Business Problem – Assignment 2

Task 1: Demand-Supply Mismatch Analysis

Objective: Identify zones and regional zones with the highest mismatch between demand and supply.

Required Fields: zone, WH_regional_zone, product_wg_ton

--mapper.py :

```
#!/usr/bin/python3

"""mapper.py"""

import sys

import csv

for row in csv.reader(sys.stdin):

    print("%s\t%s\t%s"%(row[4],row[5],row[23]))
```

--reduce.py :

```
#!/usr/bin/python3

"""reducer.py"""


import sys

import csv


data = {}


for line in sys.stdin:

  zone, regional_zone, product_shipped = line.strip().split("\t")

  try:

    product_shipped = float(product_shipped)

  except ValueError:
```

```
        continue
    if zone in data:
        if regional_zone in data[zone]:
            data[zone][regional_zone] += product_shipped
        else:
            data[zone][regional_zone] = product_shipped
    else:
        data[zone] = {regional_zone: product_shipped}


for zone in data:
    for regional_zone in data[zone]:
        print("%s\t%s\t%s" % (zone, regional_zone, data[zone][regional_zone]))
```

```
hadoop@hadoop-VirtualBox:~/mapreduce/task1$ hadoop fs -cat /assignment/output/part-00000
24/07/02 22:34:48 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform...
 using builtin-java classes where applicable
East    Zone 3  33055.0
East    Zone 1  25139.0
East    Zone 5  16084.0
East    Zone 4  7090.0
East    Zone 6  31055.0
North   Zone 5  29086.0
North   Zone 6  26138.0
North   Zone 1  17112.0
North   Zone 2  21141.0
North   Zone 3  26127.0
North   Zone 4  24059.0
South   Zone 5  15121.0
South   Zone 2  18132.0
South   Zone 1  14070.0
South   Zone 4  12109.0
South   Zone 3  12067.0
South   Zone 6  10093.0
West    Zone 4  12127.0
West    Zone 2  17134.0
West    Zone 5  15125.0
West    Zone 6  17115.0
West    Zone 1  32134.0
West    Zone 3  8127.0
hadoop@hadoop-VirtualBox:~/mapreduce/task1$
```


Task 2: Warehouse Refill Frequency Correlation

Objective: Determine the correlation between warehouse capacity and refill frequency.

Required Fields: WH_capacity_size, num_refill_req_l3m

--mapper.py:

```
#!/usr/bin/python3
"""mapper.py"""

import sys
import csv

for row in csv.reader(sys.stdin):
      print("%s\t%s"%(row[3],row[6]))
```

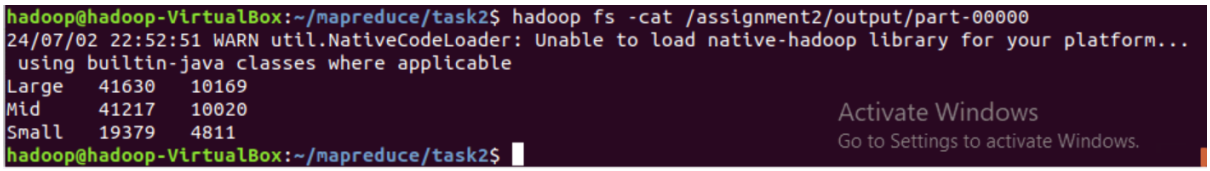
--reducer.py:

```
#!/usr/bin/python3
"""reducer.py"""

import sys

warehouse_data = {}
for line in sys.stdin:
   capacity, refill = line.strip().split("\t")
   try:
      refill = int(refill)
   except ValueError:
      continue
   if capacity in warehouse_data:
      warehouse_data[capacity].append(refill)
   else:
      warehouse_data[capacity] = [refill]
```

```
for warehouse in warehouse_data:
   total_refill = sum(warehouse_data[warehouse])
   count_refill = len(warehouse_data[warehouse])
   print("%s\t%s\t%s" % (warehouse, total_refill, count_refill))
```



Task 3. Transport Issue Impact Analysis

Objective: Analyse the impact of transport issues on warehouse supply efficiency.

Required Fields: transport_issue_l1y, product_wg_ton

--mapper :

```
#!/usr/bin/python3
"""mapper.py"""

import sys
import csv

for row in csv.reader(sys.stdin):
      print("%s\t%s"%(row[7],row[23]))
```

--reducer :

```
#!/usr/bin/python3
"""reducer.py"""

import sys
```

```
dict={}
for line in sys.stdin:
    transport, weight = line.strip().split("\t")
    try:
      weight = float(weight)
    except ValueError:
      continue
    if transport in dict:
        dict[transport]+=weight
    else:
      dict[transport]=weight

for i in dict:
    print("%s\t%s"%(i, dict[i]))
```

```
hadoop@hadoop-VirtualBox:~/mapreduce/task3$ hadoop fs -cat /assignment3/output/part-00000
24/07/05 07:42:39 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes wh
ere applicable
0       359167349.0
1       99133868.0
2       41450553.0
3       32129593.0
4       14896451.0
5       5788009.0
hadoop@hadoop-VirtualBox:~/mapreduce/task3$
```

Task 4. Storage Issue Analysis

Objective: Evaluate the impact of storage issues on warehouse performance.

Required Fields: storage_issue_reported_l3m, product_wg_ton

--mapper :

```
#!/usr/bin/python3
"""mapper.py"""
import sys
import csv
```

```
for row in csv.reader(sys.stdin):
    print("%s\t%s"%(row[18],row[23]))
```

--reducer :

```
#!/usr/bin/python3
"""reducer.py"""

import sys

dict={}
for line in sys.stdin:
    storage, weight = line.strip().split("\t")
    try:
      weight = float(weight)
    except ValueError:
      continue
    if storage in dict:
        dict[storage].append(weight)
    else:
       dict[storage]=[weight]
for i in dict:
    print("%s\t%s\t%s"%(i, sum(dict[i]), sum(dict[i])/len(dict[i]) ))
```

```
hadoop@hadoop-VirtualBox:~/mapreduce/task4$ hadoop fs -cat /assignment4/output/part-00000
24/07/05 07:39:01 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes wh
ere applicable
0       4930869.0       5430.472466960352
10      8259859.0       12966.811616954474
11      12270859.0      14153.239907727797
12      11436927.0      15476.220568335588
13      12163798.0      16754.54269972452
14      14535116.0      17704.16077953715
15      17281171.0      19032.12665198238
16      19200310.0      20469.413646055436
17      16416984.0      21918.536715620827
18      24289887.0      22700.828971962615
19      24569176.0      24040.28962818004
20      27006058.0      25357.800938967135
21      18581712.0      27047.615720524016
22      25472459.0      27930.327850877195
23      26797528.0      29223.040348964012
24      42904667.0      30129.681882022473
25      39461458.0      31268.984152139463
26      19958755.0      32772.99671592775
27      19849883.0      33931.42393162393
28      12281089.0      36550.86011904762
29      12068423.0      37596.333333333336
30      13109614.0      38900.93175074184
31      11698085.0      40477.80276816609
32      12244881.0      41367.84121621621
```