

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}')
```

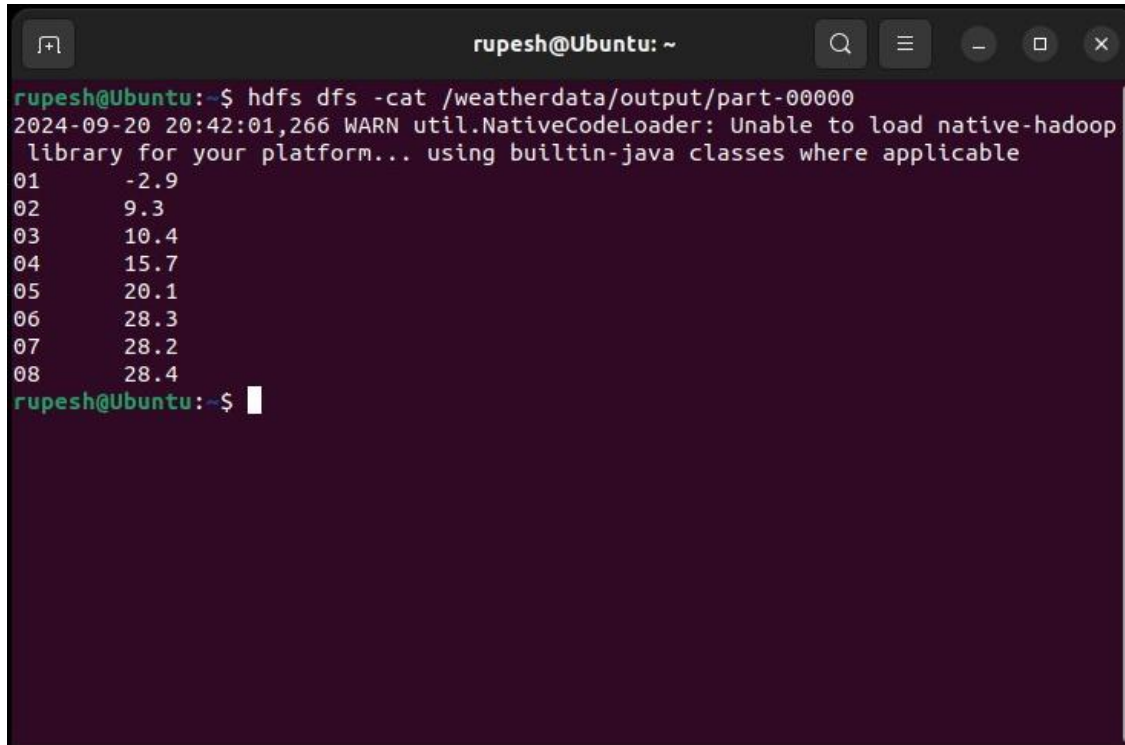
4. Run the Program:

```
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 titled 'rupesh@Ubuntu: ~' with standard Ubuntu window controls. The terminal shows a command 'hdfs dfs -cat /weatherdata/output/part-00000' being executed. The output consists of a warning message and a list of eight temperature readings. The warning message is '2024-09-20 20:42:01,266 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where applicable'. The temperature readings are: 01 -2.9, 02 9.3, 03 10.4, 04 15.7, 05 20.1, 06 28.3, 07 28.2, and 08 28.4. The prompt 'rupesh@Ubuntu: ~\$' is visible at the bottom.

```
rupesh@Ubuntu:~$ hdfs dfs -cat /weatherdata/output/part-00000
2024-09-20 20:42:01,266 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
rupesh@Ubuntu:~$
```

RESULT:

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