Uploaded hql.zip using “scp” and unzipped it

Running TestDataGen class to create Below Details:

Magic Number=227086

Foodplaces227086.txt

Foodratings22707086.txt

```
[hadoop@ip-172-31-48-80 ~]$ ls
hql  hql.zip  __MACOSX  TestDataGen.class
[hadoop@ip-172-31-48-80 ~]$ java TestDataGen.class
Error: Could not find or load main class TestDataGen.class
[hadoop@ip-172-31-48-80 ~]$ java TestDataGen
Magic Number = 227086
[hadoop@ip-172-31-48-80 ~]$
```

```
[hadoop@ip-172-31-48-80 ~]$ ls
foodplaces227086.txt   hql      __MACOSX
foodratings227086.txt  hql.zip  TestDataGen.class
[hadoop@ip-172-31-48-80 ~]$
```

Contents of Foodratings22707086.txt

```
[hadoop@ip-172-31-48-80 ~]$ cat foodratings227086.txt
Mel,36,43,5,16,2
Mel,47,25,31,39,1
Mel,27,48,18,35,1
Sam,32,47,13,31,1
Jill,7,39,40,44,2
Joe,3,16,42,34,3
Mel,45,46,11,13,2
Jill,40,26,26,26,2
```

Contents of Foodplaces227086.txt

```
[hadoop@ip-172-31-48-80 ~]$ cat foodplaces227086.txt
1,China Bistro
2,Atlantic
3,Food Town
4,Jake's
5,Soup Bowl
```

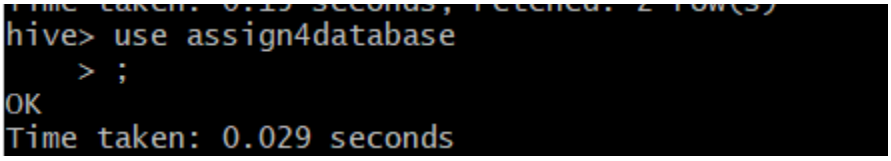
Creating Database: assign4Database

Command Used: create database assign4database;

```
hive> create database assign4Database;
OK
Time taken: 0.594 seconds
hive> show databases
    > ;
OK
assign4database
default
Time taken: 0.15 seconds, Fetched: 2 row(s)
hive>
```

Selecting DataBase: Selecting newly created database using below command

Command Used: use assign4database;



Printing Database Name: Printing Database to be sure of database working

Command Used: set hive.cli.print.current.db=true;

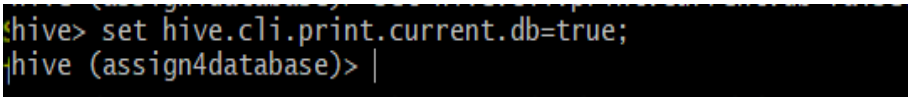
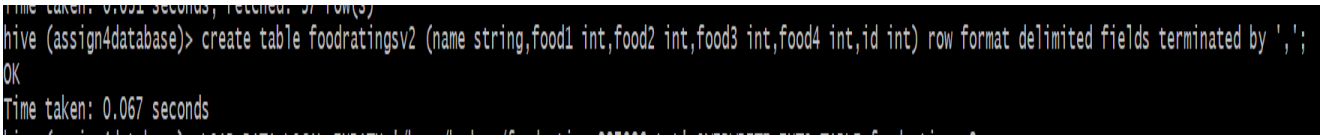
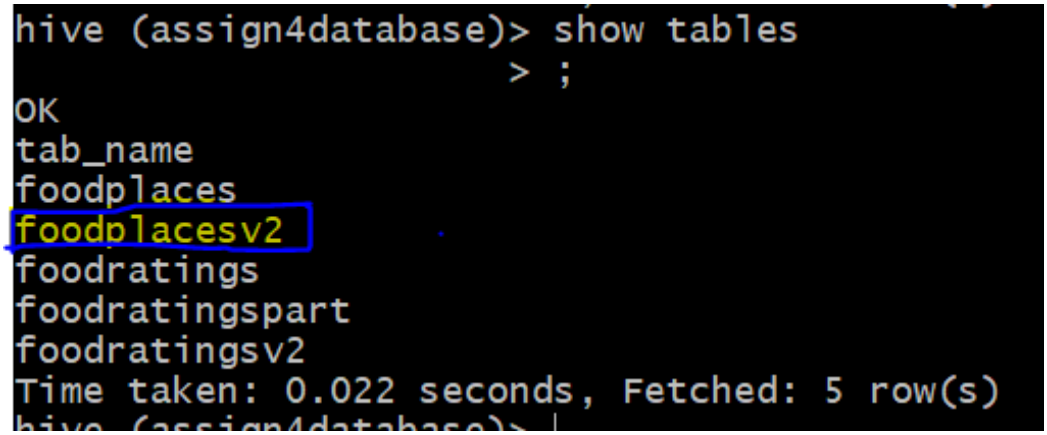


Table Creation : Created new table foodratingsv2

Command Used: CREATE TABLE <tableName> (<column1Name><Column1Datatype>,<column2Name><Column2Datatype>,….) ROW FORMAT DELIMITED FIELDS TERMINATED BY ‘,’ ;





Adding Comments :Adding the comment to already created table. using the uderlying command

Command Used:ALTER TABLE foodratingsv2 CHANGE <ColumnName> <ColumnName> <ColumnDataType> COMMENT '<comments>' ;

```
hive (assign4database)> ALTER TABLE foodratingsv2 change name name string comment 'name comment';
OK
Time taken: 0.063 seconds
```

```
hive (assign4database)> ALTER TABLE foodratingsv2 change food4 food4 int comment 'Food4 comment';
OK
Time taken: 0.062 seconds
hive (assign4database)> ALTER TABLE foodratingsv2 change food3 food3 int comment 'Food3 comment';
OK
Time taken: 0.055 seconds
hive (assign4database)> ALTER TABLE foodratingsv2 change food2 food2 int comment 'Food2 comment';
OK
Time taken: 0.057 seconds
hive (assign4database)> ALTER TABLE foodratingsv2 change food1 food1 int comment 'Food1 comment';
OK
Time taken: 0.062 seconds
```

Table Description: Showing the table description using below command

Command used: describe formatted foodratingsv2;

```
hive (assign4database)> describe formatted foodratingsv2;
OK
col_name        data_type       comment
# col_name              data_type               comment

name                    string                  name comment
food1                   int                     Food1 comment
food2                   int                     Food2 comment
food3                   int                     Food3 comment
food4                   int                     Food4 comment
id                      int

# Detailed Table Information
Database:               assign4database
Owner:                  hadoop
CreateTime:             Sun Sep 20 23:37:53 UTC 2020
LastAccessTime:         UNKNOWN
Retention:              0
Location:               hdfs://ip-172-31-48-80.ec2.internal:8020/user/hive/warehouse/assign4database.db/foodratingsv2
Table Type:             MANAGED_TABLE
Table Parameters:
        last_modified_by        hadoop
        last_modified_time      1600656182
        numFiles                1
        numRows                 0
        rawDataSize             0
        totalSize               17464
        transient_lastDdlTime   1600656182

# Storage Information
SerDe Library:          org.apache.hadoop.hive.serde2.lazy.LazySimpleSerDe
InputFormat:            org.apache.hadoop.mapred.TextInputFormat
OutputFormat:           org.apache.hadoop.hive.ql.io.HiveIgnoreKeyTextOutputFormat
Compressed:             No
Num Buckets:            -1
Bucket Columns:         []
Sort Columns:           []
Storage Desc Params:
        field.delim             ,
        serialization.format    ,
Time taken: 0.028 seconds, Fetched: 37 row(s)
```

```
hive (assign4database)> create table foodplacesv2 (id int,place string) ROW FORMAT DELIMITED FIELDS TERMINATED BY ',';
OK
```

Adding Comments :Adding the comment to already created table. using the uderlying command

Command Used:ALTER TABLE foodplacesv2 CHANGE <ColumnName> <ColumnName> <ColumnDataType> COMMENT '<comments>' ;

```
hive (assign4database)> describe formatted foodplacesv2;
OK
col_name        data_type       comment
# col_name              data_type               comment


id                      int                     this is id

place                   string                  this is place


# Detailed Table Information
Database:               assign4database
Owner:                  hadoop
CreateTime:             Mon Sep 21 01:57:18 UTC 2020
LastAccessTime:         UNKNOWN
Retention:              0
Location:               hdfs://ip-172-31-48-80.ec2.internal:8020/
user/hive/warehouse/assign4database.db/foodplacesv2
Table Type:             MANAGED_TABLE
Table Parameters:
        last_modified_by        hadoop
        last_modified_time      1600656421
        numFiles                1
        numRows                 0
        rawDataSize             0
        totalSize               59
        transient_lastDdlTime   1600656421

# Storage Information
SerDe Library:          org.apache.hadoop.hive.serde2.lazy.LazySi
mpleSerDe
InputFormat:            org.apache.hadoop.mapred.TextInputFormat
OutputFormat:           org.apache.hadoop.hive.ql.io.HiveIgnoreKe
yTextOutputFormat
Compressed:             No
Num Buckets:            -1
Bucket Columns:         []
Sort Columns:           []
Storage Desc Params:
        field.delim             ,
        serialization.format    ,
Time taken: 0.046 seconds, Fetched: 33 row(s)
hive (assign4database)>
```

2)

Load Data: Loading Data from foodratings227086.txt to foodratingsv2 using below command.

Command used: LOAD DATA LOCAL INPATH '/home/Hadoop/foodratings227086.txt' OVERWRITE INTO TABLE foosratingsv2 ;

```
Time taken: 0.067 seconds
hive (assign4database)> LOAD DATA LOCAL INPATH '/home/hadoop/foodratings227086.txt' OVERWRITE INTO TABLE foodratingsv2;
Loading data to table assign4database.foodratingsv2
OK
Time taken: 0.894 seconds
```

Printing Values: Printing Min, Max, Avg of column food3 using below command.

Command Used: select min(food3) as min, max(food3) as max, avg(food3) as avg from foodratingsv2;

```
Time taken: 0.344 seconds, Fetched: 1 row(s)
hive (assign4database)> select min(food3) as min,max(food3) as max,avg(food3) as avg from foodratingsv2;
Query ID = hadoop_20200920234354_cc61c1b6-b80e-4c07-8c0d-2032cf2624e7
Total jobs = 1
Launching Job 1 out of 1
Status: Running (Executing on YARN cluster with App id application_1600630486906_0007)

--------------------------------------------------------------------------------
        VERTICES      MODE        STATUS  TOTAL  COMPLETED  RUNNING  PENDING  FAILED  KILLED
--------------------------------------------------------------------------------
Map 1 .......... container     SUCCEEDED      1          1        0        0       0       0
Reducer 2 ...... container     SUCCEEDED      1          1        0        0       0       0
--------------------------------------------------------------------------------
VERTICES: 02/02  [==========================>>] 100%  ELAPSED TIME: 5.57 s
--------------------------------------------------------------------------------
OK
min     max     avg
1       50      25.903
Time taken: 6.119 seconds, Fetched: 1 row(s)
```

3)

Printing Values: Printing Min, Max, Avg of column food3 grouped by name using below command.

Command Used: select name, min(food1) as min, max(food1) as max, avg(food1) as avg from foodratingsv2 group by name;

```
hive (assign4database)> select name, min(food1) as min,max(food1) as max,avg(food1) as avg from foodratingsv2 group by name;
Query ID = hadoop_20200920235051_30c6df15-d9de-46c1-bbc3-b3c32abfed27
Total jobs = 1
Launching Job 1 out of 1
Status: Running (Executing on YARN cluster with App id application_1600630486906_0007)

--------------------------------------------------------------------------------
        VERTICES      MODE        STATUS  TOTAL  COMPLETED  RUNNING  PENDING  FAILED  KILLED
--------------------------------------------------------------------------------
Map 1 .......... container     SUCCEEDED      1          1        0        0       0       0
Reducer 2 ...... container     SUCCEEDED      2          2        0        0       0       0
--------------------------------------------------------------------------------
VERTICES: 02/02  [==========================>>] 100%  ELAPSED TIME: 6.40 s
--------------------------------------------------------------------------------
OK
name    min     max     avg
Jill    1       50      26.54696132596685
Joe     1       50      25.68
Joy     1       50      23.175675675675677
Mel     1       50      26.014492753623188
Sam     1       50      26.905263157894737
Time taken: 7.232 seconds, Fetched: 5 row(s)
```

4)

Creating Table: creating table using below command.

Command Used: CREATE TABLE <tableName> (<column1Name><Column1Datatype>,<column2Name><Column2Datatype>,….) PARTIONED BY (<columnName><ColumnDatatype>) ROW FORMAT DELIMITED FIELDS TERMINATED BY ‘,’ ;

```
hive (assign4database)> create table foodratingspart (food1 int,food2 int,food3
int,food4 int,id int) partitioned by (name string) ROW FORMAT DELIMITED FIELDS T
ERMINATED BY ',';
OK
Time taken: 0.07 seconds
```

```
hive (assign4database)> describe formatted foodratingspart
                      > ;
OK
col_name        data_type       comment
# col_name              data_type               comment

food1                   int
food2                   int
food3                   int
food4                   int
id                      int

# Partition Information
# col_name              data_type               comment

name                    string

# Detailed Table Information
Database:               assign4database
Owner:                  hadoop
CreateTime:             Mon Sep 21 00:33:27 UTC 2020
LastAccessTime:         UNKNOWN
Retention:              0
Location:               hdfs://ip-172-31-48-80.ec2.internal:8020/user/hive/wareh
ouse/assign4database.db/foodratingspart
Table Type:             MANAGED_TABLE
Table Parameters:
        COLUMN_STATS_ACCURATE   {\"BASIC_STATS\":\"true\"}
        numFiles                0
        numPartitions           0
        numRows                 0
        rawDataSize             0
        totalSize               0
        transient_lastDdlTime   1600648407

# Storage Information
SerDe Library:          org.apache.hadoop.hive.serde2.lazy.LazySimpleSerDe
InputFormat:            org.apache.hadoop.mapred.TextInputFormat
OutputFormat:           org.apache.hadoop.hive.ql.io.HiveIgnoreKeyTextOutputForm
at
Compressed:             No
Num Buckets:            -1
Bucket Columns:         []
Sort Columns:           []
Storage Desc Params:
        field.delim             ,
        serialization.format    ,
Time taken: 0.063 seconds, Fetched: 41 row(s)
hive (assign4database)>
```

5)

As the number of critics is relatively small it helps in organizing data efficiently over the partition feature.

6)

Copying Data from table-> portioned table: Copying the data from normal table to the Partitioned table

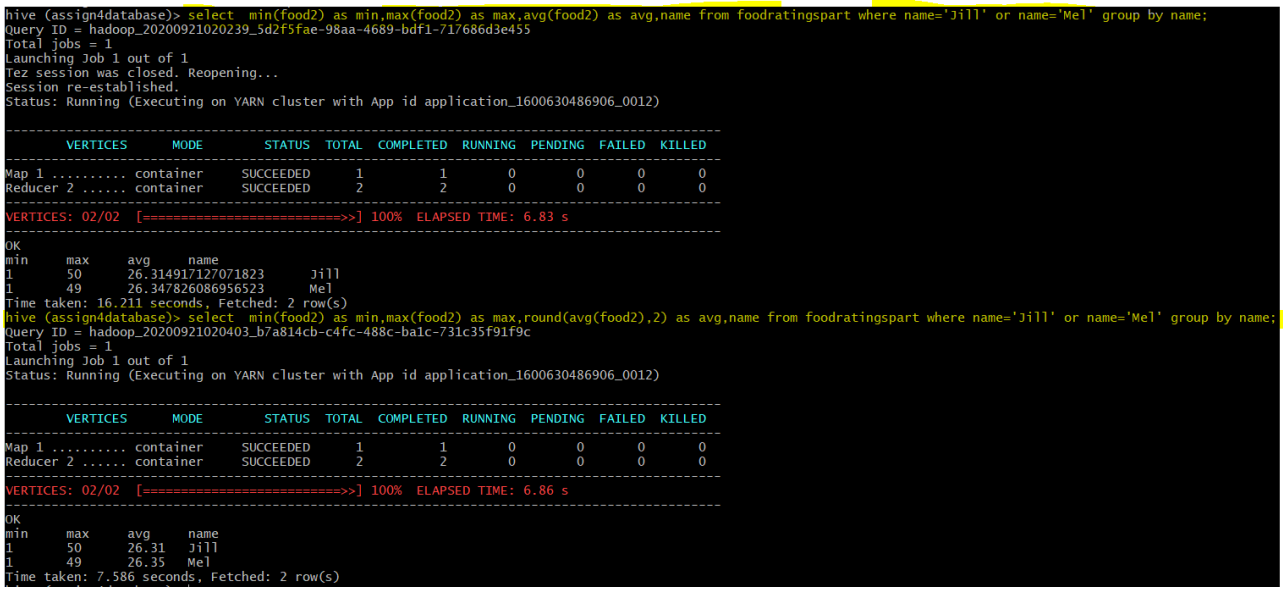
Command used: INSERT OVERWRITE TABLE foodratingspart PARTITION (name) SELECT food1,food2,food3,food4,id ,name FROM foodratingsv2 ;

```
hive (assign4database)> INSERT OVERWRITE TABLE foodratingspart PARTITION (name)
SELECT food1,food2,food3,food4,id,name FROM foodratingsv2;
Query ID = hadoop_20200921005721_1fec22ff-1479-42c5-8ec3-5abf2bde49a4
Total jobs = 1
Launching Job 1 out of 1
Status: Running (Executing on YARN cluster with App id application_1600630486906
_0008)

Map 1: 0/1      Reducer 2: 0/2
Map 1: 0/1      Reducer 2: 0/2
Map 1: 0(+1)/1  Reducer 2: 0/2
Map 1: 0/1      Reducer 2: 0/2
Map 1: 1/1      Reducer 2: 0(+1)/2
Map 1: 1/1      Reducer 2: 1(+0)/2
Map 1: 1/1      Reducer 2: 1(+1)/2
Map 1: 1/1      Reducer 2: 2/2
Loading data to table assign4database.foodratingspart partition (name=null)


        Time taken to load dynamic partitions: 0.671 seconds
        Time taken for adding to write entity : 0.003 seconds
OK
```

```
hive (assign4database)> select * from foodratingspart;
OK
40      34      48      45      2       Jill
7       39      40      44      2       Jill
40      26      26      26      2       Jill
20      28      37      13      1       Jill
35      32      19      37      2       Jill
3       30      2       26      4       Jill
6       20      39      5       5       Jill
8       49      28      50      2       Jill
39      7       50      45      5       Jill
36      10      5       27      3       Jill
45      11      30      6       2       Jill
9       38      25      29      2       Jill
48      44      6       44      1       Jill
14      21      43      40      2       Jill
14      43      49      20      4       Jill
44      43      8       27      2       Jill
45      14      27      47      5       Jill
38      30      11      17      2       Jill
41      32      17      24      2       Jill
26      44      24      27      2       Jill
25      44      26      20      1       Jill
48      25      45      28      4       Jill
6       40      18      20      1       Jill
4       45      20      21      2       Jill
```

Calculating following Statistics: calculating the avg, Min, Max using following command

Command used: SELECT min (food20 AS min, max(food2) AS max, avg(food2) AS avg, name FROM foodratingpart WHERE name='Jill' OR name='Mel' GROUP BY name;



7)

Joining Tables and Finding Avg: Joining tables foodratingv2, foodplacesv2 and finding average value of food4 column when place is equal to 'Soup Bowl'.

Command Used: SELECT fp.place,, avg(fr.food4) FROM foodplacesv2 fp JOIN foodratingsv2 fr ON (fr.id=fp.id) WHERE fp.place ='Soup Bowl' GROUP BY fp.place ;

8)