EX.NO.10 **210701152**

IMPLEMENT A MAPREDUCE PROGRAM TO PROCESS A WEATHER DATASET

AIM:

To implement a MapReduce python program to process a weather dataset in Hadoop.

PROCEDURE:

1. Open command prompt as administrator and start the Hadoop by using the command:

start-all.cmd

2. Create a new directory in the Hadoop file systems using the command:

hadoop fs -mkdir /weather

3. Upload the input text file into the weather directory using the command:

hadoop fs -put

C:/Users/mercy/OneDrive/Documents/DataAnalytics/WeatherPrediction/sample_weather.txt /weather

4. Create the mapper and reducer files.

5. To execute the files with Hadoop streaming run the following command:

hadoop jar C:/hadoop-3.3.6/share/hadoop/tools/lib/hadoop-streaming-3.3.6.jar ^ -file C:/Users/mercy/Documents/DataAnalytics/WeatherPrediction/mapper.py ^ -file C:/Users/mercy/Documents/DataAnalytics/WeatherPrediciton/reducer.py ^ -input /weather/sample_weather.txt ^ -output /weather/output ^ -mapper "python mapper.py" ^ -reducer "python reducer.py"

MAPPER.PY:

```
#!C:/ProgramData/chocolatey/bin/python3.exe

import sys

def map1():
```

```
for line in sys.stdin:
tokens = line.strip().split()
if len(tokens) < 13:
continue
station = tokens[0]
if "STN" in station:
continue
date_hour = tokens[2]
temp = tokens[3]
dew = tokens[4]
wind = tokens[12]
if temp == "9999.9" or dew == "9999.9" or wind == "999.9":
continue
hour = int(date_hour.split("_")[-1])
date = date_hour[:date_hour.rfind("_")-2]
if 4 < hour <= 10:
section = "section1"
elif 10 < hour <= 16:
section = "section2"
elif 16 < hour <= 22:
section = "section3"
else:
section = "section4"
key_out =
f"{station}_{date}_{section}" value_out
= f"{temp} {dew} {wind}"
print(f"{key_out}\t{value_out}") if
__name__ == "__main__":
```

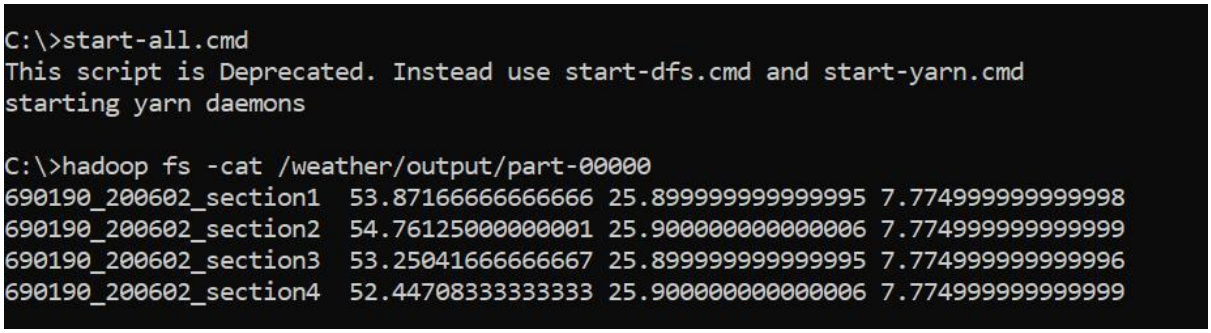
map1()

REDUCER.PY:

```
#!C:/ProgramData/chocolatey/bin/python3.exe
import sys
def reduce1():
current_key = None
sum_temp, sum_dew, sum_wind = 0, 0,
0 count = 0
for line in sys.stdin:
key, value = line.strip().split("\t")
temp, dew, wind = map(float, value.split())
if current_key is None:
current_key = key
if key == current_key:
sum_temp += temp
sum_dew += dew
sum_wind += wind
count += 1
else:
avg_temp = sum_temp / count
avg_dew = sum_dew / count
avg_wind = sum_wind / count
print(f"{current_key}\t{avg_temp} {avg_dew} {avg_wind}")
current_key = key
sum_temp, sum_dew, sum_wind = temp, dew,
wind count = 1
if current_key is not None:
```

```
avg_temp = sum_temp / count
avg_dew = sum_dew / count
avg_wind = sum_wind / count
print(f"{current_key}\t{avg_temp} {avg_dew} {avg_wind}")
if __name__ == "__main__":
reduce1()
```

OUTPUT:



RESULT:

Thus the implementation of the MapReduce python program to process a weather dataset in Hadoop is executed successfully.