EX.NO.10 **Roll no: 210701289**

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.ex
e 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.ex
e 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()
```

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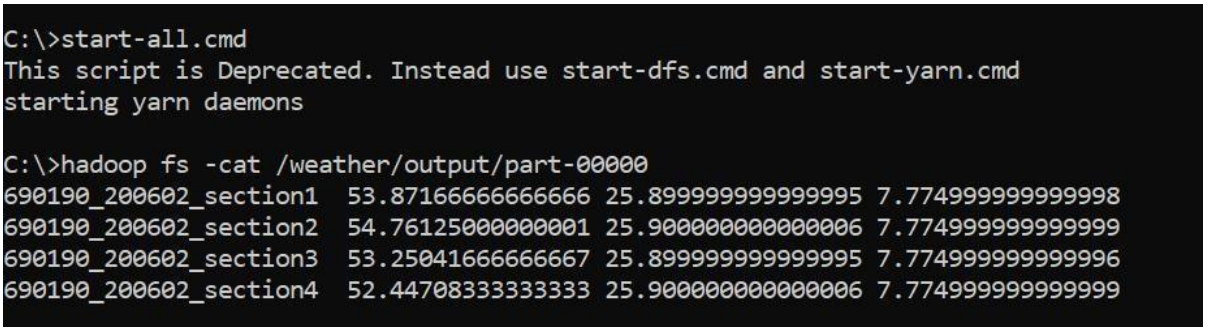
OUTPUT:



RESULT:

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