HIVE CASE STUDY

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PROBLEM STATEMENT :

With online sales gaining popularity, tech companies are exploring ways to improve their sales by analysing customer behaviour and gaining insights about product trends. Furthermore, the websites make it easier for customers to find the products they require without much scavenging. Needless to say, the role of big data analysts is among the most sought-after job profiles of this decade. Therefore, as part of this assignment, we will be challenging you, as a big data analyst, to extract data and gather insights from a real-life data set of an e-commerce company.

OBJECTIVE :

The goal is to extract the data and gather insights from a real-life data set of an e-commerce company.

DATA :

This project makes use of a public clickstream dataset from a cosmetics business. The clickstream data contains all of the logs of how a user navigated the ecommerce website. It also includes information such as client time spent on each page, amount of clicks made, things added to the cart, customer id, and so on.

The data is available from the link provided:

https://e-commerce-events-ml.s3.amazonaws.com/2019-Oct.csv

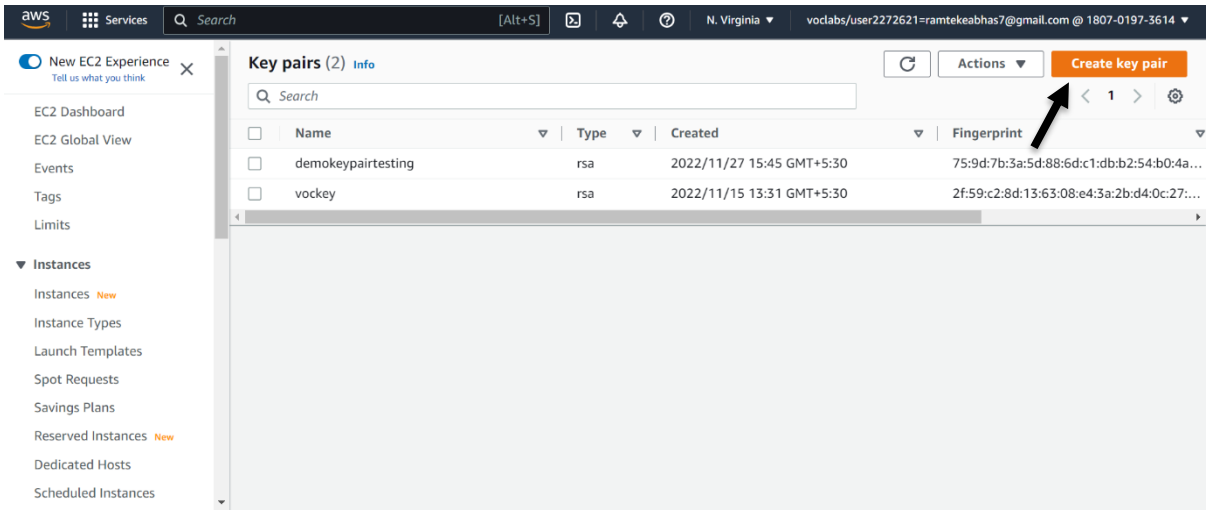
https://e-commerce-events-ml.s3.amazonaws.com/2019-Nov.csv

OVERVIEW OF STEPS :

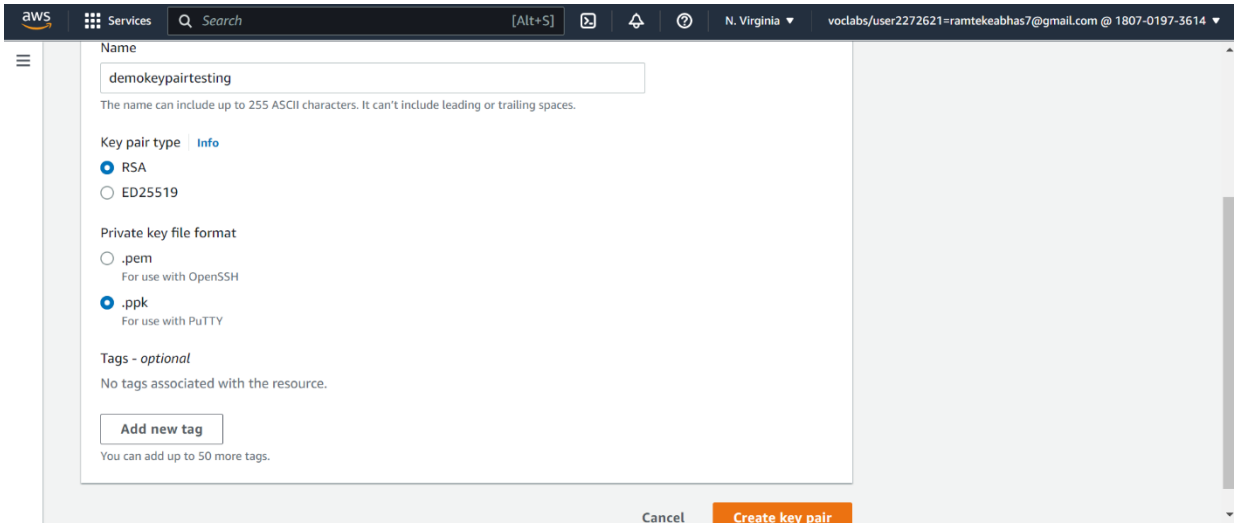
- Copying the data set into the HDFS:
    - Launch an EMR cluster that utilizes the Hive services.
    - Move the data from the S3 bucket into the HDFS.
- Creating the database and launching Hive queries on your EMR cluster:
    - Create the structure of your database,
    - Use optimized techniques to run your queries as efficiently as possible
    - Show the improvement of the performance after using optimization on any single query.
    - Run Hive queries to answer the questions given below.
- Cleaning up
    - Drop your database, and
    - Terminate your cluster

1. Key-pair creation and generation

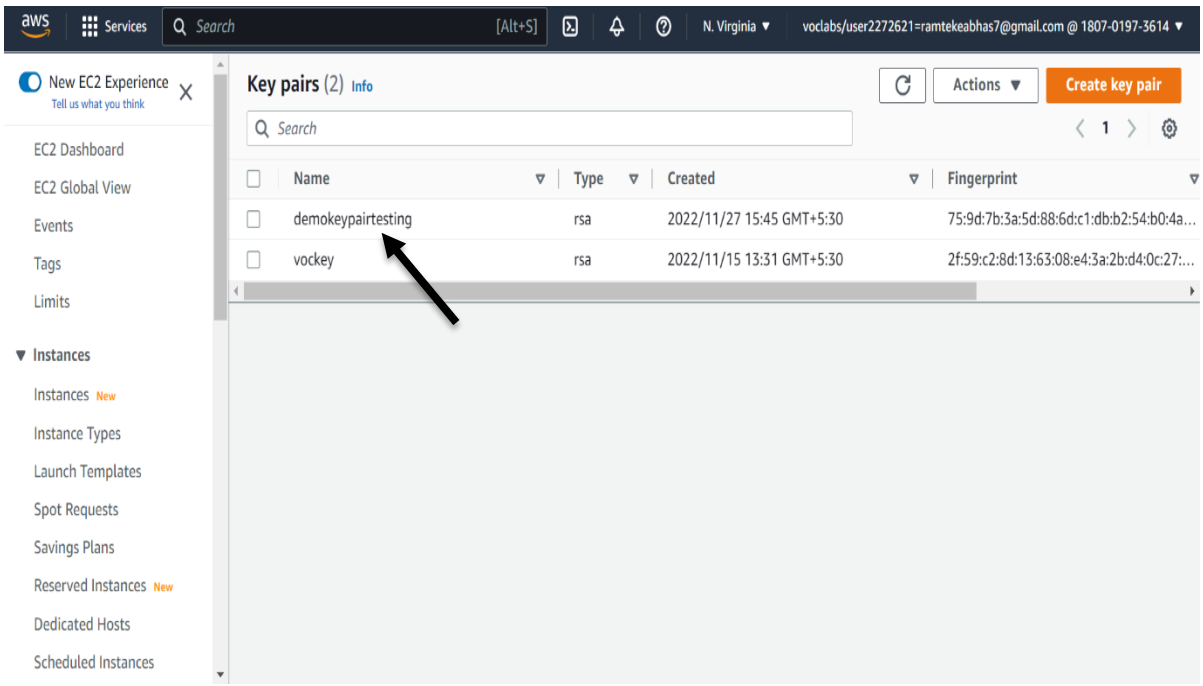
1.1 Click on Create Key pair



1.2 Providing name of Key & format as .ppk further for use with putty.

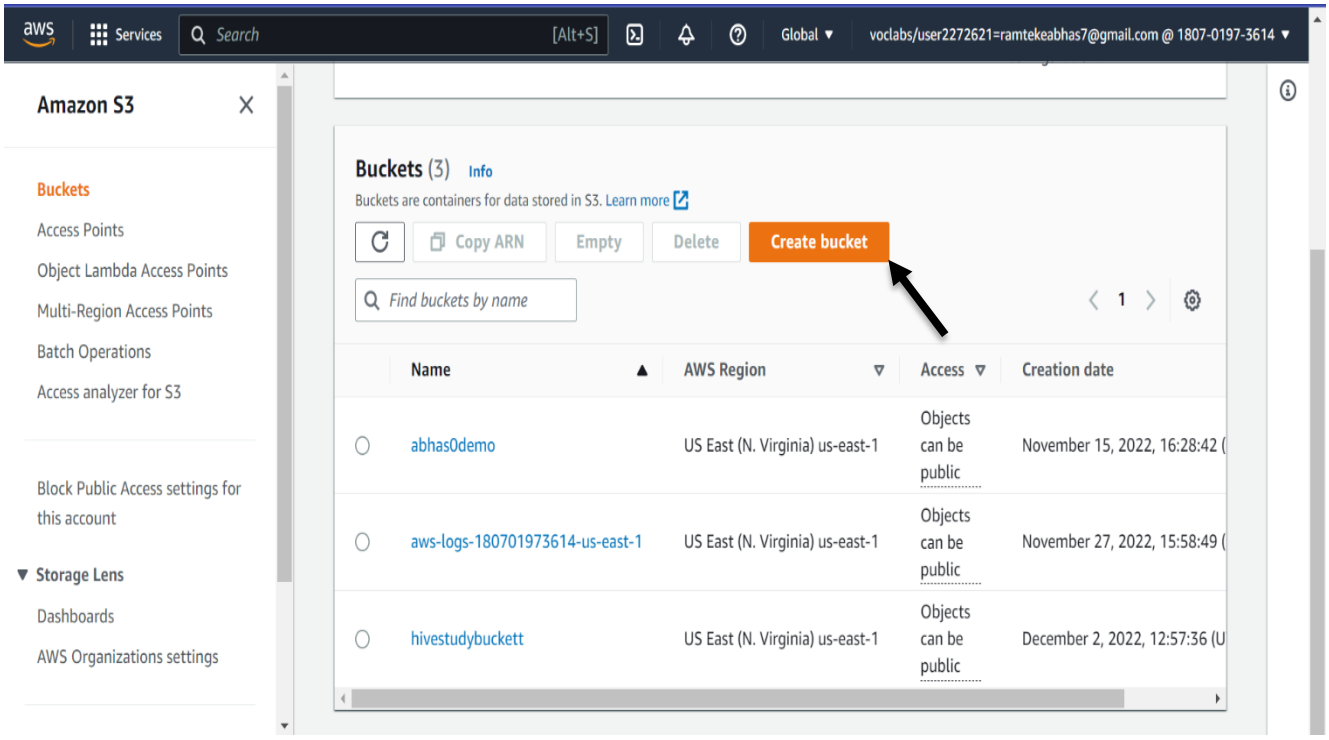


Successfully Key Pair created.
Name given to key-pair as shown below as “demokeypairtesting”.

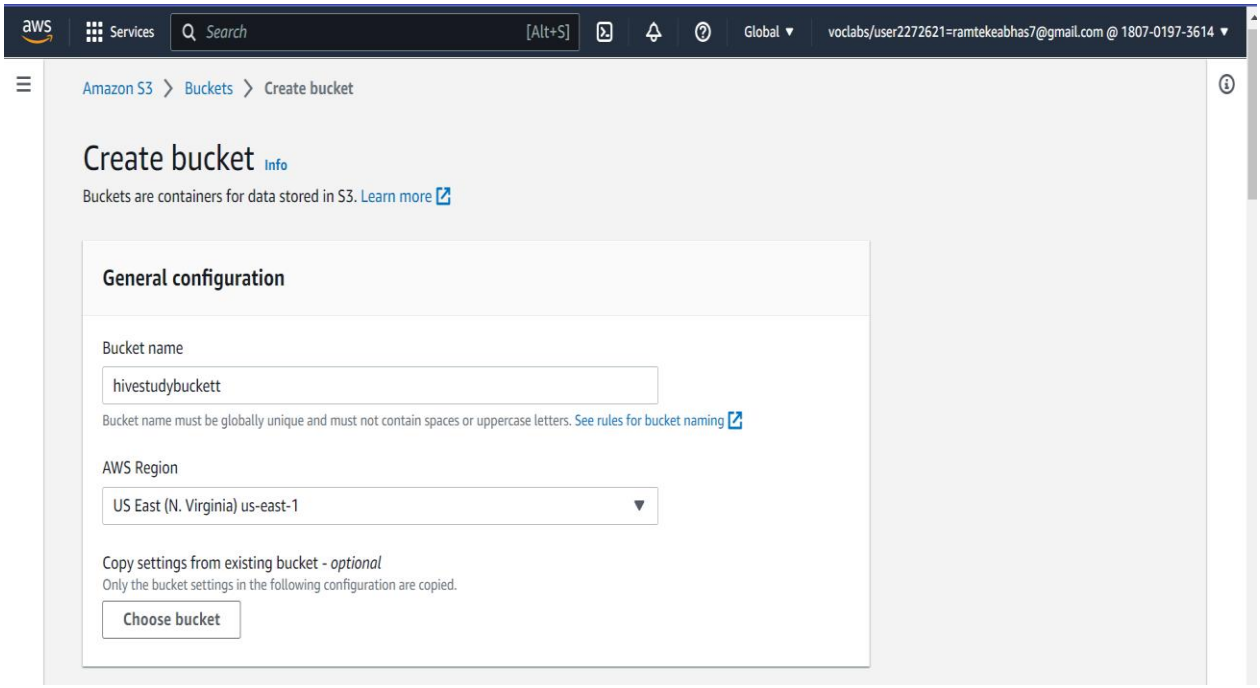


2. Create S3 Bucket to store data files :

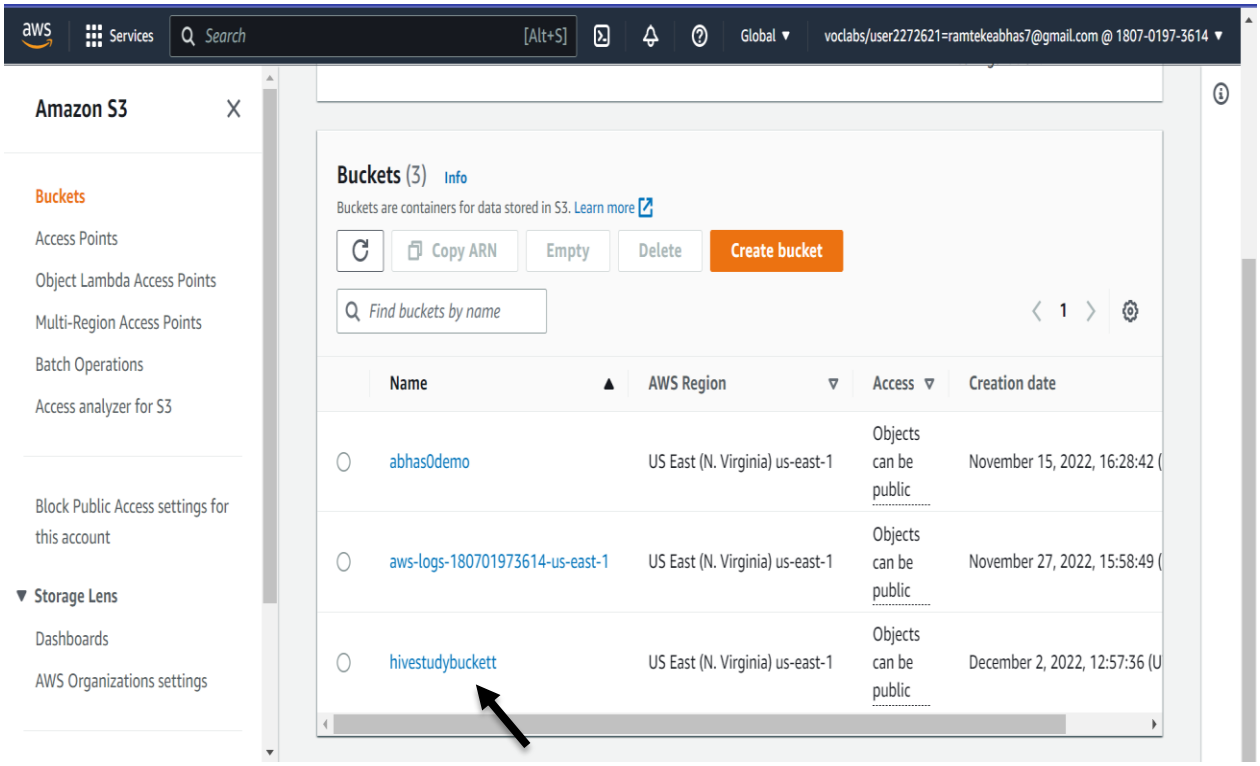
2.1 In search bar as we select s3 and clicked on the same, the below screen comes up in order to create bucket.



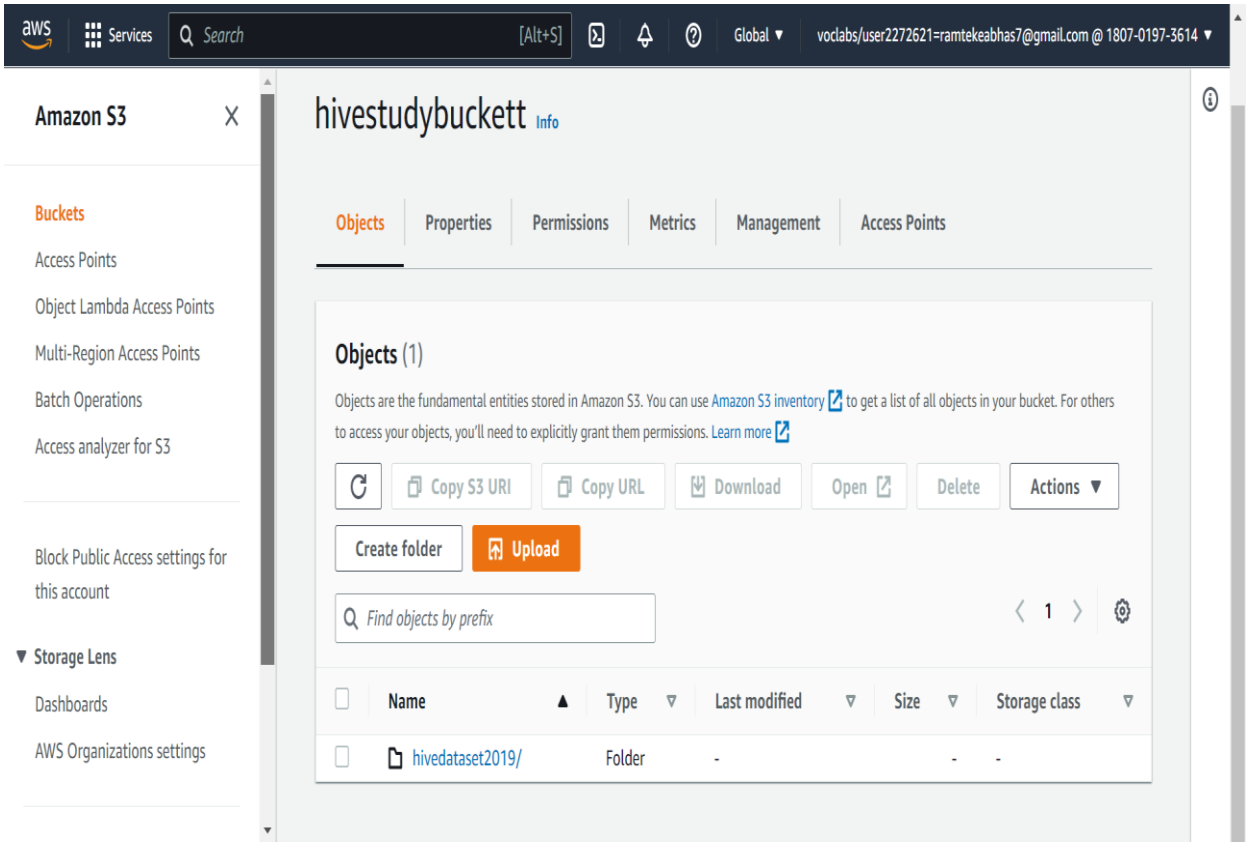
2.2 A unique name was given to create bucket which was not used earlier as instructed. Clicked on block to uncheck “block all public access”.

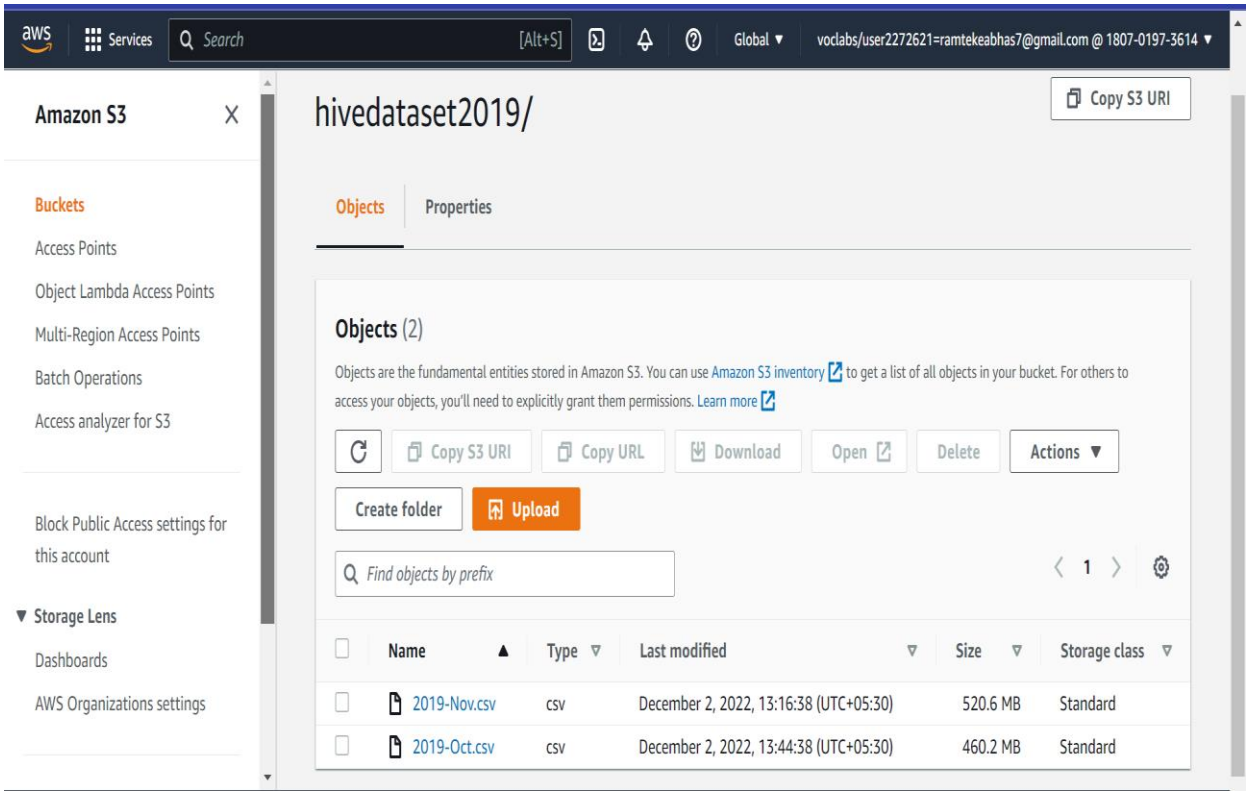


2.3 New Bucket created successfully with name “hivestudybuckett”.



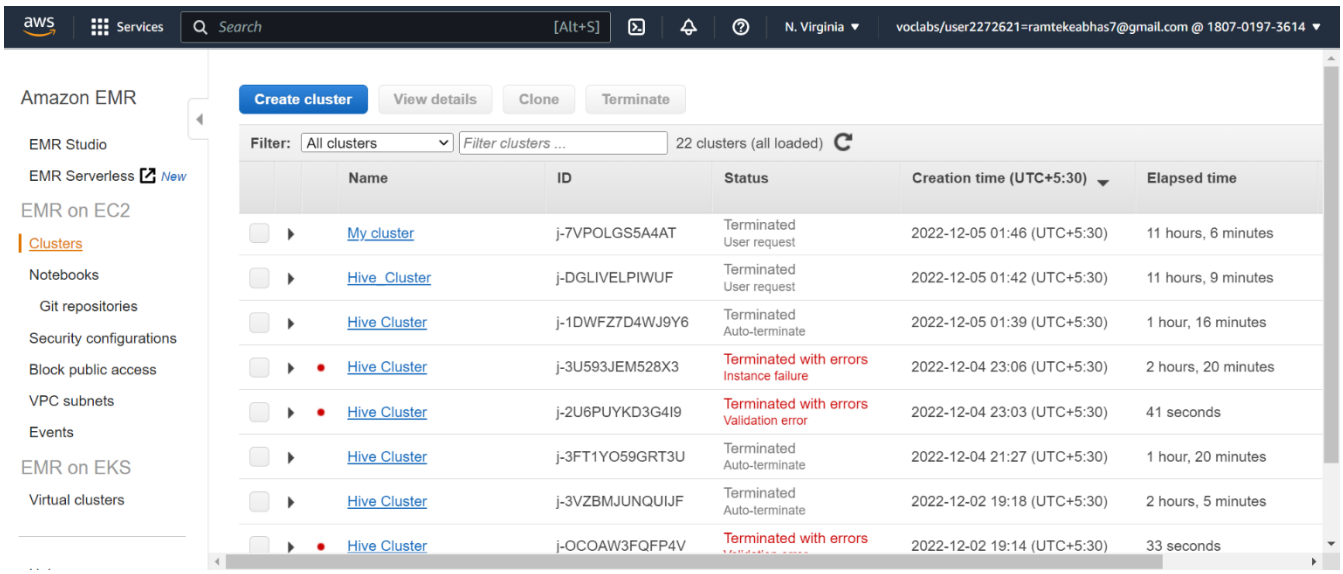
2.4 Firstly, a folder “hivedataset2019” is created under bucket & then uploaded both dataset in the folder.



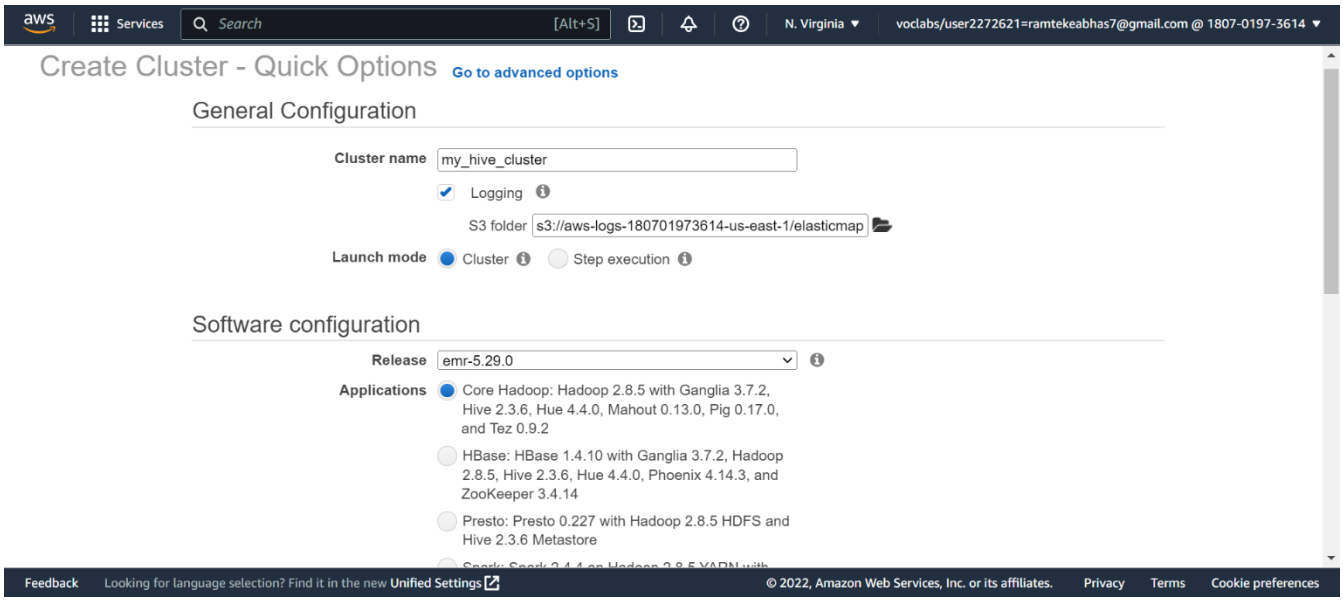


3. EMR CLUSTER CREATION:

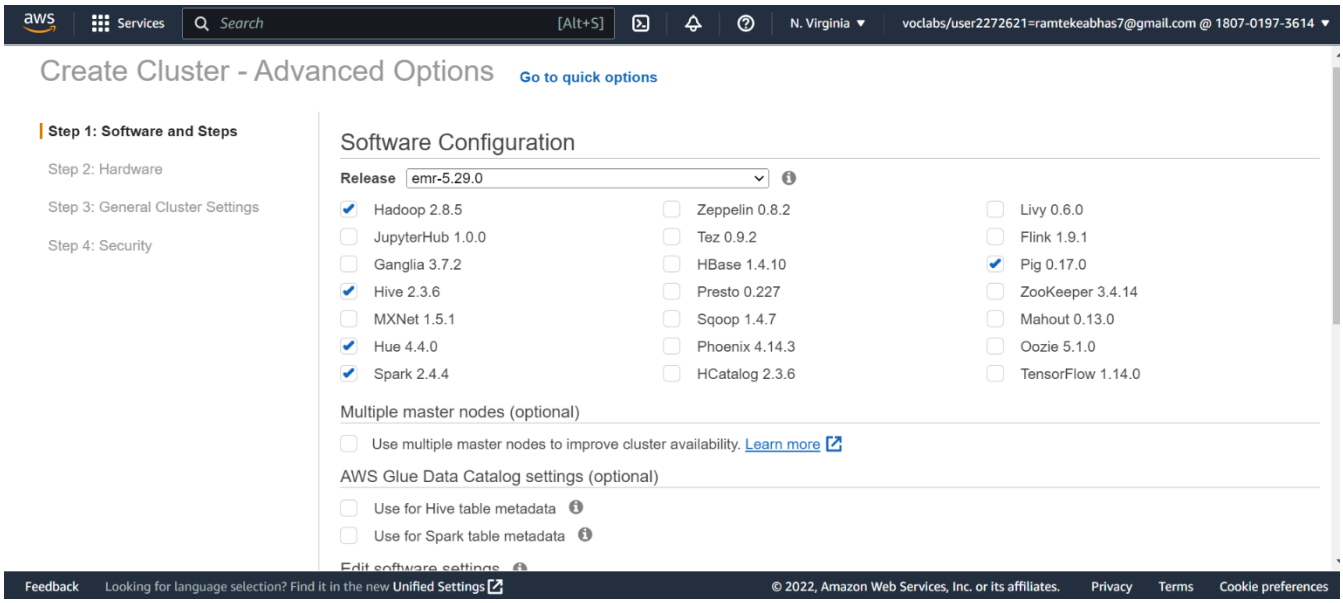
3.1 In Amazon EMR home page click on create cluster button.



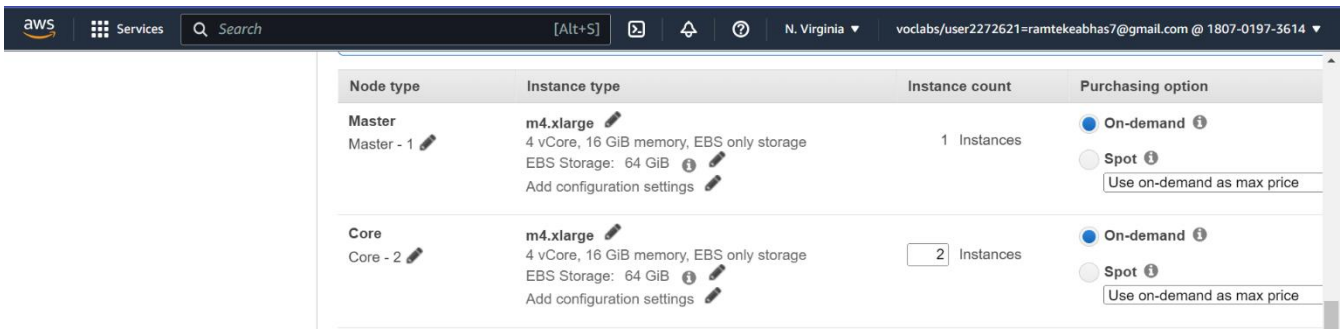
3.2 Then click on 'Go to advanced options'.



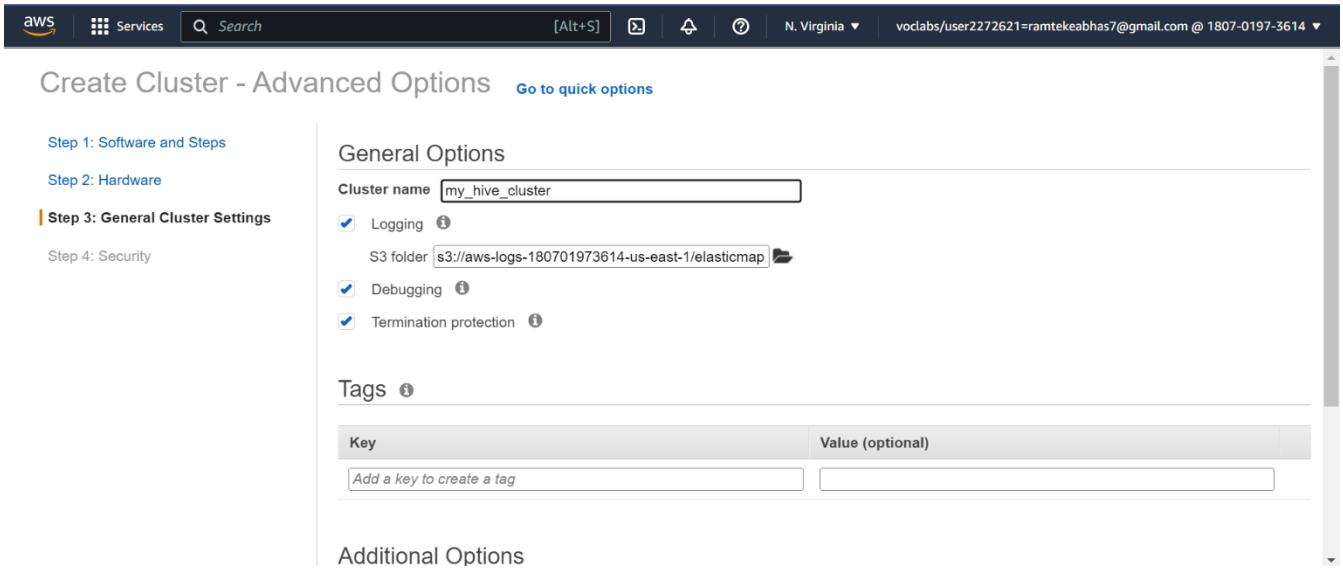
3.3 In software and steps page we have to select all the required services needed to complete this analysis. We are selecting emr-5.29.0 release as per the instruction with required services.



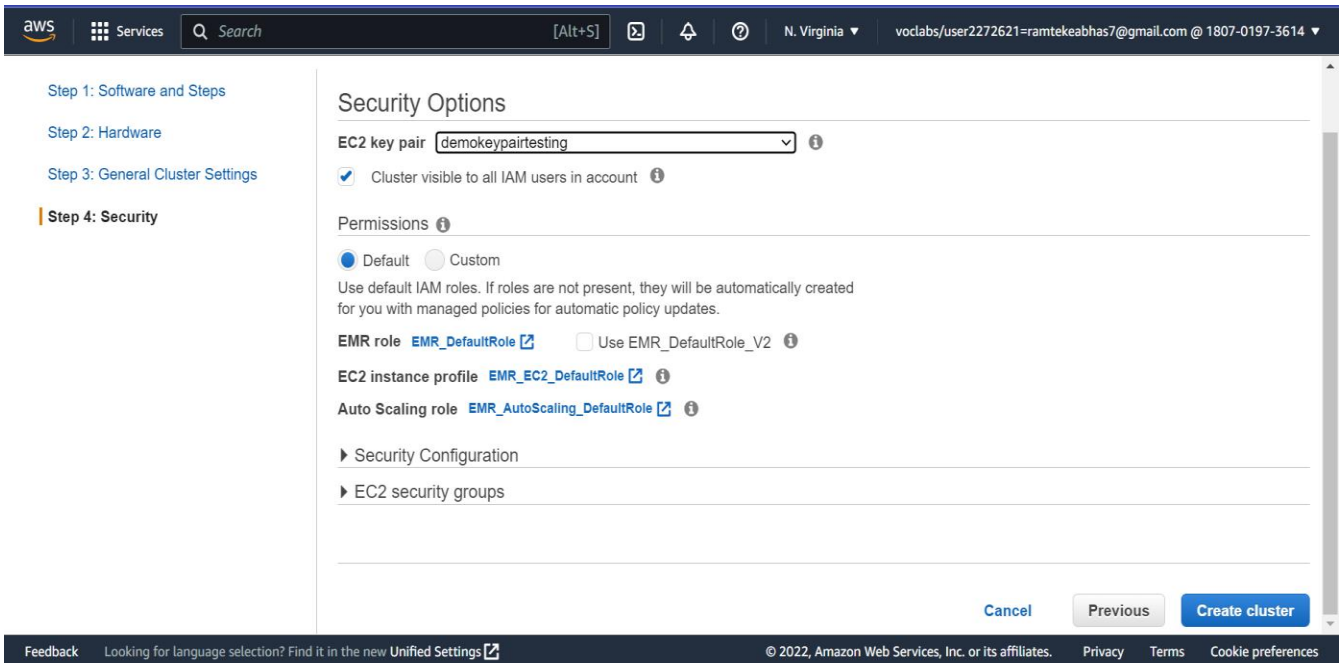
3.4 Then we will proceed to next page, in this step we have to specify the required configuration needed for the cluster. Here we have to select the instance type and instance count for master and core node. We have selected instance type as m4.large and 1 instance count for master and 2 for core node.



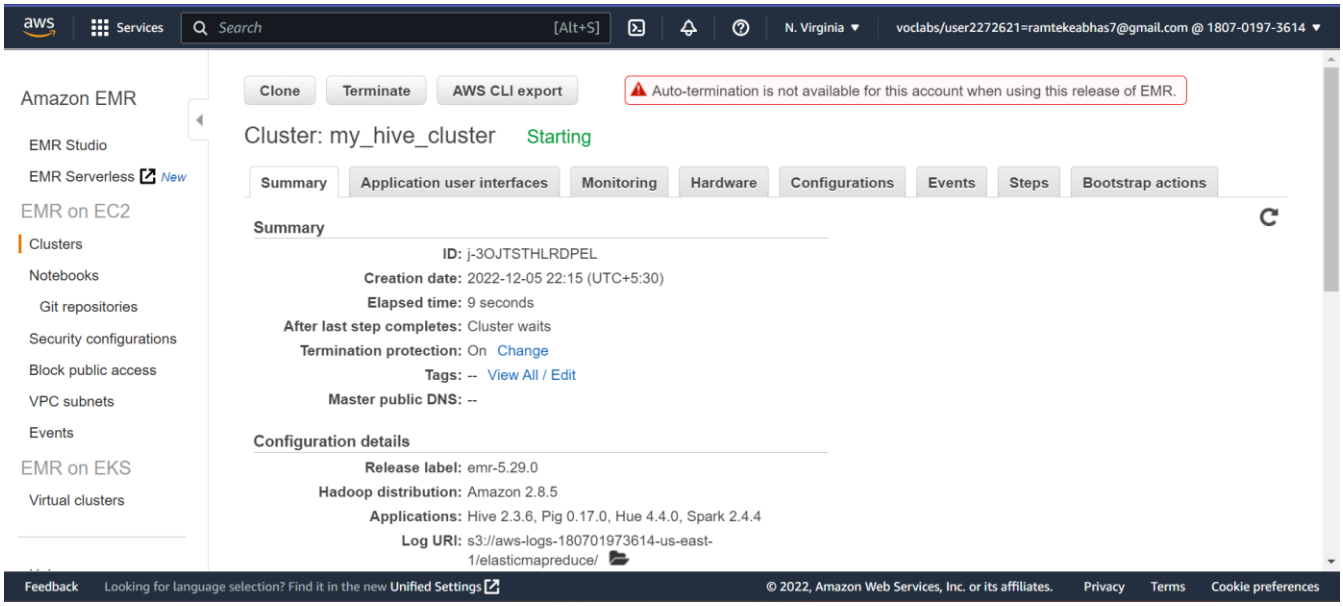
3.5 Here we have given the name of the cluster as “my_hive_cluster”.



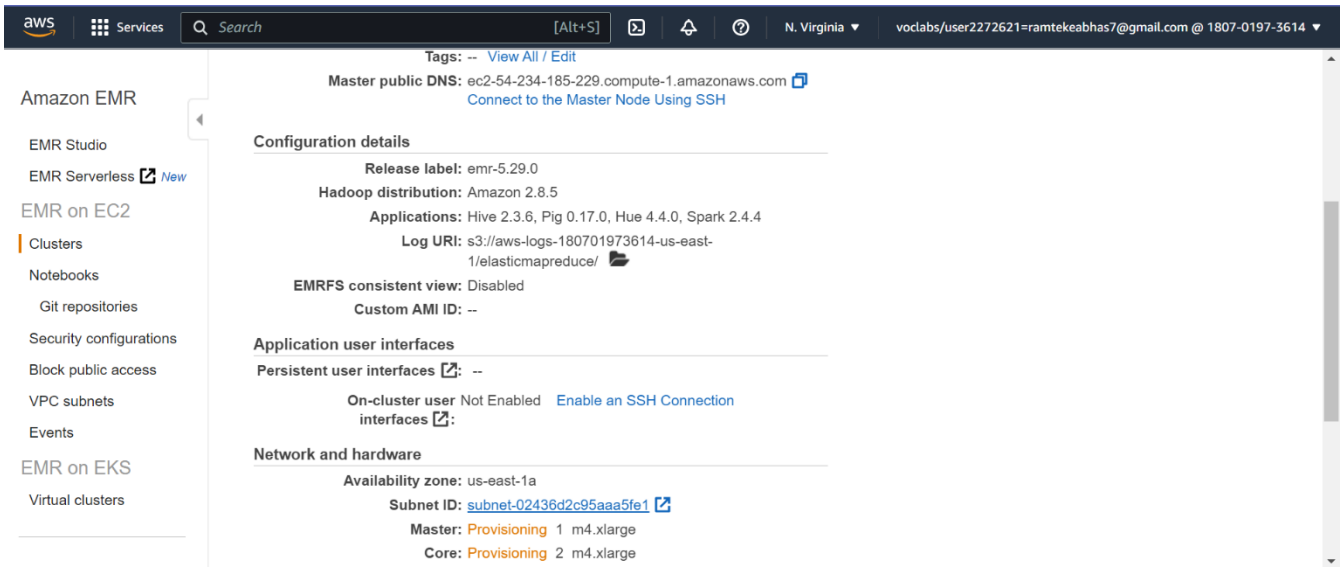
3.6 We have selected the created EC2 key pair named “demokeypairtesting” and then click on the create cluster option.



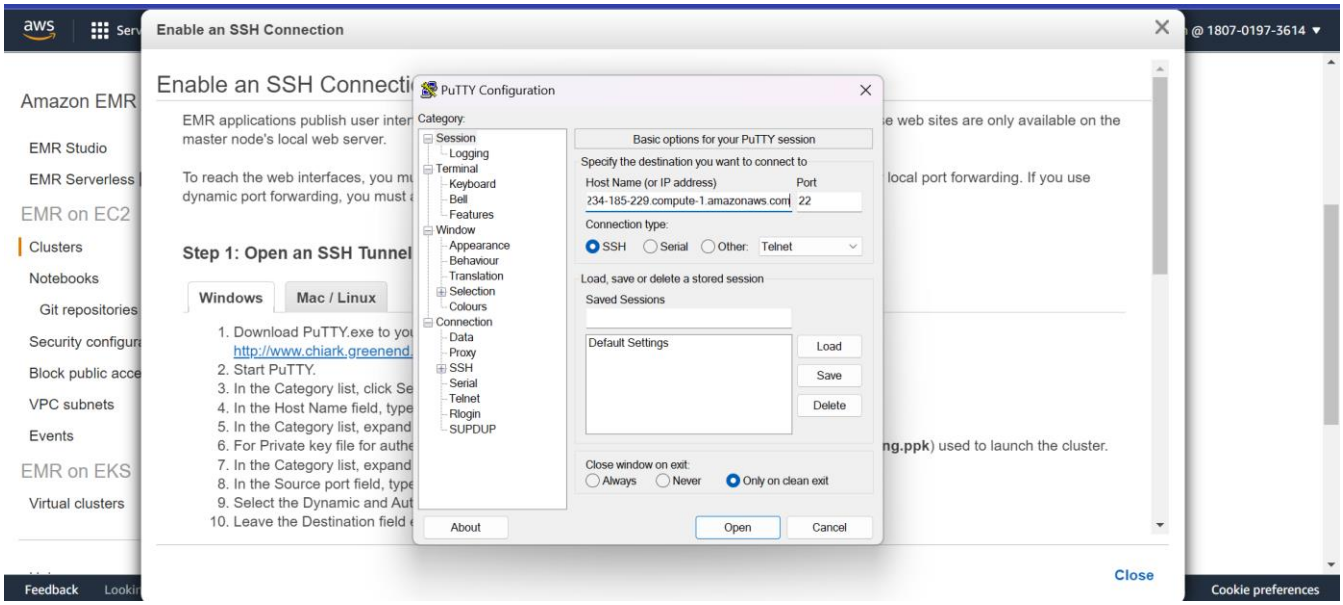
3.7 Then cluster has been created and will be in the “Starting” state and will change to ‘Waiting’ state after sometime.

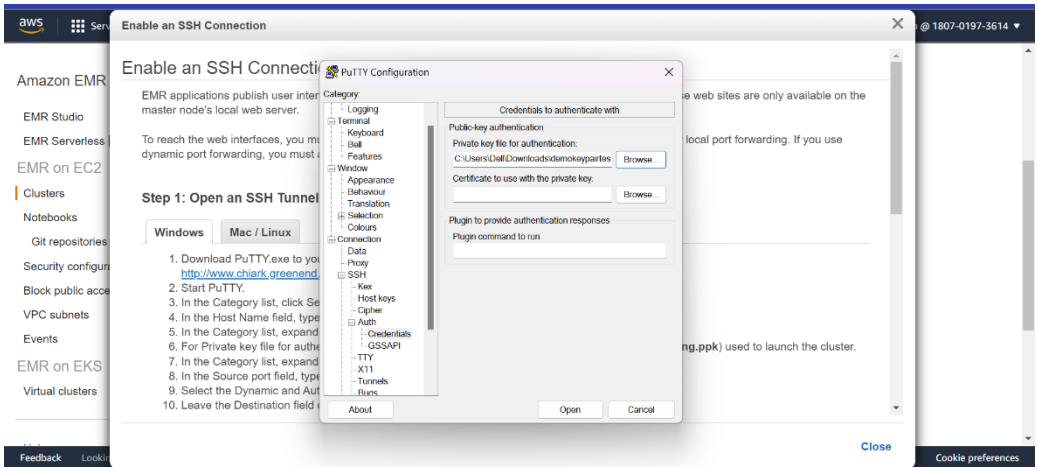


3.8 Now cluster is started & connected to Master Node using SSH connection.

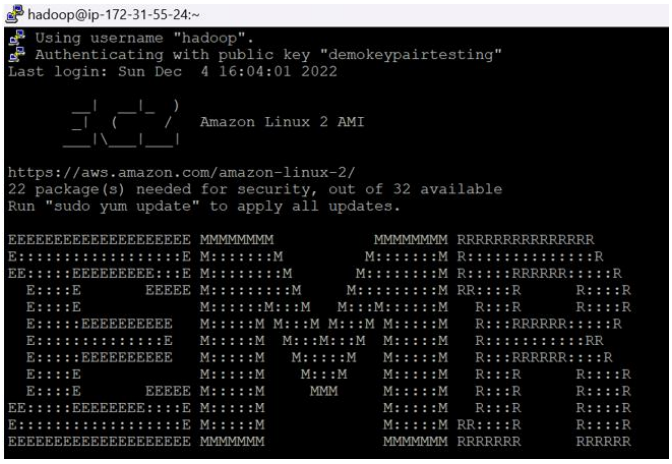


3.9 Once cluster in running state we have to click on Master public DNS(Connect to master stroke using SSH). We have to open the putty configuration and then give the host name (master node DNS) and then browse to the private key file location by clicking on Connection → SSH → Auth → credentials. Selected browse option for selecting key pair.





3.10 Then EMR command line interface will be open and login as Hadoop.



4. Copying the data into HDFS

4.1 To access the public s3bucket.

Command : aws s3 ls hivestudybuckett

Output : PRE hivedataset2019/ (this is folder where both the dataset is uploaded).

```
[hadoop@ip-172-31-55-24 ~]$ aws s3 ls hivestudybuckett
                           PRE hivedataset2019/
```

4.2 Command to check already present directories in HDFS.

Command: hadoop fs -ls /

```
[hadoop@ip-172-31-55-24 ~]$ hadoop fs -ls /
Found 4 items
drwxr-xr-x   - hdfs hdfsadmingroup          0 2022-12-04 16:04 /apps
drwxrwxrwt   - hdfs hdfsadmingroup          0 2022-12-04 16:07 /tmp
drwxr-xr-x   - hdfs hdfsadmingroup          0 2022-12-04 16:04 /user
drwxr-xr-x   - hdfs hdfsadmingroup          0 2022-12-04 16:04 /var
```

4.3 Checking the available directory.

Command: hadoop fs -ls /user/

```
[hadoop@ip-172-31-55-24 ~]$ hadoop fs -mkdir /user/hive/hive_case_study_abhas
[hadoop@ip-172-31-55-24 ~]$ hadoop fs -ls /user/
Found 6 items
drwxrwxrwx   - hadoop hdfsadmingroup          0 2022-12-04 16:04 /user/hadoop
drwxr-xr-x   - mapred mapred                  0 2022-12-04 16:04 /user/history
drwxrwxrwx   - hdfs   hdfsadmingroup          0 2022-12-04 16:40 /user/hive
drwxrwxrwx   - hue    hue                     0 2022-12-04 16:04 /user/hue
drwxrwxrwx   - oozie  oozie                   0 2022-12-04 16:06 /user/oozie
drwxrwxrwx   - root   hdfsadmingroup          0 2022-12-04 16:04 /user/root
[hadoop@ip-172-31-55-24 ~]$
```

4.4 Creating a directory in HDFS.

Command: hadoop fs -mkdir /user/hive/hive_case_study_abhas

4.5 Load the s3 public data set to created directory “hive_case_study_abhas” in hadoop .

Command: hadoop distcp s3://hivestudybuckett/hivedataset2019/2019-Oct.csv /user/new_hive/2019-Oct.csv

```
[hadoop@ip-172-31-53-223 ~]$ hadoop distcp s3://hivestudybuckett/hivedataset2019/2019-Oct.csv  /user
/new_hive/2019-Oct.csv
22/12/04 18:00:45 INFO tools.OptionsParser: parseChunkSize: blocksperchunk false
22/12/04 18:00:47 INFO tools.DistCp: Input Options: DistCpOptions{atomicCommit=false, syncFolder=fal
se, deleteMissing=false, ignoreFailures=false, overwrite=false, append=false, useDiff=false, useRdif
f=false, fromSnapshot=null, toSnapshot=null, skipCRC=false, blocking=true, numListstatusThreads=0, m
axMaps=20, mapBandwidth=100, sslConfigurationFile='null', copyStrategy='uniformsize', preserveStatus
=[], preserveRawXattrs=false, atomicWorkPath=null, logPath=null, sourceFileListing=null, sourcePaths
=[s3://hivestudybuckett/hivedataset2019/2019-Oct.csv], targetPath=/user/new_hive/2019-Oct.csv, targe
tPathExists=false, filtersFile='null', blocksPerChunk=0, copyBufferSize=8192, verboseLog=false}
22/12/04 18:00:47 INFO client.RMProxy: Connecting to ResourceManager at ip-172-31-53-223.ec2.interna
l/172.31.53.223:8032
22/12/04 18:00:47 INFO client.AHSProxy: Connecting to Application History server at ip-172-31-53-223
.ec2.internal/172.31.53.223:10200
22/12/04 18:00:54 INFO tools.SimpleCopyListing: Paths (files+dirs) cnt = 1; dirCnt = 0
22/12/04 18:00:54 INFO tools.SimpleCopyListing: Build file listing completed.
22/12/04 18:00:54 INFO Configuration.deprecation: io.sort.mb is deprecated. Instead, use mapreduce.t
ask.io.sort.mb
22/12/04 18:00:54 INFO Configuration.deprecation: io.sort.factor is deprecated. Instead, use mapredu
ce.task.io.sort.factor
22/12/04 18:00:54 INFO tools.DistCp: Number of paths in the copy list: 1
22/12/04 18:00:54 INFO tools.DistCp: Number of paths in the copy list: 1
22/12/04 18:00:54 INFO client.RMProxy: Connecting to ResourceManager at ip-172-31-53-223.ec2.interna
l/172.31.53.223:8032
22/12/04 18:00:54 INFO client.AHSProxy: Connecting to Application History server at ip-172-31-53-223
.ec2.internal/172.31.53.223:10200
22/12/04 18:00:55 INFO mapreduce.JobSubmitter: number of splits:1
22/12/04 18:00:55 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_1670175863837_0001
22/12/04 18:00:55 INFO conf.Configuration: resource-types.xml not found
22/12/04 18:00:55 INFO resource.ResourceUtils: Unable to find 'resource-types.xml'.
22/12/04 18:00:55 INFO resource.ResourceUtils: Adding resource type - name = memory-mb, units = Mi,
type = COUNTABLE
22/12/04 18:00:55 INFO resource.ResourceUtils: Adding resource type - name = vcores, units = , type
= COUNTABLE
22/12/04 18:00:56 INFO impl.YarnClientImpl: Submitted application application_1670175863837_0001
22/12/04 18:00:56 INFO mapreduce.Job: The url to track the job: http://ip-172-31-53-223.ec2.internal
:20888/proxy/application_1670175863837_0001/
22/12/04 18:00:56 INFO tools.DistCp: DistCp job-id: job_1670175863837_0001
22/12/04 18:00:56 INFO mapreduce.Job: Running job: job_1670175863837_0001
22/12/04 18:01:07 INFO mapreduce.Job: Job job_1670175863837_0001 running in uber mode : false
22/12/04 18:01:07 INFO mapreduce.Job:  map 0% reduce 0%
22/12/04 18:01:25 INFO mapreduce.Job:  map 100% reduce 0%
22/12/04 18:01:29 INFO mapreduce.Job: Job job_1670175863837_0001 completed successfully
22/12/04 18:01:29 INFO mapreduce.Job: Counters: 38
```

```
                Bytes Read=250
        File Output Format Counters
                Bytes Written=0
        DistCp Counters
                Bytes Copied=482542278
                Bytes Expected=482542278
                Files Copied=1
```

Command: hadoop distcp s3://hivestudybuckett/hivedataset2019/2019-Nov.csv /user/new_hive/2019-Nov.csv

```
[hadoop@ip-172-31-53-223 ~]$ hadoop distcp s3://hivestudybuckett/hivedataset2019/2019-Nov.csv  /user
/new_hive/2019-Nov.csv
22/12/04 18:04:09 INFO tools.OptionsParser: parseChunkSize: blocksperchunk false
22/12/04 18:04:11 INFO tools.DistCp: Input Options: DistCpOptions{atomicCommit=false, syncFolder=fal
se, deleteMissing=false, ignoreFailures=false, overwrite=false, append=false, useDiff=false, useRdif
f=false, fromSnapshot=null, toSnapshot=null, skipCRC=false, blocking=true, numListstatusThreads=0, m
axMaps=20, mapBandwidth=100, sslConfigurationFile='null', copyStrategy='uniformsize', preserveStatus
=[], preserveRawXattrs=false, atomicWorkPath=null, logPath=null, sourceFileListing=null, sourcePaths
=[s3://hivestudybuckett/hivedataset2019/2019-Nov.csv], targetPath=/user/new_hive/2019-Nov.csv, targe
tPathExists=false, filtersFile='null', blocksPerChunk=0, copyBufferSize=8192, verboseLog=false}
22/12/04 18:04:11 INFO client.RMProxy: Connecting to ResourceManager at ip-172-31-53-223.ec2.interna
l/172.31.53.223:8032
22/12/04 18:04:11 INFO client.AHSProxy: Connecting to Application History server at ip-172-31-53-223
.ec2.internal/172.31.53.223:10200
22/12/04 18:04:16 INFO tools.SimpleCopyListing: Paths (files+dirs) cnt = 1; dirCnt = 0
22/12/04 18:04:16 INFO tools.SimpleCopyListing: Build file listing completed.
22/12/04 18:04:16 INFO Configuration.deprecation: io.sort.mb is deprecated. Instead, use mapreduce.t
ask.io.sort.mb
22/12/04 18:04:16 INFO Configuration.deprecation: io.sort.factor is deprecated. Instead, use mapredu
ce.task.io.sort.factor
22/12/04 18:04:16 INFO tools.DistCp: Number of paths in the copy list: 1
22/12/04 18:04:16 INFO tools.DistCp: Number of paths in the copy list: 1
```

```
ce.task.io.sort.factor
22/12/04 18:04:16 INFO tools.DistCp: Number of paths in the copy list: 1
22/12/04 18:04:16 INFO tools.DistCp: Number of paths in the copy list: 1
22/12/04 18:04:16 INFO client.RMProxy: Connecting to ResourceManager at ip-172-31-53-223.ec2.interna
l/172.31.53.223:8032
22/12/04 18:04:16 INFO client.AHSProxy: Connecting to Application History server at ip-172-31-53-223
.ec2.internal/172.31.53.223:10200
22/12/04 18:04:17 INFO mapreduce.JobSubmitter: number of splits:1
22/12/04 18:04:17 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_1670175863837_0002
22/12/04 18:04:18 INFO conf.Configuration: resource-types.xml not found
22/12/04 18:04:18 INFO resource.ResourceUtils: Unable to find 'resource-types.xml'.
22/12/04 18:04:18 INFO resource.ResourceUtils: Adding resource type - name = memory-mb, units = Mi,
type = COUNTABLE
22/12/04 18:04:18 INFO resource.ResourceUtils: Adding resource type - name = vcores, units = , type
= COUNTABLE
22/12/04 18:04:18 INFO impl.YarnClientImpl: Submitted application application_1670175863837_0002
22/12/04 18:04:18 INFO mapreduce.Job: The url to track the job: http://ip-172-31-53-223.ec2.internal
:20888/proxy/application_1670175863837_0002/
22/12/04 18:04:18 INFO tools.DistCp: DistCp job-id: job_1670175863837_0002
22/12/04 18:04:18 INFO mapreduce.Job: Running job: job_1670175863837_0002
22/12/04 18:04:26 INFO mapreduce.Job: Job job_1670175863837_0002 running in uber mode : false
22/12/04 18:04:26 INFO mapreduce.Job:  map 0% reduce 0%
22/12/04 18:04:44 INFO mapreduce.Job:  map 100% reduce 0%
22/12/04 18:04:48 INFO mapreduce.Job: Job job_1670175863837_0002 completed successfully
22/12/04 18:04:48 INFO mapreduce.Job: Counters: 38
```

```
22/12/04 18:04:48 INFO mapreduce.Job: Counters: 38
        File System Counters
                FILE: Number of bytes read=0
                FILE: Number of bytes written=224554
                FILE: Number of read operations=0
                FILE: Number of large read operations=0
                FILE: Number of write operations=0
                HDFS: Number of bytes read=385
                HDFS: Number of bytes written=545839412
                HDFS: Number of read operations=11
                HDFS: Number of large read operations=0
                HDFS: Number of write operations=5
                S3: Number of bytes read=545839412
                S3: Number of bytes written=0
                S3: Number of read operations=0
                S3: Number of large read operations=0
                S3: Number of write operations=0
        Job Counters
                Launched map tasks=1
                Other local map tasks=1
                Total time spent by all maps in occupied slots (ms)=646624
                Total time spent by all reduces in occupied slots (ms)=0
                Total time spent by all map tasks (ms)=20207
                Total vcore-milliseconds taken by all map tasks=20207
                Total megabyte-milliseconds taken by all map tasks=20691968
        Map-Reduce Framework
                Map input records=1
                Map output records=0
                Input split bytes=135
                Spilled Records=0
                Failed Shuffles=0
                Merged Map outputs=0
                GC time elapsed (ms)=359
                CPU time spent (ms)=21250
                Physical memory (bytes) snapshot=618848256
```

```
                Physical memory (bytes) snapshot=618848256
                Virtual memory (bytes) snapshot=3334119424
                Total committed heap usage (bytes)=500695040
        File Input Format Counters
                Bytes Read=250
        File Output Format Counters
                Bytes Written=0
        DistCp Counters
                Bytes Copied=545839412
                Bytes Expected=545839412
                Files Copied=1
```

5. Hive query > hive

5.1 create database ABDB;

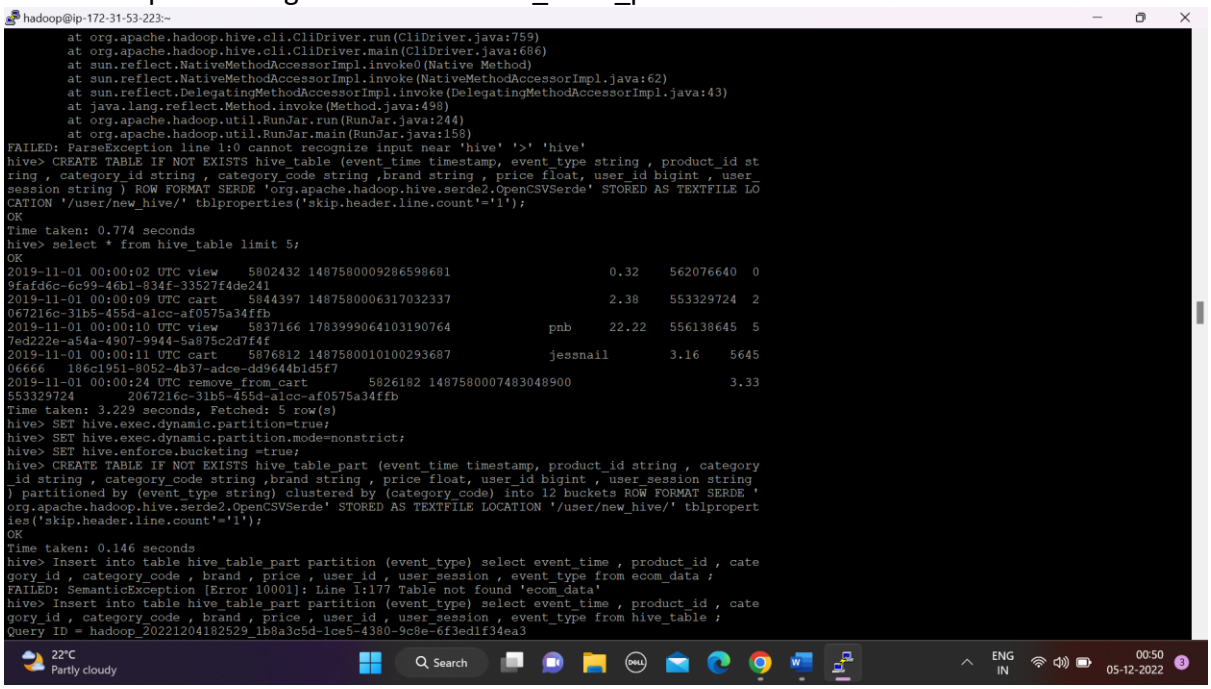
5.2 use ABDB;

5.3 Create table hive_table;

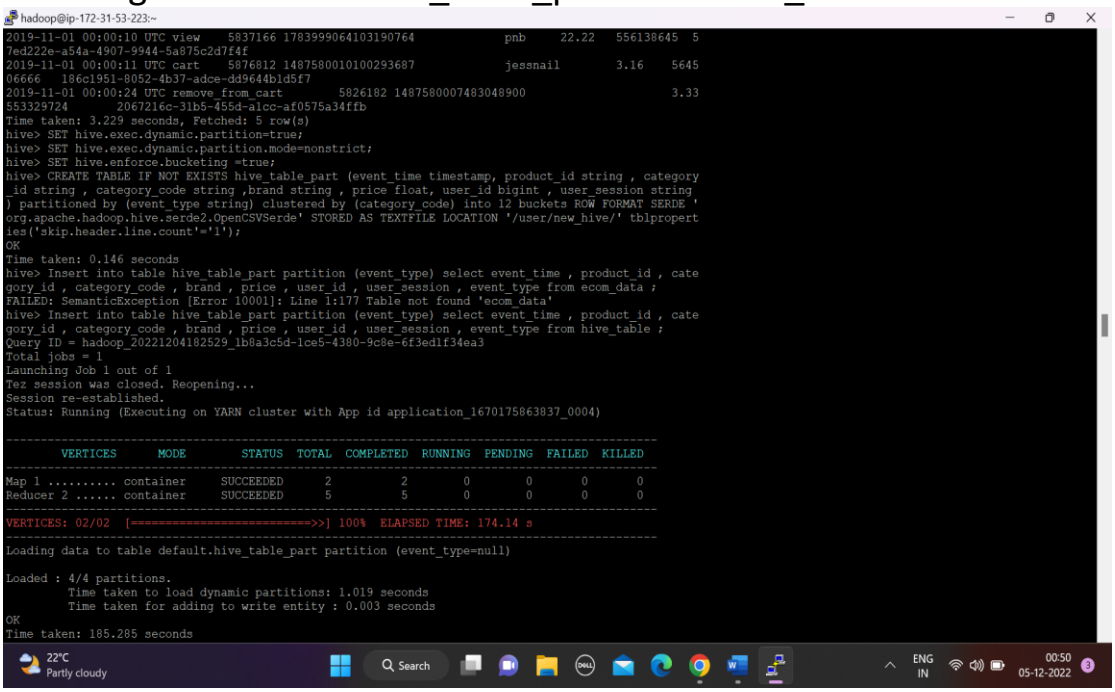
5.4 Once base table is created we need to go for optimizing the table for quick query result.
Optimised table name is hive_table_part.

```
hive> SET hive.exec.dynamic.partition=true;
hive> SET hive.exec.dynamic.partition.mode=nonstrict;
hive> SET hive.enforce.bucketing =true;
hive>
```

5.5 Created partitioning table named hive_table_part.



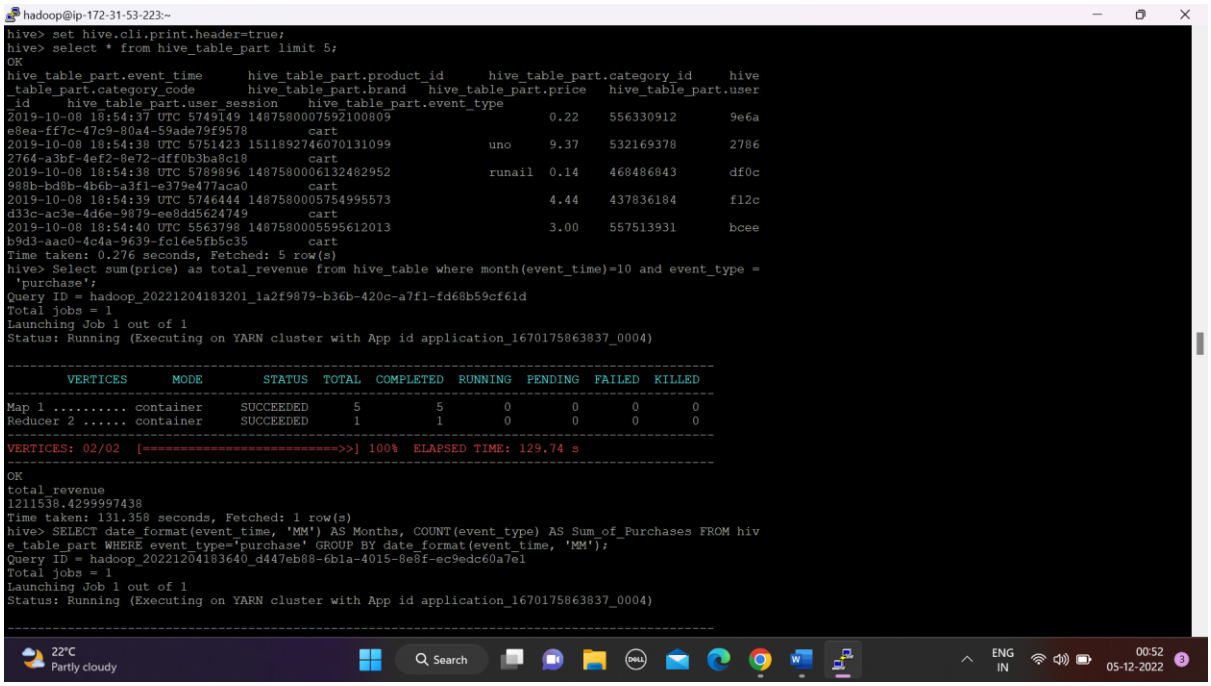
5.5 Inserting records into hive_table_part from hive_table.



5.6 Print the column headers for the queries.

Command:

Set hive.cli.print.header=true;



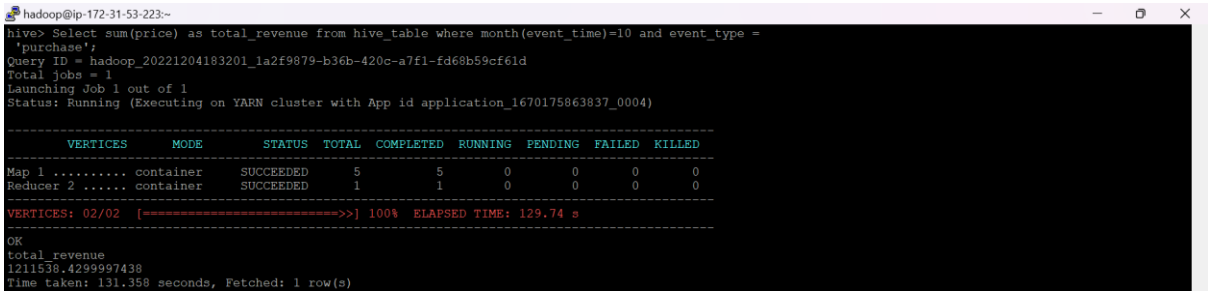
Following are the screen shots of the query outputs:

Question 1:

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

Ans 1- Total revenue generated with the help of base table created as in below image.

Query - Select sum(price) as total_revenue from hive_table where month(event_time)=10 and event_type = 'purchase' ;



Ans2 - Total revenue generated with the help of partition table created as in below image.

Select sum(price) as total_revenue from hive_table_part where month(event_time)=10 and event_type = 'purchase' ;

```
hive> select sum(price) as total_revenue from hive_table_part where month(event_time)=10 and event_type = 'purchase' ;
Query ID = hadoop_20221207190213_ddb111bc-144a-4fec-9e10-bf9dbe0dcda7
Total jobs = 1
Launching Job 1 out of 1
Status: Running (Executing on YARN cluster with App id application_1670438307348_0004)

--------------------------------------------------------------------------------
        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: 9.07 s
--------------------------------------------------------------------------------
OK
total_revenue
1211525.179999663
Time taken: 9.958 seconds, Fetched: 1 row(s)
hive>
```

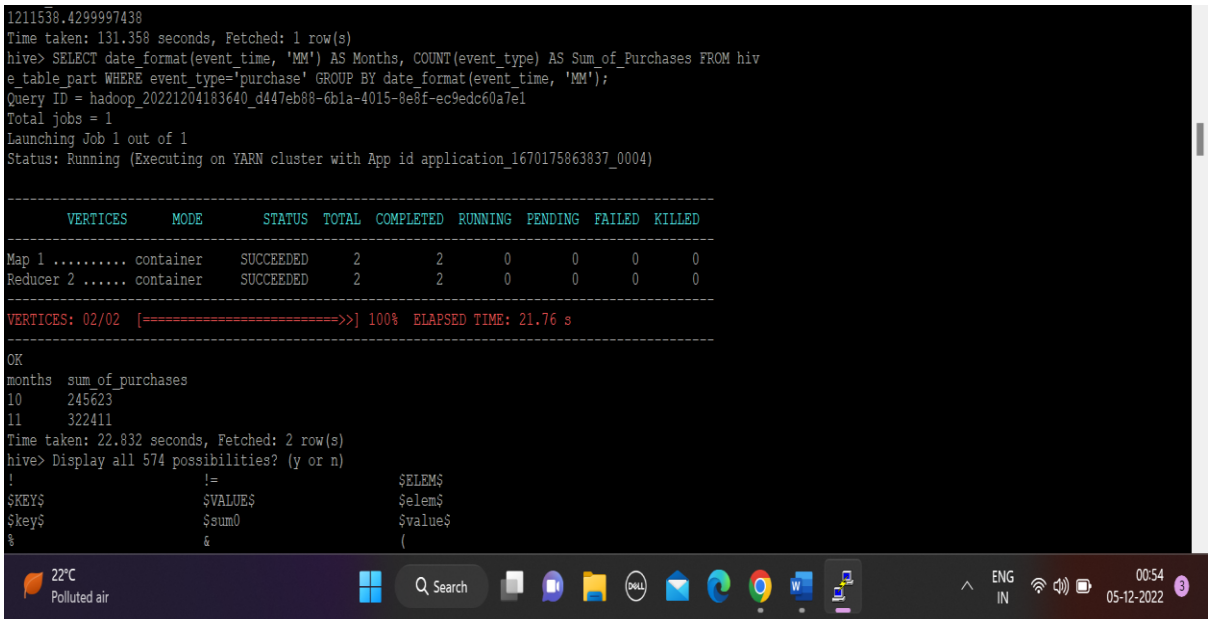
Inference:-

The total revenue made by the ECOM company in the month of October is 1211538/- & We attempted to obtain the result by using both the base table hive_table and the optimised table hive_table_part. We discovered that the Bucketed table improves query time by around 120 seconds when compared to the base table. Hence using hive_table_part partitioning table for further query for optimization.

Question 2)

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

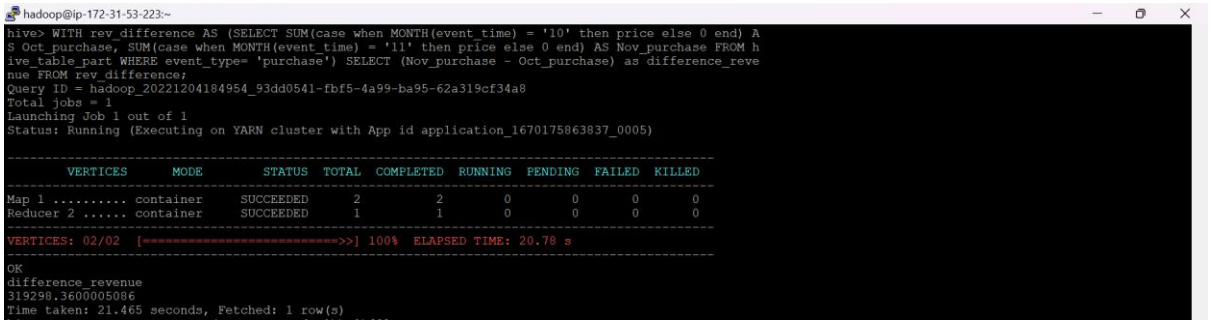
Query 2:
select date_format(event_time, 'MM') as month, count(event_type) as Sum_of_purchases from hive_table_part where event_type='purchase' group by date_format(event_time, 'MM');



Inference:
More purchases are done in the month of November compared to October, with a difference of 76788/-

Que 3:
Write a query to find the change in revenue generated due to purchases from October to November.

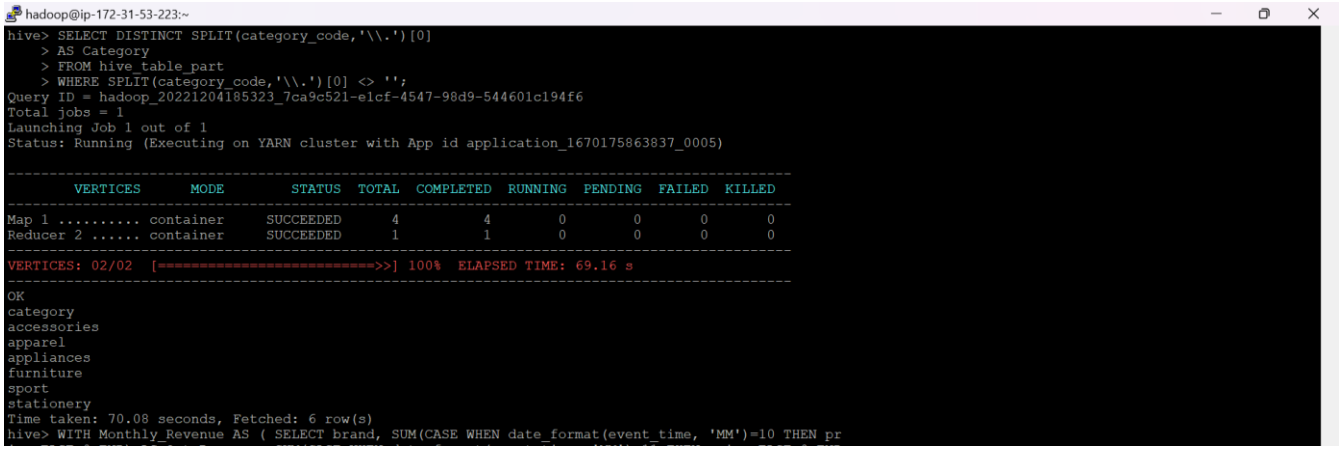
Query- WITH rev_difference AS
(SELECT SUM(case when MONTH(event_time) = '10' then price else 0 end) AS Oct_purchase, SUM(case when MONTH(event_time) = '11' then price else 0 end) AS Nov_purchase FROM hive_table_part
WHERE event_type= 'purchase') SELECT (Nov_purchase - Oct_purchase) as difference_revenue FROM rev_difference ;



Inference:
The difference in revenue between October and November is 319298/-. The month of November is more profitable.

Que 4:
Find distinct categories of products. Categories with null category code can be ignored.

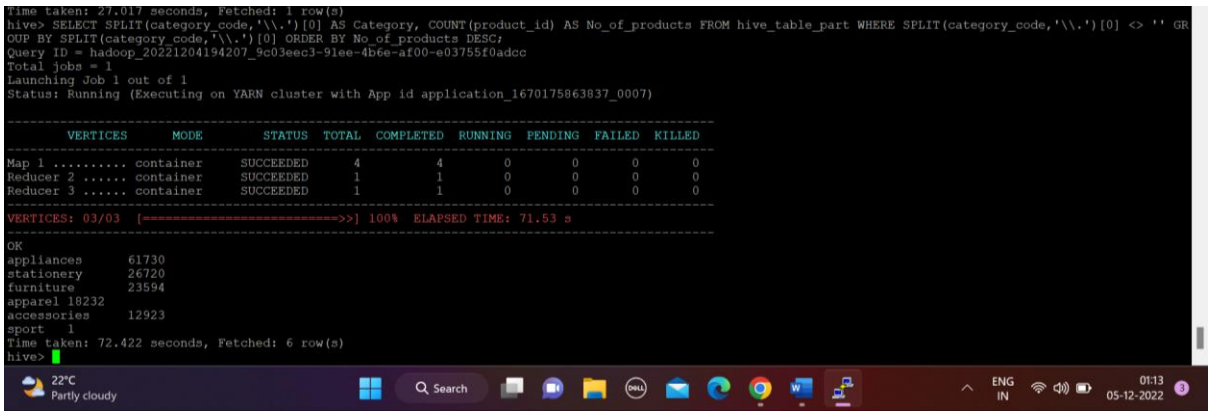
Query- SELECT DISTINCT SPLIT(category_code,'\\.')[0] AS Category FROM hive_table_part WHERE SPLIT(category_code,'\\.')[0] <> '';



Furniture, appliances, accessories, apparel, sport and stationery are the different categories in the table.

Query 5:
Find the total number of products available under each category.

SELECT SPLIT(category_code,'\\.')[0] AS Category, COUNT(product_id) AS No_of_products FROM hive_table_part WHERE SPLIT(category_code,'\\.')[0] <> '' GROUP BY SPLIT(category_code,'\\.')[0] ORDER BY No_of_products DESC;

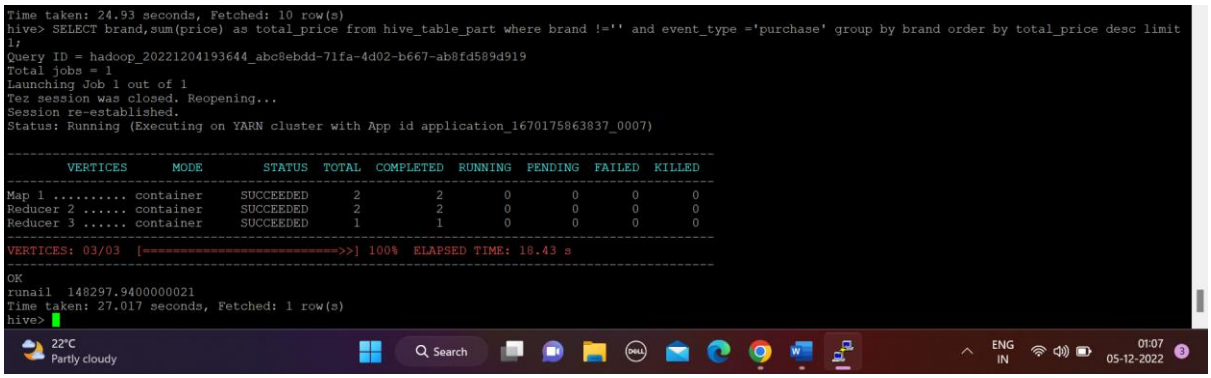


appliances	61730
stationery	26720
furniture	23594
apparel	18232
accessories	12923
sport	1

Inference: - Appliances category has the highest number of products 61730, and the least is sport which is only has 1.

Query 6:
Which brand had the maximum sales in October and November combined?

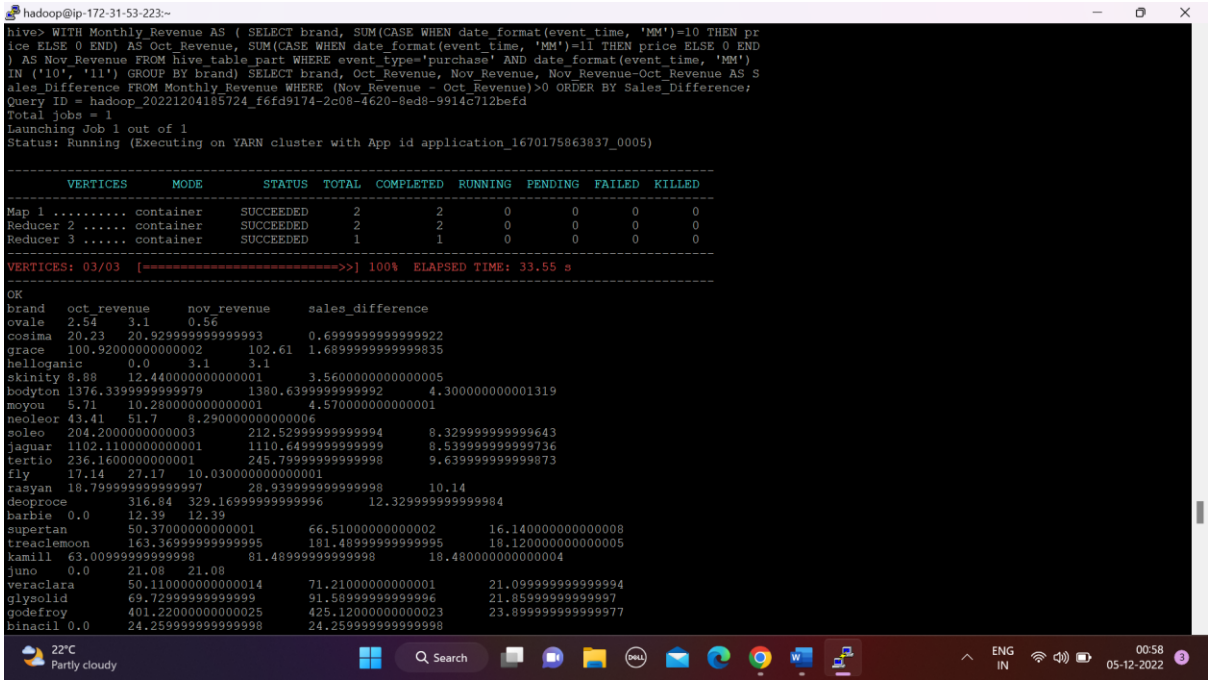
SELECT brand,sum(price) as total_price from hive_table_part where brand !='' and event_type ='purchase' group by brand order by total_price desc limit 1;

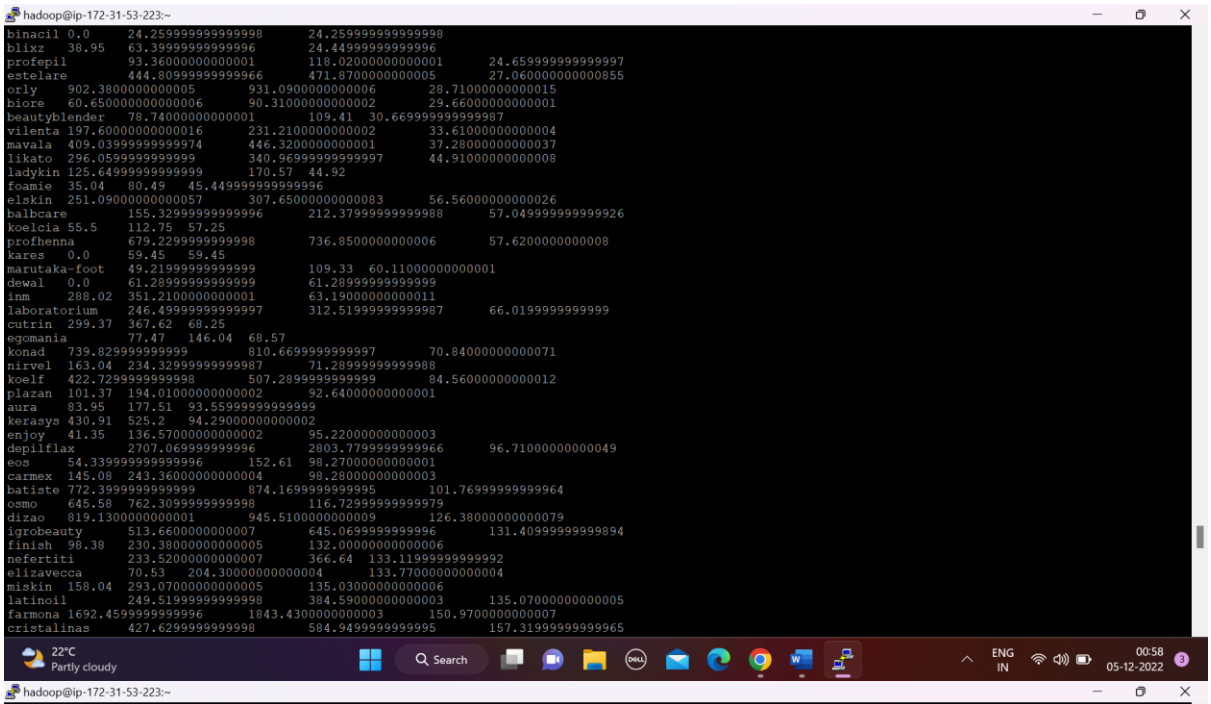


Inference:-
Runail is the brand which has the maximum price of 148297 /- in the two months October and November. Looks like cosmetics addicts more towards runail brand.

Query 7.
Which brands increased their sales from October to November?

WITH Monthly_Revenue AS (
SELECT brand,
SUM(CASE WHEN date_format(event_time, 'MM')=10 THEN price ELSE 0 END)
AS Oct_Revenue, SUM(CASE WHEN date_format(event_time, 'MM')=11 THEN
price ELSE 0 END) AS Nov_Revenue FROM hive_table_part WHERE event_type='purchase' AND
date_format(event_time, 'MM') IN ('10', '11') GROUP BY brand) SELECT brand, Oct_Revenue, Nov_Revenue,
Nov_Revenue-Oct_Revenue AS Sales_Difference FROM Monthly_Revenue WHERE (Nov_Revenue -
Oct_Revenue)>0 ORDER BY Sales_Difference;

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profepil 93.36000000000001 118.02000000000001 24.659999999999997
estelare 444.80999999999966 471.8700000000005 27.060000000000855
orly 902.3800000000005 931.0900000000006 28.71000000000015
biore 60.650000000000006 90.31000000000002 29.66000000000001
beautyblender 78.74000000000001 109.41 30.669999999999987
vilenta 197.60000000000016 231.2100000000002 33.61000000000004
mavala 409.03999999999974 446.3200000000001 37.28000000000037
likato 296.0599999999999 340.96999999999997 44.91000000000008
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foamie 35.04 80.49 45.449999999999996
elskin 251.09000000000057 307.65000000000083 56.56000000000026
balbcare 155.32999999999996 212.37999999999988 57.049999999999926
koelcia 55.5 112.75 57.25
profhenna 679.2299999999998 736.8500000000006 57.6200000000008
kares 0.0 59.45 59.45
marutaka-foot 49.21999999999999 109.33 60.11000000000001
dewal 0.0 61.28999999999999 61.28999999999999
inm 288.02 351.2100000000001 63.19000000000011
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cutrin 299.37 367.62 68.25
egomania 77.47 146.04 68.57
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kerasys 430.91 525.2 94.29000000000002
enjoy 41.35 136.57000000000002 95.22000000000003
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eos 54.339999999999996 152.61 98.27000000000001
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farmona 1692.4599999999996 1843.4300000000003 150.9700000000007
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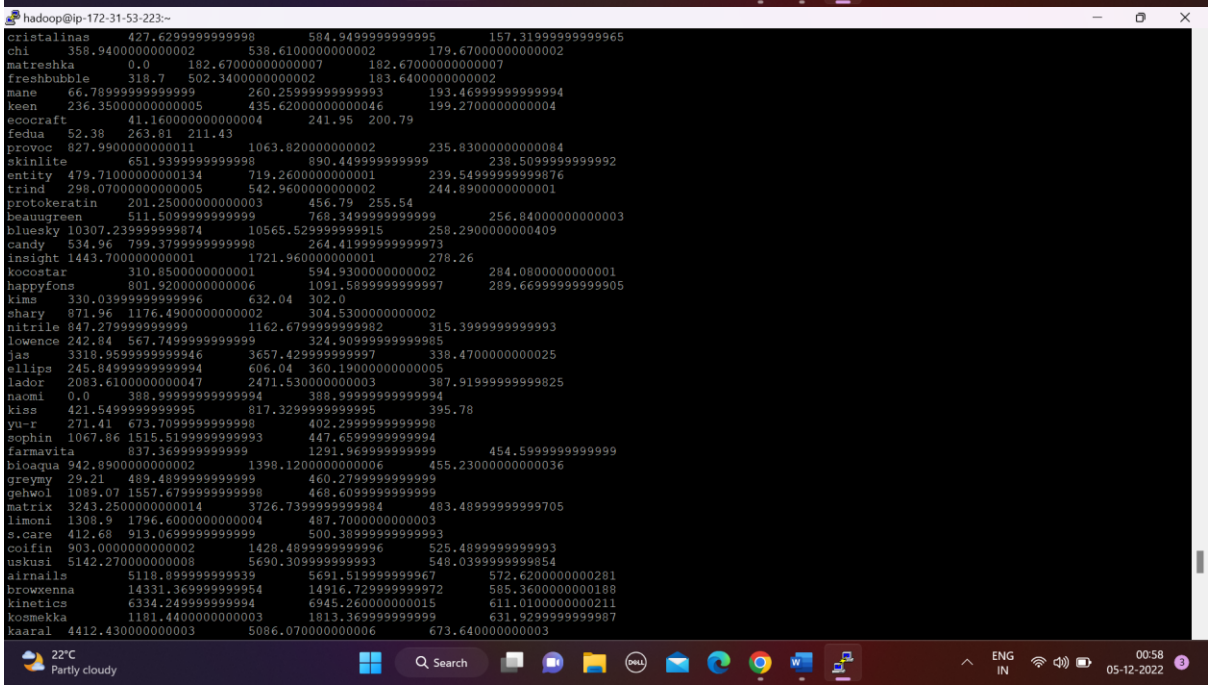
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fedua 52.38 263.81 211.43
provoc 827.9900000000011 1063.8200000000002 235.83000000000084
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yu-r 271.41 673.7099999999998 402.2999999999998
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Partly cloudy
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ENG
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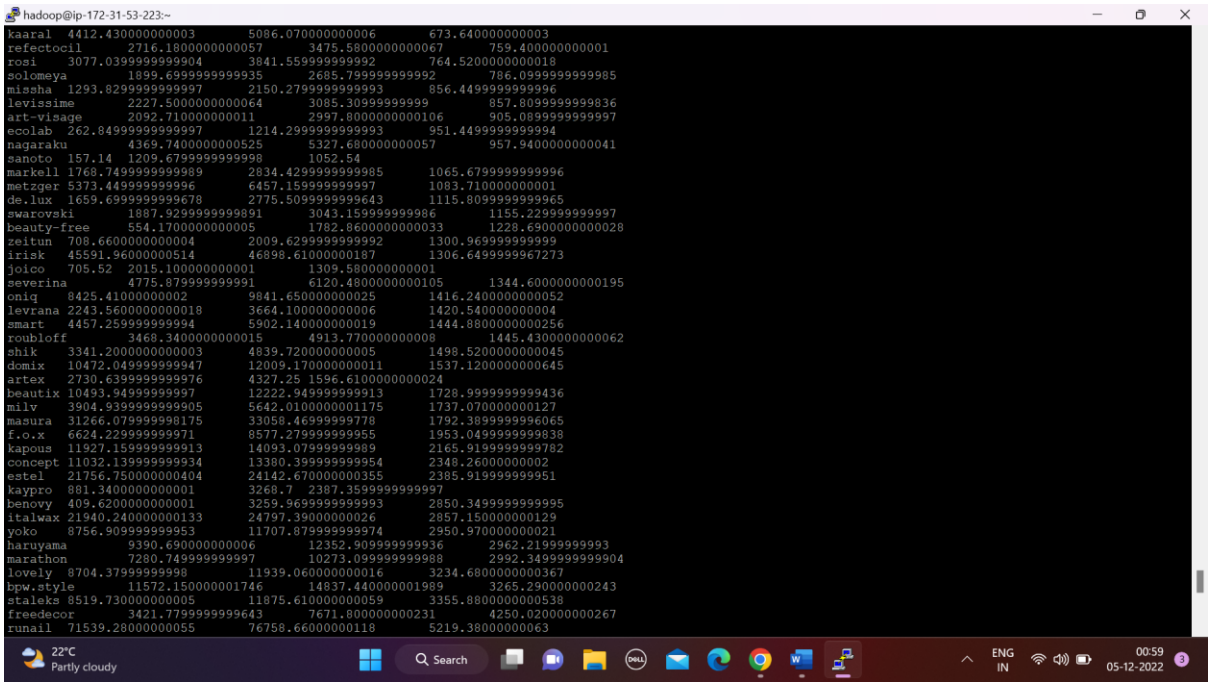
00:58
05-12-2022

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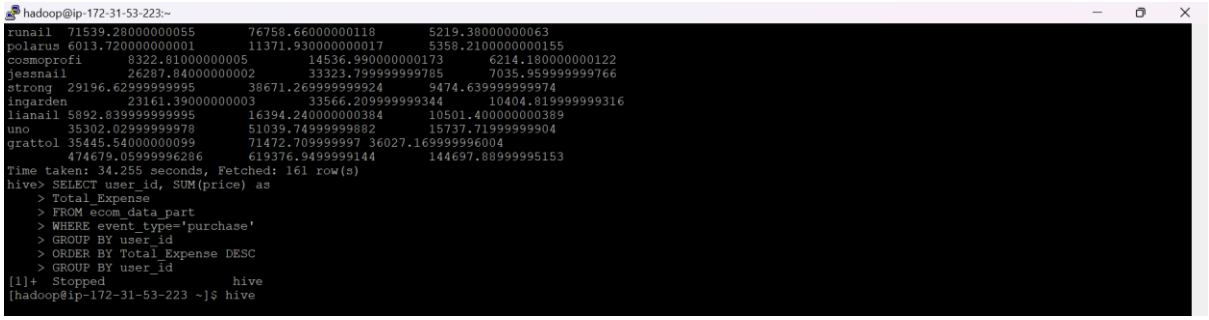
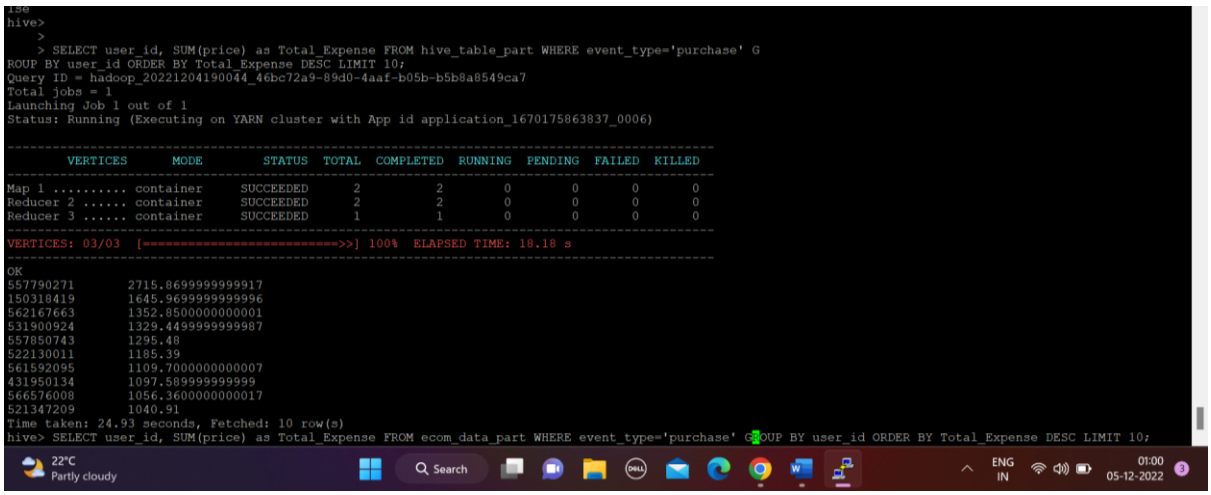


Inference: There are 161 brands for which the sales increased from October to November. Ovale showing the least difference and Grattol showing the maximum difference. Runail is also among the brands which showed increase in sales. So runail can be claimed as a popular brand.

Query 8.

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.

Query – SELECT user_id, SUM(price) as Total_Expense FROM hive_table_part WHERE event_type='purchase' GROUP BY user_id ORDER BY Total_Expense DESC LIMIT 10;



Inference:

The output gives the list of top 10 customers who can be rewarded the Golden customer plan.

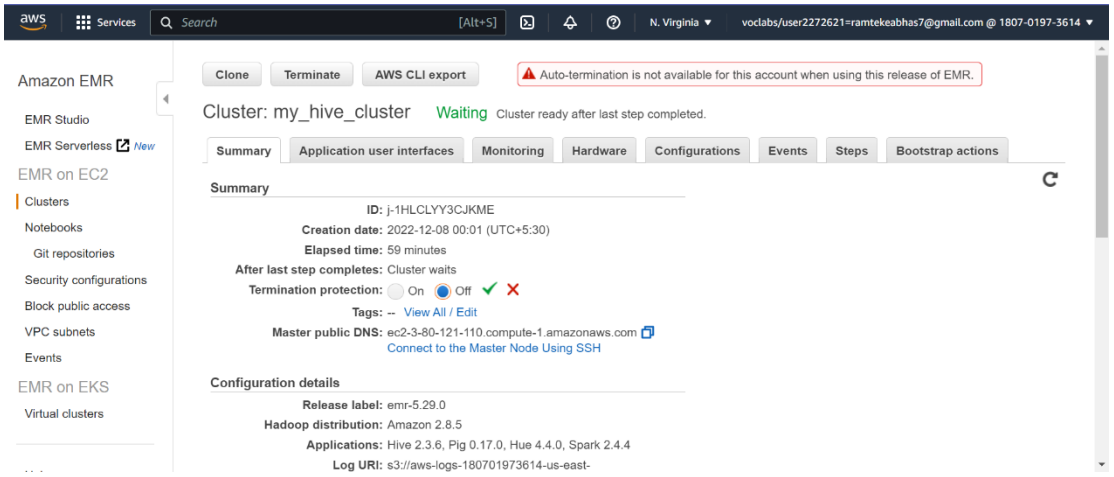
6. Cleaning Up:

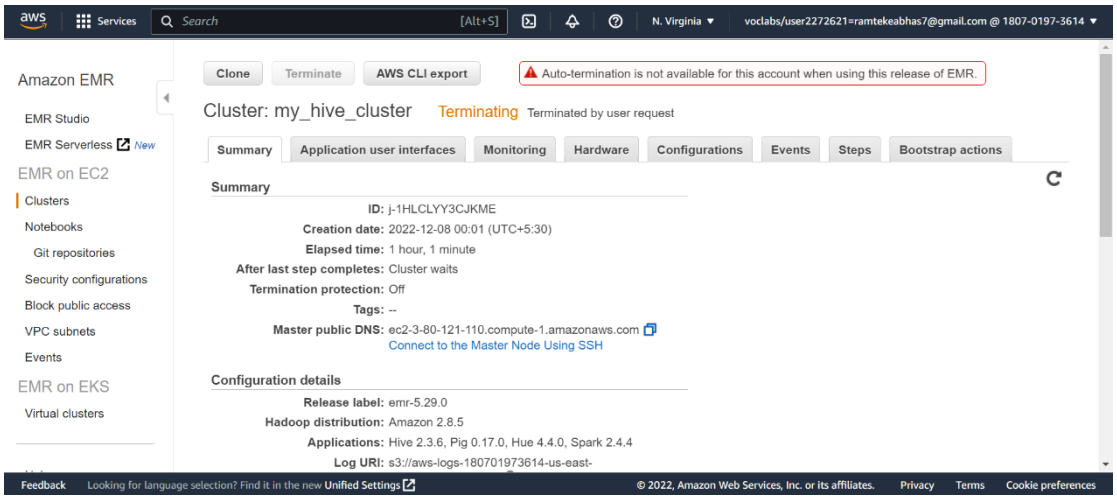
Dropping the database.

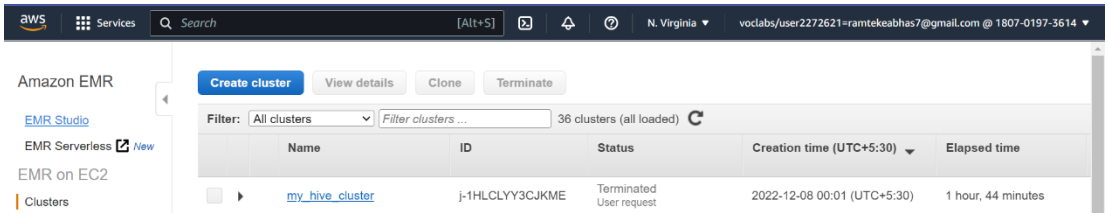
Drop database ABDB;

```
hive> DROP DATABASE IF EXISTS ABDB;
OK
Time taken: 0.159 seconds
hive>
```

6.1. Once the analysis is done, we can terminate the cluster by changing the Termination protection from **ON** to **OFF** and thenclick on the terminate button.







Summary:

The public clickstream dataset of a cosmetics store is used for this analysis.

Steps involved:

1. Copying the data set into the HDFS from S3 Bucket.
2. Creating the database and launching Hive queries on EMR cluster.
3. Necessary optimizations are done, such as selecting the appropriate table format and using partitioned/bucketed tables. CSV Serde is used with the default properties value for loading the dataset into a Hive table.
4. Runail seems to have increased sales from October to November
5. Cleaning up.

Overall, there is increase in sales from October to November.