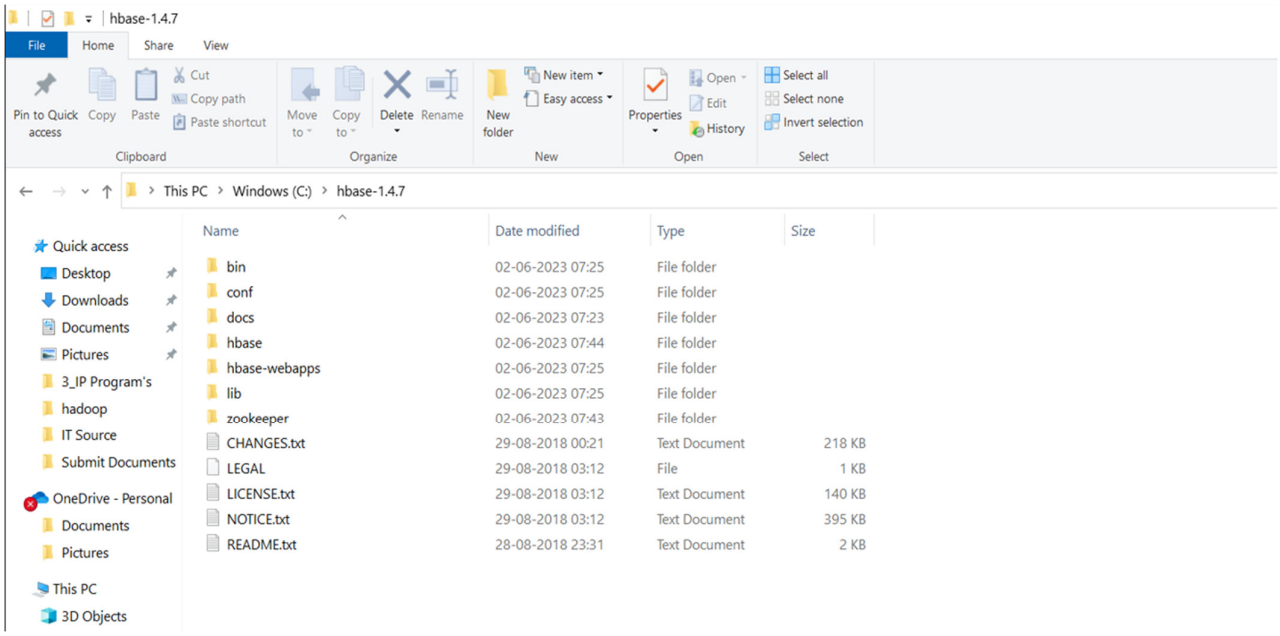
Aim: Implement an application that store big data in Hbase/ Mongodb/ Pig using Hadoop / R.

Hbase - Standalone mode installation.

STEP - 1: Extract the HBase file

Download from: http://www.apache.org/dyn/closer.lua/hbase/

Extract file hbase-1.4.7-bin.tar.gz and place under "C:\hbase-1.4.7", you can use any preferred location –

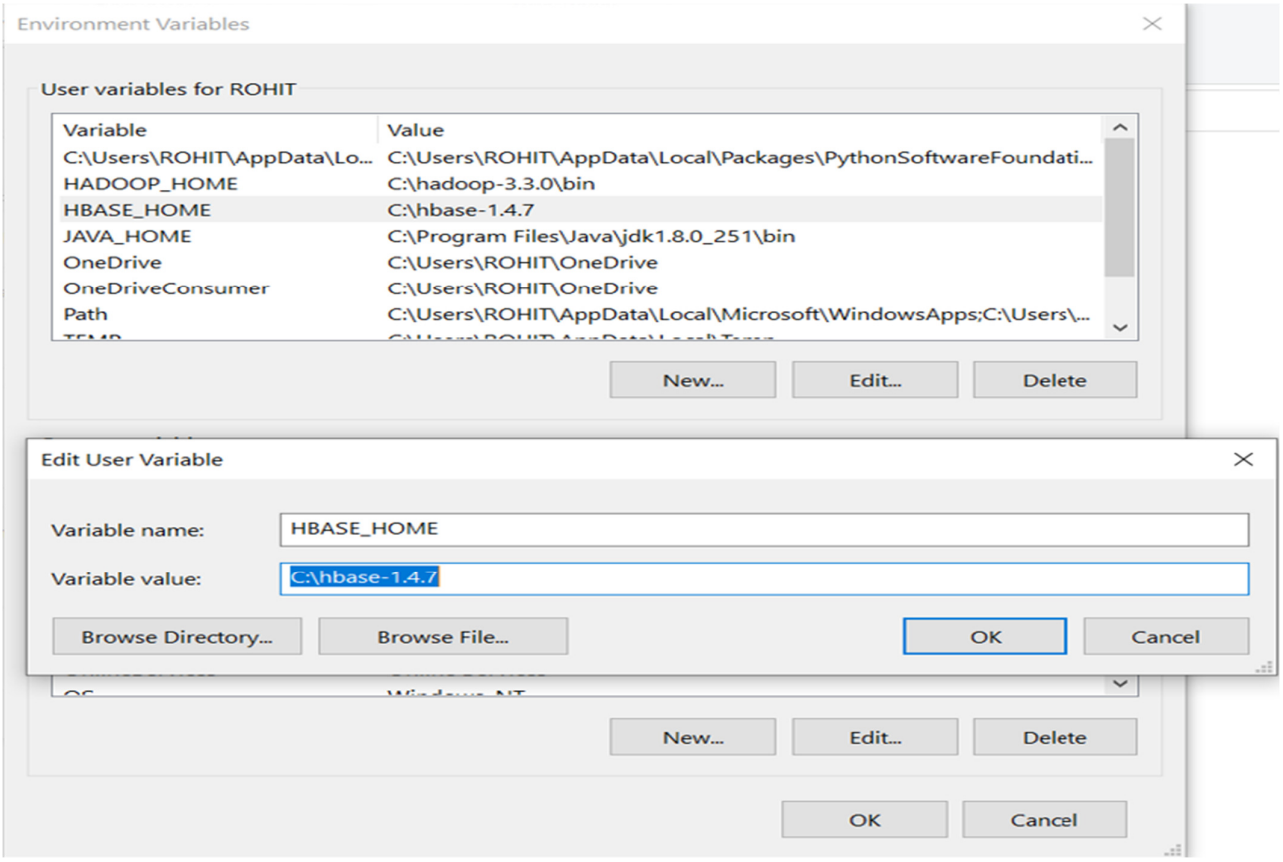


STEP - 2: Configure Environment variable.

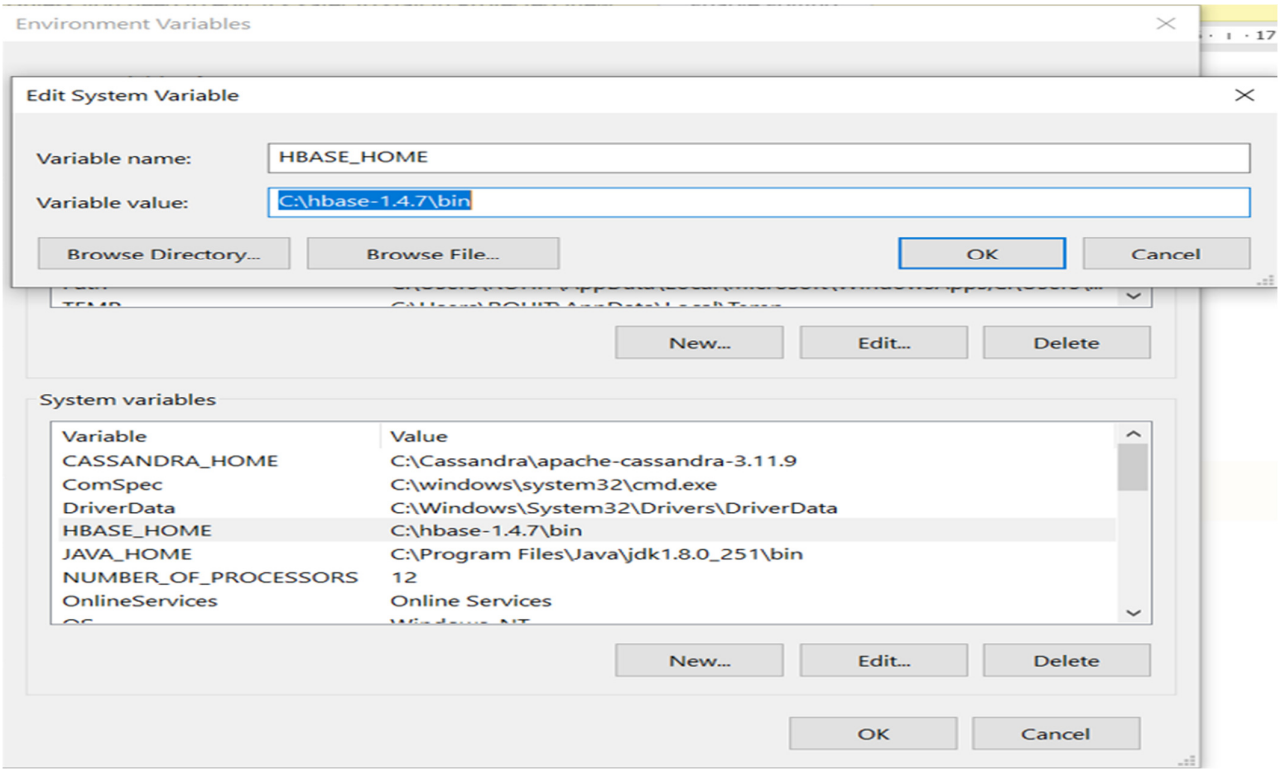
Set the path for the following Environment variable (User Variables) on windows 10 –

- HBASE_HOME - C:\hbase-1.4.7

This PC - > Right Click - > Properties - > Advanced System Settings - > Advanced - > Environment Variables.



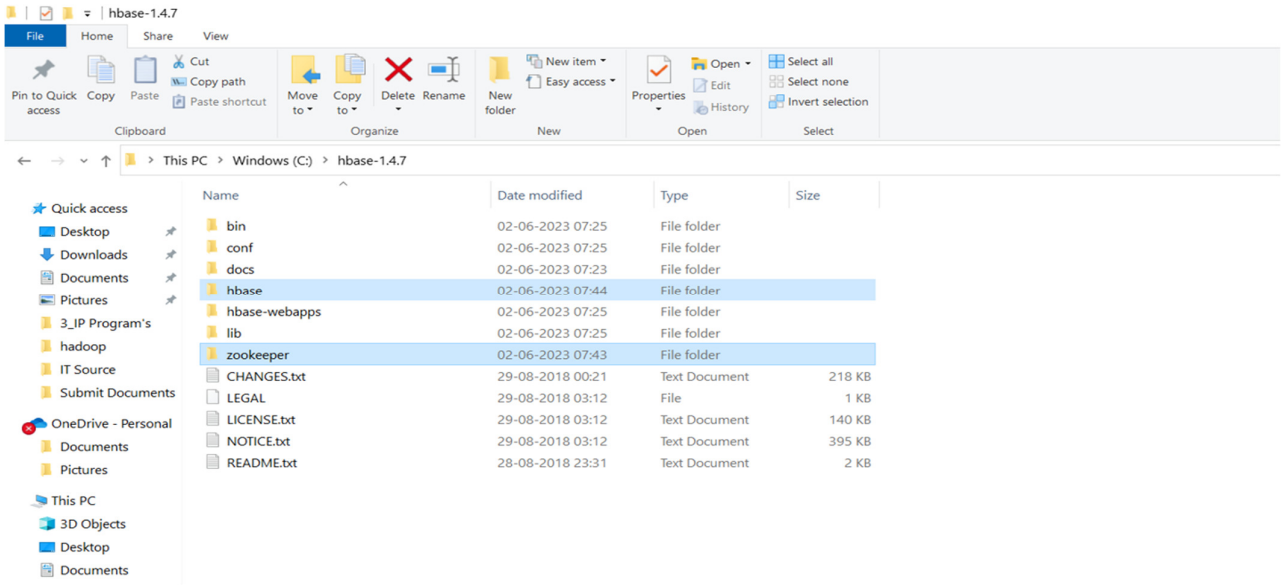
STEP - 3: Configure System variable.



STEP - 4: Create required folders.

1. Create folder "hbase" under “C:\hbase-1.4.7”.

2. Create folder "zookeeper" under “C:\hbase-1.4.7”.



STEP - 5: Configured required files.

Next, essential to configure two key files with minimal required details –

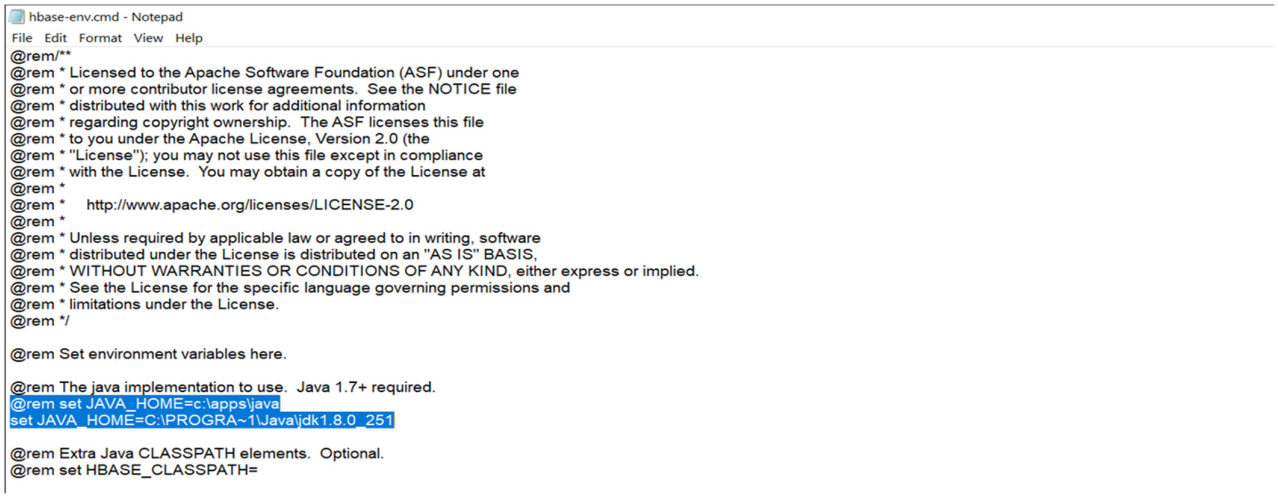
• hbase-env.cmd

• hbase-site.xml

1) Edit file "C:\hbase-1.4.7\conf\hbase-env.cmd", mention JAVA_HOME path in the location and save this file.

@rem set JAVA_HOME=c:\apps\java

set JAVA_HOME=C:\PROGRA~1\Java\jdk1.8.0_251



2) Edit file "C:\hbase-1.4.7\conf\hbase-site.xml", paste below xml paragraph and save this file.

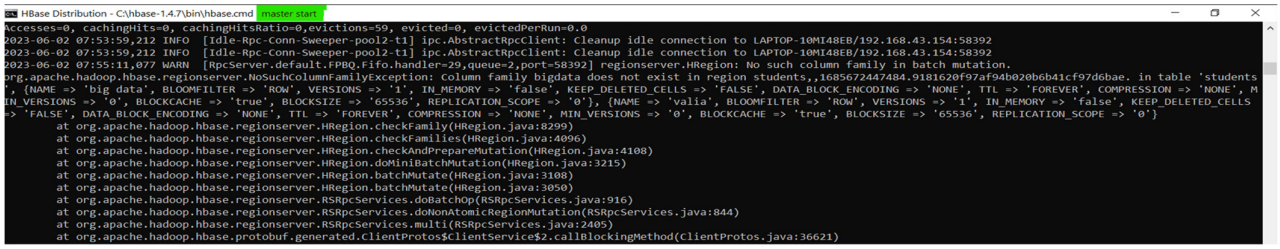
```
<configuration>
        <property>
                <name>hbase.rootdir</name>
                <value>C:\hbase-1.4.7\hbase</value>
         </property>
         <property>
                <name>hbase.zookeeper.property.dataDir</name>
                <value>C:\hbase-1.4.7\zookeeper</value>
        </property>
        <property>
                <name> hbase.zookeeper.quorum</name>
                <value>127.0.0.1</value>
        </property>
</configuration>
```

All HMaster and ZooKeeper activities point out to this hbase-site.xml.

STEP - 6: Start HBase

Open command prompt and change directory to “C:\hbase-1.4.7\bin" and type "start-hbase.cmd" to start HBase.

It will open a separate instances of cmd for following tasks – HBase Master

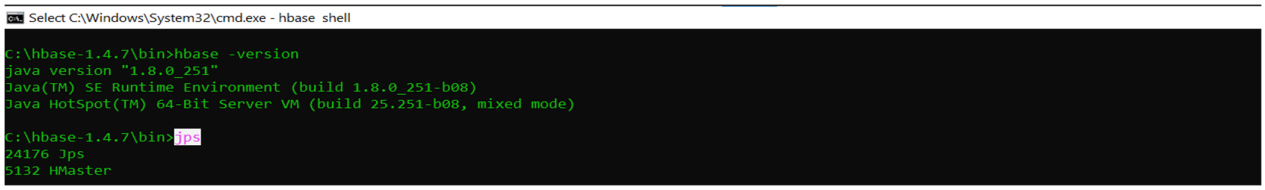


STEP - 7: Validate HBase.

Post successful execution of HBase, verify the installation using following commands.

• hbase –version

• jps



If we can see HMaster is in running mode, then our installation is okay.

STEP - 8: Execute HBase Shell.

The standalone mode does not require Hadoop daemons to start. HBase can run independently. HBase shell can start by using "hbase shell" and it will enter into interactive shell mode –

```
Select C:\Windows\System32\cmd.exe - hbase  shell

C:\hbase-1.4.7\bin>hbase shell
2023-06-02 07:46:06,024 ERROR [main] util.Shell: Failed to locate the winutils binary in the hadoop binary path
java.io.IOException: Could not locate executable C:\hadoop-3.3.0\bin\bin\winutils.exe in the Hadoop binaries.
        at org.apache.hadoop.util.Shell.getQualifiedBinPath(Shell.java:382)
        at org.apache.hadoop.util.Shell.getWinUtilsPath(Shell.java:397)
        at org.apache.hadoop.util.Shell.<clinit>(Shell.java:390)
        at org.apache.hadoop.util.StringUtils.<clinit>(StringUtils.java:80)
        at org.apache.hadoop.conf.Configuration.getBoolean(Configuration.java:1437)
        at org.apache.hadoop.hbase.HBaseConfiguration.checkDefaultsVersion(HBaseConfiguration.java:67)
        at org.apache.hadoop.hbase.HBaseConfiguration.addHbaseResources(HBaseConfiguration.java:81)
        at org.apache.hadoop.hbase.HBaseConfiguration.create(HBaseConfiguration.java:96)
        at org.apache.hadoop.hbase.HColumnDescriptor.<clinit>(HColumnDescriptor.java:151)
        at java.lang.Class.forName0(Native Method)
        at java.lang.Class.forName(Class.java:348)
```

STEP-9: Some hands on activities.

1. Create a simple table

create 'students', 'bigdata', 'valia'

```
Select C:\Windows\System32\cmd.exe - hbase  shell
HBase Shell
Use "help" to get list of supported commands.
Use "exit" to quit this interactive shell.
Version 1.4.7, r763f27f583cf8fd7ecf79fb6f3ef57f1615dbf9b, Tue Aug 28 14:40:11 PDT 2018

hbase(main):001:0> crete 'students', 'big data', 'valia'
NoMethodError: undefined method `crete' for #<Object:0x46e64760>

hbase(main):002:0> crete 'students', 'big data'
NoMethodError: undefined method `crete' for #<Object:0x46e64760>

hbase(main):003:0> create 'students', 'big data', 'valia'
0 row(s) in 1.5490 seconds
```

2. List the table has been created.

- List

```
=> Hbase::Table - students
hbase(main):004:0>
hbase(main):005:0* list
TABLE
students
1 row(s) in 0.0140 seconds

=> ["students"]
hbase(main):006:0> put 'students', 'row1', 'bigdata:hadoop', 'hadoop Tutorials'
```

3. Insert some data to above created table

put ‘tablename’, ‘rowname’, ‘columnvalue’, ‘value’

put 'students', 'row1', 'bigdata:hadoop', 'hadoop tutorial'

```
Select C:\Windows\System32\cmd.exe - hbase  shell

hbase(main):007:0> put 'students', 'row1', 'valia:hadoop', 'hadoop Tutorials'
0 row(s) in 0.0070 seconds
```

4. List all rows in the table

scan 'students'

```
hbase(main):008:0> scan 'students'
ROW                                   COLUMN+CELL
 row1                                 column=valia:hadoop, timestamp=1685672770496, value=hadoop Tutorials
1 row(s) in 0.0110 seconds

hbase(main):009:0>
```

**************************************END**************************************