Data Ingestion from the RDS to HDFS using Sqoop

1. Sqoop command used for importing table from RDS to HDFS

- Run Sqoop command to import "**member_score**" table from RDS to HDFS.

```
sqoop import --connect jdbc:mysql://upgradawsrds1.cyaielc9bmnf.us-east-1.rds.amazonaws.com/
cred_financials_data \
--username upgraduser \
--password upgraduser \
--table member_score \
--null-string 'NA' \
--null-non-string '\\N' \
--delete-target-dir \
--target-dir '/ccfd_capstone_project/member_score' \
-m 1
```

- Run Sqoop command to import “**card_member**” table from RDS to HDFS.

```
sqoop import --connect jdbc:mysql://upgradawsrds1.cyaielc9bmnf.us-east-1.rds.amazonaws.com/
cred_financials_data \
--username upgraduser \
--password upgraduser \
--table card_member \
--null-string 'NA' \
--null-non-string '\\N' \
--delete-target-dir \
--target-dir '/ccfd_capstone_project/card_member' \
-m 1
```

2. <Command to see the list of imported data in HDFS>

- Create external table "**card_member_ext**" to hold data from card_member table in RDS.

```
CREATE EXTERNAL TABLE IF NOT EXISTS CARD_MEMBER_EXT(`CARD_ID` STRING,`MEMBER_ID`
STRING,`MEMBER_JOINING_DT` TIMESTAMP,`CARD_PURCHASE_DT` STRING,`COUNTRY` STRING,`CITY`
STRING)
ROW FORMAT DELIMITED FIELDS TERMINATED BY ',' LOCATION '/ccfd_capstone_project/
card_member';
```

- Create external table "**member_score_ext**" to hold data from member_score table in RDS.

```
CREATE EXTERNAL TABLE IF NOT EXISTS MEMBER_SCORE_EXT(
`MEMBER_ID` STRING,
`SCORE` INT)
ROW FORMAT DELIMITED FIELDS TERMINATED BY ','
LOCATION '/ccfd_capstone_project/member_score';
```

- Create "**card_member_orc**" table. For better performance.

```
CREATE TABLE IF NOT EXISTS CARD_MEMBER_ORC(
`CARD_ID` STRING,
`MEMBER_ID` STRING,
`MEMBER_JOINING_DT` TIMESTAMP,
`CARD_PURCHASE_DT` STRING,
`COUNTRY` STRING,
`CITY` STRING)
STORED AS ORC
TBLPROPERTIES ("orc.compress"="SNAPPY");
```

- Create "**member_score_orc**" table. For better performance.

```
CREATE TABLE IF NOT EXISTS MEMBER_SCORE_ORC(
`MEMBER_ID` STRING,
`SCORE` INT) STORED AS ORC
TBLPROPERTIES ("orc.compress"="SNAPPY");
```

- Load data into "card_member_orc" table from "card_member_ext" table.

```
INSERT OVERWRITE TABLE CARD_MEMBER_ORC
SELECT CARD_ID, MEMBER_ID, MEMBER_JOINING_DT, CARD_PURCHASE_DT, COUNTRY, CITY FROM
CARD_MEMBER_EXT;
```

- Load data into “**member_score_orc**” table from “**member_score_ext**” table.

```
INSERT OVERWRITE TABLE MEMBER_SCORE_ORC
SELECT MEMBER_ID, SCORE FROM MEMBER_SCORE_EXT;
```

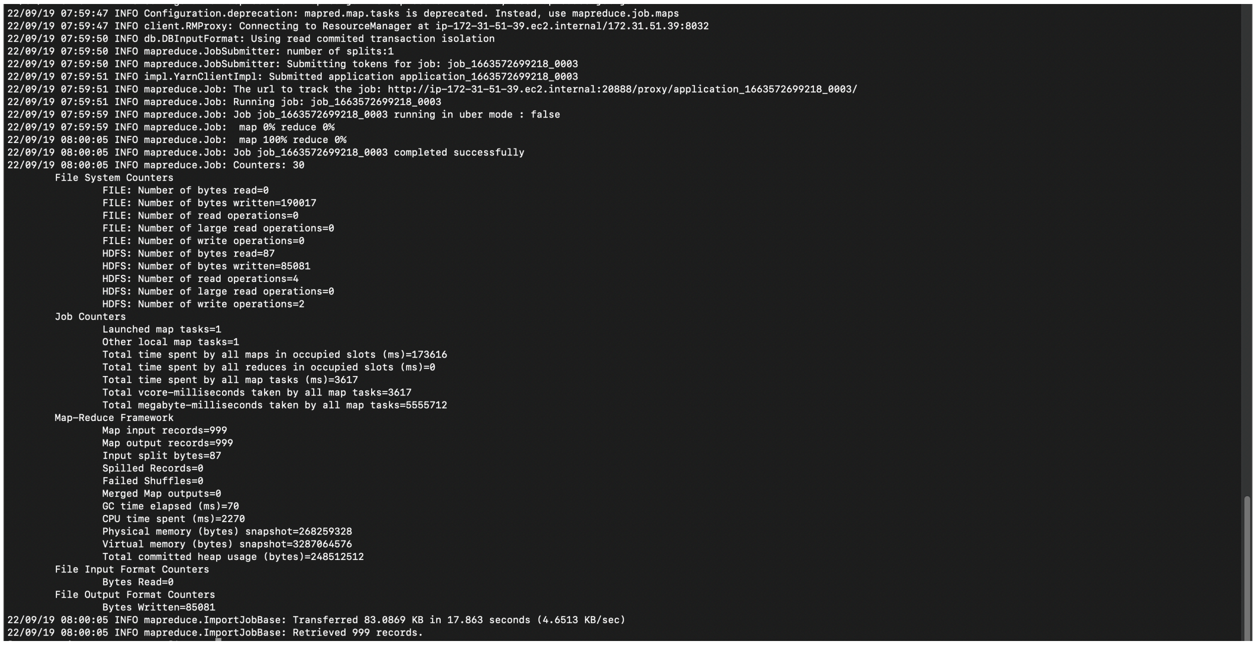
- Verify data in “**card_member_orc**" table.

```
SELECT * FROM CARD_MEMBER_ORC LIMIT 10;
```

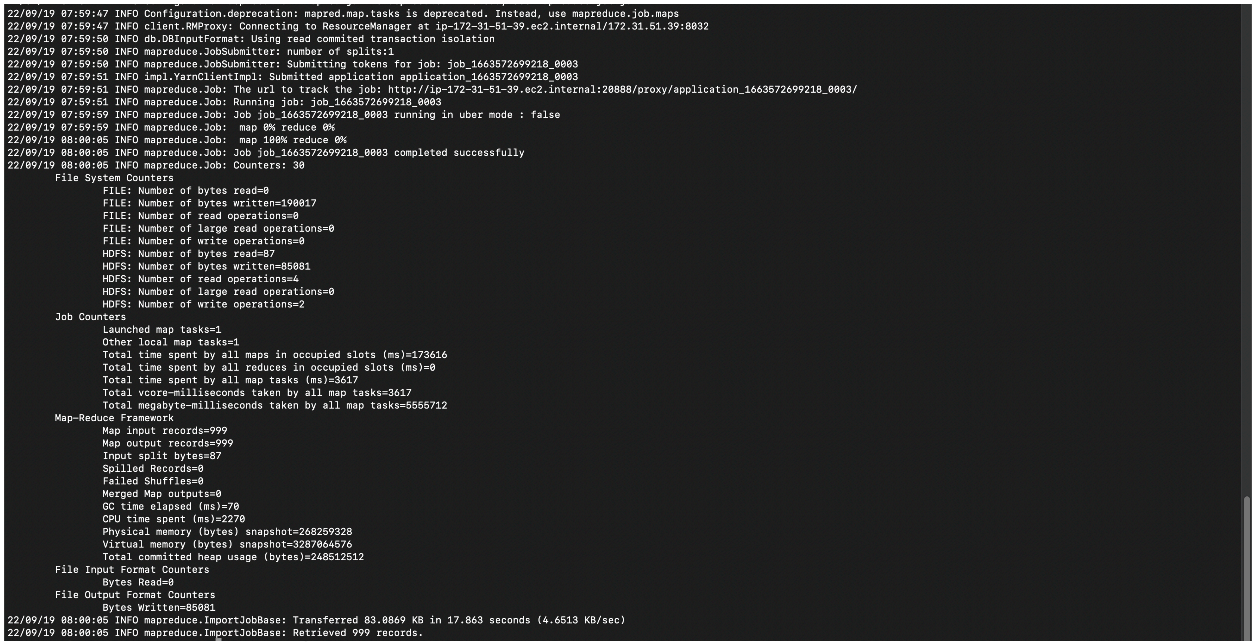
- Verify data in "**member_score_orc**" table.

```
SELECT * FROM MEMBER_SCORE_ORC LIMIT 10;
```

3. Screenshot of the imported data



```
22/09/19 07:59:47 INFO Configuration.deprecation: mapred.map.tasks is deprecated. Instead, use mapreduce.job.maps
22/09/19 07:59:47 INFO client.RMProxy: Connecting to ResourceManager at ip-172-31-51-39.ec2.internal/172.31.51.39:8032
22/09/19 07:59:50 INFO db.DBInputFormat: Using read commited transaction isolation
22/09/19 07:59:50 INFO mapreduce.JobSubmitter: number of splits:1
22/09/19 07:59:50 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_1663572699218_0003
22/09/19 07:59:51 INFO impl.YarnClientImpl: Submitted application application_1663572699218_0003
22/09/19 07:59:51 INFO mapreduce.Job: The url to track the job: http://ip-172-31-51-39.ec2.internal:20888/proxy/application_1663572699218_0003/
22/09/19 07:59:51 INFO mapreduce.Job: Running job: job_1663572699218_0003
22/09/19 07:59:59 INFO mapreduce.Job: Job job_1663572699218_0003 running in uber mode : false
22/09/19 07:59:59 INFO mapreduce.Job:  map 0% reduce 0%
22/09/19 08:00:05 INFO mapreduce.Job:  map 100% reduce 0%
22/09/19 08:00:05 INFO mapreduce.Job: Job job_1663572699218_0003 completed successfully
22/09/19 08:00:05 INFO mapreduce.Job: Counters: 30
        File System Counters
                FILE: Number of bytes read=0
                FILE: Number of bytes written=190017
                FILE: Number of read operations=0
                FILE: Number of large read operations=0
                FILE: Number of write operations=0
                HDFS: Number of bytes read=87
                HDFS: Number of bytes written=85081
                HDFS: Number of read operations=4
                HDFS: Number of large read operations=0
                HDFS: Number of write operations=2
        Job Counters
                Launched map tasks=1
                Other local map tasks=1
                Total time spent by all maps in occupied slots (ms)=173616
                Total time spent by all reduces in occupied slots (ms)=0
                Total time spent by all map tasks (ms)=3617
                Total vcore-milliseconds taken by all map tasks=3617
                Total megabyte-milliseconds taken by all map tasks=5555712
        Map-Reduce Framework
                Map input records=999
                Map output records=999
                Input split bytes=87
                Spilled Records=0
                Failed Shuffles=0
                Merged Map outputs=0
                GC time elapsed (ms)=70
                CPU time spent (ms)=2270
                Physical memory (bytes) snapshot=268259328
                Virtual memory (bytes) snapshot=3287064576
                Total committed heap usage (bytes)=248512512
        File Input Format Counters
                Bytes Read=0
        File Output Format Counters
                Bytes Written=85081
22/09/19 08:00:05 INFO mapreduce.ImportJobBase: Transferred 83.0869 KB in 17.863 seconds (4.6513 KB/sec)
22/09/19 08:00:05 INFO mapreduce.ImportJobBase: Retrieved 999 records.
```



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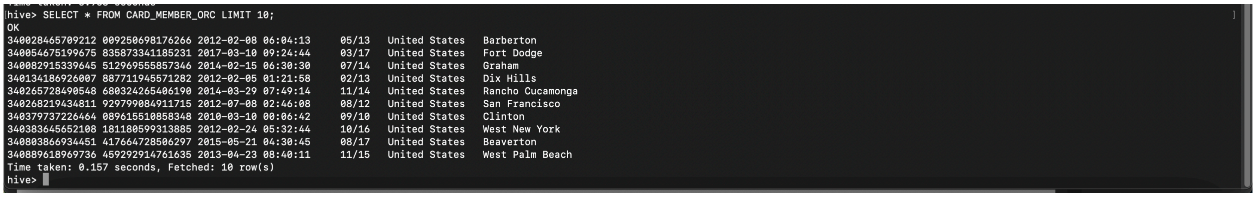
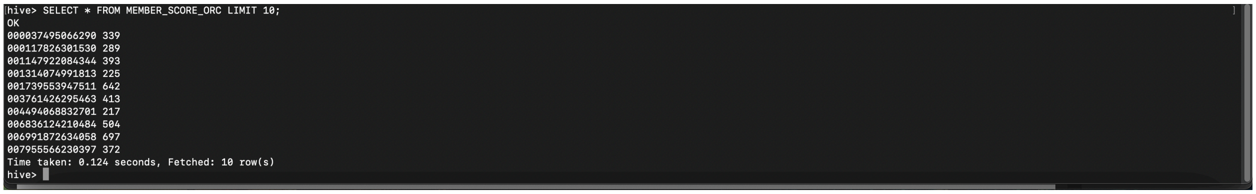


```
hive> SELECT * FROM CARD_MEMBER_ORC LIMIT 10;
OK
340028465709212 009250698176266 2012-02-08 06:04:13     05/13   United States   Barberton
340054675199675 835873341185231 2017-03-10 09:24:44     03/17   United States   Fort Dodge
340082915339645 512969555857346 2014-02-15 06:30:30     07/14   United States   Graham
340134186926007 887711945571282 2012-02-05 01:21:58     02/13   United States   Dix Hills
340265728490548 680324265406190 2014-03-29 07:49:14     11/14   United States   Rancho Cucamonga
340268219434811 929799084911715 2012-07-08 02:46:08     08/12   United States   San Francisco
340379737226464 089615510858348 2010-03-10 00:06:42     09/10   United States   Clinton
340383645652108 181180599313885 2012-02-24 05:32:44     10/16   United States   West New York
340803866934451 417664728506297 2015-05-21 04:30:45     08/17   United States   Beaverton
340889618969736 459292914761635 2013-04-23 08:40:11     11/15   United States   West Palm Beach
Time taken: 0.157 seconds, Fetched: 10 row(s)
hive> 
```



```
hive> SELECT * FROM MEMBER_SCORE_ORC LIMIT 10;
OK
000037495066290 339
000117826301530 289
001147922084344 393
001314074991813 225
001739553947511 642
003761426295463 413
004494068832701 217
006836124210484 504
006991872634058 697
007955566230397 372
Time taken: 0.124 seconds, Fetched: 10 row(s)
hive> 
```