Assignment Submission- Session 9

DATE SET DESCRIPTION
The data set consists of the following fields.
Athlete: This field consists of the athlete name
Age: This field consists of athlete ages
Country: This fields consists of the country names which participated in Olympics
Year: This field consists of the year
Closing Date: This field consists of the closing date of ceremony
Sport: Consists of the sports name
Gold Medals: No. of Gold medals
Silver Medals: No. of Silver medals
Bronze Medals: No. of Bronze medals
Total Medals: Consists of total no. of medals

Task 1
Solution: First of all, creating a hive table and inserting the data into it.

```
CREATE TABLE OLYMPICS (name STRING, age INT, country STRING, yearParticipated
STRING, closingDate STRING, sports STRING, goldMedals INT, silverMedals INT, bronzeMedals
INT, totalMedals INT)
ROW FORMAT SERDE 'org.apache.hadoop.hive.serde2.OpenCSVSerde'
WITH SERDEPROPERTIES (
"separatorChar" = "\t"
)
STORED AS TEXTFILE;
```

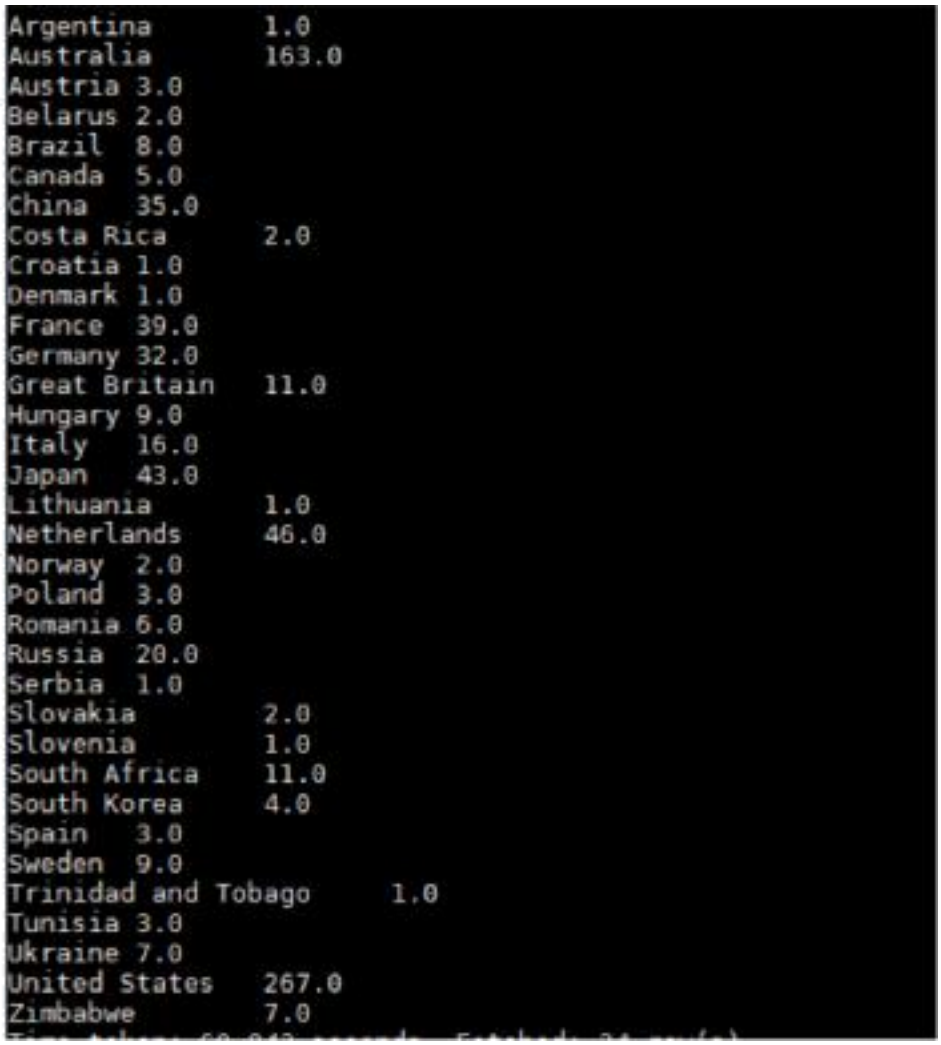
LOADING DATA INTO TABLE

```
LOAD DATA LOCAL INPATH '/home/acadgild/sumanth/HIVE_SESSIONS/olympix_data.csv'
INTO TABLE olympics;
```

1. Write a Hive program to find the number of medals won by each country in swimming.

Hive query:

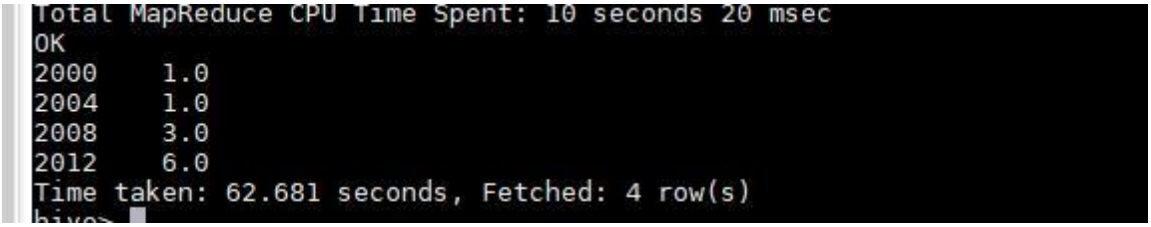
```
SELECT country, sum(totalMedals) FROM olympics WHERE sports='Swimming'
GROUP BY country;
```



2. Write a Hive program to find the number of medals that India won year wise.

Hive Query:

SELECT yearParticipated, sum(totalMedals) FROM olympics WHERE country='India' GROUP BY yearParticipated;

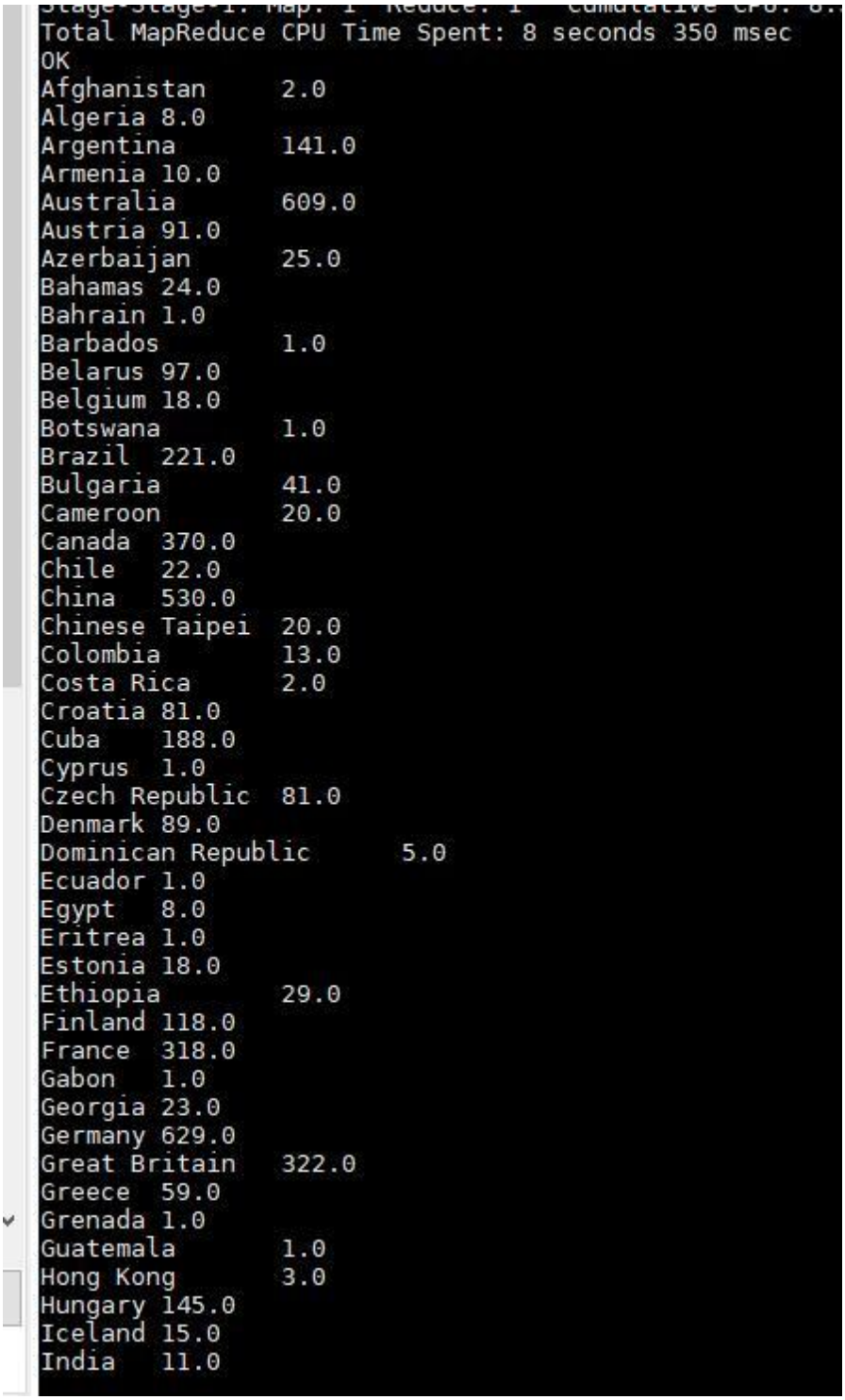


3. Write a Hive Program to find the total number of medals each country won.

Hive Query:

SELECT country, sum(totalMedals) FROM olympics GROUP BY country;

Note: Output not completely captured in screenshot.



```
Total MapReduce CPU Time Spent: 8 seconds 350 msec
OK
Afghanistan     2.0
Algeria 8.0
Argentina       141.0
Armenia 10.0
Australia       609.0
Austria 91.0
Azerbaijan      25.0
Bahamas 24.0
Bahrain 1.0
Barbados        1.0
Belarus 97.0
Belgium 18.0
Botswana        1.0
Brazil  221.0
Bulgaria        41.0
Cameroon        20.0
Canada  370.0
Chile   22.0
China   530.0
Chinese Taipei  20.0
Colombia        13.0
Costa Rica      2.0
Croatia 81.0
Cuba    188.0
Cyprus  1.0
Czech Republic  81.0
Denmark 89.0
Dominican Republic      5.0
Ecuador 1.0
Egypt   8.0
Eritrea 1.0
Estonia 18.0
Ethiopia        29.0
Finland 118.0
France  318.0
Gabon   1.0
Georgia 23.0
Germany 629.0
Great Britain   322.0
Greece  59.0
Grenada 1.0
Guatemala       1.0
Hong Kong       3.0
Hungary 145.0
Iceland 15.0
India   11.0
```

4. Write a Hive program to find the number of gold medals each country won.

Hive Query:

SELECT country, sum(goldMedals) FROM olympics GROUP BY country;

Output not completely captured in screenshot:

```
MapReduce Jobs Launched:
Stage-Stage-1: Map: 1  Reduce: 1   Cumulative CPU
Total MapReduce CPU Time Spent: 8 seconds 410 mse
OK
Afghanistan     0.0
Algeria 2.0
Argentina       49.0
Armenia 0.0
Australia       163.0
Austria 36.0
Azerbaijan      6.0
Bahamas 11.0
Bahrain 0.0
Barbados        0.0
Belarus 17.0
Belgium 2.0
Botswana        0.0
Brazil  46.0
Bulgaria        8.0
Cameroon        20.0
Canada  168.0
Chile   3.0
China   234.0
Chinese Taipei  2.0
Colombia        2.0
Costa Rica      0.0
Croatia 35.0
Cuba    57.0
Cyprus  0.0
Czech Republic  14.0
Denmark 46.0
Dominican Republic      3.0
Ecuador 0.0
Egypt   1.0
Eritrea 0.0
Estonia 6.0
Ethiopia        13.0
Finland 11.0
France  108.0
Gabon   0.0
Georgia 6.0
Germany 223.0
Great Britain   124.0
Greece  12.0
Grenada 1.0
Guatemala       0.0
Hong Kong       0.0
Hungary 77.0
Iceland 0.0
India   1.0
Indonesia       5.0
Iran    10.0
Ireland 1.0
```

Task 2

Write a hive UDF that implements functionality of string concat_ws(string SEP, array<string>).
This UDF will accept two arguments, one string and one array of string.
It will return a single string where all the elements of the array are separated by the SEP.

Solution:

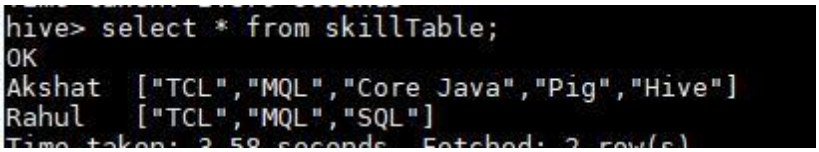
- Created a table in hive:

create table skillTable(name string, skill array<string>) row format delimited fields terminated by '\t' collection items terminated by ',';

- Loaded data into table:

load data local inpath '/home/acadgild/sumanth/HIVE_SESSIONS/skillData.txt' into table skillTable;

- Select all data from table:



- Created a jar file for udf.

UDF program code:

```
import java.util.ArrayList;
import org.apache.hadoop.hive.ql.exec.UDF;
public class ConcatArrayElements extends UDF {
	public String evaluate(String del, ArrayList<String> arrayelements) {
		if (arrayelements == null) {
			return null;
		}
		StringBuffer sbuf = new StringBuffer();
		sbuf.append(arrayelements.get(0));
		for (int i = 1; i < arrayelements.size(); i++) {
			sbuf.append(del);
			sbuf.append(arrayelements.get(i));
		}
		return sbuf.toString();
	}

}
```

- Added jar to hive.

```
hive> add jar /home/acdadgild/sumanth/HIVE_SESSIONS/ConcatArrElements.jar;
Added [/home/acadgild/sumanth/HIVE_SESSIONS/ConcatArrElements.jar] to class path
Added resources: [/home/acadgild/sumanth/HIVE_SESSIONS/ConcatArrElements.jar]
```

- Created temporary function.

Jar hive -exec couldn't be downloaded so couldn't proceed further for running the function.

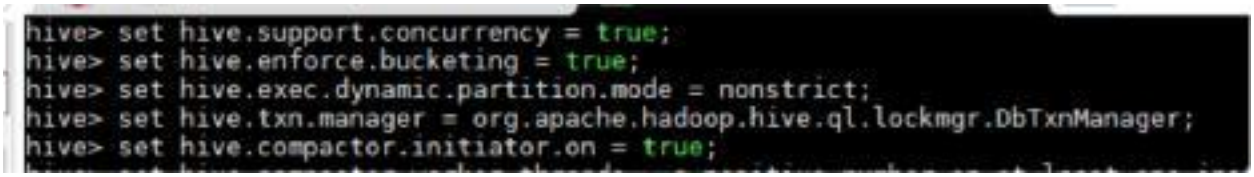
Task 3

Link: https://acadgild.com/blog/transactions-in-hive/

Refer the above given link for transactions in Hive and implement the operations given in the blog using your own sample data set and send us the screenshot.

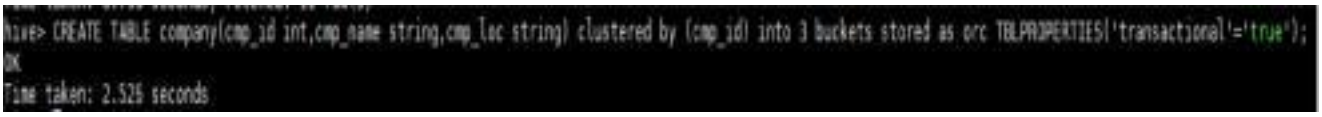
Solution:

Turning ON features to support transactions:



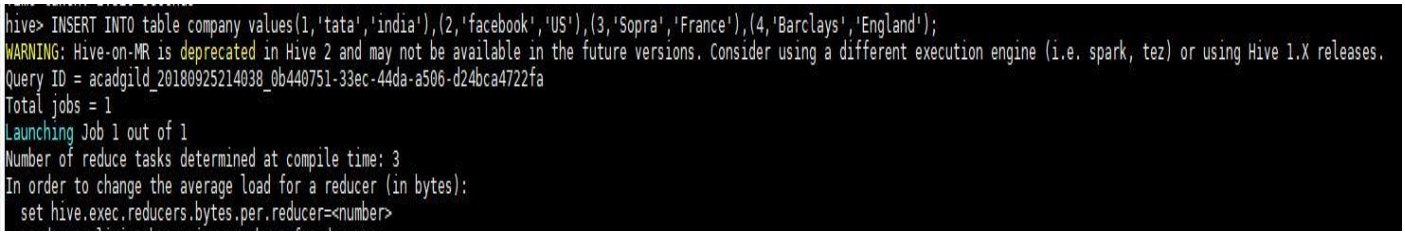
Creating table using ORC format

CREATE TABLE company(cmp_id int,cmp_name string,cmp_loc string) clustered by (cmp_id) into 3 buckets stored as orc TBLPROPERTIES('transactional'='true');



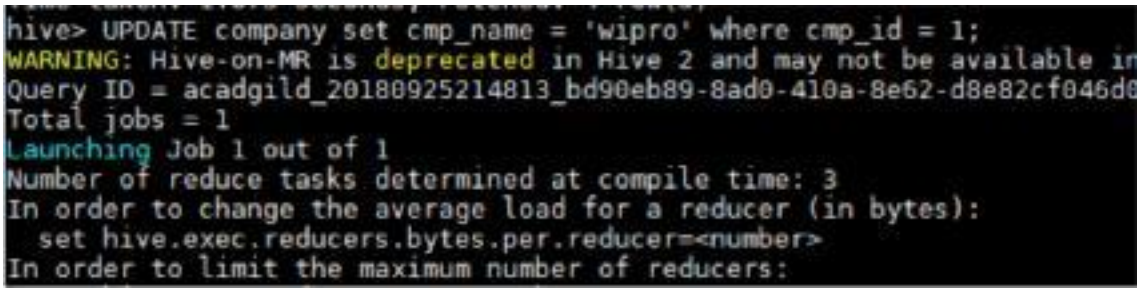
Inserting data into table created

INSERT INTO table company values
(1,'tata','india'),(2,'facebook','US'),(3,'Sopra','France'),(4,'Barclays','England');



Data after inserting in table:

Updating record: (Update doesn't work on bucketed column)
UPDATE company set cmp_name = 'wipro' where cmp_id = 1;



Deleting record:
delete from company where cmp_id=3;

Data post update and deletion: