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EXP 4: Create UDF in PIG

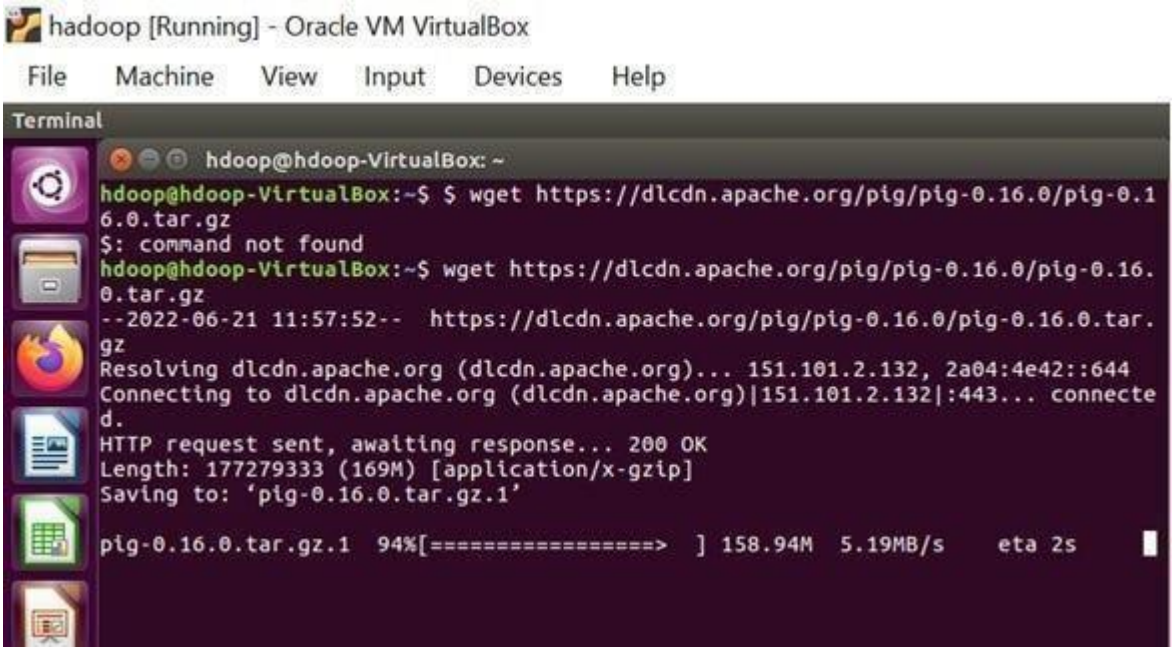
Step-by-step installation of Apache Pig on Hadoop cluster on Ubuntu Prerequisite:

· Ubuntu 16.04 or higher version running (I have installed Ubuntu on Oracle VM (Virtual Machine) VirtualBox),

· Run Hadoop on ubuntu (I have installed Hadoop 3.2.1 on Ubuntu 16.04). You may refer to my blog "How to install Hadoop installation" click here for Hadoop installation).

Pig installation steps

Step 1: Login into Ubuntu



Step 2: Go to https://pig.apache.org/releases.html and copy the path of the latest version of pig that you want to install. Run the following comment to download Apache Pig in Ubuntu:

$ wget https://dlcdn.apache.org/pig/pig-0.16.0/pig-0.16.0.tar.gz

Step 3: To untar pig-0.16.0.tar.gz file run the following command:

$ tar xvzf pig-0.16.0.tar.gz

Step 4: To create a pig folder and move pig-0.16.0 to the pig folder, execute the following command:

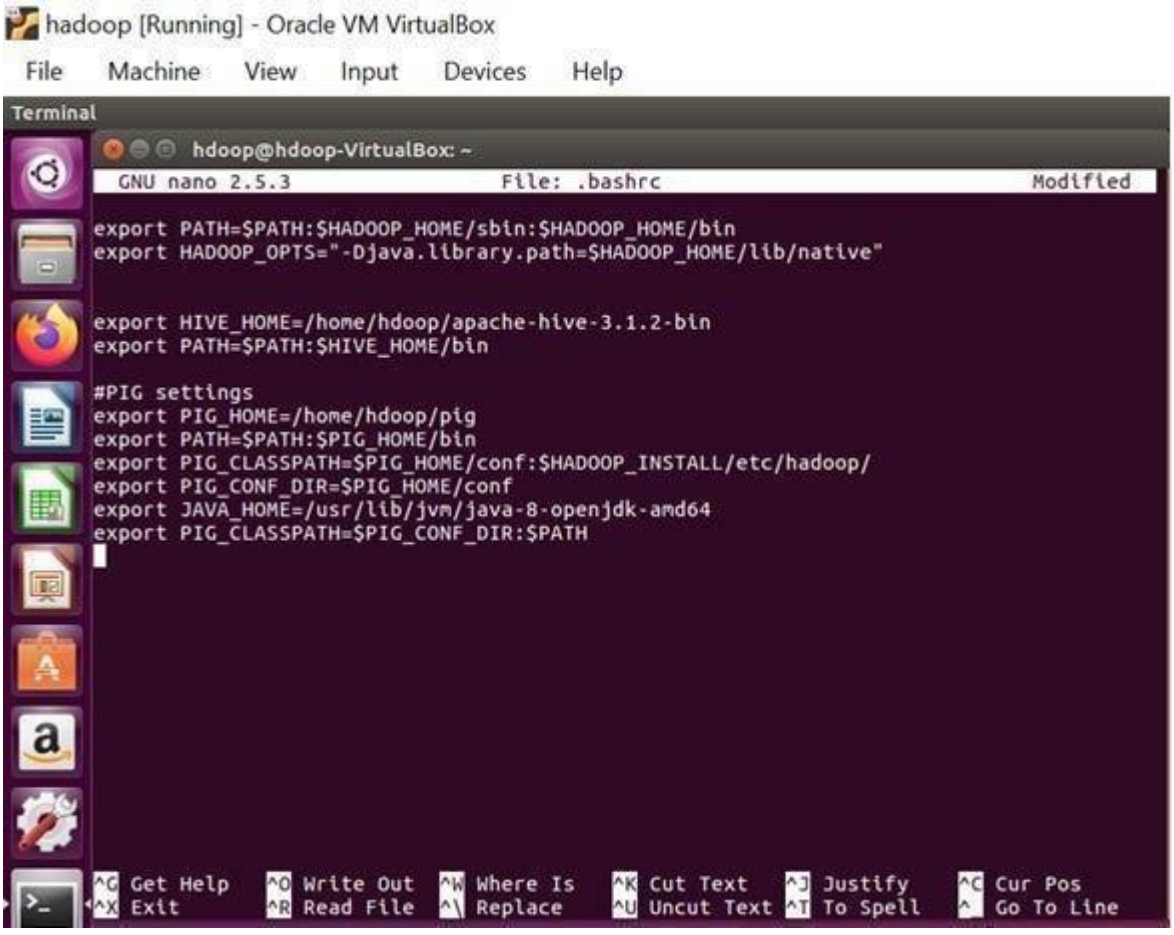
$ sudo mv /home/hdoop/pig-0.16.0 /home/hdoop/pig

Step 5: Now open the .bashrc file to edit the path and variables/settings for pig. Run the following command:

$ sudo nano .bashrc

Add the below given to .bashrc file at the end and save the file.

#PIG settingsexport PIG_HOME=/home/hdoop/pigexport PATH=$PATH:$PIG_HOME/binexport PIG_CLASSPATH=$PIG_HOME/conf:$HADOOP_INSTALL/etc/hadoop/export PIG_CONF_DIR=$PIG_HOME/confexport JAVA_HOME=/usr/lib/jvm/java-8openjdkamd64export PIG_CLASSPATH=$PIG_CONF_DIR:$PATH#PIG setting ends



Step 6: Run the following command to make the changes effective in the .bashrc file:

$ source .bashrc

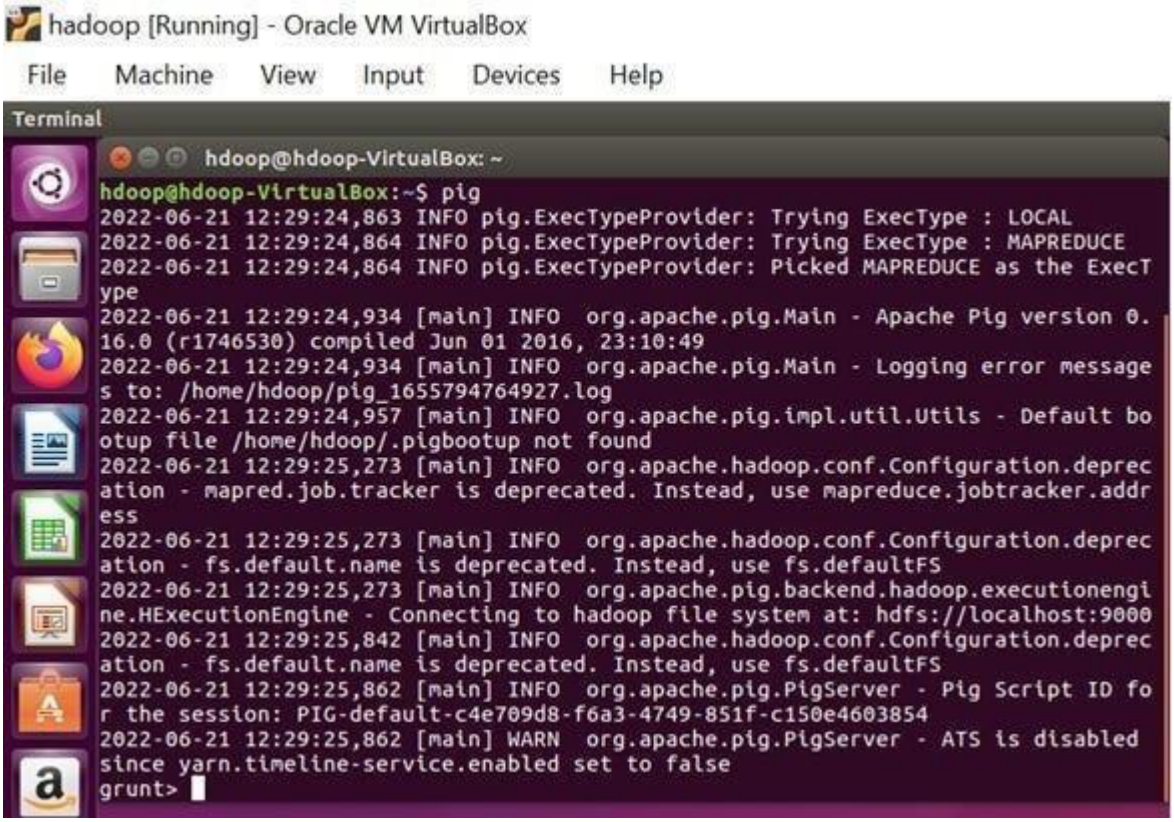
Step 7: To start all Hadoop daemons, navigate to the hadoop-3.2.1/sbin folder and run the following commands:

$ ./start-dfs.sh$ ./start-yarn$ jps

```
hdoop@hdoop-VirtualBox:~$ cd hadoop-3.2.1/sbin
hdoop@hdoop-VirtualBox:~/hadoop-3.2.1/sbin$ ./start-dfs.sh
Starting namenodes on [localhost]
Starting datanodes
Starting secondary namenodes [hdoop-VirtualBox]
hdoop@hdoop-VirtualBox:~/hadoop-3.2.1/sbin$ ./start-yarn.sh
Starting resourcemanager
Starting nodemanagers
hdoop@hdoop-VirtualBox:~/hadoop-3.2.1/sbin$ jps
4817 DataNode
5298 ResourceManager
5000 SecondaryNameNode
5450 NodeManager
4683 NameNode
5982 Jps
hdoop@hdoop-VirtualBox:~/hadoop-3.2.1/sbin$
```

Step 8: Now you can launch pig by executing the following

command: $ pig



Step 9: Now you are in pig and can perform your desired tasks on pig. You can come out of the pig by the quit command:

> quit;

Procedure:

Create a sample text file

hadoop@Ubuntu:~/Documents$ nano sample.txt

Paste the below content to sample.txt

1,John

2,Jane

3,Joe

4,Emma

hadoop@Ubuntu:~/Documents$ hadoop fs -put sample.txt /home/hadoop/piginput/

Create PIG File

hadoop@Ubuntu:~/Documents$ nano demo_pig.pig

paste the below the content to demo_pig.pig

-- Load the data from HDFS data = LOAD '/home/hadoop/piginput/sample.txt'

USING PigStorage(',') AS (id:int>

-- Dump the data to check if it was loaded correctly

DUMP data;

Run the above file

hadoop@Ubuntu:~/Documents$ pig demo_pig.pig

2024-08-07 12:13:08,791 [main] INFO
org.apache.pig.backend.hadoop.executionengine.util.MapRedUtil

- Total input paths to process : 1

(1,John)

(2,Jane)

(3,Joe)

(4,Emma)

Create udf file an save as uppercase_udf.py

uppercase_udf.py

------- def uppercase(text): return text.upper()

if __name__ == "__main__":

import sys for

line in

sys.stdin:

line = line.strip()

result =

uppercase(line)

print(result)

Create the udfs folder on hadoop

hadoop@Ubuntu:~/Documents$ hadoop fs -mkdir /home/hadoop/udfs

put the upppercase_udf.py in to the abv folder

hadoop@Ubuntu:~/Documents$ hdfs dfs -put uppercase_udf.py /home/hadoop/udfs/

---

hadoop@Ubuntu:~/Documents$ nano udf_example.pig

copy and paste the below content on udf_example.pig

-- Register the Python UDF script

REGISTER 'hdfs:///home/hadoop/udfs/uppercase_udf.py' USING jython AS udf;

-- Load some data data = LOAD 'hdfs:///home/hadoop/sample.txt'

AS (text:chararray);

-- Use the Python UDF uppercased_data = FOREACH data GENERATE

udf.uppercase(text) AS uppercase_text;

-- Store the result

STORE uppercased_data INTO 'hdfs:///home/hadoop/pig_output_data';

---

place sample.txt file on hadoop hadoop@Ubuntu:~/Documents$ hadoop

fs -put sample.txt /home/hadoop/ **To Run the pig file**

hadoop@Ubuntu:~/Documents$ pig -f udf_example.pig

finally u get

Success!

Job Stats (time in seconds):

JobId Maps Reduces MaxMapTimeMinMapTime AvgMapTime MedianMapTime

MaxReduceTime MinReduceTime AvgReduceTime MedianReducetime

Alias Feature Outputs

job_local1786848041_0001 1 0 n/a n/a n/a n/a 00 0 0

data,uppercased_data MAP_ONLY hdfs:///home/hadoop/pig_output_data,

Input(s):

Successfully read 4 records (42778068 bytes) from: "hdfs:///home/hadoop/sample.txt"
Output(s):

Successfully stored 4 records (42777870 bytes) in:
"hdfs:///home/hadoop/pig_output_data"

Counters:

Total records written : 4

Total bytes written : 42777870

Spillable Memory Manager spill count : 0

Total bags proactively spilled: 0

Total records proactively spilled: 0

Job DAG:

job_local1786848041_0001

2024-08-07 13:33:04,631 [main] WARN
org.apache.hadoop.metrics2.impl.MetricsSystemImpl JobTracker
metrics system already initialized! 2024-08-07 13:33:04,639
[main] WARN
org.apache.hadoop.metrics2.impl.MetricsSystemImpl JobTracker
metrics system already initialized!

2024-08-07 13:33:04,644 [main] WARN
org.apache.hadoop.metrics2.impl.MetricsSystemImp l - JobTracker metrics system
already initialized! 2024-08-07 13:33:04,667 [main] INFO
org.apache.pig.backend.hadoop.executionengine.mapReduceLayer.MapReduceLauncher
- Success!

Note :

If any error check jython package is installed and check the path specified on the above steps are give correctly

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-- To check the output file is created hadoop@Ubuntu:~/Documents$ hdfs

dfs -ls /home/hadoop/pig_output_data

Found 2 items

If you need to examine the files in the output folder,

use: **To view the output**

hadoop@Ubuntu:~/Documents$ hdfs dfs -cat /home/hadoop/pig_output_data/partm00000

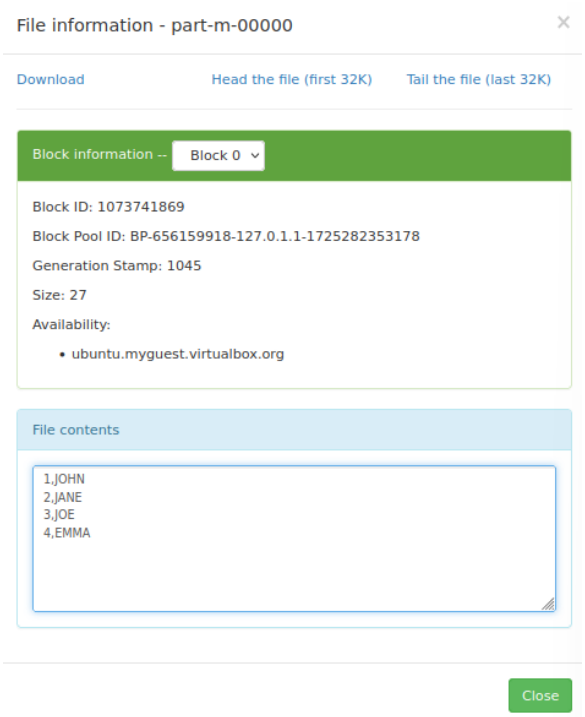
1,JOHN

2,JANE

3,JOE

4,EMMA

Output:




```
hadoop@ubuntu:~/Documents$ hdfs dfs -cat /home/hadoop/pig_output_data/part-m-00000
1,JOHN
2,JANE
3,JOE
4,EMMA
hadoop@ubuntu:~/Documents$
```

Result:

Thus the UDF in Apache PIG has been created and executed in Mapreduce/HDFS mode Successfully.