Exp no:4 210701181

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

Aim:

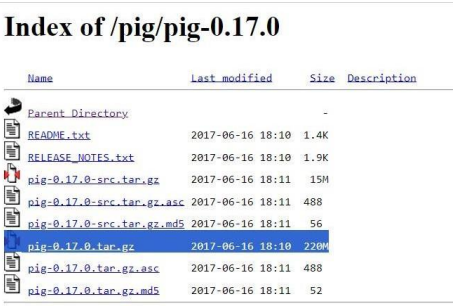
To create UDF in Apache Pig and execute it in MapReduce/HDFS mode.

Procedure:

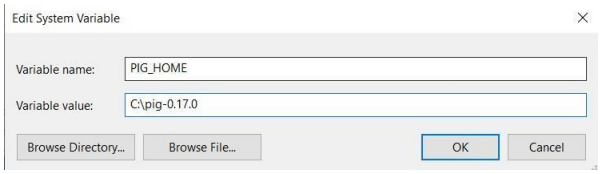
Pig Download and installation:

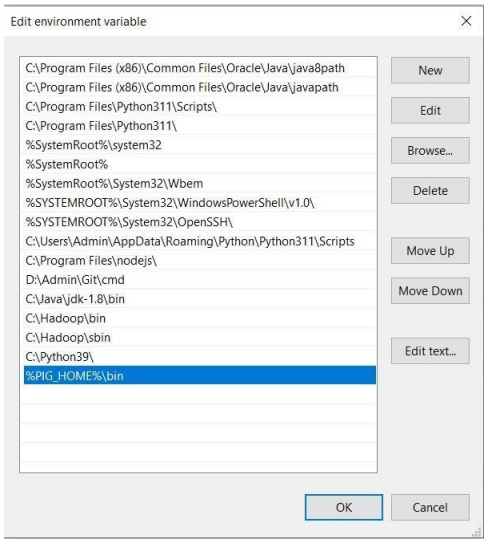
1. Download Pig:

Download Pig from "https://downloads.apache.org/pig/pig-0.17.0/"



2. Add the environment variable for Pig:





3. Go to C:\pig-0.16.0\bin and open pig (Windows Command Script)

```
set HADOOP_BIN_PATH=%HADOOP_HOME%\libexec
```

4. Open Windows Powershell and type “pig –x local” and check whether pig grunt appears.

Pig is successfully installed.

Create UDF:

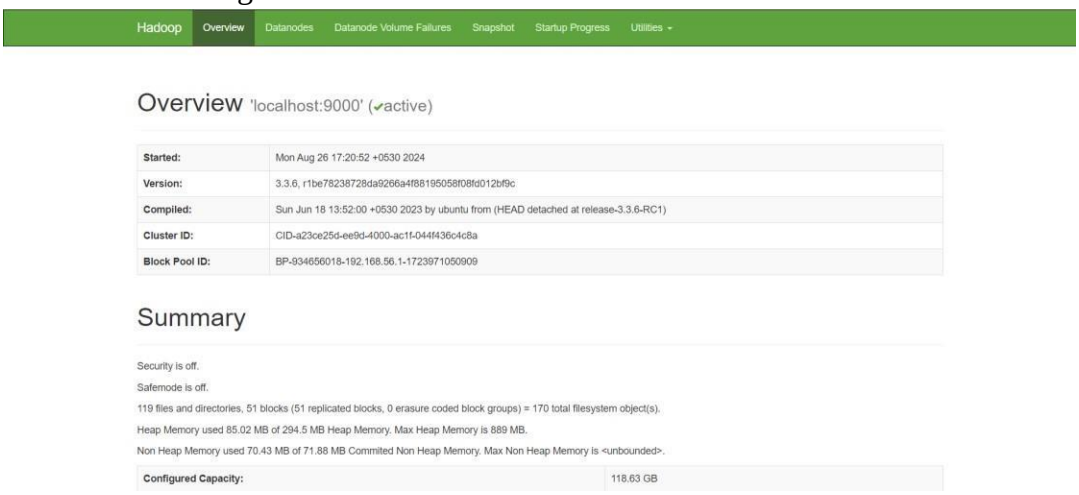
1. **Start Hadoop services:**

Open command prompt as an administrator

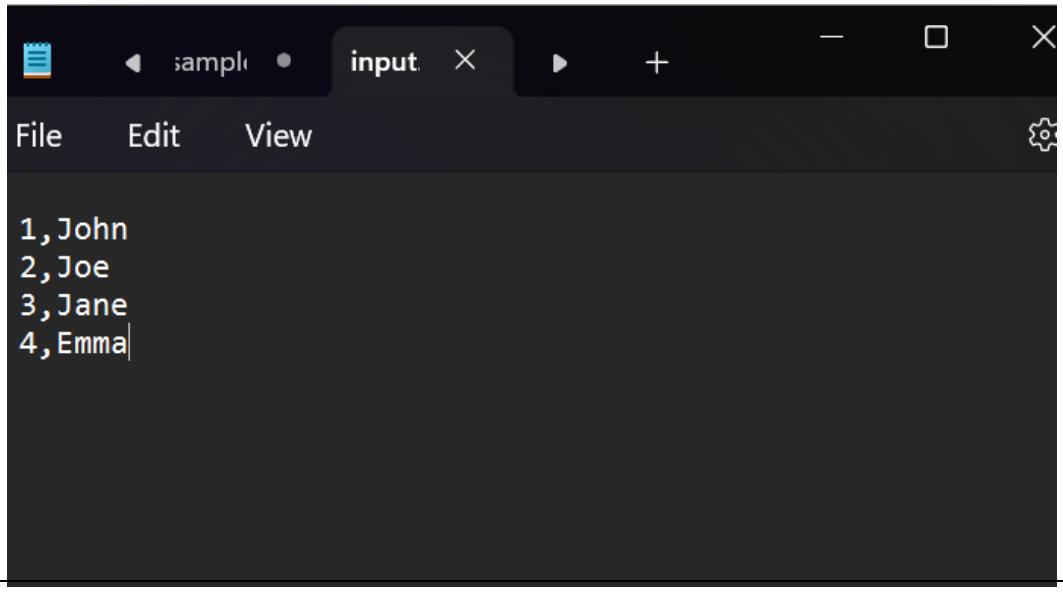
start-dfs.cmd

start-yarn.cmd

2. Open the browser and go to the URL “localhost:9870”



3. Create a text file “input.txt”:



4. Create a Python file “uppercase_udf.py”:

uppercase_udf - Notepad

File Edit Format View Help

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

if __name__ == "__main__":
    import sys
    for line in sys.stdin:
        line = line.strip()
        result = uppercase(line)
        print(result)
```

6.Create a Directory in HDFS and copy the Input File to HDFS

Hadoop fs -mkdir /piginput

hadoop fs -put udfs C:\pig\sample.pig /piginput

```
C:\hadoop\sbin>Hadoop fs -mkdir /piginput
mkdir: `/piginput': File exists

C:\hadoop\sbin>
```

5. Create pig file “sample.pig”:

File Edit View

```
-- Register the Jython standalone JAR using the correct URI format
REGISTER 'file:///C:/jython-standalone-2.7.4.jar';

-- Register the Python UDF script
REGISTER 'C:/pig/my_udf.py' USING jython AS myudfs;

-- Load the input file from HDFS
data = LOAD 'hdfs://localhost:9000/piginput/input.txt' AS (line: chararray);

-- Apply the UDF to convert each line to uppercase
uppercased_data = FOREACH data GENERATE myudfs.to_upper(line);

-- Store the result in HDFS
STORE uppercased_data INTO 'hdfs://localhost:9000/pigOutput/output.txt';
```

6. Execute Pig file:

pig -f C:\pig\sample.pig

```
C:\hadoop\sbin>pig -f  C:\pig\sample.pig
2024-09-14 08:47:02,291 INFO pig.ExecTypeProvider: Trying ExecType : LOCAL
2024-09-14 08:47:02,296 INFO pig.ExecTypeProvider: Trying ExecType : MAPREDUCE
2024-09-14 08:47:02,296 INFO pig.ExecTypeProvider: Picked MAPREDUCE as the ExecType
2024-09-14 08:47:02,696 [main] INFO  org.apache.pig.Main - Apache Pig version 0.17.0 (r1797386) compiled Jun 02 2017, 15
:41:58
2024-09-14 08:47:02,697 [main] INFO  org.apache.pig.Main - Logging error messages to: C:\hadoop\logs\pig_1726283822682.l
og
2024-09-14 08:47:03,337 [main] INFO  org.apache.pig.impl.util.Utils - Default bootup file C:\Users\monid/.pigbootup not
found
2024-09-14 08:47:03,426 [main] INFO  org.apache.hadoop.conf.Configuration.deprecation - mapred.job.tracker is deprecated
. Instead, use mapreduce.jobtracker.address
2024-09-14 08:47:03,427 [main] INFO  org.apache.pig.backend.hadoop.executionengine.HExecutionEngine - Connecting to hado
op file system at: hdfs://localhost:9000
2024-09-14 08:47:04,523 [main] INFO  org.apache.pig.PigServer - Pig Script ID for the session: PIG-sample.pig-6562013e-a
b11-405c-a25e-fd4c9a36c3f8
2024-09-14 08:47:04,523 [main] WARN  org.apache.pig.PigServer - ATS is disabled since yarn.timeline-service.enabled set
to false
```

7. View the Output hdfs dfs -ls /pigOutput

```
C:\hadoop\sbin>hdfs dfs -ls /pigOutput
Found 1 items
drwxr-xr-x   - monid supergroup          0 2024-08-27 14:48 /pigOutput/output.txt

C:\hadoop\sbin>
```

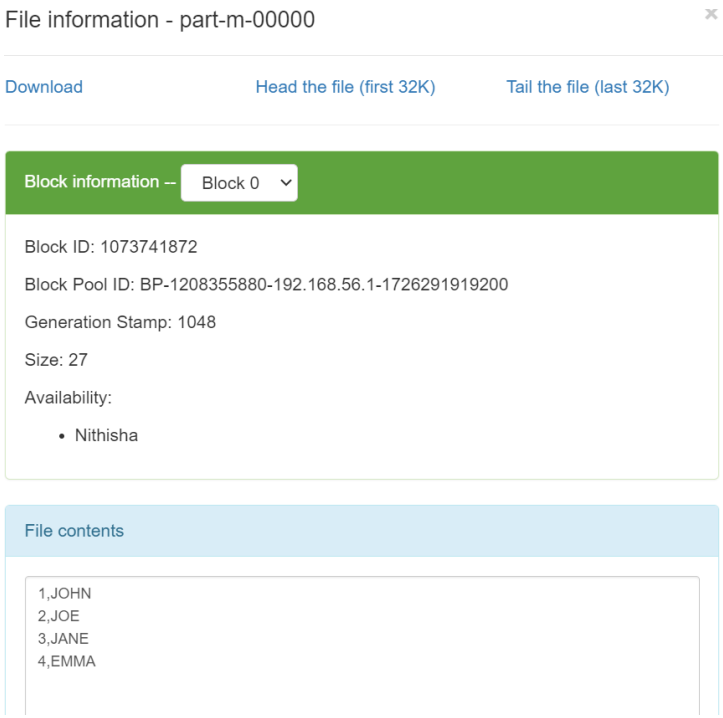
hdfs dfs -cat /pigOutput/output.txt/part-m-00000

```
C:\hadoop\sbin>hdfs dfs -cat /pigOutput/output.txt/part-m-00000
WELCOME TO HADOOP INSTALLATION

C:\hadoop\sbin>
```

8. Once the map reduce operations are performed successfully, the output will be present in the specified directory.

"/pigOutput/output.data/part-m-00000"



9. Stop Hadoop Services

stop-dfs.cmd stop-yarn.cmd

Result:

Thus, UDF in Apache Pig has been created and executed in MapReduce/HDFS mode successfully.