

Create User Define Function in Apache Pig and execute it on map reduce

Aim:

To create User Define Function in Apache Pig and execute it on map reduce

Procedure:

1. Firstly install PIG

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 command 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/hadoop/pig-0.16.0 /home/hadoop/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 settings
export PIG_HOME=/home/hadoop/pig
export PATH=$PATH:$PIG_HOME/bin
export PIG_CLASSPATH=$PIG_HOME/conf:$HADOOP_INSTALL/etc/hadoop/export
export PIG_CONF_DIR=$PIG_HOME/conf
export JAVA_HOME=/usr/lib/jvm/java-8-openjdk-amd64
export PIG_CLASSPATH=$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.sh
```

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;
```

2. Create UDF in Pig

Create a sample text file

```
hadoop@Ubuntu:~/Documents$ nano
```

```
sample.txtPaste 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
```

```
correctlyDUMP 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 and 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 uppercase_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.pigcopy 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

MedianMapTimeMaxReduceTime 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 :

0Total 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.MetricsSystemImp

l -JobTracker metrics system already initialized!

2024-08-07 13:33:04,639 [main] WARN
org.apache.hadoop.metrics2.impl.MetricsSystemImp

l -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.MapReduceLaunche
r -Success!

Note :

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

To check the output file is created

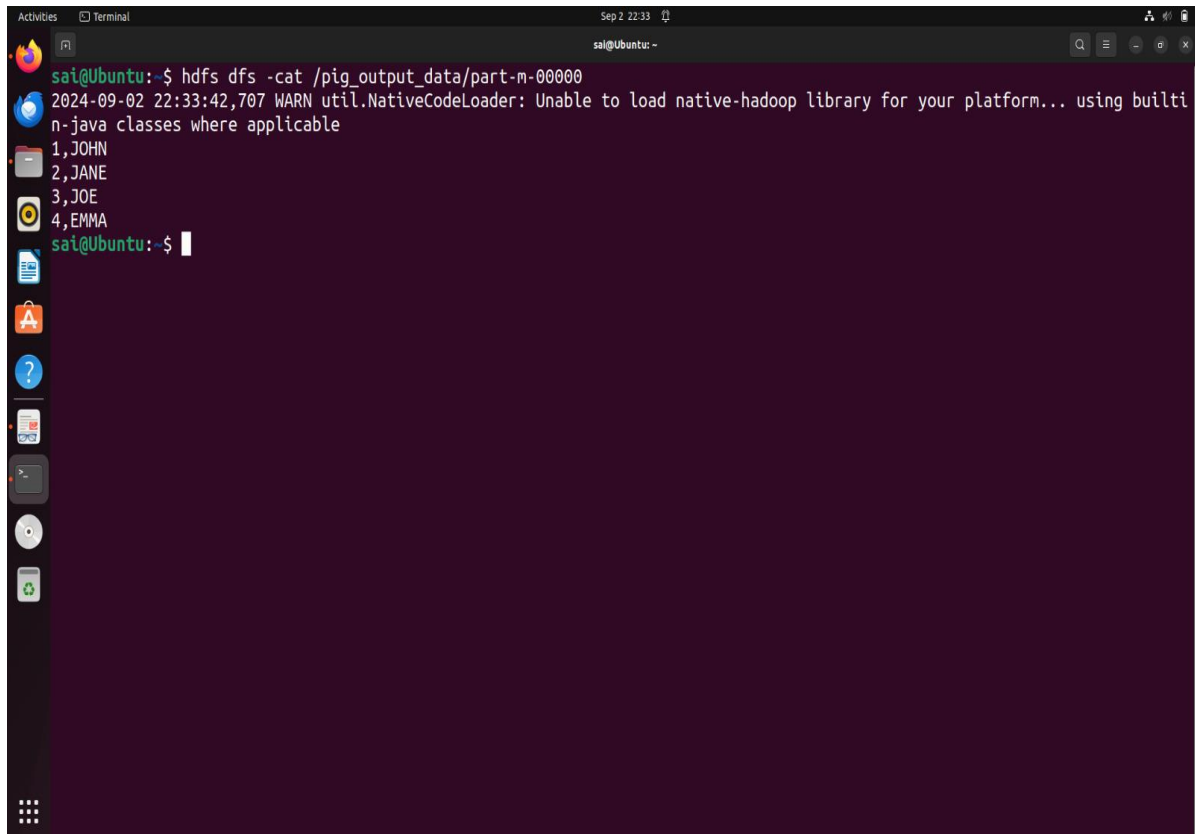
hadoop@Ubuntu:~/Documents\$ hdfs dfs -ls
/home/hadoop/pig_output_dataFound 2 items

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/part-m-00000
```

OUTPUT:

A screenshot of a Linux terminal window. The terminal title bar shows 'Activities', 'Terminal', and the date 'Sep 2 22:33'. The prompt is 'sai@Ubuntu: ~'. The command entered is 'hdfs dfs -cat /pig_output_data/part-m-00000'. The output shows a warning message: '2024-09-02 22:33:42,707 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where applicable'. Below the warning, the output is a list of four names: '1,JOHN', '2,JANE', '3,JOE', and '4,EMMA'. The terminal has a dark purple background and a vertical dock on the left with various application icons.

```
sai@Ubuntu:~$ hdfs dfs -cat /pig_output_data/part-m-00000  
2024-09-02 22:33:42,707 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using built  
n-java classes where applicable  
1,JOHN  
2,JANE  
3,JOE  
4,EMMA  
sai@Ubuntu:~$
```

Result:

Thus the User Define Function in Apache Pig and execute it on map reduce is executed successfully.