How to Install Hadoop in Linux?

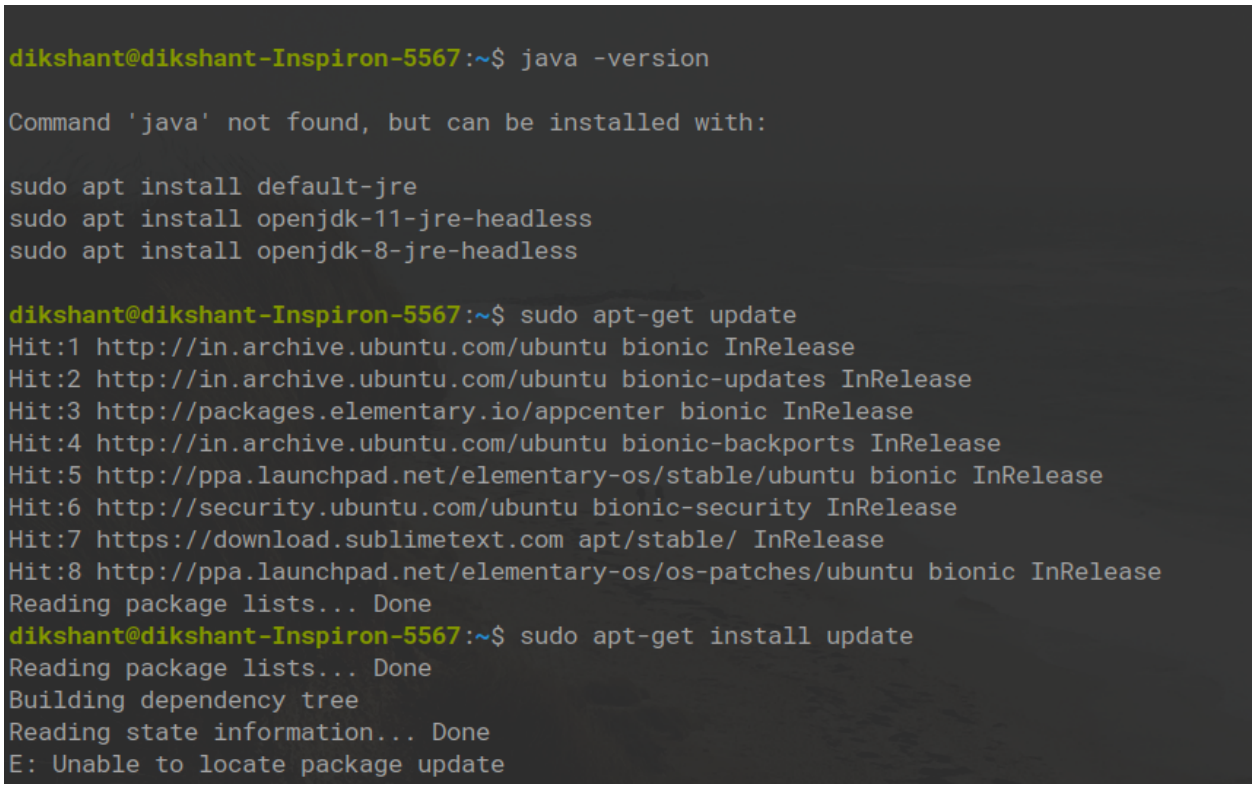
Step 1: Open your terminal and first check whether your system is equipped with Java or not with command

```
java -version
```

Step 2: Update your system using the below 2 commands.

```
sudo apt-get update
```

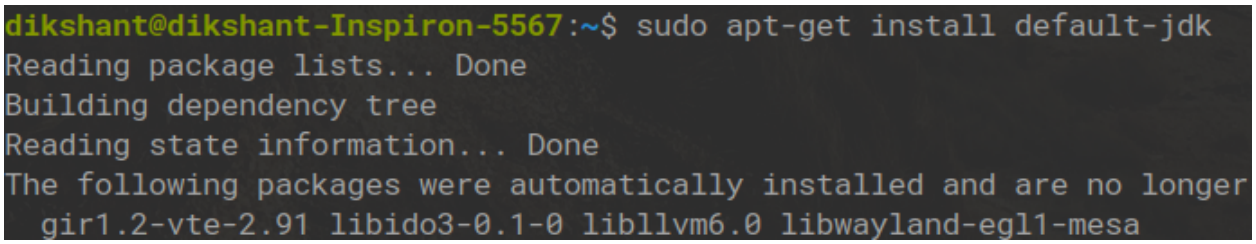
```
sudo apt-get install update
```



Step 3: Now we will install the default JDK for java using the following command:

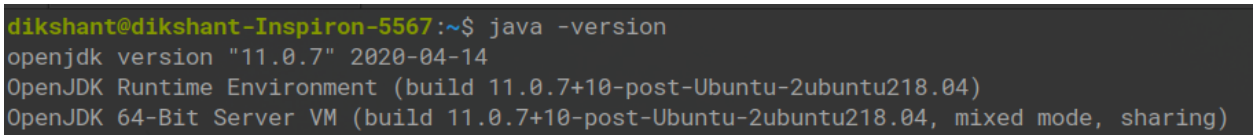
```
sudo apt-get install default-jdk
```

It will ask you for Y/N press Y.



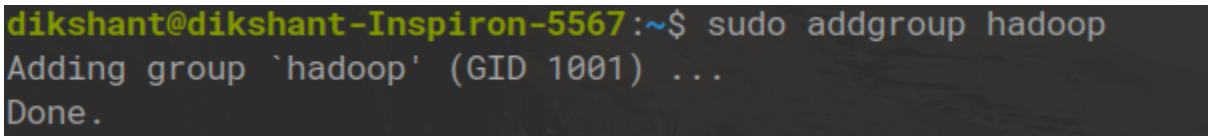
Step 4: Now check whether Java is installed or not using the command

```
java -version
```

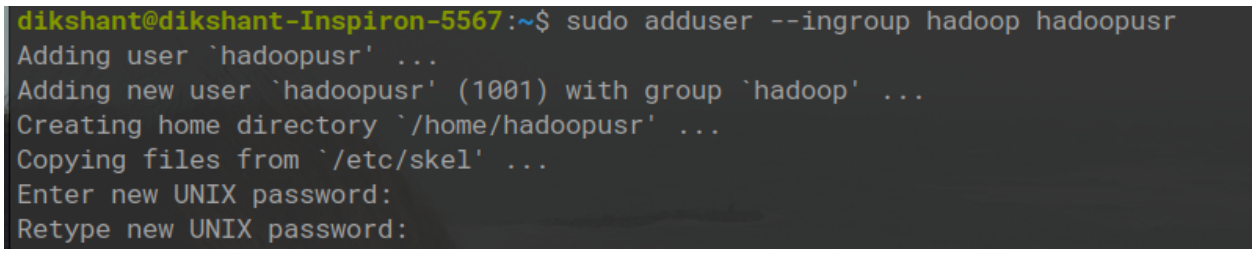


Step 5: Once it installs we require a dedicated user for the same. It is not necessary but it is a good thing to make a dedicated user for the **Hadoop** installation. You can use the following command:

```
sudo addgroup hadoop
```




```
sudo adduser --ingroup hadoop hadoopusr
```



Step 6: Now after running the above 2 commands, you have successfully created a dedicated user with name **hadoopusr**. Now it will ask for a new UNIX password so choose password according to your convenience(make sure sometimes it doesn't show the character or number you type so please remember whatever you type). Then it will ask you for information like Full Name etc. Keep pressing enter for default then press Y for correct information.

```
Changing the user information for hadoopusr
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] y
dikshant@dikshant-Inspiron-5567:~$
```

Step 7: Now use the following command:

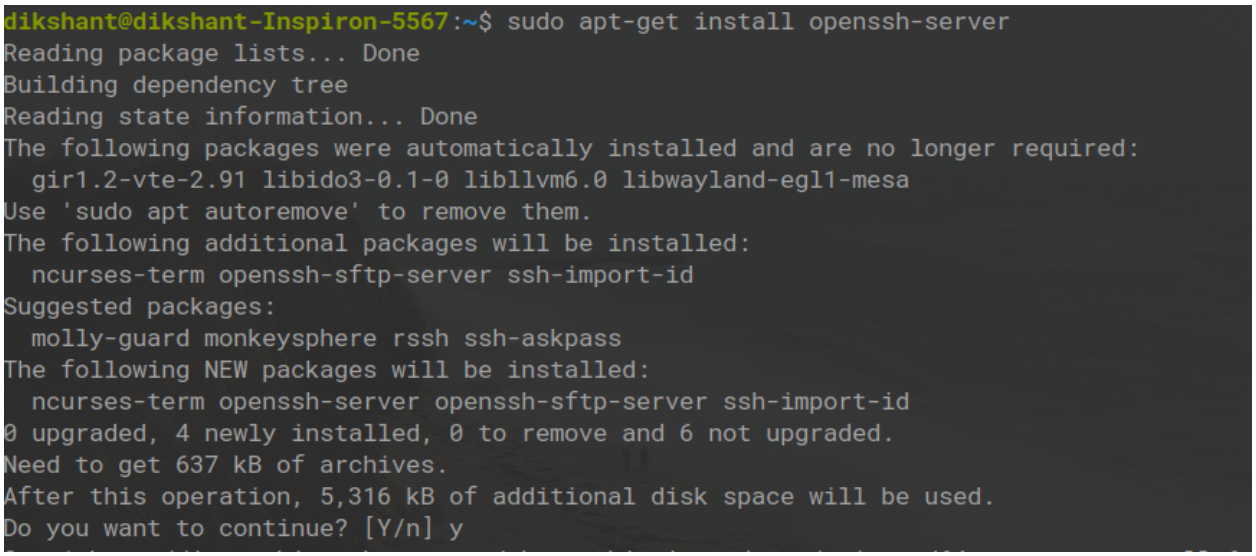
```
sudo adduser hadoopusr sudo
```

With this command, you add your 'hadoopusr' to the 'sudo' group so that we can also make it a superuser.

```
dikshant@dikshant-Inspiron-5567:~$ sudo adduser hadoopusr sudo
Adding user `hadoopusr' to group `sudo' ...
Adding user hadoopusr to group sudo
Done.
```

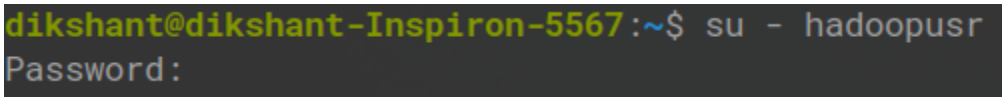
Step 8: Now we also need to install ssh key's that is secured shell.

```
sudo apt-get install openssh-server
```



Step 9: Now it's time for us to switch to new user that is hadoopusr and also enter the password you use above command for switching user:

```
su - hadoopusr
```



Step 10: Now it's time to generate ssh key because Hadoop requires ssh access to manage it's node, remote or local machine so for our single node of the setup of Hadoop we configure such that we have access to the localhost.

```
ssh-keygen -t rsa -P ""
```

After this command simple press **enter**.

```
hadoopusr@dikshant-Inspiron-5567:~$ ssh-keygen -t rsa -P ""
Generating public/private rsa key pair.
Enter file in which to save the key (/home/hadoopusr/.ssh/id_rsa):
/home/hadoopusr/.ssh/id_rsa already exists.
Overwrite (y/n)? y
Your identification has been saved in /home/hadoopusr/.ssh/id_rsa.
Your public key has been saved in /home/hadoopusr/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:d8oqU82BJG7U1TZINPSDn9qHx7eCxGfJWHP63gYh4uE hadoopusr@dikshant-Inspiron-5567
The key's randomart image is:
+---[RSA 2048]----+
|       . =*o     |
|      o o .++    |
|     o o ...o.   |
|      o . +..=.. |
|     .  S=o+B.=. |
|        .oEO O.  |
|       .  = * =..|
|      o  . . + o+|
|       o.     o+.|
+----[SHA256]-----+
```

Step 11: Now we use the below command because we need to add the public key of the computer to the authorized key file of the compute that you want to access with ssh keys so we fired these command.

```
cat $HOME/ .ssh/id_rsa.pub >> $HOME/.ssh/authorized_keys
```

```
+----[SHA256]-----+
hadoopusr@dikshant-Inspiron-5567:~$ cat $HOME/ .ssh/id_rsa.pub >> $HOME/.ssh/authorized_keys
cat: /home/hadoopusr/: Is a directory
hadoopusr@dikshant-Inspiron-5567:~$
```

Step 12: Now check for the local host i.e. ssh localhost with below command and press *yes* to continue and enter your **password** if it ask then type exit.

```
ssh localhost
```

```
hadoopusr@dikshant-Inspiron-5567:~$ ssh localhost
The authenticity of host 'localhost (127.0.0.1)' can't be established.
ECDSA key fingerprint is SHA256:VJr2egmcO6zJMziGFTtYkvU+59uwUsflFHIrI9NnJwg.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'localhost' (ECDSA) to the list of known hosts.
Welcome to elementary OS 5.0 Juno (GNU/Linux 4.15.0-36-generic x86_64)
Built on Ubuntu 18.04 LTS
```

```
hadoopusr@dikshant-Inspiron-5567:~$ exit
logout
Connection to localhost closed.
hadoopusr@dikshant-Inspiron-5567:~$
```

Now you have completed the basic requirement for **Hadoop** installation.

Step 13: Now download the package that you will going to install . download it from Hadoop-2.9.0 by clicking to the file shown in below image.

hadoop-2.9.0.tar.gz 2017-11-17 23:10 350M

Step 14: Once you have download *hadoop-2.9.0.tar.gz* then place this tar file to your preferred location then extract it with below commands. In my case I moved it to the */Documents* folder.

```
hadoopusr@dikshant-Inspiron-5567:~$ cd /home
hadoopusr@dikshant-Inspiron-5567:/home$ ls
dikshant  hadoopusr
hadoopusr@dikshant-Inspiron-5567:/home$ cd dikshant
hadoopusr@dikshant-Inspiron-5567:/home/dikshant$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos
hadoopusr@dikshant-Inspiron-5567:/home/dikshant$ cd Documents
hadoopusr@dikshant-Inspiron-5567:/home/dikshant/Documents$ ls
hadoop-2.9.0.tar.gz
hadoopusr@dikshant-Inspiron-5567:/home/dikshant/Documents$
```

Now we extract this file with below command and enter your *hadoopusr* password. If you don't know the password don't worry you can simply switch your user and change password according to yourself.

```
sudo tar xvzf hadoop-2.9.0.tar.gz
```

```
hadoopusr@dikshant-Inspiron-5567:/home/dikshant/Documents$ sudo tar xvzf hadoop-2.9.0.tar.gz
hadoop/share/doc/hadoop/hadoop-yarn/hadoop-yarn-server/hadoop-yarn-server-resourcemanager/apidocs/org/apach
/resourcemanager/scheduler/capacity/allocator/class-use/RegularContainerAllocator.html
hadoop/share/doc/hadoop/hadoop-yarn/hadoop-yarn-server/hadoop-yarn-server-nodemanager/apidocs/org/apache/ha
emanager/containermanager/linux/privileged/class-use/PrivilegedOperation.html
hadoop/share/doc/hadoop/hadoop-mapreduce-client/hadoop-mapreduce-client-hs/apidocs/org/apache/hadoop/mapre
/package-use.html
```

Step 15: Now we need to move this extracted folder to the *hadoopusr* user so for that type below command(make sure name of your extracted folder is *hadoop*):

```
sudo mv hadoop /usr/local/hadoop
```

Step 16: Now we need to change the ownership so for that command is:

```
sudo chown -R hadoopusr /usr/local
```

```
hadoopusr@dikshant-Inspiron-5567:/home/dikshant/Documents$ sudo mv hadoop /usr/local/hadoop
hadoopusr@dikshant-Inspiron-5567:/home/dikshant/Documents$ sudo chown -R hadoopusr /usr/local
hadoopusr@dikshant-Inspiron-5567:/home/dikshant/Documents$
```

Note: For the next couple of steps, we will be using a text editor to set up configurations. The pictures show gedit but since I was having some issues with gedit, I used vim instead. You can use whatever you're comfortable with.

To make changes in vim:

Press 'i' to enter editing mode.

Copy and paste whatever needs to be added.

Press Esc to exit editing mode.

Press ':' +'w' to save the file.

Press ':' + 'q' to exit.

Step 17: This is the most important Step i.e. now we are going to configure some files.

First we configure our **./bashrc** file so that to open that file type the below command:

```
sudo vim ~/.bashrc
```

```
hadoopusr@dikshant-Inspiron-5567:/home/dikshant/Documents$ sudo gedit ~/.bashrc

** (gedit:13283): WARNING **: 13:59:30.257: Set document metadata failed: Setting attribute metadata::gedit-spell-la
nguage not supported

** (gedit:13283): WARNING **: 13:59:30.258: Set document metadata failed: Setting attribute metadata::gedit-encoding
 not supported
```

Then a **./bashrc file** is open then copy the below command inside this file (change java version according to your PC java version like it might be java-8-openjdk-amd64).

```
export JAVA_HOME=/usr/lib/jvm/java-11-openjdk-amd64
export HADOOP_HOME=/usr/local/hadoop
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
export HADOOP_COMMON_LIB_NATIVE_DIR=$HADOOP_HOME/lib/native
export HADOOP_OPTS="-Djava.library.path=$HADOOP_HOME/lib"
```

```
fi

export JAVA_HOME=/usr/lib/jvm/java-11-openjdk-amd64
export HADOOP_HOME=/usr/local/hadoop
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
export HADOOP_COMMON_LIB_NATIVE_DIR=$HADOOP_HOME/lib/native
export HADOOP_OPTS="-Djava.library.path=$HADOOP_HOME/lib"
```

Then check whether you have configured it correctly or not.

```
source ~/.bashrc
```

```
hadoopusr@dikshant-Inspiron-5567:/home/dikshant/Documents$ source ~/.bashrc
hadoopusr@dikshant-Inspiron-5567:/home/dikshant/Documents$
```

Step 18: Before configuring more file first we ensure which version of java we have installed for that go to the location */usr/lib/jvm* and after going to this location type *ls* command to list down the file inside it now see the java version, In my case it is **java-11-openjdk-amd64**.

```
hadoopusr@dikshant-Inspiron-5567:/home/dikshant/Documents$ cd /usr/lib/jvm
hadoopusr@dikshant-Inspiron-5567:/usr/lib/jvm$ ls
default-java  java-1.11.0-openjdk-amd64  java-11-openjdk-amd64  openjdk-11
hadoopusr@dikshant-Inspiron-5567:/usr/lib/jvm$
```

Step 19: Now we will configure *hadoop-env.sh*. For that open the file using below command.

```
sudo vim /usr/local/hadoop/etc/hadoop/hadoop-env.sh
```

```
hadoopusr@dikshant-Inspiron-5567:~$ sudo gedit /usr/local/hadoop/etc/hadoop/hadoop-env.sh

** (gedit:14032): WARNING **: 14:09:53.607: Set document metadata failed: Setting attribute metadata::gedit-spell-la
nguage not supported
```

Once the file opened, copy the below export command inside it and make sure to comment the already existing export command with **JAVA_HOME**:

```
export JAVA_HOME=/usr/lib/jvm/java-11-openjdk-amd64
```

```
# The java implementation to use.
#export JAVA_HOME=${JAVA_HOME}
export JAVA_HOME=/usr/lib/jvm/java-11-openjdk-amd64
```

Don't forget to **save**.

Step 20: Now we will configure the core-site.xml. For that open that file using below command:

```
sudo vim /usr/local/hadoop/etc/hadoop/core-site.xml
```

```
hadoopusr@dikshant-Inspiron-5567:~$ sudo gedit /usr/local/hadoop/etc/hadoop/core-site.xml

** (gedit:14110): WARNING **: 14:12:13.754: Set document metadata failed: Setting attribute metadata::gedit-spell-la
nguage not supported
```

once the file opens copy the below text **inside the configuration tag**

```
<!--
<property>
<name>fs.default.name</name>
<value>hdfs://localhost:9000</v
alue>
</property>
 -->
```

See the below image for better understanding:

```
  Unless required by applicable law or agreed to in writing, software
  distributed under the License is distributed on an "AS IS" BASIS,
  WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
  See the License for the specific language governing permissions and
  limitations under the License. See accompanying LICENSE file.
-->

<!-- Put site-specific property overrides in this file. -->

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

</configuration>
```

Step 21: Now we will configure the *hdfs-site.xml* for that open that file using below command.

```
sudo vim /usr/local/hadoop/etc/hadoop/hdfs-site.xml
```

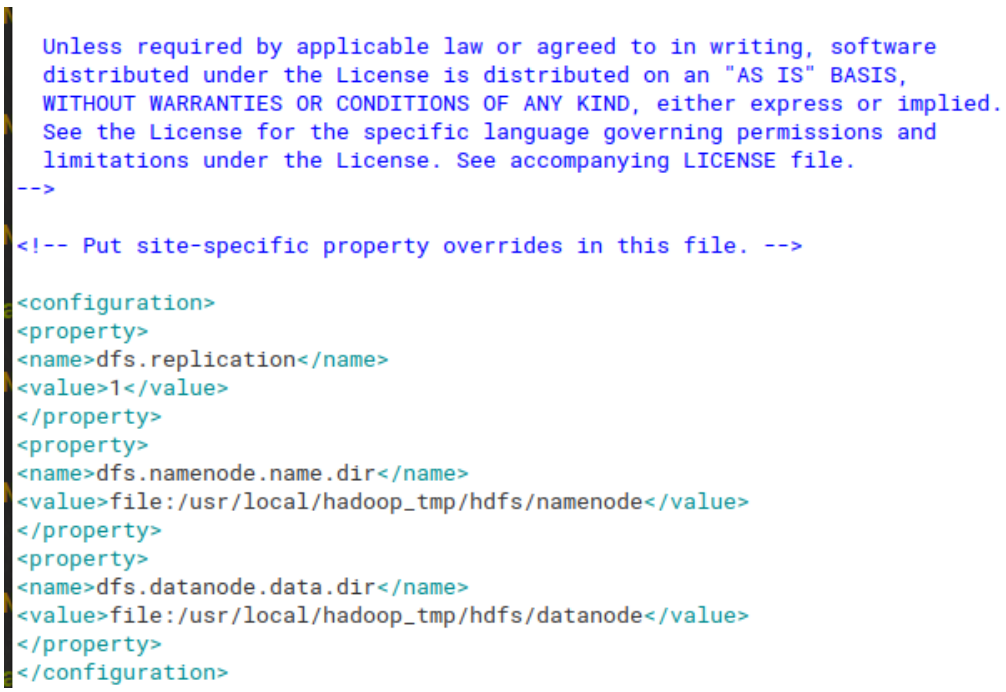
```
hadoopusr@dikshant-Inspiron-5567:~$ sudo gedit /usr/local/hadoop/etc/hadoop/hdfs-site.xml

** (gedit:14153): WARNING **: 14:13:04.419: Set document metadata failed: Setting attribute metadata::gedit-spell-la
nguage not supported
```

Once the file opens copy the below text **inside the configuration tag**

```
<!--
<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>
 -->
```

See the below image for better understanding:



```
  Unless required by applicable law or agreed to in writing, software
  distributed under the License is distributed on an "AS IS" BASIS,
  WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
  See the License for the specific language governing permissions and
  limitations under the License. See accompanying LICENSE file.
-->

<!-- Put site-specific property overrides in this file. -->

<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>
```

Step 22: Now we will configure the yarn-site.xml which is responsible for the execution of file in the Hadoop environment. For that open that file using below command:

```
sudo vim /usr/local/hadoop/etc/hadoop/yarn-site.xml
```

```
hadoopusr@dikshant-Inspiron-5567:~$ sudo gedit /usr/local/hadoop/etc/hadoop/yarn-site.xml

** (gedit:14223): WARNING **: 14:15:27.016: Set document metadata failed: Setting attribute metadata::gedit-spell-la
nguage not supported
```

once the file opens copy the below text **inside the configuration tag**

```
<!--
<property>
<name>yarn.nodemanager.aux-services</name>
<value>mapreduce_shuffle</value>
</property>
<property>
<name>yarn.nodemanager.aux-services.mapreduce.shuffle.class</n
ame>
<value>org.apache.hadoop.mapred.ShuffleHandler</value>
</property>
 -->
```

See the below image for better understanding:

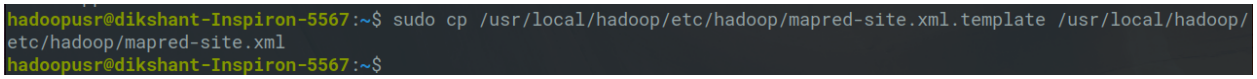
```
  WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
  See the License for the specific language governing permissions and
  limitations under the License. See accompanying LICENSE file.
-->
<configuration>
<property>
<name>yarn.nodemanager.aux-services</name>
<value>mapreduce_shuffle</value>
</property>
<property>
<name>yarn.nodemanager.aux-services.mapreduce.shuffle.class</
name><value>org.apache.hadoop.mapred.ShuffleHandler</value>
</property>

</configuration>
```

Step 23: Now the last file to configure is mapred-site.xml. For that we have *mapred-site.xml.template* so we need to locate that file then copy this file to that location and then *rename* it.

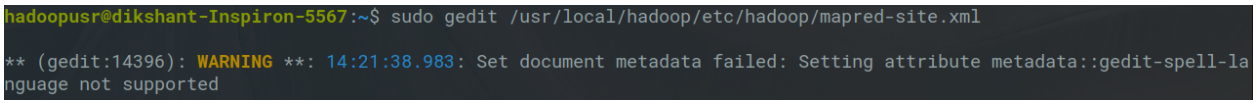
So to locate the file we need to go to the location */usr/local/hadoop/etc/hadoop/* so to copy this file and also rename the file the single, use the following command

```
sudo cp
/usr/local/hadoop/etc/hadoop/mapred-site.xml.template
/usr/local/hadoop/etc/hadoop/mapred-site.xml
```



once the file gets copied or renamed now open that file using the following command:

```
sudo vim /usr/local/hadoop/etc/hadoop/mapred-site.xml
```



And then place the below content inside its **configuration tag**.

```
<!--
<property>
<name>mapreduce.framework.name</
name>
<value>yarn</value>
</property>
 -->
```

See the below image for better understanding:

```
  distributed under the License is distributed on an "AS IS" BASIS,
  WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
  See the License for the specific language governing permissions and
  limitations under the License. See accompanying LICENSE file.
-->

<!-- Put site-specific property overrides in this file. -->

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

Step 24: Now we have successfully configured all the files. So now it is time to check our installation. As we know that in Hadoop architecture we have name node and other blocks so we need to make one directory i.e. hadoop_space. Inside this directory we make another directory i.e. hdfs and namenode and datanode. The command to make directory is given below:

```
sudo mkdir -p /usr/local/hadoop_space

sudo mkdir -p /usr/local/hadoop_space/hdfs/namenode

sudo mkdir -p /usr/local/hadoop_space/hdfs/datanode
```

Now we need to give permission for that commands are below:

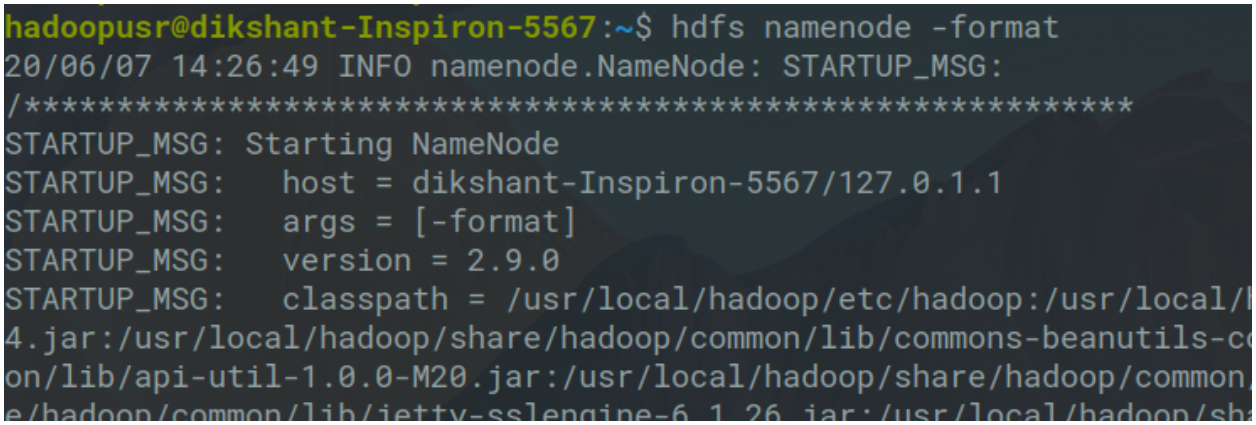
```
sudo chown -R hadoopusr /usr/local/hadoop_space
```

```
hadoopusr@dikshant-Inspiron-5567:~$  sudo mkdir -p /usr/local/hadoop_space
hadoopusr@dikshant-Inspiron-5567:~$ sudo mkdir -p /usr/local/hadoop_space/hdfs/namenode
hadoopusr@dikshant-Inspiron-5567:~$ sudo mkdir -p /usr/local/hadoop_space/hdfs/datanode
hadoopusr@dikshant-Inspiron-5567:~$ sudo chown -R hadoopusr /usr/local/hadoop_space
hadoopusr@dikshant-Inspiron-5567:~$
```

Running Hadoop

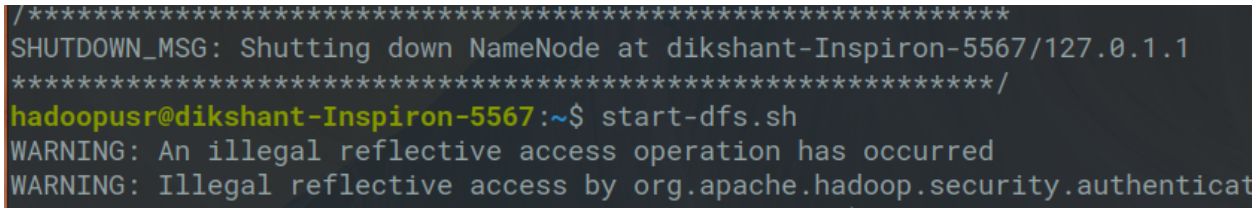
1. First, we need to format the namenode then you need to run the below command for first time when you starting the cluster if you use it again then all your metadata will get erase.

```
hdfs namenode -format
```



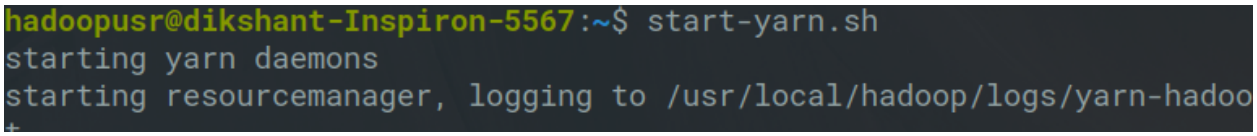
2. Now we need to start the DFS i.e. Distributed File System.

```
start-dfs.sh
```



3. now the last thing you need to start is *yarn*

```
start-yarn.sh
```



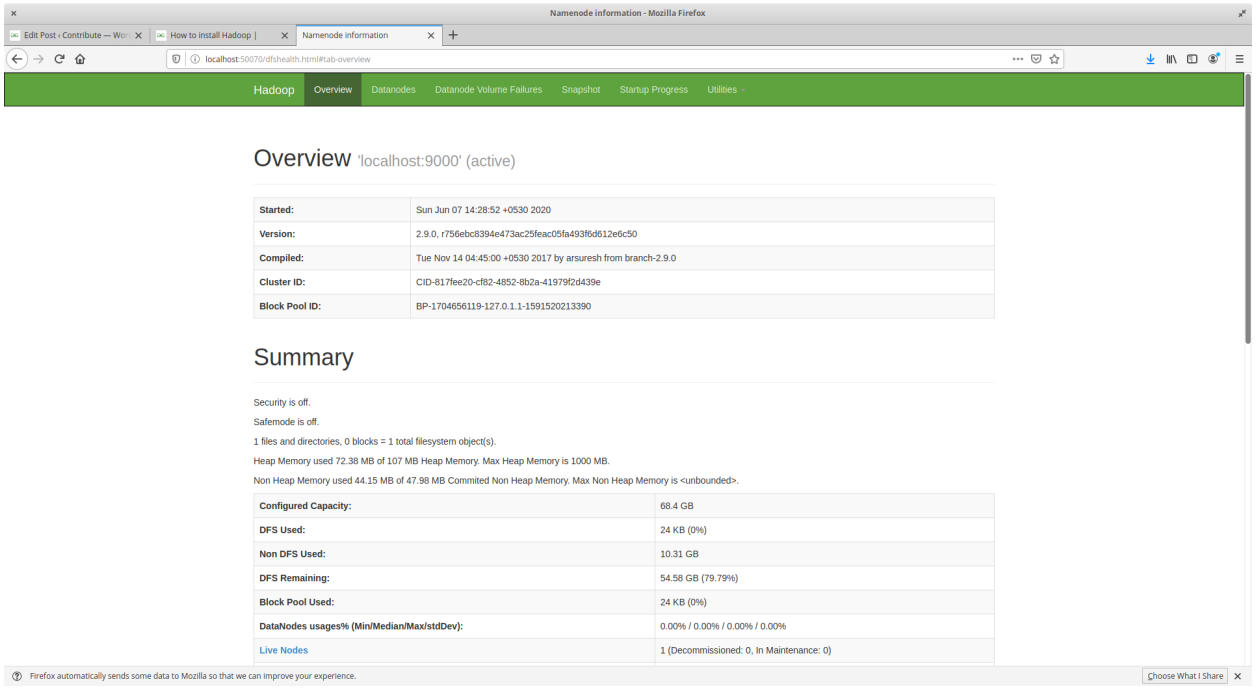
4. Now use the following command:

```
jps
```

Now you will be able to see the SecondaryNameNode, NodeManager, ResourceManager, NameNode, jpd, and DataNode which means you will have successfully installed Hadoop.

```
hadoopusr@dikshant-Inspiron-5567:~$ jps
15056 DataNode
15301 SecondaryNameNode
14917 NameNode
15528 ResourceManager
15659 NodeManager
16062 Jps
```

5. You have successfully installed *hadoop* on your system. Now to check all you cluster information you can use **localhost:50070** in your browser. The Interface will look like as:



Note: If your localhost is not connecting then make sure you have placed the correct version of java in the property files.

Source: https://www.geeksforgeeks.org/how-to-install-hadoop-in-linux/