

INSTALL CONFIGURE AND RUN HADOOP AND HDFS

Aim:

To install configure and run hadoop and hdfs.

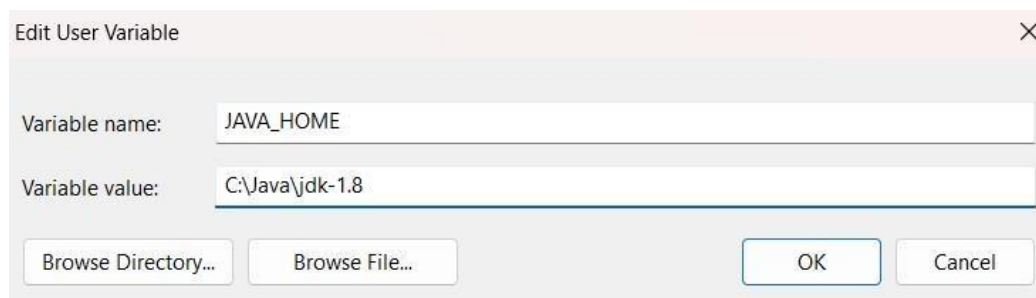
Procedure:

1. To install Java

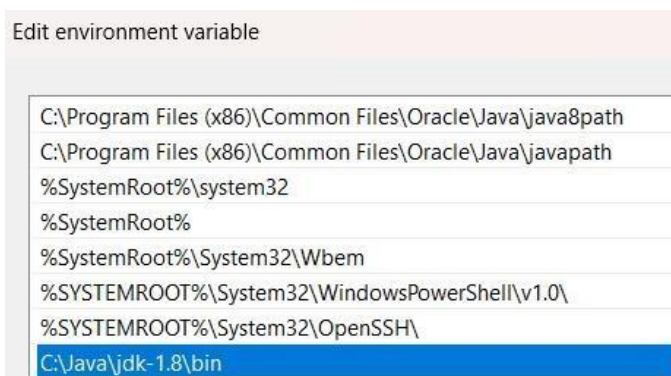
- 1) Check if java is available in the system

```
C:\Windows\System32>java -version
java version "1.8.0_421"
Java(TM) SE Runtime Environment (build 1.8.0_421-b09)
Java HotSpot(TM) 64-Bit Server VM (build 25.421-b09, mixed mode)
```

- 2) If not install java jdk 1.8 and set the environment variables



- 3) Set the path variable



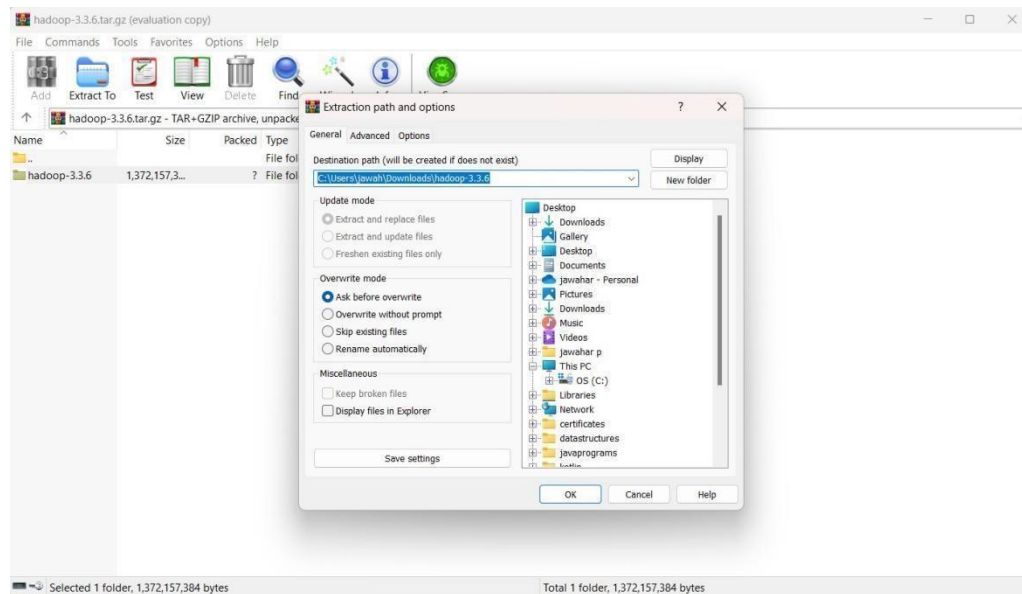
2. Hadoop Installation

- 1) Install Hadoop 3.3.6 from <https://hadoop.apache.org/releases.html>

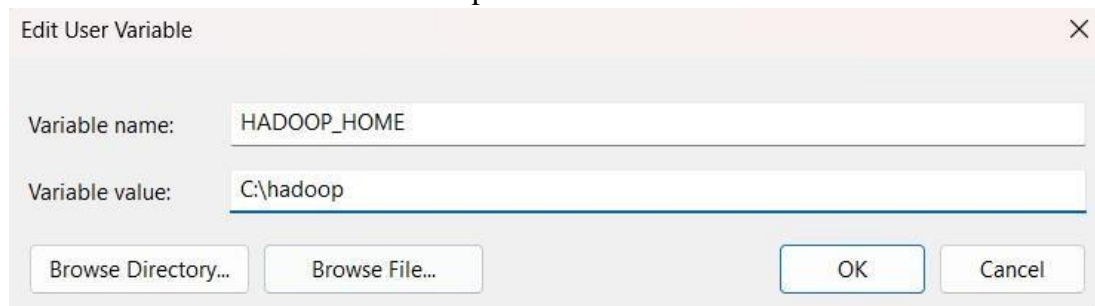
3.3.6	2023 Jun 23	source (checksum signature)	binary (checksum signature)	Announcement
		binary-aarch64 (checksum signature)		

Download the binary(checksum signature)

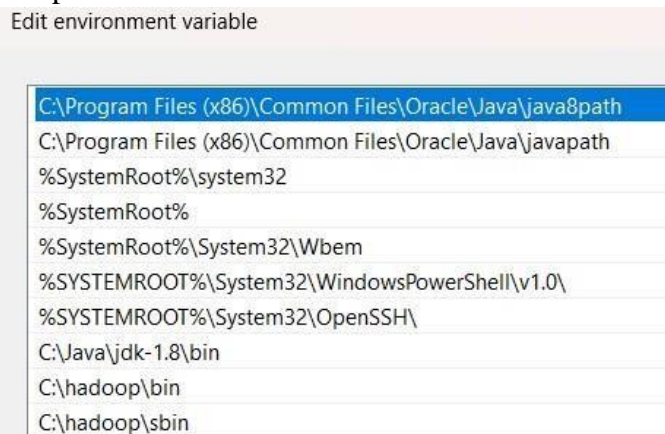
- 2) Extract the jar files to C://Hadoop



3) Add environment variables for Hadoop



Add path variable



4) Check if Hadoop is installed successfully using the command prompt

```

C:\Windows\System32>hadoop
Usage: hadoop [--config confdir] [--loglevel loglevel] COMMAND
where COMMAND is one of:
    fs                run a generic filesystem user client
    version           print the version
    jar <jar>         run a jar file
                     note: please use "yarn jar" to launch
                           YARN applications, not this command.
    checknative [-a|-h] check native hadoop and compression libraries availability
    conftest          validate configuration XML files
    distch path:owner:group:permission
                     distributed metadata changer
    distcp <srcurl> <desturl> copy file or directories recursively
    archive -archiveName NAME -p <parent path> <src>* <dest> create a hadoop archive
    classpath          prints the class path needed to get the
                     Hadoop jar and the required libraries
    credential         interact with credential providers
    jnipath            prints the java.library.path
    kerbname           show auth_to_local principal conversion
    kdiag             diagnose kerberos problems
    key               manage keys via the KeyProvider
    trace             view and modify Hadoop tracing settings
    daemonlog         get/set the log level for each daemon
or
    CLASSNAME          run the class named CLASSNAME

Most commands print help when invoked w/o parameters.

```

5) Thus Hadoop is installed successfully

3. Hadoop Configuration

1) Configure core-site.xml in C:\hadoop\etc\hadoop by adding

```

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

```

2) Configure the httpfs-site.xml file by adding the following xml code

```

<configuration>
<property>
<name>dfs.replication</name>
<value>1</value>
</property>
<property>
<name>dfs.namenode.name.dir</name>
<value>C:\hadoop\data\namenode</value>
</property>
<property>
<name>dfs.datanode.data.dir</name>
<value>C:\hadoop\data\datanode</value>

```

```
</property>
</configuration>
```

3. Configure mapred-site.xml file by adding the following xml code

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

4. Configure yarn-site.xml file by adding the following xml code

```
<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>
```

5. Change the bin shell command files.
6. Thus hadoop is configured.

4. Hadoop execution

1. To check whether hadoop is running we must start the hadoop. To start hadoop we must use the command **start-all.cmd**

```
C:\Windows\System32\cmd.e x + v - - - - -
```

```
Apache Hadoop Distribution x + v - - - - -
```

```
hare/h  
adood-  
gson-2  
-5.2.0.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\curator-framework-5.2.0.jar;C:\hadoop-3.4.0\hadoop-3.4.0\s  
hare\hadoop\hdfs\lib\curator-recipes-5.2.0.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\dnsjava-3.4.0.jar;C:\h  
adoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\failureaccess-1.0.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\  
gson-2.9.0.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\guava-27.0-jre.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\  
hadoop\hdfs\lib\hadoop-annotations-3.4.0.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\hadoop-auth-3.4.0.jar;C:  
:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\hadoop-shaded-guava-1.2.0.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop  
hdfs\lib\hadoop-shaded-protobuf-3.21.1-2.0.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\HikariCP-4.0.3.jar;C:  
:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\httpclient-4.5.13.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\li  
b\httpcore-4.4.13.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\j2objc-annotations-1.1.jar;C:\hadoop-3.4.0\had  
oop-3.4.0\share\hadoop\hdfs\lib\jackson-annotations-2.12.7.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\jackso  
n-core-2.12.7.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\jackson-databind-2.12.7.1.jar;C:\hadoop-3.4.0\hadoo  
dfs\lib\jakarta.activation-api-1.2.1.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\javax.jav  
awt-swing-1.6.0.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\jaxb-api-2.2.11.jar;C:\hadoop-3.4.0\hadoop-3.4.0  
\share\hadoop\hdfs\lib\jaxb-impl-2.2.3-1.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\jcip-annotations-1.0-1.j  
ar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\jersey-core-1.19.4.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\h  
dfs\lib\jersey-json-1.20.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\jersey-server-1.19.4.jar;C:\hadoop-3.4.0  
\share\hadoop\hdfs\lib\jersey-servlet-1.19.4.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\jettio  
n-1.5.4.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\jetty-http-9.4.53.v20231009.jar;C:\hadoop-3.4.0\hadoop-3.  
4.0\share\hadoop\hdfs\lib\jetty-io-9.4.53.v20231009.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\jetty-securit  
y-9.4.53.v20231009.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\jetty-server-9.4.53.v20231009.jar;C:\hadoop-3.  
4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\jetty-servlet-9.4.53.v20231009.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs  
\lib\jetty-util-9.4.53.v20231009.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\jetty-util-ajax-9.4.53.v20231009  
.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\jetty-webapp-9.4.53.v20231009.jar;C:\hadoop-3.4.0\hadoop-3.4.0\s  
hare\hadoop\hdfs\lib\jetty-xml-9.4.53.v20231009.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\jline-3.9.0.jar;C:  
:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\jsch-0.1.55.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\jso  
n-simple-1.1.1.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\jsr305-3.0.2.jar;C:\hadoop-3.4.0\hadoop-3.4.0\shar  
e\hadoop\hdfs\lib\jsr311-api-1.1.1.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\kerb-admin-2.0.3.jar;C:\hadoo  
p-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\kerb-client-2.0.3.jar;C:\hadoop-3.4.0\hadoop-3.4.0\share\hadoop\hdfs\lib\kerb-
```

- To check this go to browser and type localhost:9870

Haadoop

Overview

Datanodes

Datanode Volume Failures

Snapshot

Startup Progress

Utilities

Overview 'localhost:9000' (active)

Started:	Fri Sep 13 21:19:35 +0530 2024
Version:	3.3.1, ra3b9c37a397ad4188041dd80621bdeefc46885f2
Compiled:	Tue Jun 15 10:43:00 +0530 2021 by ubuntu from (HEAD detached at release-3.3.1-RC3)
Cluster ID:	CID-0f72c4f6-d9e3-4f2f-9b48-d38e385aaf7f
Block Pool ID:	BP-399902486-192.168.228.238-1724038237583

Summary

Security is off.

Safemode is off.

203 files and directories, 85 blocks (85 replicated blocks, 0 erasure coded block groups) = 288 total filesystem object(s).

Heap Memory used 35.51 MB of 180.5 MB Heap Memory. Max Heap Memory is 889 MB.

Non Heap Memory used 52.64 MB of 53.69 MB Committed Non Heap Memory. Max Non Heap Memory is <unbounded>.

Non Heap Memory used 52.64 MB of 53.69 MB Committed Non Heap Memory. Max Non Heap Memory is <unbounded>.

Configured Capacity:	475.5 GB
Configured Remote Capacity:	0 B
DFS Used:	177.47 MB (0.04%)
Non DFS Used:	143.36 GB
DFS Remaining:	331.96 GB (69.81%)
Block Pool Used:	177.47 MB (0.04%)
DataNodes usages% (Min/Median/Max/stdDev):	0.04% / 0.04% / 0.04% / 0.00%
Live Nodes	1 (Decommissioned: 0, In Maintenance: 0)
Dead Nodes	0 (Decommissioned: 0, In Maintenance: 0)
Decommissioning Nodes	0
Entering Maintenance Nodes	0
Total Datanode Volume Failures	0 (0 B)
Number of Under-Replicated Blocks	15
Number of Blocks Pending Deletion (including replicas)	0
Block Deletion Start Time	Fri Sep 13 21:19:35 +0530 2024
Last Checkpoint Time	Fri Sep 13 21:19:36 +0530 2024
Enabled Erasure Coding Policies	RS-6-3-1024k

Result:

Thus hadoop has been installed, configured and run successfully.