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Downloading and installing Hadoop, Understanding different Hadoop modes, Startup scripts, Configuration files.

Aim:

To Download and install Hadoop, Understanding different Hadoop modes, Startup scripts, Configuration files.

Procedure:

Step 1 : Install java jdk 8

First of all you must install Java JDK 8 on your system. You can just type this command to install java jdk on your system.

```
sudo apt install openjdk-8-jdk
```

To check it's there cd /usr/lib/jvm

Step 2 : Add this configuration on you bash file

Now just open .bashrc file and paste these commands.

```
export JAVA_HOME=/usr/lib/jvm/java-8-openjdk-amd64
export PATH=$PATH:/usr/lib/jvm/java-8-openjdk-amd64/bin
export HADOOP_HOME=~/hadoop-3.2.3/
export PATH=$PATH:$HADOOP_HOME/bin
export PATH=$PATH:$HADOOP_HOME/sbin
export HADOOP_MAPRED_HOME=$HADOOP_HOME
export YARN_HOME=$HADOOP_HOME
export HADOOP_CONF_DIR=$HADOOP_HOME/etc/hadoop
export HADOOP_COMMON_LIB_NATIVE_DIR=$HADOOP_HOME/lib/native
export HADOOP_OPTS="-Djava.library.path=$HADOOP_HOME/lib/native"
export HADOOP_STREAMING=$HADOOP_HOME/share/hadoop/tools/lib/hadoop-streaming-3.2.3.jar
export HADOOP_LOG_DIR=$HADOOP_HOME/logs
export PDSH_RCMD_TYPE=ssh
```

(ssh — secure shell — protocol used to securely connect to remote server/system — transfers data in encrypted form)

```
sudo apt-get install ssh
```

now go to hadoop.apache.org website download the tar file
(hadoop.apache.org — download tar file of hadoop.)

```
tar -zxvf ~/Downloads/hadoop-3.2.3.tar.gz
```

(Extract the tar file)
cd hadoop-3.2.3/etc/hadoop

now open hadoop-env.hsudo nano hadoop-env.hJAVA_HOME=/usr/lib/jvm/java-8-openjdk-amd64 (set the path for JAVA_HOME)

Step 3 : Add this file in core-site.xml

Now add this configuration in core-site.xml file.

core-site.xml

```
<configuration>
 <property>
 <name>fs.defaultFS</name>
 <value>hdfs://localhost:9000</value>  </property>
 <property>
<name>hadoop.proxyuser.dataflair.groups</name> <value>*</value>
 </property>
 <property>
<name>hadoop.proxyuser.dataflair.hosts</name> <value>*</value>
 </property>
 <property>
<name>hadoop.proxyuser.server.hosts</name> <value>*</value>
 </property>
 <property>
<name>hadoop.proxyuser.server.groups</name> <value>*</value>
 </property>
</configuration>
```

Step 3 : Add this file in hdfs-site.xml

Now add this configuration in hdfs-site.xml file.

hdfs-site.xml

```
<configuration>
 <property>
 <name>dfs.replication</name>
 <value>1</value>
 </property>
</configuration>
```

Step 4: Add this file in mapred-site.xml

Now add this configuration in mapred-site.xml file.

mapred-site.xml

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

<value>$HADOOP_MAPRED_HOME/share/hadoop/mapreduce/*:
$HADOOP_MAPRED_HOME/share/hadoop/mapreduce/lib/*</value>
 </property>
</configuration>
```

Step 4: Add this file in yarn-site.xml

Now add this configuration in yarn-site.xml file.

yarn-site.xml

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

<value>JAVA_HOME,HADOOP_COMMON_HOME,HADOOP_HDFS_HOME,HADOOP_
CONF_DIR,CLASSPATH_PREP
END_DISTCACHE,HADOOP_YARN_HOME,HADOOP_MAPRED_HOME</value>
 </property>
</configuration>
```

ssh

```
ssh localhost
ssh-keygen -t rsa -P '' -f ~/.ssh/id_rsa
cat ~/.ssh/id_rsa.pub >> ~/.ssh/authorized_keys
chmod 0600 ~/.ssh/authorized_keys
hadoop-3.2.3/bin/hdfs namenode -format
```

format the file system

```
export PDSH_RCMD_TYPE=ssh
```

Step 5 : Start hadoop

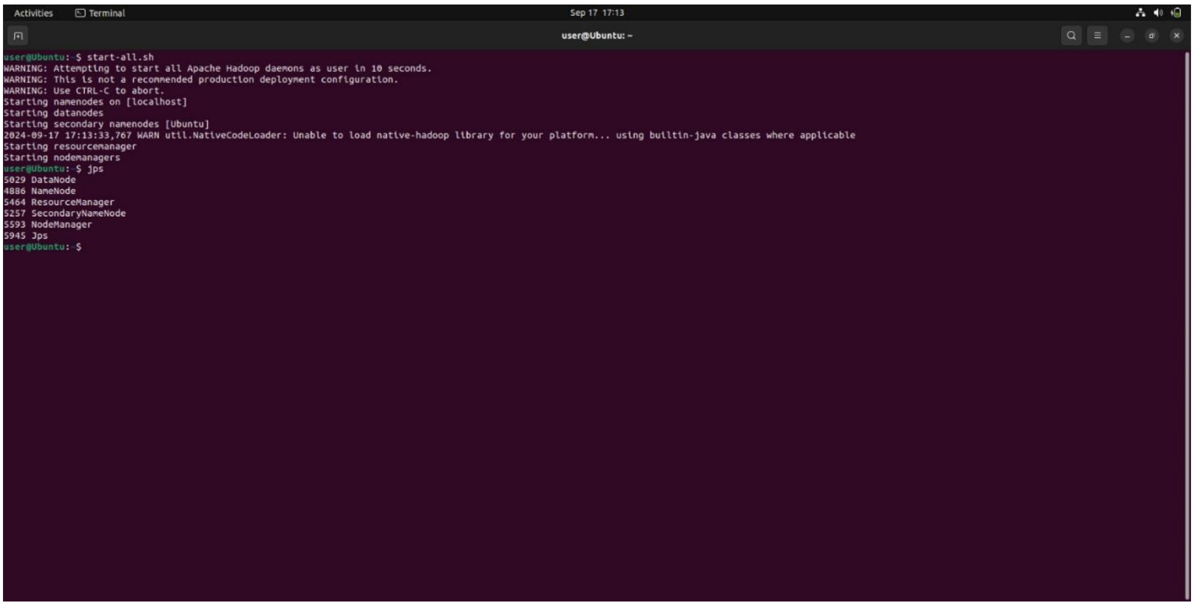
To start

start-all.sh(Start NameNode daemon and DataNode daemon)

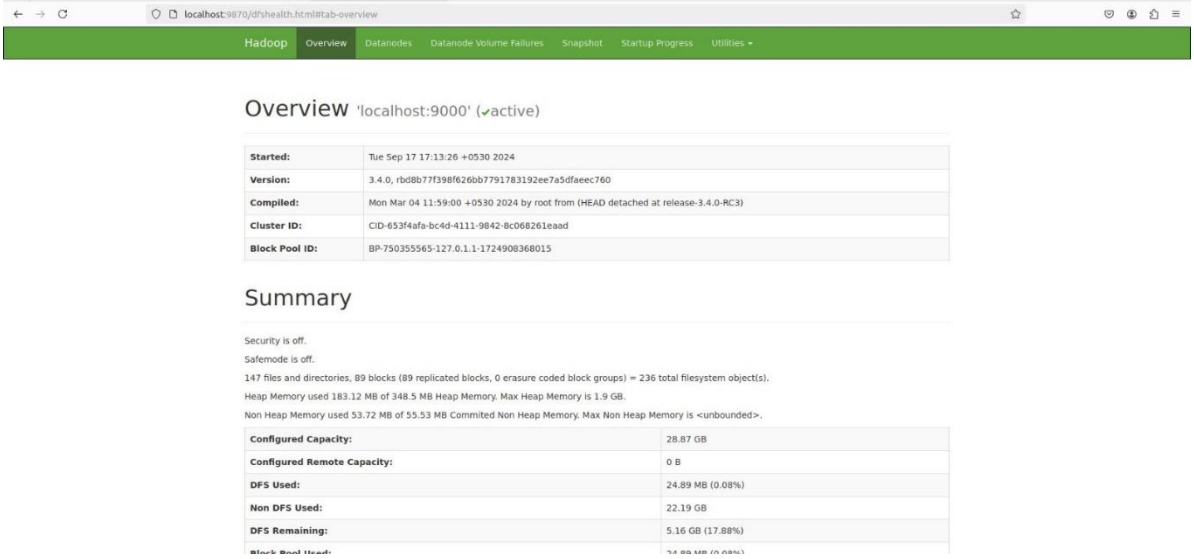
This is how you can install hadoop on your ubuntu operating system and start using on your system.

Step 6 : Check the status using jps

Jps



```
user@Ubuntu:~$ start-all.sh
WARNING: Attempting to start all Apache Hadoop daemons as user in 10 seconds.
WARNING: This is not a recommended production deployment configuration.
WARNING: Use CTRL-C to abort.
Starting namenodes on [localhost]
Starting datanodes
Starting secondary namenodes [Ubuntu]
2024-09-17 17:13:33,767 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where applicable
Starting resourcemanager
Starting nodemanagers
user@Ubuntu:~$ jps
5029 DataNode
4886 NameNode
5464 ResourceManager
5257 SecondaryNameNode
5593 NodeManager
5945 Jps
user@Ubuntu:~$
```



Overview 'localhost:9000' (✓active)

Started:	Tue Sep 17 17:13:26 +0530 2024
Version:	3.4.0, rbd8b77f398f626bb7791783192ee7a5dfaeec760
Compiled:	Mon Mar 04 11:59:00 +0530 2024 by root from (HEAD detached at release-3.4.0-RC3)
Cluster ID:	CID-653f4afa-bc4d-4111-9842-8c068261eaad
Block Pool ID:	BP-750355565-127.0.1.1-1724908368015

Summary

Security is off.

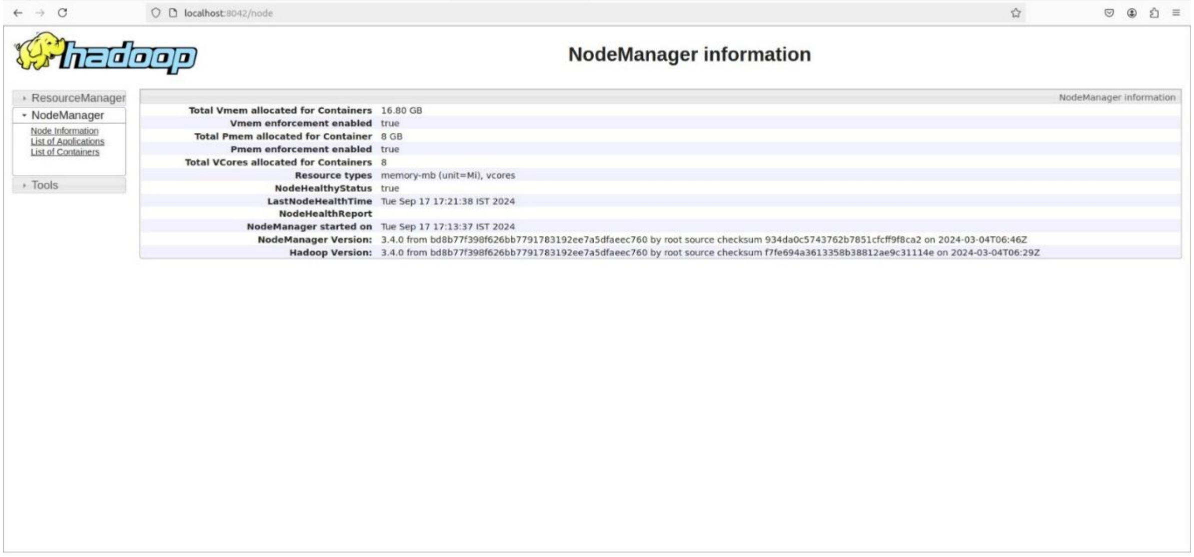
Safemode is off.

147 files and directories, 89 blocks (89 replicated blocks, 0 erasure coded block groups) = 236 total filesystem object(s).

Heap Memory used 183.12 MB of 348.5 MB Heap Memory. Max Heap Memory is 1.9 GB.

Non Heap Memory used 53.72 MB of 55.53 MB Commited Non Heap Memory. Max Non Heap Memory is <unbounded>.

Configured Capacity:	28.87 GB
Configured Remote Capacity:	0 B
DFS Used:	24.89 MB (0.08%)
Non DFS Used:	22.19 GB
DFS Remaining:	5.16 GB (17.88%)
Block Pool Used:	24.89 MB (0.08%)



NodeManager information

	NodeManager information
Total Vmem allocated for Containers	16.80 GB
Vmem enforcement enabled	true
Total Pmem allocated for Container	8 GB
Pmem enforcement enabled	true
Total VCores allocated for Containers	8
Resource types	memory-mb (unit=Mi), vcores
NodeHealthyStatus	true
LastNodeHealthTime	Tue Sep 17 17:21:38 IST 2024
NodeHealthReport	
NodeManager started on	Tue Sep 17 17:13:37 IST 2024
NodeManager Version:	3.4.0 from bd8b77f398f626bb7791783192ee7a5dfaeec760 by root source checksum 934da0c5743762b7851cfcff9f8ca2 on 2024-03-04T06:46Z
Hadoop Version:	3.4.0 from bd8b77f398f626bb7791783192ee7a5dfaeec760 by root source checksum f7fe694a3613358b38812ae9c31114e on 2024-03-04T06:29Z

Result:

The step-by-step installation and configuration of Hadoop on Ubutu linux system have been successfully completed.