

## Create UDF (User Defined Functions) in Apache Pig and execute it in MapReduce/HDFS mode

### AIM:

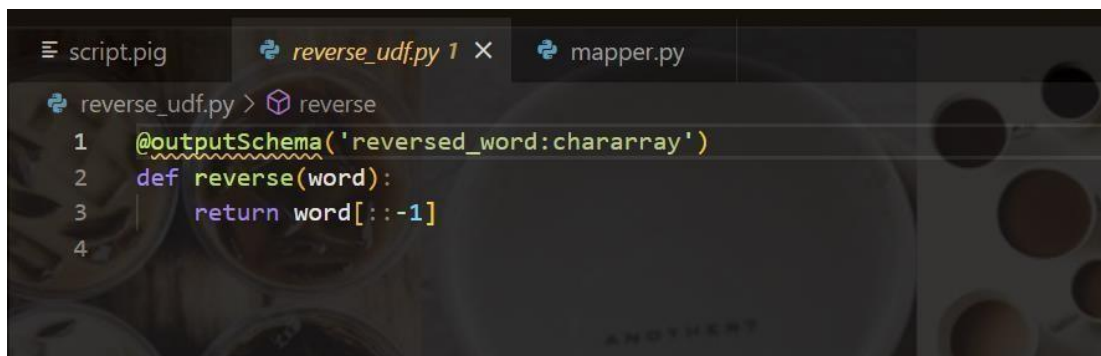
To create UDF (User Defined Functions) in Apache Pig and execute it in MapReduce/HDFS mode.

### PROCEDURE:

1. Ensure that Apache Pig is installed and configured.

```
C:\> pig
2024-08-26 21:04:07,868 INFO pig.ExecTypeProvider: Trying ExecType : LOCAL
2024-08-26 21:04:07,871 INFO pig.ExecTypeProvider: Trying ExecType : MAPREDUCE
2024-08-26 21:04:07,872 INFO pig.ExecTypeProvider: Picked MAPREDUCE as the ExecType
2024-08-26 21:04:08,053 [main] INFO org.apache.pig.Main - Apache Pig version 0.17.0 (r1797386) compiled Jun 02 2017, 15:41:58
2024-08-26 21:04:08,053 [main] INFO org.apache.pig.Main - Logging error messages to: C:\hadoop-3.3.6\logs\pig_1724686448046.log
2024-08-26 21:04:08,075 [main] INFO org.apache.pig.impl.util.Utils - Default bootstrap file C:\Users\mercy/.pigbootup not found
2024-08-26 21:04:08,316 [main] INFO org.apache.hadoop.conf.Configuration.deprecation - mapred.job.tracker is deprecated. Instead, use mapreduce.jobtracker.address
2024-08-26 21:04:08,317 [main] INFO org.apache.pig.backend.hadoop.executionengine.HExecutionEngine - Connecting to hadoop file system at: hdfs://localhost:9000
2024-08-26 21:04:08,792 [main] INFO org.apache.pig.PigServer - Pig Script ID for the session: PIG-default-61e9ddc5-2e27-479d-a67c-ef401395523d
2024-08-26 21:04:08,792 [main] WARN org.apache.pig.PigServer - ATS is disabled since yarn.timeline-service.enabled set to false
grunt> |
```

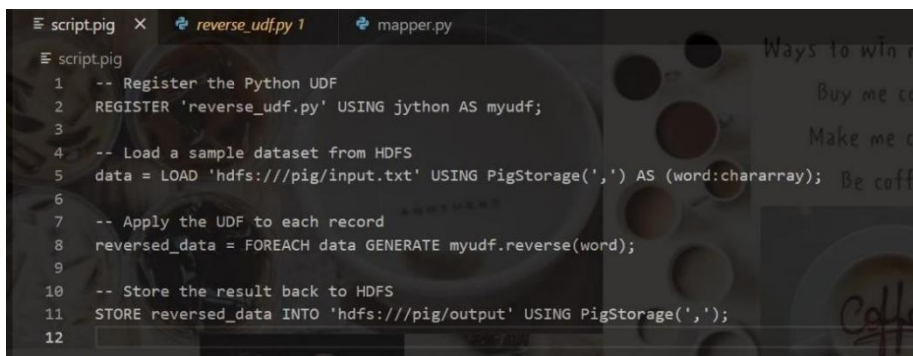
2. Create a python UDF (User Defined Functions).



```
reverse_udf.py > reverse
1  @outputSchema('reversed_word:chararray')
2  def reverse(word):
3      return word[::-1]
4
```

3. Jython should be installed as Pig will use it to interpret the Python UDFs.

4. Create a Pig script that registers and uses the Python UDF.



```
script.pig
1  -- Register the Python UDF
2  REGISTER 'reverse_udf.py' USING jython AS myudf;
3
4  -- Load a sample dataset from HDFS
5  data = LOAD 'hdfs:///pig/input.txt' USING PigStorage(',') AS (word:chararray);
6
7  -- Apply the UDF to each record
8  reversed_data = FOREACH data GENERATE myudf.reverse(word);
9
10 -- Store the result back to HDFS
11 STORE reversed_data INTO 'hdfs:///pig/output' USING PigStorage(',');
12
```

5. Execute the Pig Script in MapReduce Mode using the command:

```
pig -x mapreduce script.pig
```

## OUTPUT:

```

C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.22621.4037]
(c) Microsoft Corporation. All rights reserved.

C:\Users\mercy\OneDrive\Documents\DataAnalytics\Pig>pig -x mapreduce
2024-08-21 19:48:51,881 INFO pig.ExecTypeProvider: Trying ExecType : LOCAL
2024-08-21 19:48:51,773 INFO pig.ExecTypeProvider: Trying ExecType : MAPREDUCE
2024-08-21 19:48:51,781 INFO pig.ExecTypeProvider: Picked MAPREDUCE as the ExecType
2024-08-21 19:48:52,267 [main] INFO org.apache.pig.Main - Apache Pig version 0.17.0 (r1797386) compiled Jun 02 2017, 15:41:58
2024-08-21 19:48:52,267 [main] INFO org.apache.pig.Main - Logging error messages to: C:\hadoop-3.3.0\logs\pig_1724249812251.log
2024-08-21 19:48:52,289 [main] INFO org.apache.pig.impl.util.Util - Default bootstrap file C:\Users\mercy\.pigbootstrap not found
2024-08-21 19:48:52,551 [main] INFO org.apache.hadoop.conf.Configuration.deprecation - mapred.job.tracker is deprecated. Instead, use mapreduce.jobtracker.address
2024-08-21 19:48:52,551 [main] INFO org.apache.pig.backend.hadoop.executionengine.HExecutionEngine - Connecting to hadoop file system at: hdfs://localhost:9000
2024-08-21 19:48:53,109 [main] INFO org.apache.pig.PigServer - Pig Script ID for the session: PIG-default-a5529456-20df-4fcd-a140-38aadb2542
2024-08-21 19:48:53,109 [main] WARN org.apache.pig.PigServer - ATS is disabled since yarn.timeline-service.enabled set to false
grunt> |

```

```

336266_0001
2024-08-21 19:47:27,142 [JobControl] INFO org.apache.hadoop.mapreduce.JobSubmitter - Executing with tokens: []
2024-08-21 19:47:27,427 [JobControl] INFO org.apache.hadoop.mapred.YARNRunner - Job jar is not present. Not adding any jar to the list of resources.
2024-08-21 19:47:27,548 [JobControl] INFO org.apache.hadoop.conf.Configuration - resource-types.xml not found
2024-08-21 19:47:27,549 [JobControl] INFO org.apache.hadoop.yarn.util.resource.ResourceUtils - Unable to find 'resource-types.xml'.
2024-08-21 19:47:28,024 [JobControl] INFO org.apache.hadoop.yarn.client.api.impl.YarnClientImpl - Submitted application application_1724249336266_0001
2024-08-21 19:47:28,103 [JobControl] INFO org.apache.hadoop.mapreduce.Job - The url to track the job: http://Honor:8088/proxy/application_1724249336266_0001/
2024-08-21 19:47:28,103 [main] INFO org.apache.pig.backend.hadoop.executionengine.mapReduceLayer.MapReduceLauncher - Hadoop JobId: job_1724249336266_0001
2024-08-21 19:47:28,103 [main] INFO org.apache.pig.backend.hadoop.executionengine.mapReduceLayer.MapReduceLauncher - Processing aliases data,reversed_data
2024-08-21 19:47:28,104 [main] INFO org.apache.pig.backend.hadoop.executionengine.mapReduceLayer.MapReduceLauncher - detailed locations: M: data[5,7],reversed_data[-1,-1] C: R:
2024-08-21 19:47:28,111 [main] INFO org.apache.pig.backend.hadoop.executionengine.mapReduceLayer.MapReduceLauncher - 0% complete
2024-08-21 19:47:28,111 [main] INFO org.apache.pig.backend.hadoop.executionengine.mapReduceLayer.MapReduceLauncher - Running jobs are [job_1724249336266_0001]
2024-08-21 19:47:45,515 [main] INFO org.apache.pig.backend.hadoop.executionengine.mapReduceLayer.MapReduceLauncher - 50% complete
2024-08-21 19:47:45,515 [main] INFO org.apache.pig.backend.hadoop.executionengine.mapReduceLayer.MapReduceLauncher - Running jobs are [job_1724249336266_0001]
2024-08-21 19:47:48,582 [main] INFO org.apache.hadoop.yarn.client.DefaultNoHARMFailoverProxyProvider - Connecting to ResourceManager at /0.0.0.0:8032
2024-08-21 19:47:48,592 [main] INFO org.apache.hadoop.mapred.ClientServiceDelegate - Application state is completed. FinalApplicationStatus=SUCCEEDED. Redirecting to job history server

```

```

C:\>hadoop fs -mkdir /pig

C:\>hadoop fs -put C:\Users\mercy\OneDrive\Documents\DataAnalytics\Pig\input.txt /pig

C:\>hadoop fs -cat /pig/output/part-m-00000
olleH
avaJ
ycreM
hohtyP
ognaM
etalocohC
eeffoC

```

Hadoop Overview Datanodes Datanode Volume Failures Snapshot Startup Progress Utilities +

## Browse Directory

/user/jayas

Show 25 entries Search:

<input type="checkbox"/>	Permission	Owner	Group	Size	Last Modified	Replication	Block Size	Name	<input type="checkbox"/>
<input type="checkbox"/>	-rw-r--r--	jayas	supergroup	28 B	Aug 13 09:39	1	128 MB	data.txt	<input type="checkbox"/>
<input type="checkbox"/>	drwxr-xr-x	jayas	supergroup	0 B	Aug 26 11:27	0	0 B	input	<input type="checkbox"/>
<input type="checkbox"/>	drwxr-xr-x	jayas	supergroup	0 B	Aug 26 18:50	0	0 B	output	<input type="checkbox"/>
<input type="checkbox"/>	drwxr-xr-x	jayas	supergroup	0 B	Aug 23 09:35	0	0 B	output2	<input type="checkbox"/>
<input type="checkbox"/>	drwxr-xr-x	jayas	supergroup	0 B	Aug 28 14:05	0	0 B	outputpig	<input type="checkbox"/>
<input type="checkbox"/>	drwxr-xr-x	jayas	supergroup	0 B	Aug 26 18:49	0	0 B	scripts	<input type="checkbox"/>

Showing 1 to 6 of 6 entries  **1**

Hadoop, 2023.

Hadoop Overview Datanodes Datanode Volume Failures Snapshot Startup Progress Utilities +

## Browse Directory

/scripts/squared\_output

Show 25 entries Search:

<input type="checkbox"/>	Permission	Owner	Group	Size	Last Modified	Replication	Block Size	Name	<input type="checkbox"/>
<input type="checkbox"/>	-rw-r--r--	jayas	supergroup	49 B	Aug 28 14:05	1	128 MB	_SUCCESS	<input type="checkbox"/>
<input type="checkbox"/>	-rw-r--r--	jayas	supergroup	49 B	Aug 28 14:05	1	128 MB	part-m-00000	<input type="checkbox"/>

Showing 1 to 2 of 2 entries  **1**

Hadoop, 2023.

File information - part-m-00000

[Download](#) [Head the file \(first 32K\)](#) [Tail the file \(last 32K\)](#)

Block information:

Block ID: 1073741920  
Block Pool ID: BP-182655827-192.168.130.1-1723180668634  
Generation Stamp: 1096  
Size: 49  
Availability:  
• LAPTOP-5AEVBO11

## RESULT:

Thus, to create a UDF in Apache Pig and execute in MapReduce mdoe has been executed successfully