN_HOME=$HADOOP_HOME
HADOOP_COMMON_LIB_NATIVE_DIR=$HADOOP_HOME/lib/native
export HADOOP_OPTS="-D.java.library.path=$HADOOP_HOME/lib"
export PATH=$PATH:/usr/local/hadoop/hadoop-2.7.2/bin
```

// Configure Hadoop Files

$ cd /usr/local/hadoop/hadoop-2.7.2/etc/hadoop/

$ sudo nano hadoop-env.sh

// Add following line in hadoop-env.sh – Set JAVA variable in Hadoop

```
# The java implementation to use.
export JAVA_HOME=/usr/lib/jvm/java-8-oracle
```

// Create datanode and namenode

$ sudo mkdir –p /usr/local/hadoop_tmp/hdfs/namenode

$ sudo mkdir –p /usr/local/hadoop_tmp/hdfs/datanode

// Changing ownership to hadoop_tmp

$ sudo chown –R hduser:hadoop /usr/local/hadoop_tmp

// Edit hdfs-site.xml

$ sudo nano hdfs-site.xml

// Add the following lines between <configuration> …… </configuration>

```
<configuration>
<property>
<name>dfs.replication</name>
<value>1</value>
</property>
<property>
<name>dfs.namenode.name.dir</name>
<value>file:/usr/local/hadoop_tmp/hdfs/namenode</value>
</property>
<property>
<name>dfs.datanode.data.dir</name>
<value>file:/usr/local/hadoop_tmp/hdfs/datanode</value>
</property>
</configuration>
```

// Edit core-site.xml

$ sudo nano core-site.xml

// Add the following lines between <configuration> …… </configuration>

```
<configuration>
<property>
<name>fs.default.name</name>
<value>hdfs://localhost:9000</value>
</property>
</configuration>
```

// Edit yarn-site.xml

$ sudo nano yarn-site.xml

// Add the following lines between <configuration> …… </configuration>

```
<configuration>
<property>
<name>yarn.nodemanager.aux-services</name>
<value>mapreduce_shuffle</value>
</property>
```

```
<property>
<name>yarn.nodemanager.aux-services.mapreduce.shuffle.class</name>
<value>org.apache.hadoop.mapred.Shuffle-Handler</value>
</property>
</configuration>
```

// Edit mapred-site.xmsudo

$ cp /usr/local/hadoop/hadoop-2.7.2/etc/hadoop/mapred-site.xml.template /usr/local/hadoop/hadoop-2.7.2/etc/hadoop/mapred-site.xml

$ sudo nano mapred-site.xml

// Add the following lines between <configuration> …… </configuration>

```
<configuration>
<property>
<name>mapreduce.framework.name</name>
<value>yarn</value>
</property>
</configuration>
```

8 – Format Hadoop File System
$ cd /usr/local/hadoop/hadoop-2.7.2/bin
$ hadoop namenode -format

Step 9 - Start Hadoop
$ cd /usr/local/hadoop/hadoop-2.7.2/sbin

// Starting dfs services

$ start-dfs.sh

// Starting mapreduce services

$ start-yarn.sh

$ jps

Step 10 - Check Hadoop through web UI
Go to browser type http://localhost:8088 – All Applications Hadoop Cluster

Go to browser type http://localhost:50070 – Hadoop Namenode

Step 11 - Stop Hadoop

$ stop-dfs.sh

$ stop-yarn.sh

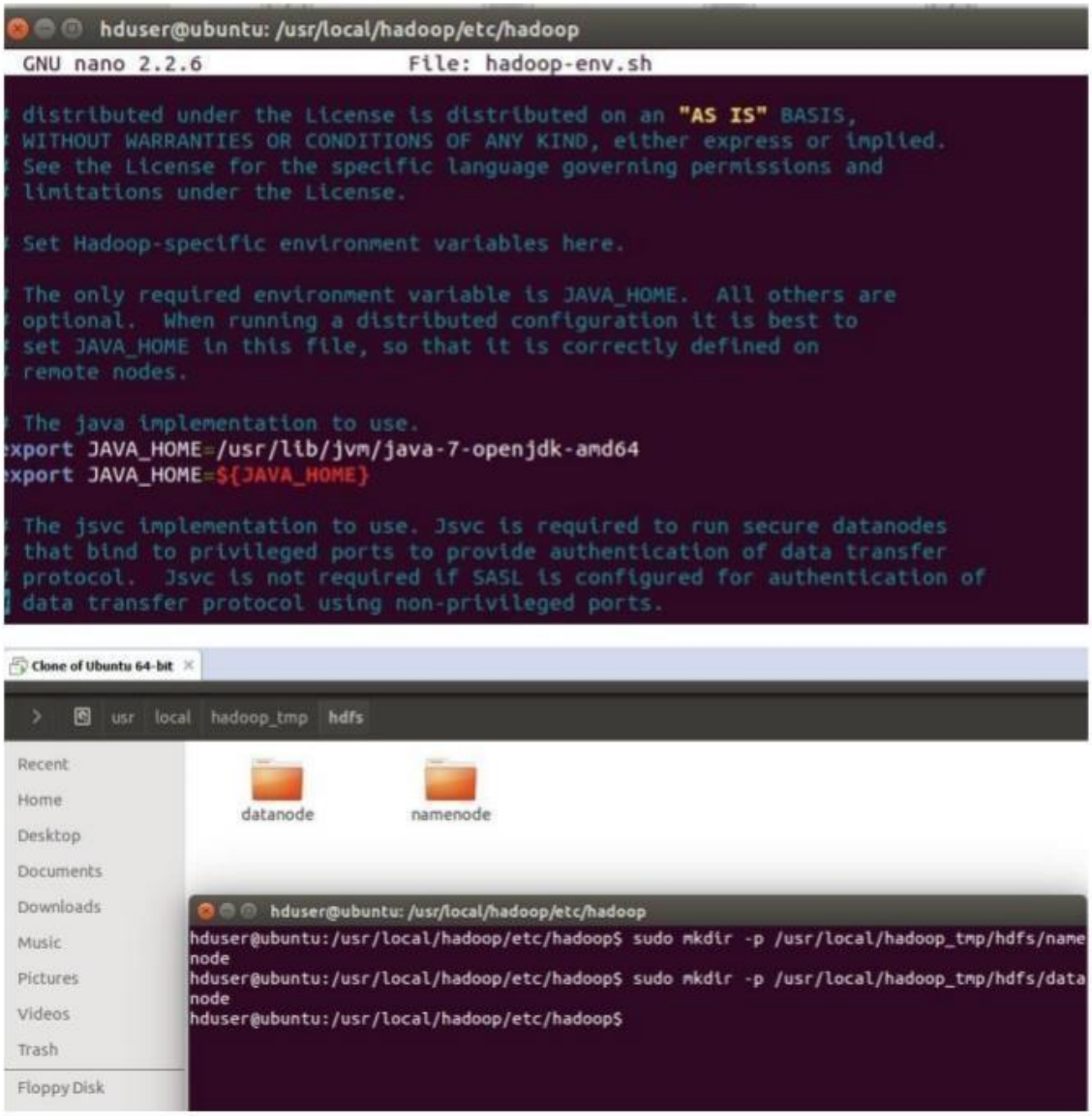
```
GNU nano 2.2.6                                File: /home/hduser/.bashrc
```

```
# enable programmable completion features (you don't need to enable
# this, if it's already enabled in /etc/bash.bashrc and /etc/profile
# sources /etc/bash.bashrc).
    /usr/share/bash-completion/bash_completion
  . /etc/bash_completion
fi
fi
```

```
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 HADOOP_OPTS="-Djava.library.path=$HADOOP_INSTALL/lib"
```

```
hduser@ubuntu:/$ cd usr
hduser@ubuntu:/usr$ cd local
hduser@ubuntu:/usr/local$ cd hadoop
hduser@ubuntu:/usr/local/hadoop$ cd etc
hduser@ubuntu:/usr/local/hadoop/etc$ cd hadoop
hduser@ubuntu:/usr/local/hadoop/etc/hadoop$ ls
container-executor.cfg      httpfs-signature.secret  mapred-site.xml
hadoop-env.cmd
hadoop-env.sh               kms-env.sh               ssl-client.xml.example
hadoop-metrics2.properties  kms-log4j.properties     ssl-server.xml.example
hadoop-metrics.properties   kms-site.xml             yarn-env.cmd
hduser@ubuntu:/usr/local/hadoop/etc/hadoop$
```



Outcome: The Single node Hadoop cluster has been successfully created and name node and data node has been formatted for HDFS.