

Expt-3:**Map Reduce program to process a weather dataset.****AIM:**

To implement MapReduce program to process a weather dataset.

PROCEDURE:**1. Create Weather Dataset:**

```
nano weather_data.txt
```

Example content:

```
20220101 30.5
```

```
20220102 29.8
```

2. Mapper Program (mapper.py):

```
#!/usr/bin/env python3

import sys

for line in sys.stdin:

    line = line.strip()

    month = line[4:6] # Extracting month

    temp = line[7:11] # Extracting temperature

    print(f'{month}\t{temp}')
```

3. Reducer Program (reducer.py):

```
#!/usr/bin/env python3

import sys

current_month = None

current_max_temp = -float('inf')

for line in sys.stdin:

    line = line.strip()

    month, temp = line.split('\t')
```

```
try:
    temp = float(temp)
except ValueError:
    continue

if current_month == month:
    current_max_temp = max(current_max_temp, temp)
else:
    if current_month:
        print(f'{current_month}\t{current_max_temp}')
    current_month = month
    current_max_temp = temp

if current_month == month:
    print(f'{current_month}\t{current_max_temp}')
```

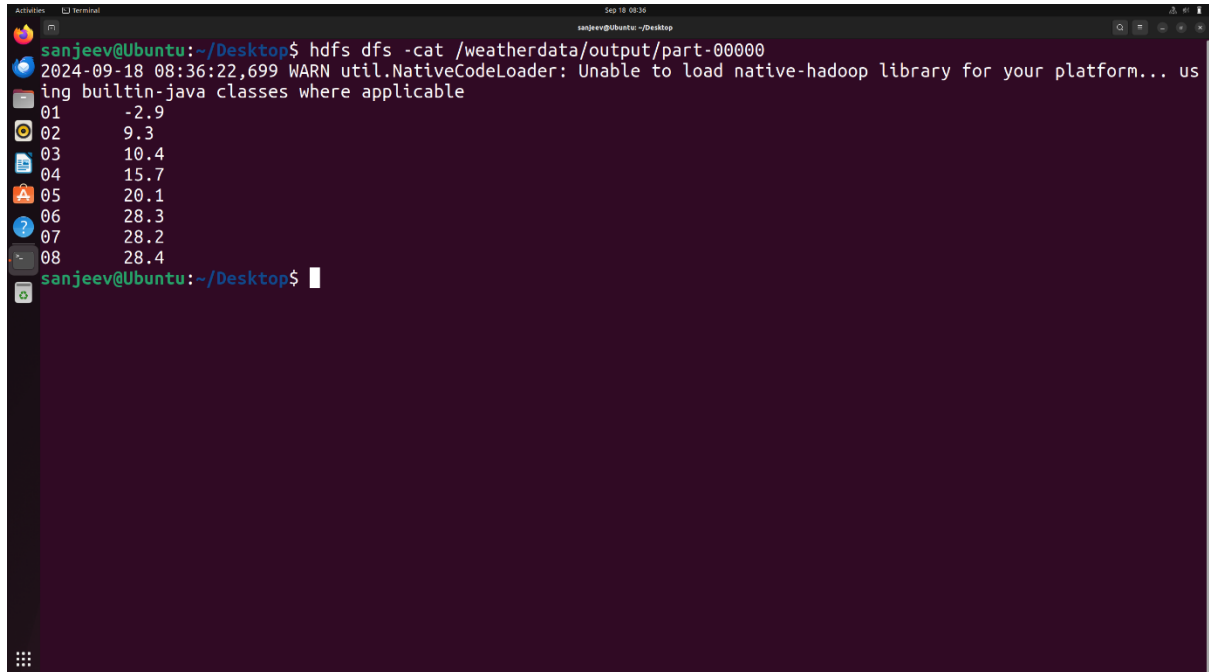
4. Run the Program:

```
hdfs dfs -mkdir /weatherdata
hdfs dfs -copyFromLocal weather_data.txt /weatherdata

hadoop jar $HADOOP_HOME/share/hadoop/tools/lib/hadoop-streaming-*.jar \
-input /weatherdata/weather_data.txt \
-output /weatherdata/output \
-mapper mapper.py \
-reducer reducer.py
```

5. Check Output:

```
hdfs dfs -cat /weatherdata/output/part-00000
```

OUTPUT:A terminal window on an Ubuntu system showing the execution of an HDFS command. The command is 'hdfs dfs -cat /weatherdata/output/part-00000'. The output displays a warning message and a list of temperature values for different time intervals. The warning message is '2024-09-18 08:36:22,699 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where applicable'. The temperature values are: 01: -2.9, 02: 9.3, 03: 10.4, 04: 15.7, 05: 20.1, 06: 28.3, 07: 28.2, 08: 28.4. The terminal window has a dark background and a light-colored text. The prompt is 'sanjeev@Ubuntu:~/Desktop\$'.

```
sanjeev@Ubuntu:~/Desktop$ hdfs dfs -cat /weatherdata/output/part-00000
2024-09-18 08:36:22,699 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where applicable
01      -2.9
02       9.3
03      10.4
04      15.7
05      20.1
06      28.3
07      28.2
08      28.4
sanjeev@Ubuntu:~/Desktop$
```

RESULT:

Thus, the program for weather dataset using Map Reduce has been executed successfully.