HIVE CASE STUDY

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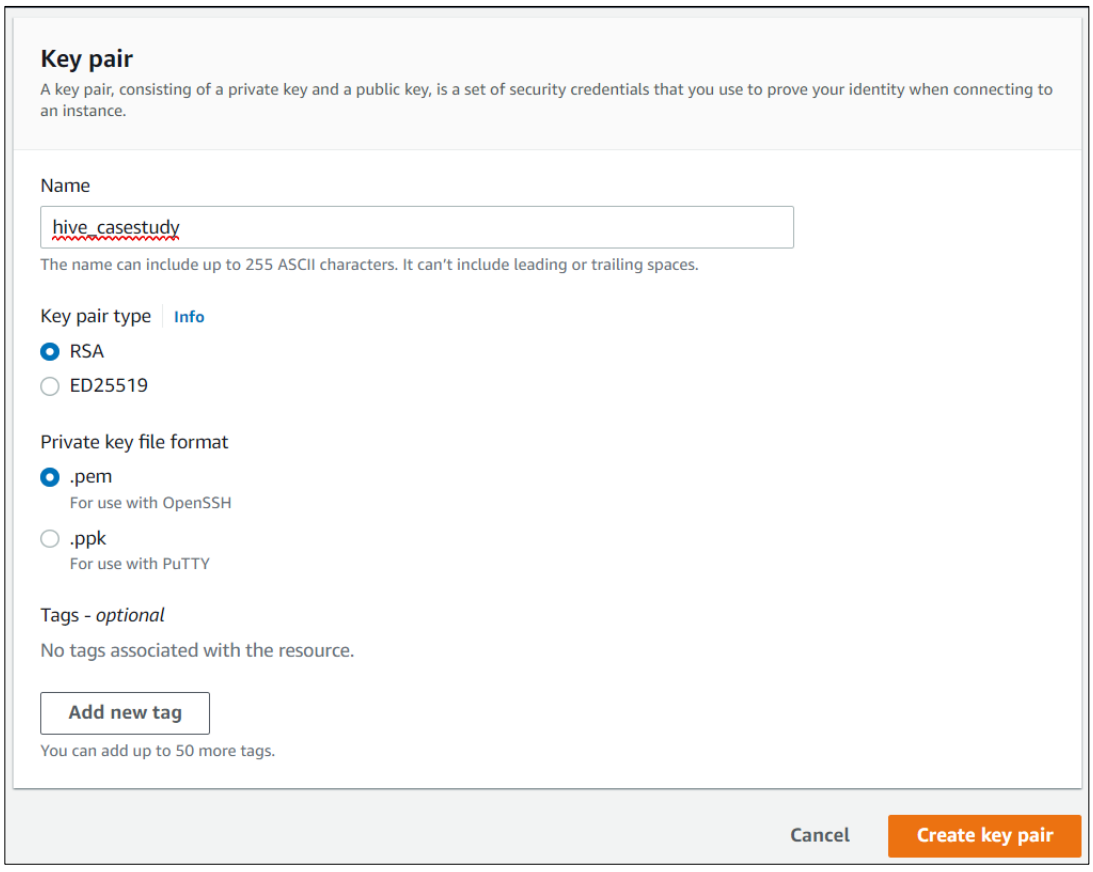
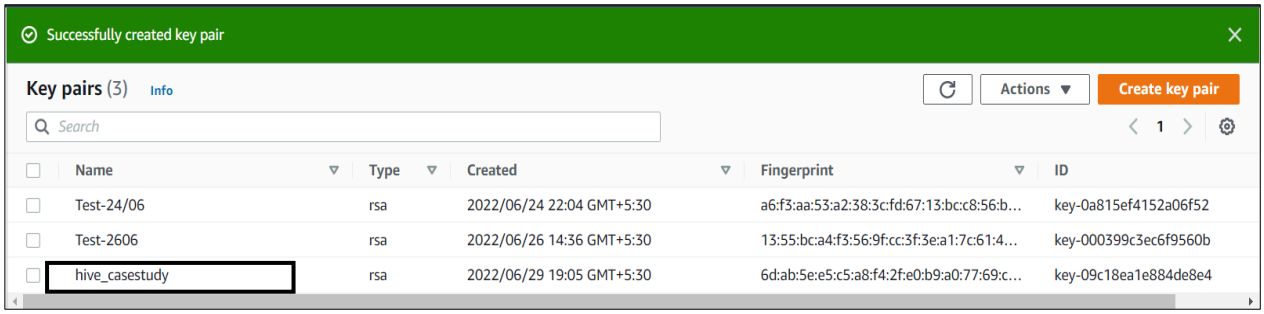
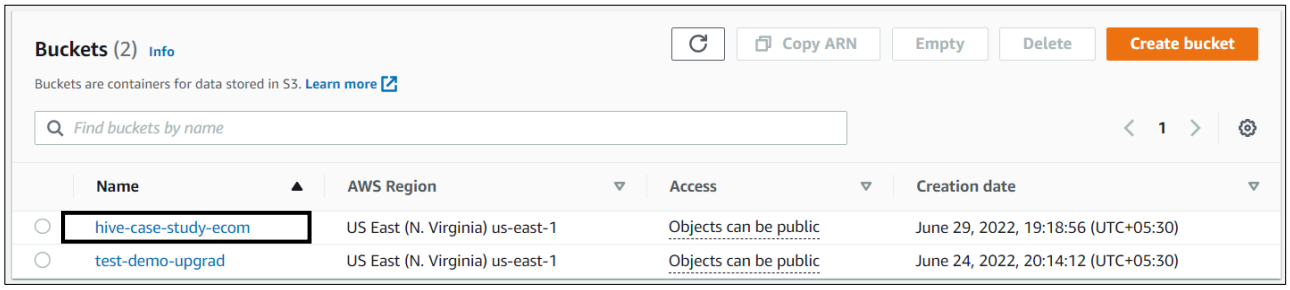
Launching of an EMR Cluster

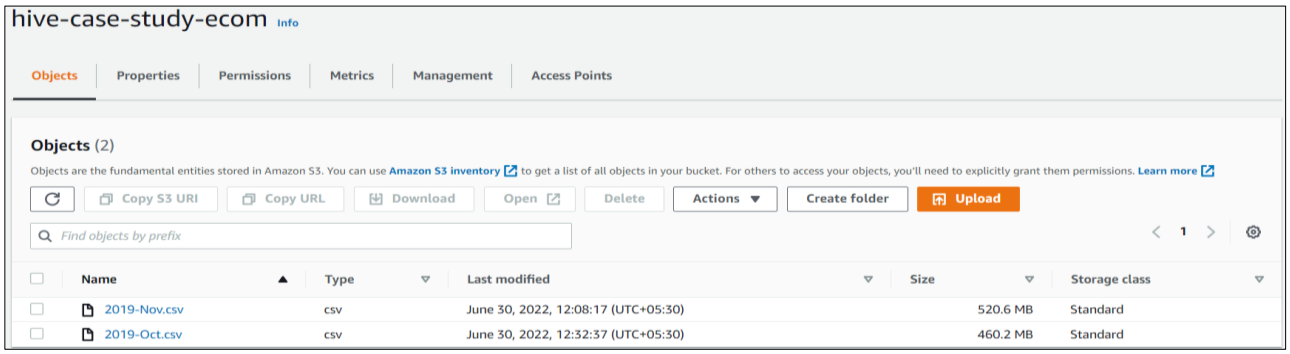
Before creating an EMR cluster, we need to create a key-pair. Since the EMR cluster will be running on EC2 instances, we will require a key-pair to connect with the instance.



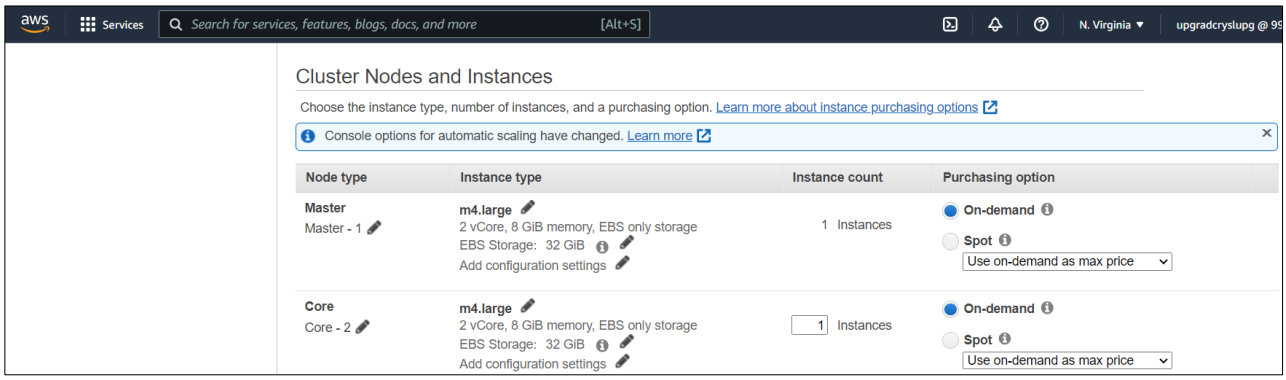


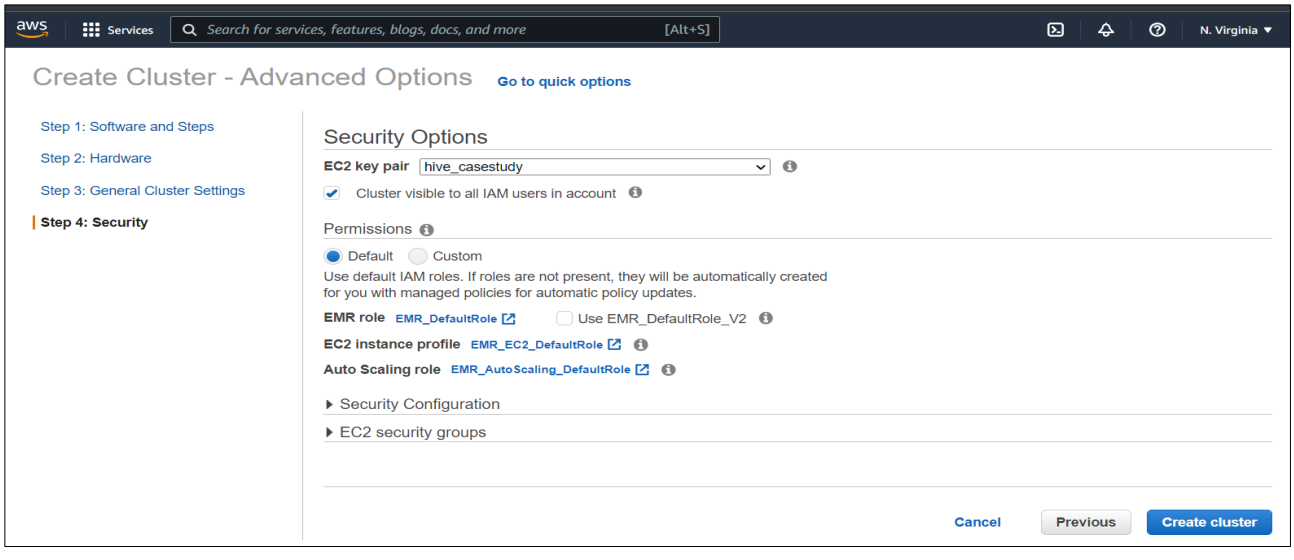
Next, we create a S3 Bucket to store our datasets.

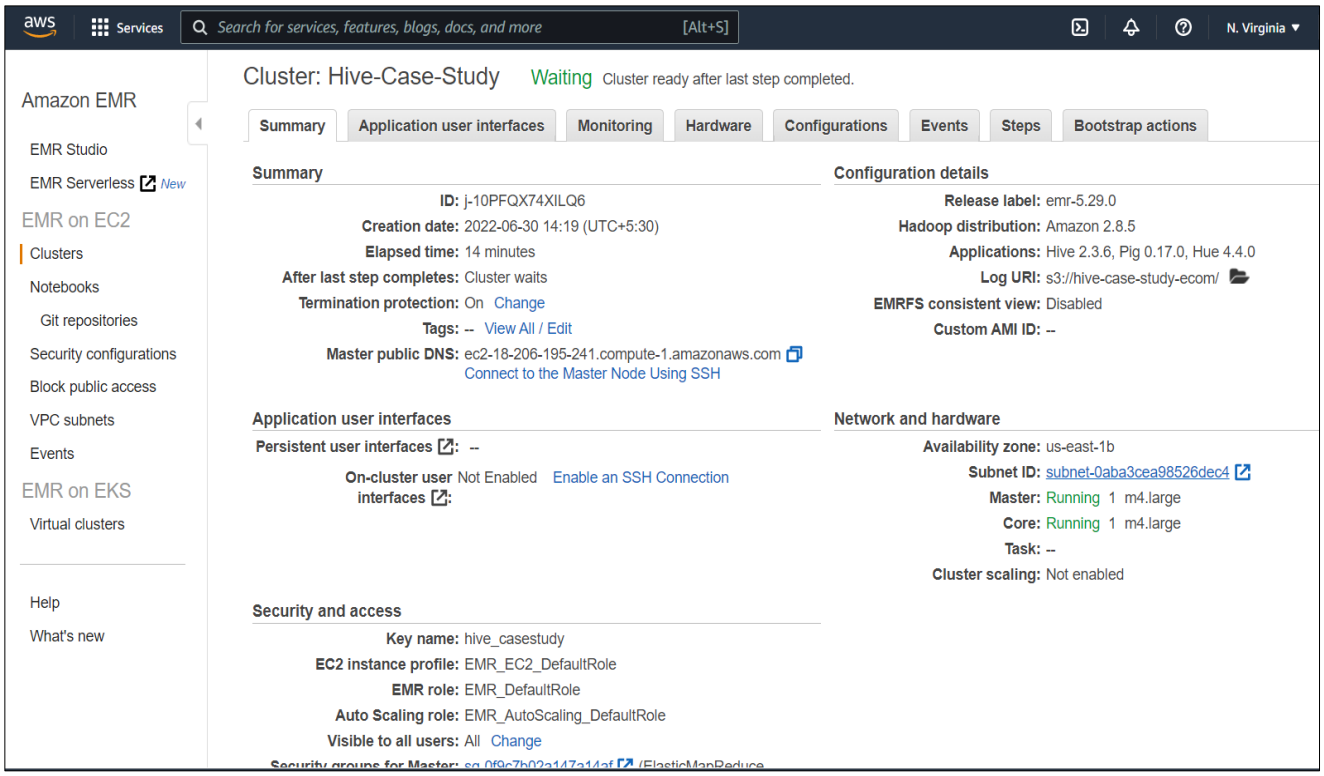




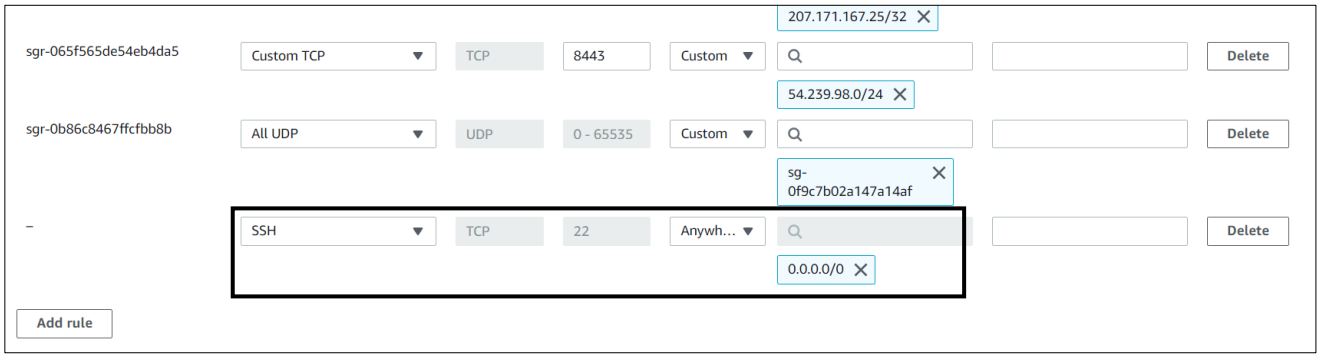
After creation of Key-pair and S3 bucket, we now create the EMR cluster.
EMR – Create cluster – Advanced Options – Release emr-5.29.0







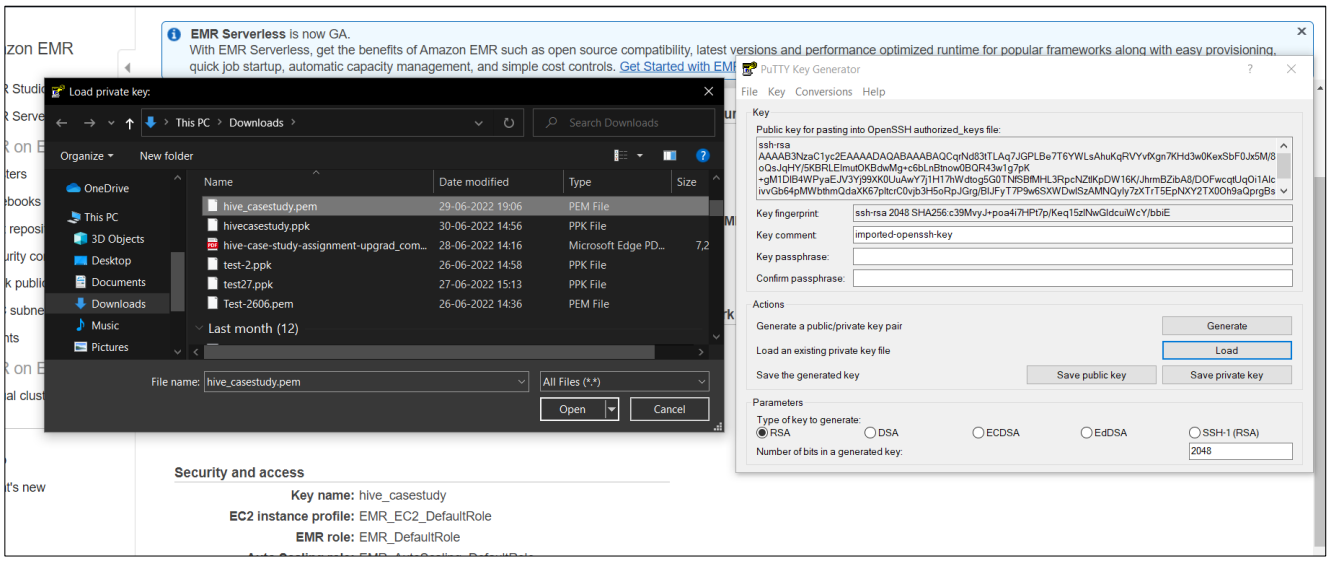
Now we need to add inbound security rule for the Master Node



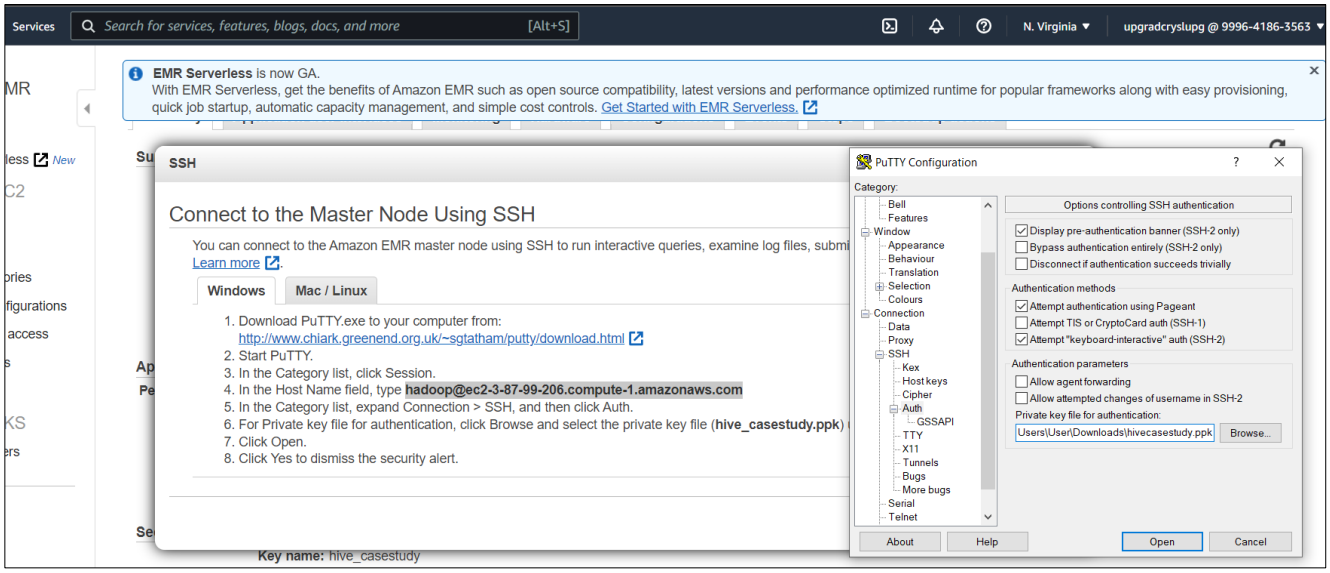
Now that the cluster is created, we are ready to move to the next stage.

Move the data from the S3 bucket into the HDFS

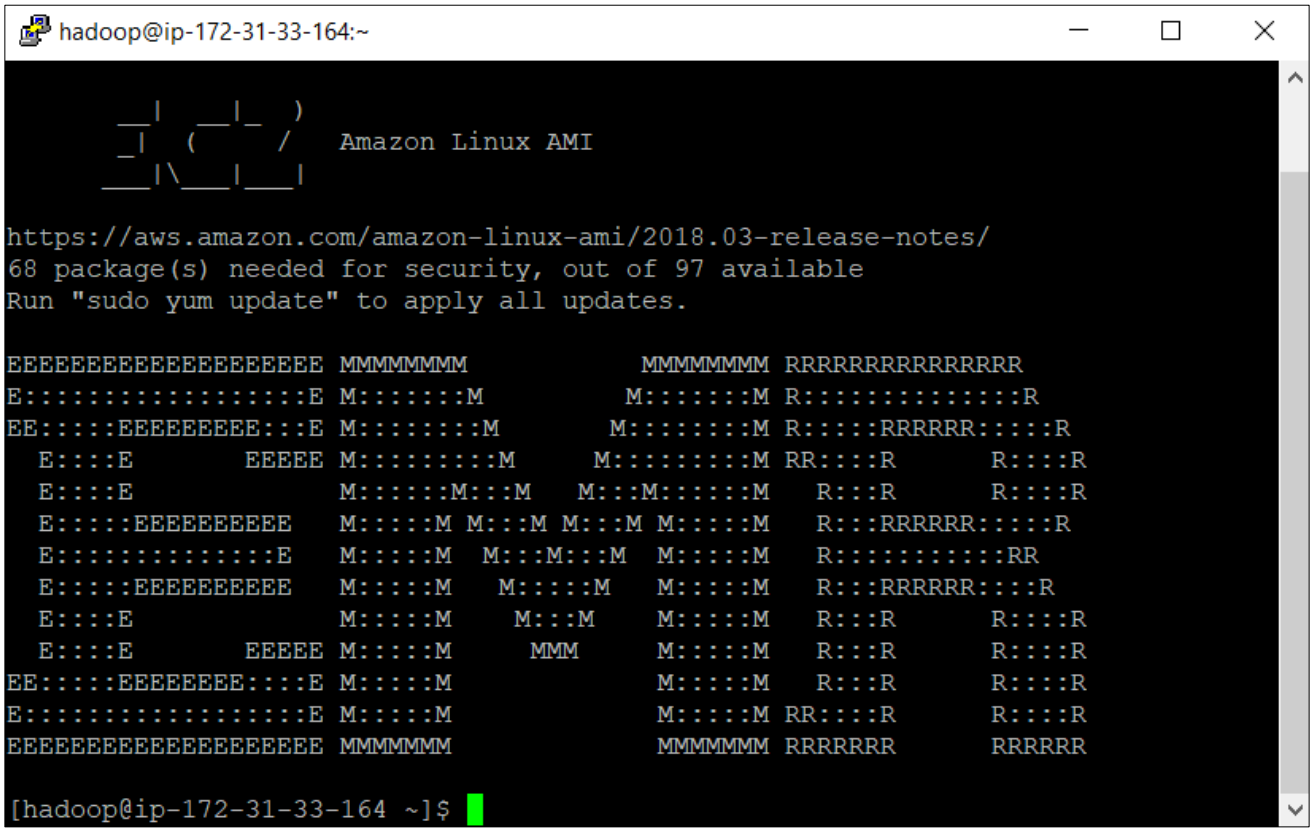
We need to open PuTTYgen application for windows and we have to load the .pem key-pair file and save the private key in the extension .ppk



Now we need to open PuTTY and give the host name and then browse for the private key which we generated above.



Connection to Hadoop is successful.



Checking for any existing directories

```
[hadoop@ip-172-31-33-164 ~]$ hadoop fs -ls /
Found 4 items
drwxr-xr-x   - hdfs hadoop          0 2022-07-03 09:19 /apps
drwxrwxrwt   - hdfs hadoop          0 2022-07-03 09:22 /tmp
drwxr-xr-x   - hdfs hadoop          0 2022-07-03 09:19 /user
drwxr-xr-x   - hdfs hadoop          0 2022-07-03 09:19 /var
```

Creating a new directory and checking whether the directory was created

```
[hadoop@ip-172-31-33-164 ~]$ hadoop fs -mkdir /hivecasestudy
[hadoop@ip-172-31-33-164 ~]$ hadoop fs -ls /
Found 5 items
drwxr-xr-x   - hdfs   hadoop          0 2022-07-03 09:19 /apps
drwxr-xr-x   - hadoop hadoop          0 2022-07-03 10:35 /hivecasestudy
drwxrwxrwt   - hdfs   hadoop          0 2022-07-03 09:22 /tmp
drwxr-xr-x   - hdfs   hadoop          0 2022-07-03 09:19 /user
drwxr-xr-x   - hdfs   hadoop          0 2022-07-03 09:19 /var
```

Moving the data from S3 buckets to the HDFS

```
[hadoop@ip-172-31-33-164 ~]$ hadoop distcp 's3://hive-case-study-ecom/2019-Oct.csv' /hivecasestudy/2019-Oct.csv
                Bytes Written=0
        DistCp Counters
                Bytes Copied=482542278
                Bytes Expected=482542278
                Files Copied=1
```

```
[hadoop@ip-172-31-33-164 ~]$ hadoop distcp 's3://hive-case-study-ecom/2019-Nov.csv' /hivecasestudy/2019-Nov.csv
        DistCp Counters
                Bytes Copied=545839412
                Bytes Expected=545839412
                Files Copied=1
```

Checking whether the data is uploaded in the directory

```
[hadoop@ip-172-31-33-164 ~]$ hadoop fs -ls /hivecasestudy
Found 2 items
-rw-r--r--   1 hadoop hadoop  545839412 2022-07-03 10:48 /hivecasestudy/2019-Nov.csv
-rw-r--r--   1 hadoop hadoop  482542278 2022-07-03 10:45 /hivecasestudy/2019-Oct.csv
```

As the data is successfully added, we can launch hive

```
[hadoop@ip-172-31-33-164 ~]$ hive

Logging initialized using configuration in file:/etc/hive/conf.dist/hive-log4j2.properties Async: false
hive>
```

Checking if any databases exist

```
hive> show databases;
OK
default
Time taken: 1.005 seconds, Fetched: 1 row(s)
hive>
```

Creating a new database and using the same

```
hive> create database if not exists Ecommerce;
OK
Time taken: 0.551 seconds
hive> show databases;
OK
default
ecommerce
Time taken: 0.021 seconds, Fetched: 2 row(s)
hive> use ecommerce;
OK
Time taken: 0.064 seconds
```

Creating an external table from the raw data

```
hive> create External table if not exists ecom_sales(event_time timestamp,event_type string,product_id stri
ng,category_id string,category_code string,brand string,price float, user_id bigint,user_session string) RO
W FORMAT SERDE 'org.apache.hadoop.hive.serde2.OpenCSVSerde' WITH SERDEPROPERTIES ("separatorChar"=",","quot
eChar"="\"","escapeChar"="\\")stored as textfile Location '/hivecasestudy' TBLPROPERTIES("skip.header.line.
count"="1");
OK
Time taken: 0.34 seconds
```

Describing the table

```
hive> describe ecom_sales;
OK
event_time              timestamp
event_type              string
product_id              string
category_id             string
category_code           string
brand                   string
price                   float
user_id                 bigint
user_session            string
Time taken: 0.042 seconds, Fetched: 9 row(s)
```

Loading data from both files into this table

```
hive> LOAD DATA INPATH '/hivecasestudy/2019-Oct.csv' into table ecom_sales;
Loading data to table ecommerce.ecom_sales
OK
Time taken: 2.301 seconds
hive> LOAD DATA INPATH '/hivecasestudy/2019-Nov.csv' into table ecom_sales;
Loading data to table ecommerce.ecom_sales
OK
Time taken: 0.795 seconds
```

Setting the header

```
hive> set hive.cli.print.header=true;
```

Checking if the data was inserted into the table

```
hive> select * from ecom_sales limit 5;
OK
ecom_sales.event_time   ecom_sales.event_type   ecom_sales.product_id   ecom_sales.category_id  ecom_sales.
category_code   ecom_sales.brand       ecom_sales.price       ecom_sales.user_id      ecom_sales.user_ses
sion
2019-11-01 00:00:02 UTC view    5802432 1487580009286598681                     0.32    562076640       09f
afd6c-6c99-46b1-834f-33527f4de241
2019-11-01 00:00:09 UTC cart    5844397 1487580006317032337                     2.38    553329724       206
7216c-31b5-455d-a1cc-af0575a34ffb
2019-11-01 00:00:10 UTC view    5837166 1783999064103190764             pnb     22.22   556138645       57e
d222e-a54a-4907-9944-5a875c2d7f4f
2019-11-01 00:00:11 UTC cart    5876812 1487580010100293687             jessnail        3.16    564506666 1
86c1951-8052-4b37-adce-dd9644b1d5f7
2019-11-01 00:00:24 UTC remove_from_cart        5826182 1487580007483048900                     3.33    553
329724  2067216c-31b5-455d-a1cc-af0575a34ffb
Time taken: 2.364 seconds, Fetched: 5 row(s)
```

QUESTIONS AND ANSWERS USING HIVE QUERY LANGUAGE

Q1. Find the total revenue generated due to purchases made in October.

select sum(price) as total_revenue from ecom_sales
where month(event_time) =10 and event_type = ‘purchase’;

Ans: 1211538.4299 is the total revenue generated due to purchases in October 2019.

The query is performed on the static table and the time taken is 71 seconds.

```
hive> select sum(price) as total_revenue from ecom_sales where month(event_time) =10 and event_typ
e = 'purchase';
Query ID = hadoop_20220704130008_f05413a4-616a-47bb-a316-f76cd9a29052
Total jobs = 1
Launching Job 1 out of 1
Status: Running (Executing on YARN cluster with App id application_1656916573590_0014)

----------------------------------------------------------------------------------------------
        VERTICES      MODE        STATUS  TOTAL  COMPLETED  RUNNING  PENDING  FAILED  KILLED
----------------------------------------------------------------------------------------------
Map 1 .......... container     SUCCEEDED      2          2        0        0       0       0
Reducer 2 ...... container     SUCCEEDED      1          1        0        0       0       0
----------------------------------------------------------------------------------------------
VERTICES: 02/02  [==========================>>] 100%  ELAPSED TIME: 70.58 s
----------------------------------------------------------------------------------------------
OK
total_revenue
1211538.4299997438
Time taken: 71.423 seconds, Fetched: 1 row(s)
```

We now create a dynamic table with optimization techniques of partitioning and bucketing for quick results.

We name the table dynamic_sales and partition the table on “event_type” and clustered the table on “user_id” into 7 buckets.

```
hive> set hive.exec.dynamic.partition=true;
hive> set hive.exec.dynamic.partition.mode=nonstrict;
hive> create external table if not exists dynamic_sales(event_time timestamp, product_id
string, category_id string, category_code string, brand string, price float, user_id bigi
nt, user_session string) partitioned by (event_type string) clustered by (user_id) into 7
 buckets ROW FORMAT SERDE 'org.apache.hadoop.hive.serde2.OpenCSVSerde' stored as textfile
;
OK
Time taken: 0.178 seconds
```

Describing the table

```
hive> describe dynamic_sales;
OK
event_time              string                  from deserializer
product_id              string                  from deserializer
category_id             string                  from deserializer
category_code           string                  from deserializer
brand                   string                  from deserializer
price                   string                  from deserializer
user_id                 string                  from deserializer
user_session            string                  from deserializer
event_type              string

# Partition Information
# col_name              data_type               comment

event_type              string
Time taken: 0.106 seconds, Fetched: 14 row(s)
```

Loading the data in the bucket table

```
hive> insert into dynamic_sales partition (event_type) select event_time, product_id, cat
egory_id, category_code, brand, price, user_id, user_session, event_type from ecom_sales;
```

Checking if the data was inserted into the table dynamic_sales

```
hive> select * from dynamic_sales limit 5;
OK
dynamic_sales.event_time        dynamic_sales.product_id        dynamic_sales.category_id  d
ynamic_sales.category_code      dynamic_sales.brand     dynamic_sales.price     dynamic_sale
s.user_id       dynamic_sales.user_session      dynamic_sales.event_type
2019-10-10 13:00:56 UTC 5810479 1487580005268456287                     22.22   410940282  2
fe5d5c9-0c45-4ff5-8a3c-245dd5d5961e     cart
2019-10-08 08:16:43 UTC 5888521 1597770225539875791             laboratorium    7.14    5579
83520   961b81d9-8e7f-465a-8a7a-c40847fd216c    cart
2019-10-10 00:00:23 UTC 5745314 1487580010628776014                     1.43    553999552  9
986365b-eb78-4b42-98ba-b90141b92c00     cart
2019-10-09 07:33:01 UTC 5817689 1487580005092295511                     10.32   541115674  f
7924d95-94a8-473a-b947-970c54ac60ad     cart
2019-10-08 13:25:19 UTC 5796094 1487580005754995573                     4.44    318432695  8
c8ae9d3-7228-4f7a-ab0b-f9afb1a004d7     cart
Time taken: 0.199 seconds, Fetched: 5 row(s)
```

Checking the partitions created in hive

```
hive> show partitions dynamic_sales;
OK
event_type=cart
event_type=purchase
event_type=remove_from_cart
event_type=view
Time taken: 0.08 seconds, Fetched: 4 row(s)
```

Checking the partitions created in Hadoop

```
[hadoop@ip-172-31-47-94 ~]$ hadoop fs -ls /user/hive/warehouse/ecommerce.db/dyna
mic_sales;
Found 4 items
drwxrwxrwt   - hadoop hadoop          0 2022-07-04 07:42 /user/hive/warehouse/ec
ommerce.db/dynamic_sales/event_type=cart
drwxrwxrwt   - hadoop hadoop          0 2022-07-04 07:42 /user/hive/warehouse/ec
ommerce.db/dynamic_sales/event_type=purchase
drwxrwxrwt   - hadoop hadoop          0 2022-07-04 07:42 /user/hive/warehouse/ec
ommerce.db/dynamic_sales/event_type=remove_from_cart
drwxrwxrwt   - hadoop hadoop          0 2022-07-04 07:42 /user/hive/warehouse/ec
ommerce.db/dynamic_sales/event_type=view
```

We run the same query on the optimized table. The time taken has reduced to 25 seconds.

```
hive> select sum(price) as total_revenue from dynamic_sales where month(event_time) =10 and event_
type = 'purchase';
Query ID = hadoop_20220704130354_23f2f319-a7d1-45f8-a59c-31e60381e46b
Total jobs = 1
Launching Job 1 out of 1
Status: Running (Executing on YARN cluster with App id application_1656916573590_0014)

--------------------------------------------------------------------------------
        VERTICES      MODE        STATUS  TOTAL  COMPLETED  RUNNING  PENDING  FAILED  KILLED
--------------------------------------------------------------------------------
Map 1 .......... container     SUCCEEDED      3          3        0        0       0       0
Reducer 2 ...... container     SUCCEEDED      1          1        0        0       0       0
--------------------------------------------------------------------------------
VERTICES: 02/02  [==========================>>] 100%  ELAPSED TIME: 24.65 s
--------------------------------------------------------------------------------
OK
total_revenue
1211538.4299998758
Time taken: 25.288 seconds, Fetched: 1 row(s)
```

As we get quick results with the optimized table, we use the same table for further queries.

Q2. Write a query to yield the total sum of purchases per month in a single output.

select month(event_time) as purchase_month, count(product_id) as total_purchases
from dynamic_sales
where event_type = 'purchase'
group by month(event_time);

Ans: 10 – October 245624
11 – November 322417

There was more purchase made in the month of November than in the month of October.

```
hive> select month(event_time) as purchase_month, count(product_id) as total_purchases from dynami
c_sales where event_type = 'purchase' group by month(event_time);
Query ID = hadoop_20220704130550_104a169b-5a28-48ca-9656-6ac20baf54b7
Total jobs = 1
Launching Job 1 out of 1
Status: Running (Executing on YARN cluster with App id application_1656916573590_0014)

--------------------------------------------------------------------------------
        VERTICES      MODE        STATUS  TOTAL  COMPLETED  RUNNING  PENDING  FAILED  KILLED
--------------------------------------------------------------------------------
Map 1 .......... container     SUCCEEDED      3          3        0        0       0       0
Reducer 2 ...... container     SUCCEEDED      1          1        0        0       0       0
--------------------------------------------------------------------------------
VERTICES: 02/02  [==========================>>] 100%  ELAPSED TIME: 26.24 s
--------------------------------------------------------------------------------
OK
purchase_month  total_purchases
10      245624
11      322417
Time taken: 26.95 seconds, Fetched: 2 row(s)
```

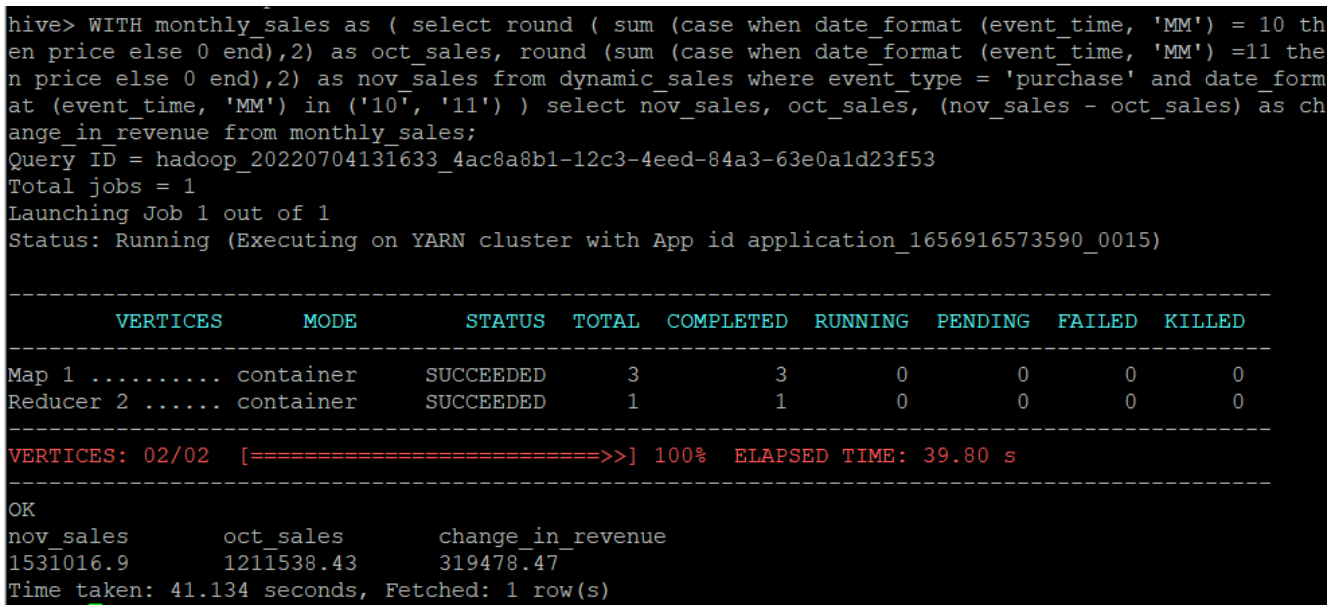
Q3. Write a query to find the change in revenue generated due to purchases from October to November.

```
WITH monthly_sales as
(select round (sum (case when date_format (event_time, 'MM')=10 then price else 0 end),2) as oct_sales,
round (sum (case when date_format (event_time, 'MM') =11 then price else 0 end),2) as nov_sales
from dynamic_sales
where event_type = 'purchase' and date_format (event_time, 'MM') in ('10', '11'))
select nov_sales, oct_sales, (nov_sales - oct_sales) as change_in_revenue
from monthly_sales;
```

Ans:

nov_sales	oct_sales	change_in_revenue
1531016.9	1211538.43	319478.47

There is an increase of 319478.47 in the revenue generated due to purchase from October to November.



```
hive> WITH monthly_sales as ( select round ( sum (case when date_format (event_time, 'MM') = 10 th
en price else 0 end),2) as oct_sales, round (sum (case when date_format (event_time, 'MM') =11 the
n price else 0 end),2) as nov_sales from dynamic_sales where event_type = 'purchase' and date_form
at (event_time, 'MM') in ('10', '11') ) select nov_sales, oct_sales, (nov_sales - oct_sales) as ch
ange_in_revenue from monthly_sales;
Query ID = hadoop_20220704131633_4ac8a8b1-12c3-4eed-84a3-63e0a1d23f53
Total jobs = 1
Launching Job 1 out of 1
Status: Running (Executing on YARN cluster with App id application_1656916573590_0015)

--------------------------------------------------------------------------------
        VERTICES      MODE        STATUS  TOTAL  COMPLETED  RUNNING  PENDING  FAILED  KILLED
--------------------------------------------------------------------------------
Map 1 .......... container     SUCCEEDED      3          3        0        0       0       0
Reducer 2 ...... container     SUCCEEDED      1          1        0        0       0       0
--------------------------------------------------------------------------------
VERTICES: 02/02  [==========================>>] 100%  ELAPSED TIME: 39.80 s
--------------------------------------------------------------------------------
OK
nov_sales       oct_sales       change_in_revenue
1531016.9       1211538.43      319478.47
Time taken: 41.134 seconds, Fetched: 1 row(s)
```

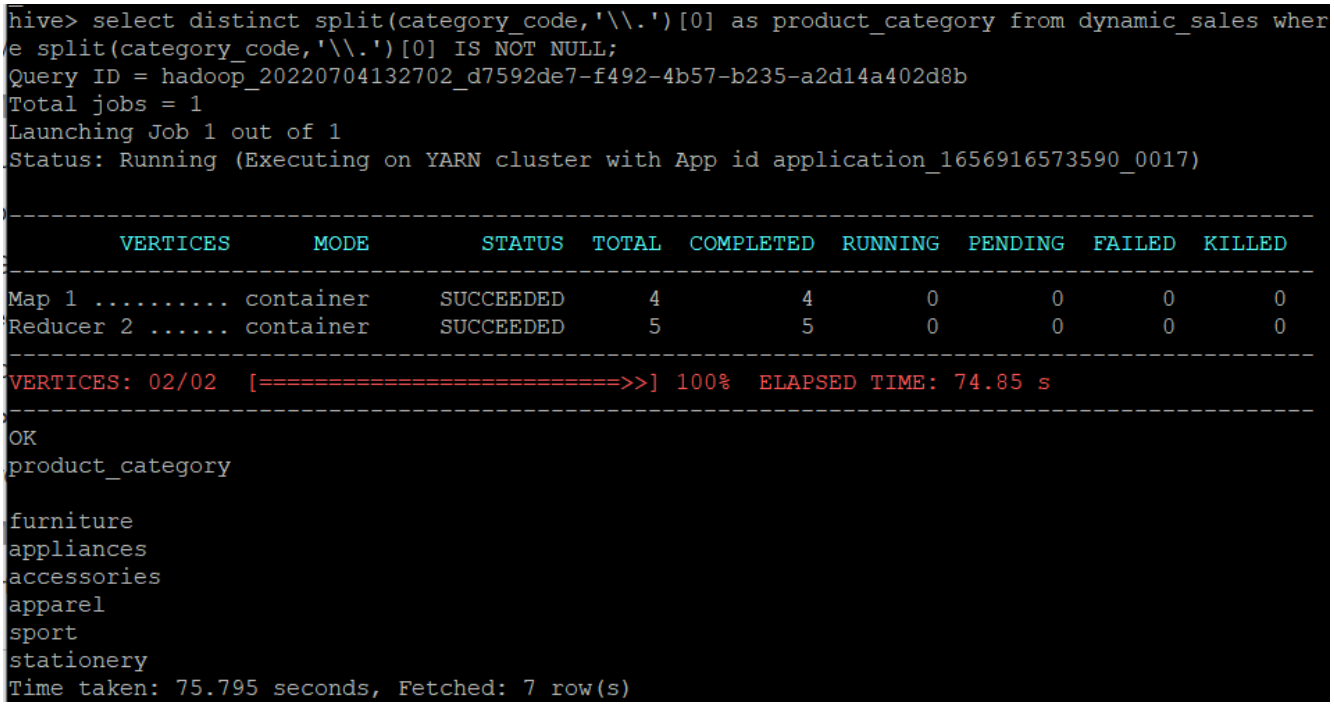
Q4. Find distinct categories of products. Categories with null products code can be ignored.

select distinct split(category_code,'\\.')[0] as product_category from dynamic_sales where split(category_code,'\\.')[0] IS NOT NULL;

Ans: product_category:-

furniture
appliances
accessories
apparel
sport
stationery

There are 6 different categories under which the company sells products.



Q5. Find the total number of products available under each category.

```
select split(category_code,'\\.')[0] as product_category, count(product_id) as total_products
from dynamic_sales
where split(category_code,'\\.')[0] IS NOT NULL
group by split(category_code,'\\.')[0];
```

Ans:

product_category	total_products
furniture	23604
appliances	61736
accessories	12929
apparel	18232
sport	2
stationery	26722

The category of Appliances has the highest number of products followed by furniture, stationery, apparel, accessories and sports.

```
hive> select split(category_code,'\\.')[0] as product_category, count(product_id) as total_prod
ucts from dynamic_sales where split(category_code,'\\.')[0]<>'' group by split(category_code,'\
\.')[0];
Query ID = hadoop_20220704134113_a8cd17f8-fe02-4be2-b68f-096ecd93e2e3
Total jobs = 1
Launching Job 1 out of 1
Status: Running (Executing on YARN cluster with App id application_1656916573590_0017)

--------------------------------------------------------------------------------
        VERTICES      MODE        STATUS  TOTAL  COMPLETED  RUNNING  PENDING  FAILED  KILLED
--------------------------------------------------------------------------------
Map 1 .......... container     SUCCEEDED      4          4        0        0       0       0
Reducer 2 ...... container     SUCCEEDED      5          5        0        0       0       0
--------------------------------------------------------------------------------
VERTICES: 02/02  [==========================>>] 100%  ELAPSED TIME: 69.35 s
--------------------------------------------------------------------------------
OK
product_category        total_products
furniture       23604
appliances      61736
accessories     12929
apparel 18232
sport   2
stationery      26722
Time taken: 69.999 seconds, Fetched: 6 row(s)
```

Q6. Which brand had the maximum sales in October and November combined?

```
select brand, round(sum(price),2) as Sales from dynamic_sales
where brand <>'' and event_type = 'purchase'
group by brand
order by Sales desc
limit 1;
```

Ans: brand sales
runail 148297.94

Runail is the brand having maximum sales in October and November combined.

```
hive> select brand, round(sum(price),2) as Sales from dynamic_sales where brand <>'' and  event
_type = 'purchase' group by brand order by Sales desc limit 1;
Query ID = hadoop_20220704134927_1bca9723-4f5e-4677-aff9-6bb75abe4d11
Total jobs = 1
Launching Job 1 out of 1
Status: Running (Executing on YARN cluster with App id application_1656916573590_0018)

--------------------------------------------------------------------------------
        VERTICES      MODE        STATUS  TOTAL  COMPLETED  RUNNING  PENDING  FAILED  KILLED
--------------------------------------------------------------------------------
Map 1 .......... container     SUCCEEDED      3          3        0        0       0       0
Reducer 2 ...... container     SUCCEEDED      1          1        0        0       0       0
Reducer 3 ...... container     SUCCEEDED      1          1        0        0       0       0
--------------------------------------------------------------------------------
VERTICES: 03/03  [==========================>>] 100%  ELAPSED TIME: 30.43 s
--------------------------------------------------------------------------------
OK
brand   sales
runail  148297.94
Time taken: 37.508 seconds, Fetched: 1 row(s)
```

Q7. Which brand increased their sales from October to November?

```
WITH monthly_sales as
(select brand, round ( sum (case when date_format (event_time, 'MM') = 10 then price else 0 end),2) as oct_sales,
round (sum (case when date_format (event_time, 'MM') =11 then price else 0 end),2) as nov_sales
from dynamic_sales
where event_type = 'purchase' and date_format (event_time, 'MM') in ('10', '11')
group by brand)
select brand, oct_sales, nov_sales, (nov_sales – oct_sales) as difference_in_sales
from monthly_sales
where (nov_sales – oct_sales) > 0
order by difference_in_sales desc;
```

Ans: 161 brands have increased their sales from October to November.
Grattol has the highest increment of 36027 and Ovale has the lowest increment of 0.56.

```
hive> WITH monthly_sales as (select brand, round(sum(case when date_format(event_time, 'MM') = 10
 then price else 0 end),2) as oct_sales, round(sum(case when date_format(event_time, 'MM') = 11 t
hen price else 0 end),2) as nov_sales from dynamic_sales where event_type = 'purchase' and date_f
ormat(event_time, 'MM') in ('10','11') group by brand) select brand, oct_sales, nov_sales, (nov_s
ales-oct_sales) as difference_in_sales from monthly_sales where (nov_Sales-oct_sales) > 0 order b
y difference_in_sales desc;
Query ID = hadoop_20220704141005_9bef0698-91a9-4b93-8fbc-8e7b2adaeed9
Total jobs = 1
Launching Job 1 out of 1
Status: Running (Executing on YARN cluster with App id application_1656916573590_0020)

----------------------------------------------------------------------------------------------
        VERTICES      MODE        STATUS  TOTAL  COMPLETED  RUNNING  PENDING  FAILED  KILLED
----------------------------------------------------------------------------------------------
Map 1 .......... container     SUCCEEDED      3          3        0        0       0       0
Reducer 2 ...... container     SUCCEEDED      1          1        0        0       0       0
Reducer 3 ...... container     SUCCEEDED      1          1        0        0       0       0
----------------------------------------------------------------------------------------------
VERTICES: 03/03  [==========================>>] 100%  ELAPSED TIME: 44.05 s
----------------------------------------------------------------------------------------------
OK
        474679.06       619509.24       144830.18
grattol 35445.54        71472.71        36027.170000000006
uno     35302.03        51039.75        15737.720000000001
lianail 5892.84 16394.24        10501.400000000001
ingarden        23161.39        33566.21        10404.82
strong  29196.63        38671.27        9474.639999999996
jessnail        26287.84        33345.23        7057.390000000003
cosmoprofi      8322.81 14536.99        6214.18
polarus 6013.72 11371.93        5358.21
runail  71539.28        76758.66        5219.380000000005
freedecor       3421.78 7671.8  4250.02
staleks 8519.73 11875.61        3355.880000000001
bpw.style       11572.15        14837.44        3265.290000000001
lovely  8704.38 11939.06        3234.6800000000003
marathon        7280.75 10273.1 2992.3500000000004
haruyama        9390.69 12352.91        2962.2199999999993
yoko    8756.91 11707.88        2950.9699999999993
italwax 21940.24        24799.37        2859.1299999999974
benovy  409.62  3259.97 2850.35
kaypro  881.34  3268.7  2387.3599999999997
estel   21756.75        24142.67        2385.9199999999983
concept 11032.14        13380.4 2348.26
kapous  11927.16        14093.08        2165.92
f.o.x   6624.23 8577.28 1953.050000000001
masura  31266.08        33058.47        1792.3899999999994
milv    3904.94 5642.01 1737.0700000000002
beautix 10493.95        12222.95        1729.0
```

artex	2730.64	4327.25	1596.6100000000001
domix	10472.05	12009.17	1537.1200000000008
shik	3341.2	4839.72	1498.5200000000004
smart	4457.26	5902.14	1444.88
roubloff	3491.36	4913.77	1422.4100000000003
levrana	2243.56	3664.1	1420.54
oniq	8425.41	9841.65	1416.2399999999998
irisk	45591.96	46946.04	1354.0800000000017
severina	4775.88	6120.48	1344.5999999999995
joico	705.52	2015.1	1309.58
zeitun	708.66	2009.63	1300.9700000000003
beauty-free	554.17	1782.86	1228.69
swarovski	1887.93	3043.16	1155.2299999999998
de.lux	1659.7	2775.51	1115.8100000000002
metzger	5373.45	6457.16	1083.71
markell	1768.75	2834.43	1065.6799999999998
sanoto	157.14	1209.68	1052.54
nagaraku	4369.74	5327.68	957.9400000000005
ecolab	262.85	1214.3	951.4499999999999
art-visage	2092.71	2997.8	905.0900000000001
levissime	2227.5	3085.31	857.81
missha	1293.83	2150.28	856.4500000000003
solomeya	1899.7	2685.8	786.1000000000001
rosi	3077.04	3841.56	764.52
refectocil	2716.18	3475.58	759.4000000000001
kaaral	4412.43	5086.07	673.6399999999994
kosmekka	1181.44	1813.37	631.9299999999998
kinetics	6334.25	6945.26	611.0100000000002
browxenna	14331.37	14916.73	585.3599999999988
airnails	5118.9	5691.52	572.6200000000008
uskusi	5142.27	5690.31	548.04
coifin	903.0	1428.49	525.49
s.care	412.68	913.07	500.39000000000004
limoni	1308.9	1796.6	487.6999999999998
matrix	3243.25	3726.74	483.4899999999998
gehwol	1089.07	1557.68	468.6100000000001
greymy	29.21	489.49	460.28000000000003
bioaqua	942.89	1398.12	455.2299999999999
farmavita	837.37	1291.97	454.6
sophin	1067.86	1515.52	447.6600000000001
yu-r	271.41	673.71	402.3
kiss	421.55	817.33	395.78000000000003
naomi	0.0	389.0	389.0
lador	2083.61	2471.53	387.9200000000001
ellips	245.85	606.04	360.18999999999994
jas	3318.96	3657.43	338.4699999999998
lowence	242.84	567.75	324.90999999999997
nitrile	847.28	1162.68	315.4000000000001
shary	871.96	1176.49	304.53
kims	330.04	632.04	301.99999999999994
happyfons	801.92	1091.59	289.66999999999996
kocostar	310.85	594.93	284.0799999999999
insight	1443.7	1721.96	278.26
candy	534.96	799.38	264.41999999999996
bluesky	10307.24	10565.53	258.2900000000009
beauugreen	511.51	768.35	256.84000000000003
protokeratin	201.25	456.79	255.54000000000002
trind	298.07	542.96	244.89000000000004
entity	479.71	719.26	239.55
skinlite	651.94	890.45	238.51
provoc	827.99	1063.82	235.82999999999993
fedua	52.38	263.81	211.43
ecocraft	41.16	241.95	200.79
keen	236.35	435.62	199.27
mane	66.79	260.26	193.46999999999997
freshbubble	318.7	502.34	183.64
matreshka	0.0	182.67	182.67
chi	358.94	538.61	179.67000000000002
cristalinas	427.63	584.95	157.32000000000005
farmona	1692.46	1843.43	150.97000000000003
latinoil	249.52	384.59	135.06999999999996
miskin	158.04	293.07	135.03
elizavecca	70.53	204.3	133.77
nefertiti	233.52	366.64	133.11999999999998
finish	98.38	230.38	132.0
igrobeauty	513.66	645.07	131.41000000000008
dizao	819.13	945.51	126.38
osmo	645.58	762.31	116.7299999999999
batiste	772.4	874.17	101.76999999999998
carmex	145.08	243.36	98.28
eos	54.34	152.61	98.27000000000001
depilflax	2707.07	2803.78	96.71000000000004
enjoy	41.35	136.57	95.22
kerasys	430.91	525.2	94.29000000000002
aura	83.95	177.51	93.55999999999999
plazan	101.37	194.01	92.63999999999999
koelf	422.73	507.29	84.56
nirvel	163.04	234.33	71.29000000000002
konad	739.83	810.67	70.83999999999992
egomania	77.47	146.04	68.57
cutrin	299.37	367.62	68.25
laboratorium	246.5	312.52	66.01999999999998
inm	288.02	351.21	63.19
dewal	0.0	61.29	61.29
marutaka-foot	49.22	109.33	60.11
kares	0.0	59.45	59.45
profhenna	679.23	736.85	57.620000000000005
koelcia	55.5	112.75	57.25

```
balbcare        155.33  212.38  57.04999999999998
elskin  251.09  307.65  56.559999999999974
foamie  35.04   80.49   45.449999999999996
ladykin 125.65  170.57  44.91999999999999
likato  296.06  340.97  44.910000000000025
mavala  409.04  446.32  37.27999999999997
vilenta 197.6   231.21  33.610000000000014
beautyblender   78.74   109.41  30.67
biore   60.65   90.31   29.660000000000004
orly    902.38  931.09  28.710000000000036
estelare        444.81  471.87  27.060000000000002
profepil        93.36   118.02  24.659999999999997
blixz   38.95   63.4    24.449999999999996
binacil 0.0     24.26   24.26
godefroy        401.22  425.12  23.899999999999977
glysolid        69.73   91.59   21.86
veraclara       50.11   71.21   21.099999999999994
juno    0.0     21.08   21.08
kamill  63.01   81.49   18.479999999999997
treaclemoon     163.37  181.49  18.120000000000005
supertan        50.37   66.51   16.140000000000008
barbie  0.0     12.39   12.39
deoproce        316.84  329.17  12.330000000000041
rasyan  18.8    28.94   10.14
fly     17.14   27.17   10.030000000000001
tertio  236.16  245.8   9.640000000000015
jaguar  1102.11 1110.65 8.540000000000191
soleo   204.2   212.53  8.330000000000013
neoleor 43.41   51.7    8.290000000000006
moyou   5.71    10.28   4.569999999999999
bodyton 1376.34 1380.64 4.300000000000182
skinity 8.88    12.44   3.5599999999999987
helloganic      0.0     3.1     3.1
grace   100.92  102.61  1.6899999999999977
cosima  20.23   20.93   0.6999999999999993
ovale   2.54    3.1     0.56
Time taken: 45.459 seconds, Fetched: 161 row(s)
```

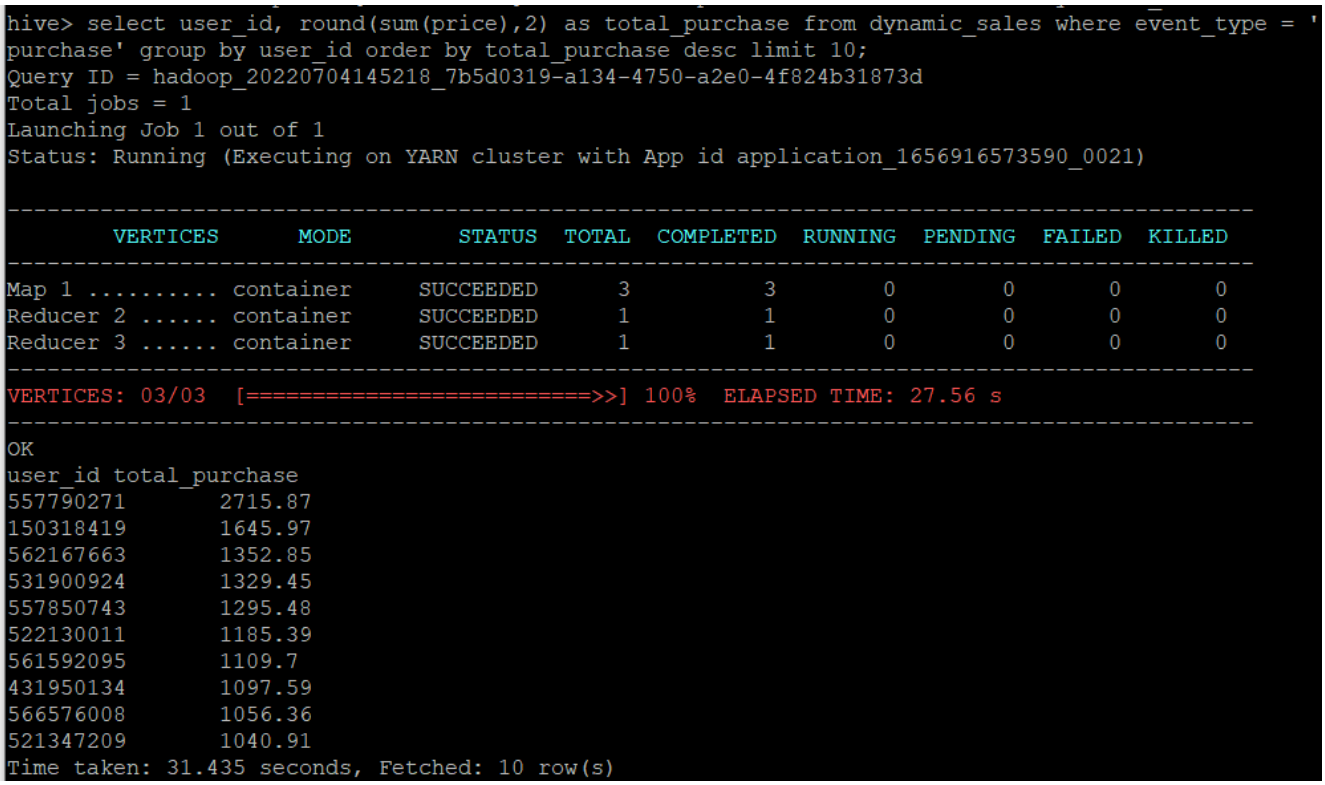
Q8. Your company wants to reward the top 10 users of its website with a Golden Customer plan. Write a query to generate a list of top 10 users who spend the most.

```
select user_id, round(sum(price),2) as total_purchase
from dynamic_sales
where event_type = 'purchase'
group by user_id
order by total_purchase desc limit 10;
```

Ans:

user_id	total_purchase
557790271	2715.87
150318419	1645.97
562167663	1352.85
531900924	1329.45
557850743	1295.48
522130011	1185.39
561592095	1109.7
431950134	1097.59
566576008	1056.36
521347209	1040.91

This is the list of the top 10 users who spend the most and can be rewarded with a Golden Customer Plan.

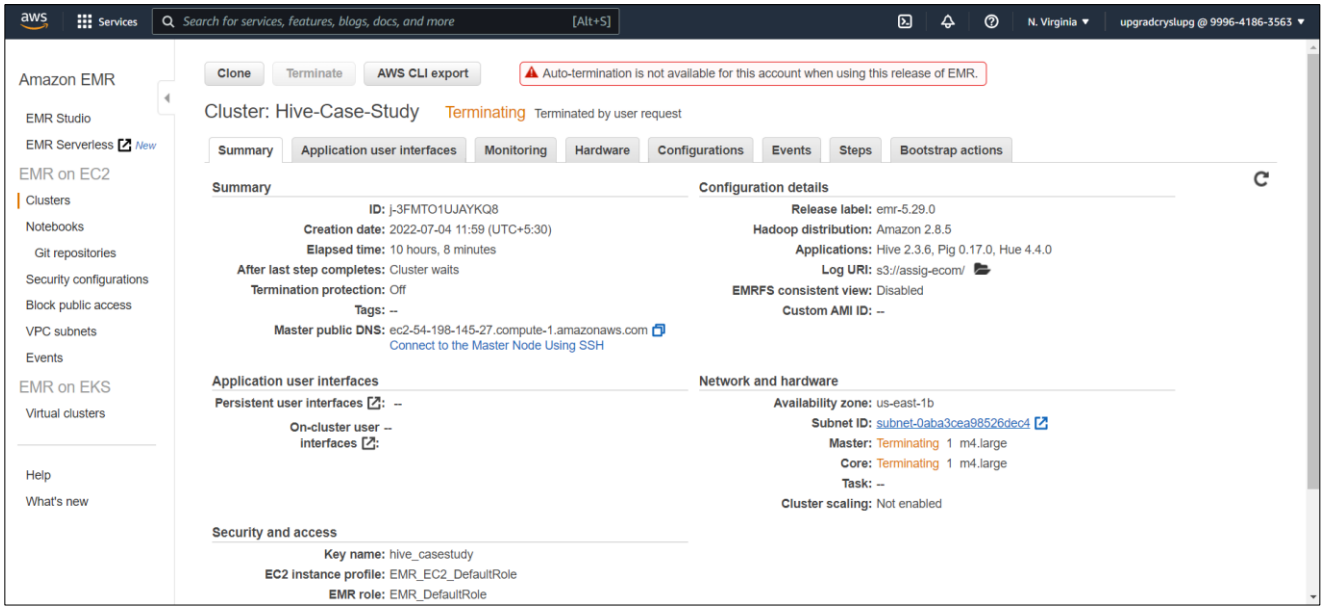


Cleaning up

Dropping the database

```
hive> DROP DATABASE ecommerce CASCADE;
OK
Time taken: 0.419 seconds
```

Terminating the cluster




```
Broadcast message from root@ip-172-31-47-94
        (unknown) at 16:38 ...

The system is going down for power off NOW!
```