### **Hive QL with transformation**

```
[ec2-user@ip-172-31-56-147 ~]$ cat swapCol7.py
#!/usr/bin/python
import sys

for line in sys.stdin:
        line = line.strip().split('\t')
        val1 = line[6].split(' ')
        Word1 = val1[0]
        Word2 = val1[1]
        Word3 = val1[2]
        val2 = '~'.join([Word3,Word2,Word1])
        line[6] = val2
        print '\t'.join([line[0],line[1],line[2],line[3],line[4],line[5],line[6],line[7],line[8]])
```

create table part(p\_partkey int, p\_name varchar(22), p\_mfgr varchar(6), p\_category varchar(7), p\_brand1 varchar(9), p\_color varchar(11), p\_type varchar(25), p\_size int, p\_container varchar(10)) ROW FORMAT DELIMITED FIELDS TERMINATED BY '|' STORED AS TEXTFILE:

```
hive> create table part(p_partkey int, p_name varchar(22), p_mfgr varchar(6), p_category varchar(7), p_brand1 varchar(9), p_color varchar(11), p_type varchar(25), p_size int, p_container varchar(10)) ROW FORMAT DELIMITED FIELDS TERMINATED B Y '|' STORED AS TEXTFILE;
OK
Time taken: 2.097 seconds
```

LOAD DATA LOCAL INPATH '/home/ec2-user/part.tbl' OVERWRITE INTO TABLE part;

```
hive> LOAD DATA LOCAL INPATH '/home/ec2-user/part.tbl' OVERWRITE INTO TABLE part;
Loading data to table default.part
OK
Time taken: 2.136 seconds
```

CREATE TABLE PartSwapped(p\_partkey int, p\_name varchar(22), p\_mfgr varchar(6), p\_category varchar(7), p\_brand1 varchar(9), p\_color varchar(11), p\_type varchar(25), p\_size int, p\_container varchar(10)) ROW FORMAT DELIMITED FIELDS TERMINATED BY '\t' STORED AS TEXTFILE;

```
hive> CREATE TABLE PartSwapped(p_partkey int, p_name varchar(22), p_mfgr varchar(6), p_cat egory varchar(7), p_brand1 varchar(9), p_color varchar(11), p_type varchar(25), p_size int , p_container varchar(10)) ROW FORMAT DELIMITED FIELDS TERMINATED BY '\t' STORED AS TEXTFI LE;
OK
Time taken: 0.138 seconds
```

ADD FILE /home/ec2-user/swapCol7.py;

```
hive> ADD FILE /home/ec2-user/swapCol7.py;
Added resources: [/home/ec2-user/swapCol7.py]
```

INSERT OVERWRITE TABLE PartSwapped SELECT TRANSFORM(p\_partkey, p\_name, p\_mfgr, p\_category, p\_brand1, p\_color, p\_type, p\_size, p\_container) USING 'python swapCol7.py' AS (p\_partkey, p\_name, p\_mfgr, p\_category, p\_brand1, p\_color, p\_type, p\_size, p\_container) FROM part;

```
Hadoop job information for Stage-1: number of mappers: 1; number of reducers: 0
2020-10-10 06:01:11,293 Stage-1 map = 0%, reduce = 0%
2020-10-10 06:01:25,555 Stage-1 map = 100%, reduce = 0%, Cumulative CPU 6.68 se
MapReduce Total cumulative CPU time: 6 seconds 680 msec
Ended Job = job 1602309155748 0004
Stage-4 is selected by condition resolver.
Stage-3 is filtered out by condition resolver.
Stage-5 is filtered out by condition resolver.
Moving data to: hdfs://localhost/user/hive/warehouse/partswapped/.hive-staging h
ive 2020-10-10 06-01-02 953 4412192336129769987-1/-ext-10000
Loading data to table default.partswapped
MapReduce Jobs Launched:
Stage-Stage-1: Map: 1 Cumulative CPU: 6.68 sec HDFS Read: 17146903 HDFS Writ
e: 5400084 SUCCESS
Total MapReduce CPU Time Spent: 6 seconds 680 msec
OK
Time taken: 24.087 seconds
```

select count(1) from PartSwapped;

```
Kill Command = /home/ec2-user/hadoop-2.6.4/bin/hadoop job -kill job_16023474518
58_0005
Hadoop job information for Stage-1: number of mappers: 1; number of reducers: 1
2020-10-10 16:46:35,402 Stage-1 map = 0%, reduce = 0%
2020-10-10 16:46:41,916 Stage-1 map = 100%, reduce = 0%, Cumulative CPU 1.44 se
c
2020-10-10 16:46:49,486 Stage-1 map = 100%, reduce = 100%, Cumulative CPU 2.76
sec
MapReduce Total cumulative CPU time: 2 seconds 760 msec
Ended Job = job_1602347451858_0005
MapReduce Jobs Launched:
Stage-Stage-1: Map: 1 Reduce: 1 Cumulative CPU: 2.76 sec HDFS Read: 1694882
0 HDFS Write: 7 SUCCESS
Total MapReduce CPU Time Spent: 2 seconds 760 msec
OK
200000
Time taken: 25.664 seconds, Fetched: 1 row(s)
```

### **Original Data**

```
199959|forest goldenrod|MFGR#1|MFGR#12|MFGR#128|slate|LARGE PLATED NICKEL|16|JUMBO BOX|
199960|lemon gainsboro|MFGR#55|MFGR#55|MFGR#555|papaya|SMALL ANODIZED COPPER|33|WRAP BOX|
199961|cornsilk chartreuse|MFGR#2|MFGR#22|MFGR#2238|azure|ECONOMY BURNISHED STEEL|6|SM BAG|
199962|cornflower_orange|MFGR#4|MFGR#42|MFGR#4220|ivorv|LARGE_BRUSHED_COPPER|15|JUMBO_BAG|
199963|royal floral|MFGR#2|MFGR#24|MFGR#2424|lace|PROMO POLISHED BRASS|34|LG PACK|
199964|burlywood blush|MFGR#33|MFGR#3324|peru|STANDARD POLISHED TIN|10|JUMBO BAG|
199965|navajo saddle|MFGR#1|MFGR#13|MFGR#1313|violet|ECONOMY ANODIZED BRASS|36|SM CAN|
199966|firebrick frosted|MFGR#5|MFGR#53|MFGR#5328|orange|MEDIUM PLATED NICKEL|18|MED CASE|
199967|blanched tomato|MFGR#4|MFGR#45|MFGR#4529|pale|LARGE ANODIZED COPPER|21|MED PKG|
199968|moccasin peru|MFGR#3|MFGR#34|MFGR#3416|magenta|STANDARD BURNISHED NICKEL|21|MED DRUM|
199969|sky dark|MFGR#3|MFGR#32|MFGR#3234|sienna|LARGE PLATED STEEL|4|SM BAG|
199970|firebrick lemon|MFGR#4|MFGR#41|MFGR#4118|midnight|MEDIUM ANODIZED BRASS|41|MED CAN|
199971|lavender magenta|MFGR#2|MFGR#24|MFGR#2422|spring|PROMO ANODIZED STEEL|10|SM BAG|
199972|orange blue|MFGR#2|MFGR#22|MFGR#2230|peru|SMALL PLATED TIN|29|LG PKG|
199973|firebrick dim|MFGR#11|MFGR#15|MFGR#1531|beige|STANDARD BRUSHED COPPER|46|SM PACK|
199974|chartreuse sienna|MFGR#41|MFGR#411MFGR#4126|plum|LARGE PLATED NICKEL|41|SM CASE|
199975|navajo azure|MFGR#4|MFGR#44|MFGR#4438|snow|MEDIUM PLATED COPPER|42|SM BOX|
199976|snow midnight|MFGR#4|MFGR#44|MFGR#445|light|LARGE PLATED NICKEL|30|JUMBO PACK|
199977|lime magenta|MFGR#1|MFGR#15|MFGR#1516|mint|LARGE POLISHED COPPER|32|SM JAR|
199978|orange wheat|MFGR#44|MFGR#44|MFGR#4416|linen|STANDARD BURNISHED NICKEL|50|MED BAG|
199979|cornsilk sandy|MFGR#2|MFGR#21|MFGR#2111|sienna|MEDIUM ANODIZED STEEL|14|WRAP BOX|
199980|medium pink|MFGR#31|MFGR#31|MFGR#3111|cream|LARGE BURNISHED NICKEL|27|MED CAN|
199981|bisque sky|MFGR#44|MFGR#444|MFGR#4428|lime|LARGE BURNISHED BRASS|46|LG PACK|
199982 antique brown MFGR#5 | MFGR#51 | MFGR#514 | blue | STANDARD BURNISHED TIN | 34 | SM CASE |
199983|green cream|MFGR#4|MFGR#43|MFGR#43|blanched|STANDARD BRUSHED COPPER|27|SM JAR|
199984|navajo rose|MFGR#3|MFGR#31|MFGR#3119|mint|MEDIUM BRUSHED COPPER|11|LG CAN|
199985|smoke gainsboro|MFGR#3|MFGR#32|MFGR#3229|honeydew|LARGE ANODIZED NICKEL|14|JUMBO CASE|
199986|khaki dodger|MFGR#5|MFGR#52|MFGR#5222|White|MEDIUM BRUSHED NICKEL|19|SM CAN|
199987|dodger peru|MFGR#13|MFGR#13|MFGR#1316|saddle|SMALL ANODIZED STEEL|4|MED BAG|
199988|burnished coral|MFGR#3|MFGR#33|MFGR#3314|medium|ECONOMY PLATED NICKEL|10|LG PKG|
199989|medium mint|MFGR#4|MFGR#41|MFGR#4133|indian|ECONOMY PLATED TIN|11|JUMBO DRUM|
199990|metallic cornsilk|MFGR#2|MFGR#23|MFGR#2319|pale|PROMO ANODIZED TIN|40|MED BOX|
199991|mint navajo|MFGR#3|MFGR#31|MFGR#3114|steel|ECONOMY PLATED BRASS|48|SM DRUM|
199992|cream hot|MFGR#1|MFGR#13|MFGR#131|cornsilk|ECONOMY POLISHED STEEL|22|MED DRUM|
199993|magenta grey|MFGR#3|MFGR#33|MFGR#3326|orange|ECONOMY POLISHED COPPER|28|LG BAG|
199994|aquamarine chiffon|MFGR#1|MFGR#14|MFGR#1414|frosted|LARGE BRUSHED COPPER|32|MED CAN|
199995|dodger magenta|MFGR#45|MFGR#45|MFGR#458|blanched|PROMO POLISHED TIN|50|WRAP CAN|
199996|steel cyan|MFGR#4|MFGR#44|MFGR#4418|chocolate|PROMO PLATED COPPER|11|MED PACK|
199997|azure snow|MFGR#4|MFGR#44|MFGR#4426|drab|PROMO PLATED NICKEL|37|SM DRUM|
199998|misty plum|MFGR#5|MFGR#55|MFGR#5512|peach|MEDIUM BURNISHED BRASS|49|LG BOX|
199999|azure cream|MFGR#5|MFGR#52|MFGR#5235|medium|PROMO PLATED BRASS|24|LG CASE|
200000|light midnight|MFGR#5|MFGR#52|MFGR#5223|firebrick|MEDIUM ANODIZED TIN|22|LG CAN|
```

#### **Transformed Data**

select \* from PartSwapped;

```
MED DRUM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SM CASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      JUMBO PACK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SM JAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MED BAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SM JAR
                                                                                                                                                                                                                                                                                                                                           NICKEL~BRUSHED~MEDIUM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SM CAN
MFGR#52 MFGR#1316 MFGR#1316 MFGR#33 MFGR#3314 MFGR#3314 MFGR#4133 in MFGR#4133 in MFGR#2 MFGR#2 MFGR#2 MFGR#2 MFGR#2 MFGR#2 MFGR#3 MFGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MED BOX
                                                                                                                                                                                                                                                       19 pale TIN-ANODIZED-FROMO
steel BRASS-FLATED-ECONOMY 48
cornsilk STEEL-POLISHED-ECO
orange COPPER-POLISHED-ECONOMY 28
14 frosted COPPER-BRUSHED-LARK
blanched TIN-POLISHED-FROMO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SM DRUM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MED DRUM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MED CAN
                                                                                                                                                                                                                                                                                                                                                                                                                               COPPER~PLATED~PROMO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MED PACK
                                                                                                                                                                                                                                                         drab NICKEL-PLATED-PROMO 37
peach BRASS-BURNISHED-MEDIUM 49
medium BRASS-PLATED-PROMO 24
firebrick TIN-ANODIZED-MEDIUM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LG CAN
```

#### **Problem 5**

### **VehicleData**

VehicleData = LOAD '/user/ec2-user/vehicles.csv' USING PigStorage(',')
AS (barrels08:FLOAT, barrelsA08:FLOAT, charge120:FLOAT, charge240:FLOAT, city08:FLOAT);

```
grunt> VehicleData = LOAD '/user/ec2-user/vehicles.csv' USING PigStorage(',')
>> AS (barrels08:FLOAT, barrelsA08:FLOAT, charge120:FLOAT, charge240:FLOAT, city
08:FLOAT);
2020-10-10 00:29:02,859 [main] INFO org.apache.hadoop.conf.Configuration.deprec
ation - fs.default.name is deprecated. Instead, use fs.defaultFS
```

### Describe VehicleData

```
grunt> DESCRIBE VehicleData;
VehicleData: {barrels08: float,barrelsA08: float,charge120: float,charge240: flo
at,city08: float}
```

### **Count records**

# Count = FOREACH VehicleG GENERATE COUNT(VehicleData); DUMP Count;

```
Job DAG:
job 1602289220187 0001
2020-10-10 00:39:23,235 [main] INFO org.apache.hadoop.yarn.client.RMProxy - Connecting to Resource
Manager at localhost/127.0.0.1:8032
2020-10-10 00:39:23,248 [main] INFO org.apache.hadoop.mapred.ClientServiceDelegate - Application
tate is completed. FinalApplicationStatus=SUCCEEDED. Redirecting to job history server
2020-10-10 00:39:23,322 [main] INFO org.apache.hadoop.yarn.client.RMProxy - Connecting to Resource
Manager at localhost/127.0.0.1:8032
2020-10-10 00:39:23,336 [main] INFO org.apache.hadoop.mapred.ClientServiceDelegate - Application s
tate is completed. FinalApplicationStatus=SUCCEEDED. Redirecting to job history server
2020-10-10 00:39:23,401 [main] INFO org.apache.hadoop.yarn.client.RMProxy - Connecting to Resource
Manager at localhost/127.0.0.1:8032
2020-10-10 00:39:23,410 [main] INFO org.apache.hadoop.mapred.ClientServiceDelegate - Application s
tate is completed. FinalApplicationStatus=SUCCEEDED. Redirecting to job history server
2020-10-10 00:39:23,500 [main] WARN org.apache.pig.backend.hadoop.executionengine.mapReduceLayer.M
apReduceLauncher - Encountered Warning FIELD DISCARDED TYPE CONVERSION FAILED 5 time(s).
2020-10-10 00:39:23,500 [main] INFO org.apache.pig.backend.hadoop.executionengine.mapReduceLayer.M
apReduceLauncher - Success!
2020-10-10 00:39:23,502 [main] INFO org.apache.hadoop.conf.Configuration.deprecation - fs.default.
name is deprecated. Instead, use fs.defaultFS
2020-10-10 00:39:23,510 [main] INFO org.apache.pig.data.SchemaTupleBackend - Key [pig.schematuple]
was not set... will not generate code.
2020-10-10 00:39:23,540 [main] INFO org.apache.hadoop.mapreduce.lib.input.FileInputFormat - Total
input paths to process: 1
2020-10-10 00:39:23,542 [main] INFO org.apache.pig.backend.hadoop.executionengine.util.MapRedUtil
 Total input paths to process: 1
(34174)
```

### **ThreeColExtract**

ThreeCol = FOREACH VehicleData GENERATE barrels08, city08, charge120;

STORE ThreeCol into 'ThreeColOut' USING PigStorage(',');

```
Output(s):
Successfully stored 34175 records (627867 bytes) in: "hdfs://localhost/user/ec2-
user/ThreeColOut"
Counters:
Total records written: 34175
Total bytes written : 627867
Spillable Memory Manager spill count : 0
Total bags proactively spilled: 0
Total records proactively spilled: 0
Job DAG:
job 1602353051181 0004
2020-10-10 18:33:46,810 [main] INFO org.apache.hadoop.yarn.client.RMProxy - Con
necting to ResourceManager at localhost/127.0.0.1:8032
2020-10-10 18:33:46,816 [main] INFO org.apache.hadoop.mapred.ClientServiceDeleg
ate - Application state is completed. FinalApplicationStatus=SUCCEEDED. Redirect
ing to job history server
2020-10-10 18:33:46,885 [main] INFO org.apache.hadoop.yarn.client.RMProxy - Con
necting to ResourceManager at localhost/127.0.0.1:8032
2020-10-10 18:33:46,895 [main] INFO org.apache.hadoop.mapred.ClientServiceDeleg
                        is completed. FinalApplicationStatus=SUCCEEDED.
     Application state
```

### **File Directory**

hadoop fs -ls /user/ec2-user/ThreeColOut

# Creating new dataset

VehicleDataThree = LOAD '/user/ec2-user/vehicles.csv' USING PigStorage(',') AS (barrels08:FLOAT, charge120:FLOAT, city08:FLOAT);

```
grunt> VehicleDataThree = LOAD '/user/ec2-user/vehicles.csv' USING PigStorage(',')
>> AS (barrels08:FLOAT, charge120:FLOAT, city08:FLOAT);
2020-10-10 00:47:04,721 [main] INFO org.apache.hadoop.conf.Configuration.deprecation - fs.default.
name is deprecated. Instead, use fs.defaultFS
```

DESCRIBE VehicleDataThree;

```
grunt> DESCRIBE VehicleDataThree;
VehicleDataThree: {barrels08: float,charge120: float,city08: float}
STORE VehicleDataThree INTO 'VehicleDataThree'
```

USING PigStorage ('\_');

# **File Directory**

hadoop fs -ls /user/ec2-user/VehicleDataThree

```
[ec2-user@ip-172-31-56-147 ~]$ hadoop fs -ls /user/ec2-user/VehicleDataThree
Found 2 items
-rw-r--r- 1 ec2-user supergroup 0 2020-10-10 00:50 /user/ec2-user/VehicleDataThree/SUCCESS
-rw-r--r- 1 ec2-user supergroup 598597 2020-10-10 00:50 /user/ec2-user/VehicleDataThree/part-m-00000
```

# **Count records**

```
grouped = GROUP VehicleDataThree ALL;
VehicleDataThreeCount = FOREACH grouped GENERATE COUNT(VehicleDataThree);
DUMP VehicleDataThreeCount;
```

```
necting to ResourceManager at localhost/127.0.0.1:8032
2020-10-10 18:26:28,557 [main] INFO org.apache.hadoop.mapred.ClientServiceDeleg
ate - Application state is completed. FinalApplicationStatus=SUCCEEDED. Redirect
ing to job history server
2020-10-10 18:26:28,613 [main] INFO org.apache.hadoop.yarn.client.RMProxy - Con
necting to ResourceManager at localhost/127.0.0.1:8032
2020-10-10 18:26:28,618 [main] INFO org.apache.hadoop.mapred.ClientServiceDeleg
ate - Application state is completed. FinalApplicationStatus=SUCCEEDED. Redirect
ing to job history server
2020-10-10 18:26:28,657 [main] WARN org.apache.pig.backend.hadoop.executionengi
ne.mapReduceLayer.MapReduceLauncher - Encountered Warning FIELD DISCARDED TYPE C
ONVERSION FAILED 3 time(s).
2020-10-10 18:26:28,658 [main] INFO org.apache.pig.backend.hadoop.executionengi
ne.mapReduceLayer.MapReduceLauncher - Success!
2020-10-10 18:26:28,658 [main] INFO org.apache.hadoop.conf.Configuration.deprec
ation - fs.default.name is deprecated. Instead, use fs.defaultFS
2020-10-10 18:26:28,659 [main] INFO org.apache.pig.data.SchemaTupleBackend - Ke
y [pig.schematuple] was not set... will not generate code.
2020-10-10 18:26:28,667 [main] INFO org.apache.hadoop.mapreduce.lib.input.FileI
nputFormat - Total input paths to process: 1
2020-10-10 18:26:28,667 [main] INFO org.apache.pig.backend.hadoop.executionengi
ne.util.MapRedUtil - Total input paths to process : 1
(34174)
```

#### **One Column**

# OneCol = FOREACH VehicleData GENERATE barrels08;

```
grunt> OneCol = FOREACH VehicleData GENERATE barrels08;
2020-10-10 00:53:39,511 [main] INFO org.apache.hadoop.conf.Configuration.deprecation - fs.default.
name is deprecated. Instead, use fs.defaultFS
grunt> DESCRIBE OneCol
OneCol: {barrels08: float}
```

STORE OneCol INTO 'OneCol' USING PigStorage ('\_');