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Lab - 08

Perform a map-reduce program to

- Find average temperature for each year from NCD/C data set (github).
- Find the mean max temperature for every month.

Steps:

- login to Hadoop environment
- Open Eclipse
- ✓ Create New Java project
- Change Java version to 1.8 from
Window → Preferences → Java → Compiler →
Change Compiler compliance level → 1.8.

Import core jar file in hadoop Build path from
continuum, mapreduce, hdfs & yarn.

- Create 3 driver java files i.e
AverageDriver, AverageMapper, AverageReducer.

Execution:

> start-all.sh

> jps

> hadoop fs -ls/

> hadoop fs -mkdir /temp

> hadoop fs -copy From local /home/hadoop/
Desktop/AverageDriver.java, text.txt
to temp

> `hadoop.jar /home/hadoop/Desktop/
AverageDriver.jar`

> `hadoop.jar /home/hadoop/Desktop/
AverageTemperature.jar AverageDriver /
text.txt /weather/output`

> `hadoop fs -cat /weather/output/part-r-
000000`

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```
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ start-all.sh
WARNING: Attempting to start all Apache Hadoop daemons as hadoop in 10 seconds.
WARNING: This is not a recommended production deployment configuration.
WARNING: Use CTRL-C to abort.
Starting namenodes on [localhost]
Starting datanodes
Starting secondary namenodes [bmscecse-HP-Elite-Tower-800-G9-Desktop-PC]
Starting resourcemanager
Starting nodemanagers
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ jps
7056 DataNode
7332 SecondaryNameNode
7638 ResourceManager
8231 Jps
5883 org.eclipse.equinox.launcher_1.6.1000.v20250227-1734.jar
7804 NodeManager
6877 NameNode
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ hadoop fs -ls /\
> ^C
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ hadoop fs -ls /
Found 4 items
drwxr-xr-x - hadoop supergroup          0 2025-04-15 15:00 /FFF
drwxr-xr-x - hadoop supergroup          0 2025-04-15 15:34 /LLL
drwxr-xr-x - hadoop supergroup          0 2024-05-13 14:46 /file
drwxr-xr-x - hadoop supergroup          0 2024-05-13 15:18 /newDataFlair
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ hadoop fs -ls /weather
ls: `/weather': No such file or directory
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ hadoop fs -mkdir /weather
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ hadoop fs -copyFromLocal /home/hadoop/Desktop/1901.txt /weather/test.txt
```


File System Counters

FILE: Number of bytes read=153118
FILE: Number of bytes written=1493804
FILE: Number of read operations=0
FILE: Number of large read operations=0
FILE: Number of write operations=0
HDFS: Number of bytes read=1776380
HDFS: Number of bytes written=8
HDFS: Number of read operations=15
HDFS: Number of large read operations=0
HDFS: Number of write operations=4
HDFS: Number of bytes read erasure-coded=0

Map-Reduce Framework

Map input records=6565
Map output records=6564
Map output bytes=59076
Map output materialized bytes=72210
Input split bytes=103
Combine input records=0
Combine output records=0
Reduce input groups=1
Reduce shuffle bytes=72210
Reduce input records=6564
Reduce output records=1
Spilled Records=13128
Shuffled Maps =1
Failed Shuffles=0
Merged Map outputs=1
GC time elapsed (ms)=0
Total committed heap usage (bytes)=1266679808

Shuffle Errors

BAD_ID=0
CONNECTION=0
IO_ERROR=0
WRONG_LENGTH=0
WRONG_MAP=0
WRONG_REDUCE=0

File Input Format Counters

Bytes Read=888190

File Output Format Counters

Bytes Written=8

bytes written=8

```
hadoop@bnscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ hadoop fs -ls /weather
```

Found 2 items

```
drwxr-xr-x    - hadoop supergroup          0 2025-05-06 14:59 /weather/output
```

```
-rw-r--r--    1 hadoop supergroup      888190 2025-05-06 14:50 /weather/test.txt
```

```
hadoop@bnscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ hadoop fs -ls /weather/output
```

Found 2 items

```
-rw-r--r--    1 hadoop supergroup          0 2025-05-06 14:59 /weather/output/_SUCCESS
```

```
-rw-r--r--    1 hadoop supergroup          8 2025-05-06 14:59 /weather/output/part-r-00000
```

```
hadoop@bnscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ hadoop fs -cat /weather/output/part-r-00000
```

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```
hadoop@bnscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$
```