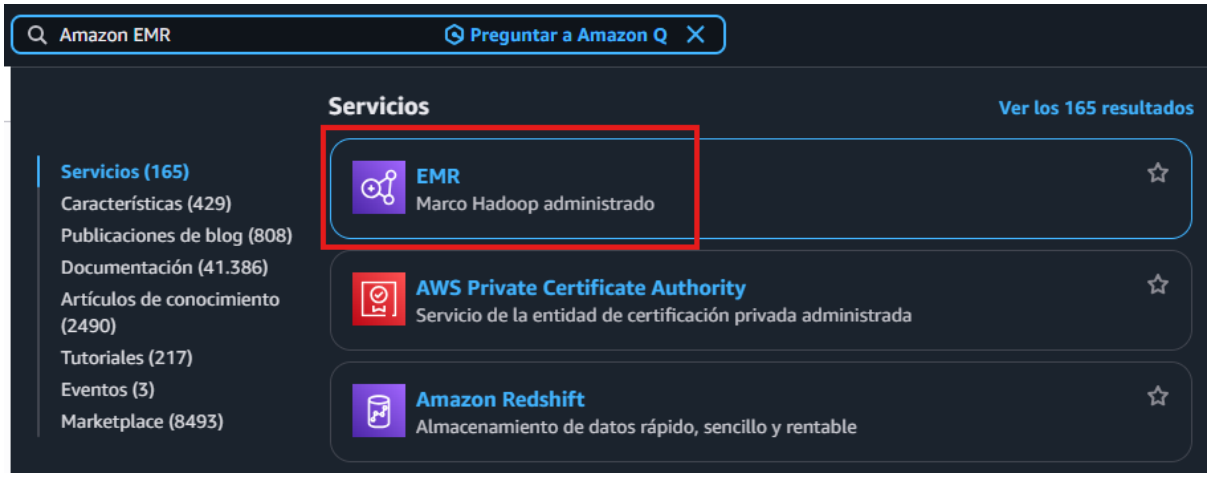
PR_07.1 Dani Gayol Rodríguez

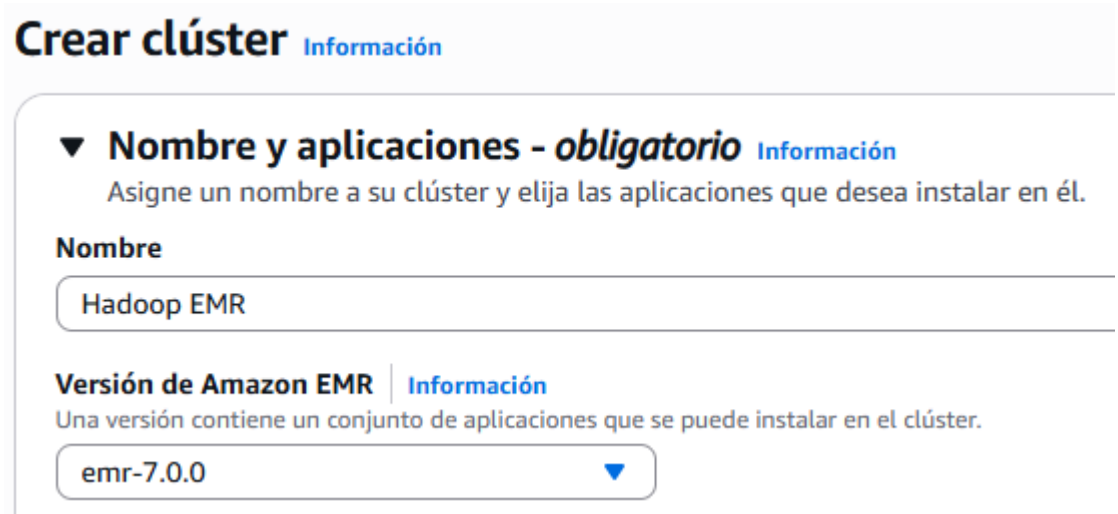
Apartado A

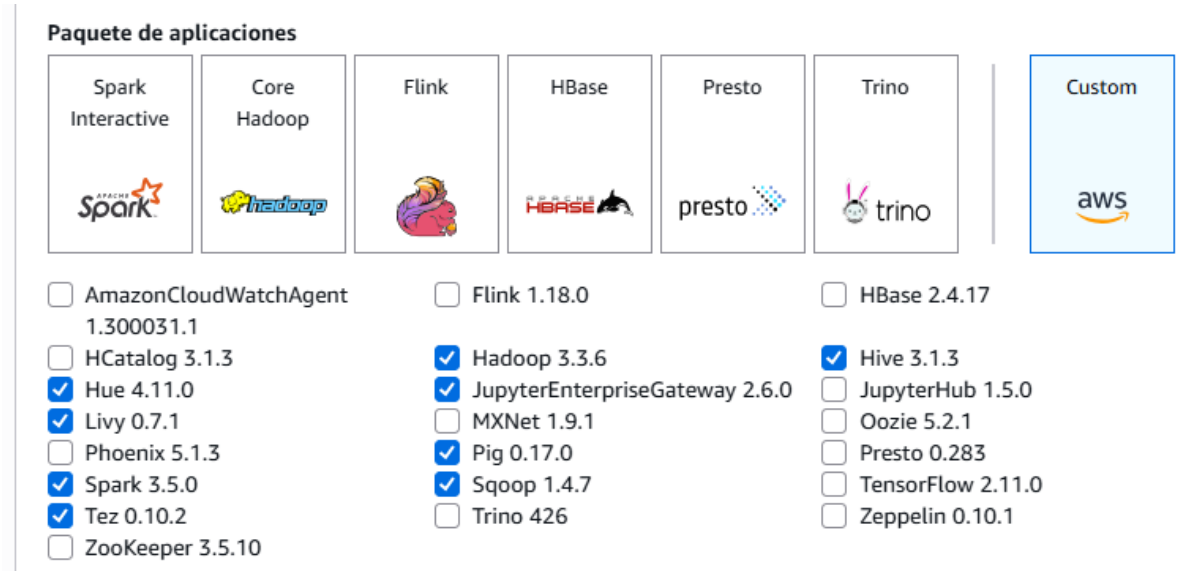
1.) Crea un clúster Hadoop EMR con 1 master y dos nodos. Selecciona la opción Core Hadoop (versión 7.0.0).

Primero de todo, tenemos que arrancar el laboratorio de AWS, una vez iniciado, buscamos "Amazon EMR" en el buscador



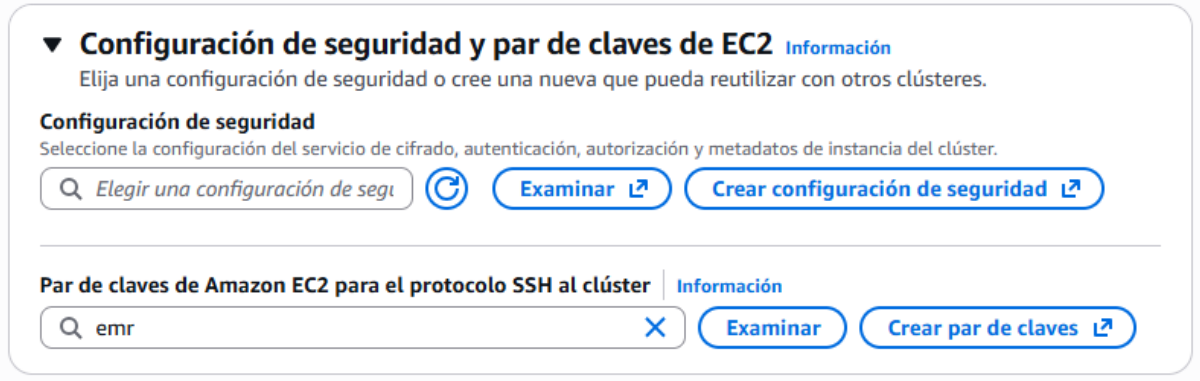
A continuación, le damos al botón de "Crear Cluster" y lo configuramos como dice el enunciado del ejercicio





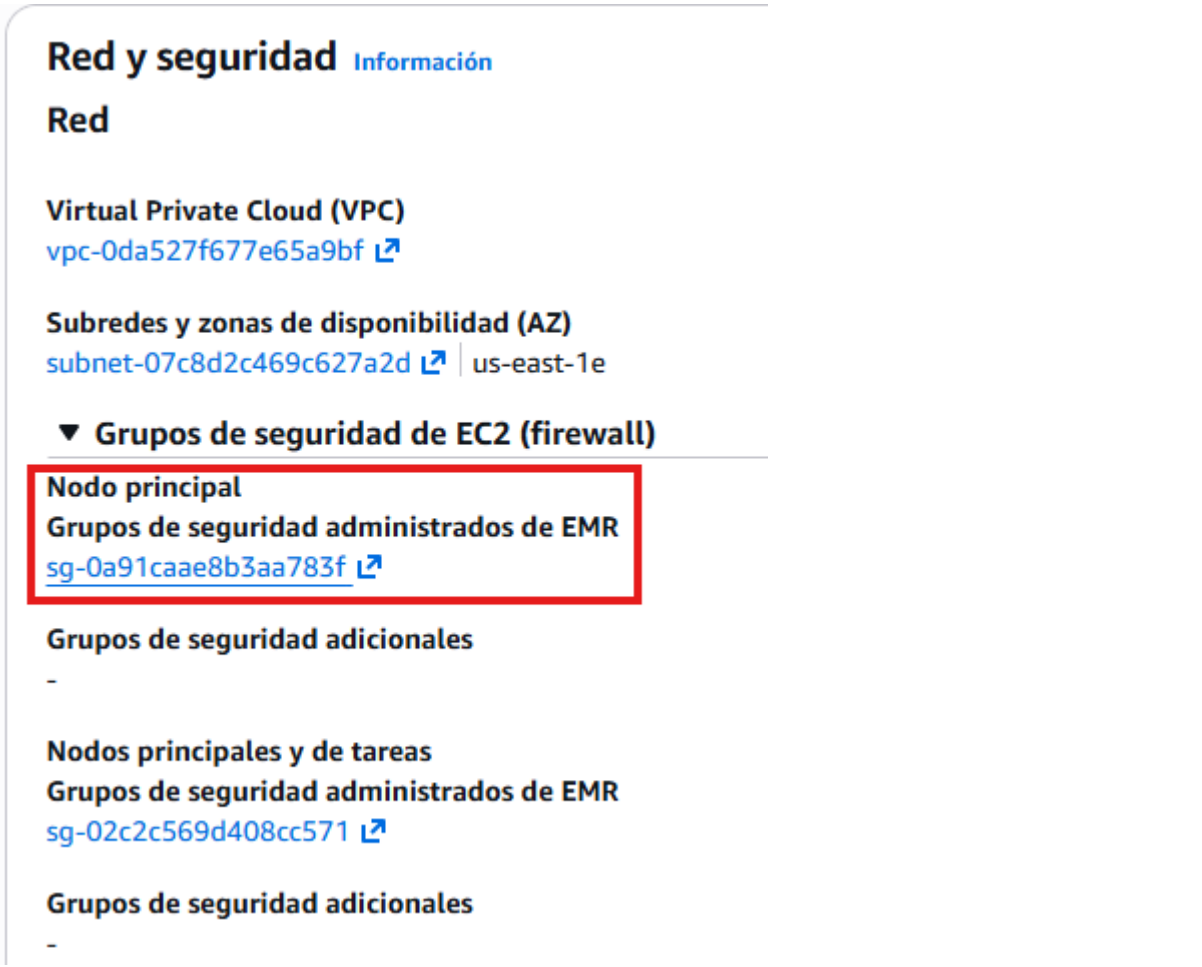
Ahora creamos los dos nodos que nos piden

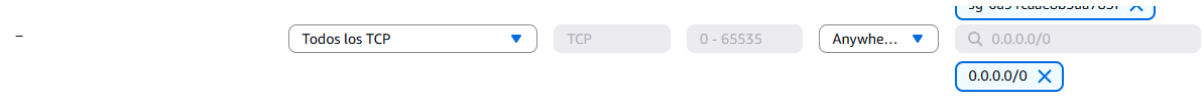
También le tuve que crear un par de claves de acceso



Ahora le vamos a desbloquear el acceso publico

Ahora vamos a modificar el grupo de seguridad para poder conectarnos por "ssh"





Finalmente, ya nos podemos conectar mediante la terminal de Windows

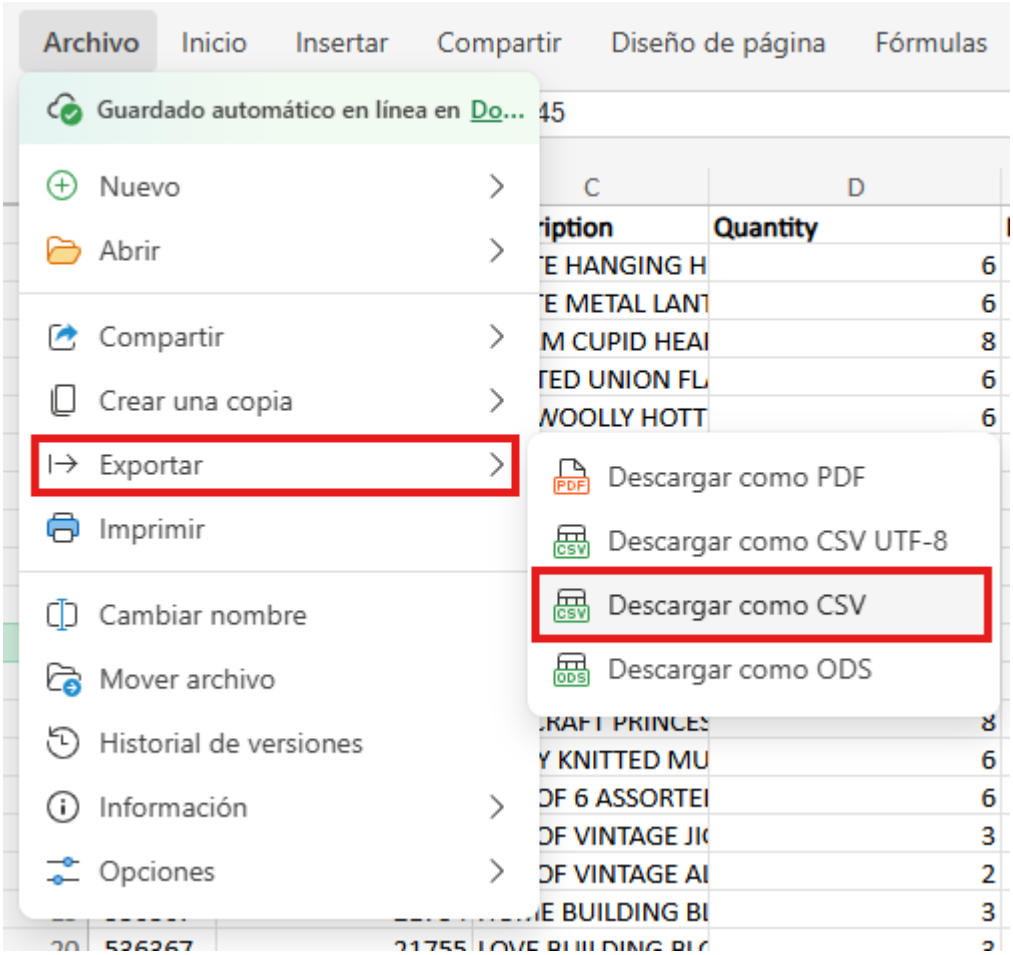
```
C:\Users\Mañana>ssh -i "C:\Users\Mañana\Downloads\emr.pem" hadoop@ec2-54-172-132-91.compute-1.amazonaws.com
```

```
   ,     #_
   ~\_  ####_        Amazon Linux 2023
  ~~  \_#####\
  ~~     \###|
  ~~       \#/ ___   https://aws.amazon.com/linux/amazon-linux-2023
   ~~       V~' '->
    ~~~         /
      ~~._.   _/
         _/ _/
       _/m/'
Last login: Tue Dec 16 08:34:34 2025

EEEEEEEEEEEEEEEEEEEE MMMMMMMM           MMMMMMMM RRRRRRRRRRRRRRR
E::::::::::::::::::E M:::::::M         M:::::::M R::::::::::::::R
EE:::::EEEEEEEEE:::E M::::::::M       M::::::::M R:::::RRRRRR:::::R
  E::::E       EEEEE M:::::::::M     M:::::::::M RR::::R      R::::R
  E::::E             M::::::M:::M   M:::M::::::M   R:::R      R::::R
  E:::::EEEEEEEEEE   M:::::M M:::M M:::M M:::::M   R:::RRRRRR:::::R
  E::::::::::::::E   M:::::M  M:::M:::M  M:::::M   R:::::::::::RR
  E:::::EEEEEEEEEE   M:::::M   M:::::M   M:::::M   R:::RRRRRR::::R
  E::::E             M:::::M    M:::M    M:::::M   R:::R      R::::R
  E::::E       EEEEE M:::::M     MMM     M:::::M   R:::R      R::::R
EE:::::EEEEEEEE::::E M:::::M             M:::::M   R:::R      R::::R
E::::::::::::::::::E M:::::M             M:::::M RR::::R      R::::R
EEEEEEEEEEEEEEEEEEEE MMMMMMM             MMMMMMM RRRRRRR      RRRRRR

[hadoop@ip-172-31-51-157 ~]$
```

Apartado B

1.) Viene en formato Excel. Desde el propio Excel puedes convertirlo a formato 'csv'

Desde Excel cargamos el archivo y una vez cargado lo podemos exportar en formato ".csv"



2.) Crea una carpeta con tu nombre en el directorio user del HDFS de EMR

Ahora vamos a crear una carpeta con mi nombre en el directorio "/user"

```
[hadoop@ip-172-31-51-157 ~]$ hdfs dfs -mkdir /user/dani-gayol
[hadoop@ip-172-31-51-157 ~]$ hdfs dfs -ls /user
Found 9 items
drwxr-xr-x   - hadoop hdfsadmingroup          0 2025-12-16 08:56 /user/dani-gayol
drwxrwxrwx   - hadoop hdfsadmingroup          0 2025-12-16 08:29 /user/hadoop
drwxr-xr-x   - mapred mapred                  0 2025-12-16 08:29 /user/history
drwxrwxrwx   - hdfs   hdfsadmingroup          0 2025-12-16 08:29 /user/hive
drwxrwxrwx   - hue    hue                     0 2025-12-16 08:29 /user/hue
drwxrwxrwx   - livy   livy                    0 2025-12-16 08:29 /user/livy
drwxrwxrwx   - oozie  oozie                   0 2025-12-16 08:30 /user/oozie
drwxrwxrwx   - root   hdfsadmingroup          0 2025-12-16 08:29 /user/root
drwxrwxrwx   - spark  spark                   0 2025-12-16 08:29 /user/spark
```

3.) Crea dentro de él una carpeta llamada ventas y sube a ella el 'csv' que obtuviste anteriormente.

Primero tenemos que pasar el ".csv" desde Windows hasta la máquina virtual y después al HDFS

```
C:\Users\Mañana>scp -i "C:\Users\Mañana\Downloads\emr.pem" "C:\Users\Mañana\Downloads\Online-Retail.csv" hadoop@ec2-54-1
72-132-91.compute-1.amazonaws.com:/home/hadoop/
Online-Retail.csv                                             100%   44MB   9.3MB/s   00:04
```

Ahora ya podemos crear la carpeta y pegarle el archivo

```
[hadoop@ip-172-31-51-157 ~]$ hdfs dfs -mkdir /user/dani-gayol/ventas
[hadoop@ip-172-31-51-157 ~]$ hdfs dfs -put /home/hadoop/Online-Retail.csv /user/dani-gayol/ventas/
[hadoop@ip-172-31-51-157 ~]$ hdfs dfs -ls /user/dani-gayol/ventas/
Found 1 items
-rw-r--r--   1 hadoop hdfsadmingroup   46079956 2025-12-16 09:09 /user/dani-gayol/ventas/Online-Retail.csv
```

Apartado C

Ahora vamos a usar “PIG”, para ello primero de todo, cargamos los datos

```
grunt> ventas = LOAD '/user/dani-gayol/ventas/Online-Retail.csv' USING PigStorage(',') AS
(InvoiceNo:chararray, StockCode:chararray, Description:chararray, Quantity:int, InvoiceDat
e:chararray, UnitPrice:double, CustomerID:int, Country:chararray);
```

1.) ¿Cuántos registros tiene la tabla? Big Data

```
grunt> DESCRIBE ventas; COUNT = FOREACH (GROUP ventas ALL) GENERATE COUNT(ventas); DUMP CO
UNT;
```

```
(541910)
```

2.) Mostrar registros con cantidades mayores o iguales a cero.

```
grunt> ventas_cantidad = FILTER ventas BY Quantity >= 0; DUMP ventas_cantidad;
```

```
(581587,22367,CHILDRENS APRON SPACEBOY DESIGN,8,09/12/2011 12:50,,12680,France)
(581587,22629,SPACEBOY LUNCH BOX ,12,09/12/2011 12:50,,12680,France)
(581587,23256,CHILDRENS CUTLERY SPACEBOY ,4,09/12/2011 12:50,,12680,France)
(581587,22613,PACK OF 20 SPACEBOY NAPKINS,12,09/12/2011 12:50,,12680,France)
(581587,22899,CHILDREN'S APRON DOLLY GIRL ,6,09/12/2011 12:50,,12680,France)
(581587,23254,CHILDRENS CUTLERY DOLLY GIRL ,4,09/12/2011 12:50,,12680,France)
(581587,23255,CHILDRENS CUTLERY CIRCUS PARADE,4,09/12/2011 12:50,,12680,France)
(581587,22138,BAKING SET 9 PIECE RETROSPOT ,3,09/12/2011 12:50,,12680,France)
```

3.) A partir de la consulta anterior, mostrar registros precio mayor a cero

```
grunt> ventas_precio = FILTER ventas_cantidad BY UnitPrice > 0; DUMP ventas_precio;
```

```
(581493,POST,POSTAGE,1,09/12/2011 10:10,15.0,12423,Belgium)
(581494,POST,POSTAGE,2,09/12/2011 10:13,18.0,12518,Germany)
(581570,POST,POSTAGE,1,09/12/2011 11:59,18.0,12662,Germany)
(581574,POST,POSTAGE,2,09/12/2011 12:09,18.0,12526,Germany)
(581578,POST,POSTAGE,3,09/12/2011 12:16,18.0,12713,Germany)
```

4.) A partir de la consulta anterior, mostrar solamente los registros con algún valor en el campo CustomerID.

```
grunt> ventas_final = FILTER ventas_precio BY CustomerID IS NOT NULL; DUMP ventas_final;
```

```
(581232,POST,POSTAGE,4,08/12/2011 10:26,40.0,12358,Austria)
(581266,POST,POSTAGE,5,08/12/2011 11:25,18.0,12621,Germany)
(581279,POST,POSTAGE,3,08/12/2011 11:35,18.0,12437,France)
```

5.) ¿Cuántos registros tiene la última consulta?

```
grunt> COUNT_FINAL = FOREACH (GROUP ventas_final ALL) GENERATE COUNT(ventas_final); DUMP COUNT_FINAL;
```

```
(1712)
```

6.) Almacena la consulta final del punto 4 en un fichero llamado ventas.csv dentro de la carpeta de apartado B.

```
grunt> STORE ventas_final INTO '/user/dani-gayol/ventas/ventas_limpias.csv' USING PigStorage(';');
```

```
Successfully stored 1712 records (110820 bytes) in: "/user/dani-gayol/ventas/ventas_limpias.csv"
```

Apartado D

1.) Crear base de datos

```
[hadoop@ip-172-31-53-111 ~]$ hive
Hive Session ID = 529764af-ffb2-45da-908a-15e9c1925356

Logging initialized using configuration in file:/etc/hive/
hive> CREATE DATABASE IF NOT EXISTS retail;
OK
Time taken: 0.575 seconds
hive> USE retail;
OK
Time taken: 0.031 seconds
```

2.) Crear tabla externa sobre los datos RAW (CSV)

```
hive> CREATE EXTERNAL TABLE ventas_raw ( InvoiceNo STRING, StockCode STRING, Description STRING, Quantity INT, InvoiceDa
te STRING, UnitPrice DOUBLE, CustomerID INT, Country STRING ) ROW FORMAT DELIMITED FIELDS TERMINATED BY ';' STORED AS TE
XTFILE LOCATION '/user/dani-gayol/ventas/ventas_limpias.csv/part-v000-o000-r-00000';
```

```
hive> CREATE EXTERNAL TABLE ventas_raw ( InvoiceNo STRING, StockCode STRING, Description STRING, Quantity INT, InvoiceDa
te STRING, UnitPrice DOUBLE, CustomerID INT, Country STRING ) ROW FORMAT DELIMITED FIELDS TERMINATED BY ';' STORED AS TE
XTFILE LOCATION '/user/dani-gayol/ventas/ventas_limpias.csv';
OK
Time taken: 0.13 seconds
```

3.) Hive no maneja muy bien el formato de fecha original, conviértelo a d/M/yyyy H:mm

```
hive> SELECT InvoiceNo, StockCode, Description, Quantity, from_unixtime(unix_timestamp(InvoiceDate,'d/M/yyyy H:mm')) AS
InvoiceDate, UnitPrice, CustomerID, Country FROM ventas_raw;
```

```
581493  POST    POSTAGE 1       2011-12-09 10:10:00     15.0    12423   Belgium
581494  POST    POSTAGE 2       2011-12-09 10:13:00     18.0    12518   Germany
581570  POST    POSTAGE 1       2011-12-09 11:59:00     18.0    12662   Germany
581574  POST    POSTAGE 2       2011-12-09 12:09:00     18.0    12526   Germany
581578  POST    POSTAGE 3       2011-12-09 12:16:00     18.0    12713   Germany
Time taken: 2.241 seconds, Fetched: 1712 row(s)
```

4.) Crea la misma estructura de tabla, pero particionada por año y mes.

```
hive> CREATE TABLE ventas_particionada ( InvoiceNo STRING, StockCode STRING, Description STRING, Quantity INT, InvoiceDa
te TIMESTAMP, UnitPrice DOUBLE, CustomerID INT, Country STRING ) PARTITIONED BY (year INT, month INT) STORED AS PARQUET;

OK
Time taken: 0.071 seconds
```

5.) Inserta los registros del punto 1.2 en la tabla particionada.

Al intentar hacerlo, me salia un error por lo tanto tuve que activar modo dinámico no estricto

```
hive> SET hive.exec.dynamic.partition=true;
hive> SET hive.exec.dynamic.partition.mode=nonstrict;
hive> INSERT INTO TABLE ventas_particionada PARTITION (year, month) SELECT InvoiceNo, StockCode, Description, Quantity,
from_unixtime(unix_timestamp(InvoiceDate,'d/M/yyyy H:mm')) AS InvoiceDate, UnitPrice, CustomerID, Country, year(from_uni
xtime(unix_timestamp(InvoiceDate,'d/M/yyyy H:mm'))) AS year, month(from_unixtime(unix_timestamp(InvoiceDate,'d/M/yyyy H:
mm'))) AS month FROM ventas_raw;
```

```
Query ID = hadoop_20251217110412_32090819-ded8-44bd-bee2-6082b2adde0b
Total jobs = 1
Launching Job 1 out of 1
Tez session was closed. Reopening...
Session re-established.
Session re-established.
Status: Running (Executing on YARN cluster with App id application_1765966144432_0004)

--------------------------------------------------------------------------------
        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
Reducer 3 ...... container     SUCCEEDED      2          2        0        0       0       0
--------------------------------------------------------------------------------
VERTICES: 03/03  [==========================>>] 100%  ELAPSED TIME: 19.05 s
--------------------------------------------------------------------------------
Loading data to table retail.ventas_particionada partition (year=null, month=null)

Loaded : 13/13 partitions.
         Time taken to load dynamic partitions: 2.199 seconds
         Time taken for adding to write entity : 0.003 seconds
OK
Time taken: 31.392 seconds
```

Finalmente, vamos a comprobar que se hizo correctamente

```
hive> SHOW PARTITIONS ventas_particionada;
OK
year=2010/month=12
year=2011/month=1
year=2011/month=10
year=2011/month=11
year=2011/month=12
year=2011/month=2
year=2011/month=3
year=2011/month=4
year=2011/month=5
year=2011/month=6
year=2011/month=7
year=2011/month=8
year=2011/month=9
Time taken: 0.136 seconds, Fetched: 13 row(s)
```

Apartado E

1.) 10 clientes con mayor gasto total

```
hive> SELECT CustomerID, SUM(Quantity*UnitPrice) AS total_gasto FROM ventas_particionada GROUP BY CustomerID ORDER BY to
tal_gasto DESC LIMIT 10;
Query ID = hadoop_20251217110928_30810056-7d6d-4d32-a65a-0158e39a869e
Total jobs = 1
Launching Job 1 out of 1
Status: Running (Executing on YARN cluster with App id application_1765966144432_0004)

--------------------------------------------------------------------------------
        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
Reducer 3 ...... container     SUCCEEDED      1          1        0        0       0       0
--------------------------------------------------------------------------------
VERTICES: 03/03  [==========================>>] 100%  ELAPSED TIME: 7.88 s
--------------------------------------------------------------------------------
```

```
17450   10496.0
14911   4364.0
15581   2750.0
12471   2400.0
14607   2120.0
12540   1820.0
12748   1788.0
15482   1646.0
14646   1458.0
12681   1422.0
```

2.) Clientes con más compras (cantidad de facturas)

```
hive> SELECT CustomerID, COUNT(DISTINCT InvoiceNo) AS facturas FROM ventas_particionada GROUP BY CustomerID ORDER BY fac
turas DESC LIMIT 10;
Query ID = hadoop_20251217111045_5d2d51dc-f990-4fcb-8922-55d51c030d17
Total jobs = 1
Launching Job 1 out of 1
Status: Running (Executing on YARN cluster with App id application_1765966144432_0004)

--------------------------------------------------------------------------------
        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
Reducer 3 ...... container     SUCCEEDED      1          1        0        0       0       0
--------------------------------------------------------------------------------
VERTICES: 03/03  [==========================>>] 100%  ELAPSED TIME: 7.97 s
--------------------------------------------------------------------------------
```

```
14911   85
12569   31
12682   29
12681   22
12471   21
12621   18
14646   18
12540   17
12474   16
12437   15
```

3.) 10 productos más vendidos

```
hive> SELECT Description, SUM(Quantity) AS total_vendido FROM ventas_particionada GROUP BY Description ORDER BY total_ve
ndido DESC LIMIT 10;
Query ID = hadoop_20251217111139_e82b481f-cd6e-4874-b7c7-9445d7eb3523
Total jobs = 1
Launching Job 1 out of 1
Status: Running (Executing on YARN cluster with App id application_1765966144432_0004)

--------------------------------------------------------------------------------
        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
Reducer 3 ...... container     SUCCEEDED      1          1        0        0       0       0
--------------------------------------------------------------------------------
VERTICES: 03/03  [==========================>>] 100%  ELAPSED TIME: 7.57 s
--------------------------------------------------------------------------------
```

```
POSTAGE 3110
PINK HANGING HEART T-LIGHT HOLDER       480
METAL TUBE CHIME ON BAMBOO      392
VICTORIAN SEWING BOX SMALL      240
FLOWERS CHANDELIER T-LIGHT HOLDER       240
BEADED CHANDELIER T-LIGHT HOLDER        240
IVORY CHANDELIER T-LIGHT HOLDER 240
Manual  221
VANILLA SCENT CANDLE JEWELLED BOX       216
RED RETROSPOT CAKE STAND        204
```

4.) 10 Productos más rentables (suma de precio unitario por cantidad)

```
hive> SELECT Description, SUM(Quantity*UnitPrice) AS total_rentable FROM ventas_particionada GROUP BY Description ORDER
BY total_rentable DESC LIMIT 10;
Query ID = hadoop_20251217111251_8d58f262-380d-4965-9072-37d3e8c7b428
Total jobs = 1
Launching Job 1 out of 1
Status: Running (Executing on YARN cluster with App id application_1765966144432_0004)

--------------------------------------------------------------------------------
        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
Reducer 3 ...... container     SUCCEEDED      1          1        0        0       0       0
--------------------------------------------------------------------------------
VERTICES: 03/03  [==========================>>] 100%  ELAPSED TIME: 7.88 s
--------------------------------------------------------------------------------
```

```
POSTAGE 69012.0
VINTAGE RED KITCHEN CABINET     8125.0
CARRIAGE        6686.0
LOVE SEAT ANTIQUE WHITE METAL   6210.0
Manual  5447.0
RUSTIC  SEVENTEEN DRAWER SIDEBOARD      5415.0
VINTAGE BLUE KITCHEN CABINET    3685.0
CHEST NATURAL WOOD 20 DRAWERS   2745.0
BOTANICAL GARDENS WALL CLOCK    1975.0
CINDERELLA CHANDELIER   1800.0
```

5.) Países con mayor volumen de ventas Análisis temporal

```
hive> SELECT Country, SUM(Quantity*UnitPrice) AS ventas_totales FROM ventas_particionada GROUP BY Country ORDER BY venta
s_totales DESC;
Query ID = hadoop_20251217111348_cf46a110-1dd2-4e79-9c2e-e3ec94e3542f
Total jobs = 1
Launching Job 1 out of 1
Status: Running (Executing on YARN cluster with App id application_1765966144432_0004)

--------------------------------------------------------------------------------
        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
Reducer 3 ...... container     SUCCEEDED      1          1        0        0       0       0
--------------------------------------------------------------------------------
VERTICES: 03/03  [==========================>>] 100%  ELAPSED TIME: 7.19 s
--------------------------------------------------------------------------------
```

```
United Kingdom  53159.0
Germany 21155.0
France  15713.0
Spain   5917.0
EIRE    5154.0
Belgium 4269.0
Switzerland     4027.0
Finland 3673.0
Norway  2996.0
Portugal        2508.0
Netherlands     1947.0
Italy   1663.0
Sweden  1539.0
Austria 1456.0
Cyprus  1265.0
Denmark 744.0
Malta   655.0
Channel Islands 443.0
Poland  360.0
Australia       350.0
Greece  335.0
Singapore       315.0
Israel  255.0
European Community      141.0
Czech Republic  40.0
```

6. Ventas totales por mes (suma de precio unitario por cantidad)

```
hive> SELECT year(InvoiceDate) AS year, month(InvoiceDate) AS month, SUM(Quantity*UnitPrice) AS total FROM ventas_partic
ionada GROUP BY year(InvoiceDate), month(InvoiceDate) ORDER BY year, month;
Query ID = hadoop_20251217111455_a31a6180-8b28-4ae5-aa67-9e7f4ba8c85a
Total jobs = 1
Launching Job 1 out of 1
Status: Running (Executing on YARN cluster with App id application_1765966144432_0004)

--------------------------------------------------------------------------------
        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
Reducer 3 ...... container     SUCCEEDED      1          1        0        0       0       0
--------------------------------------------------------------------------------
VERTICES: 03/03  [==========================>>] 100%  ELAPSED TIME: 8.63 s
--------------------------------------------------------------------------------
```

```
2010    12      9101.0
2011    1       8943.0
2011    2       5794.0
2011    3       11241.0
2011    4       7338.0
2011    5       8336.0
2011    6       8766.0
2011    7       6415.0
2011    8       12021.0
2011    9       13196.0
2011    10      12845.0
2011    11      22760.0
2011    12      3323.0
```

7. Hora del día con más actividad

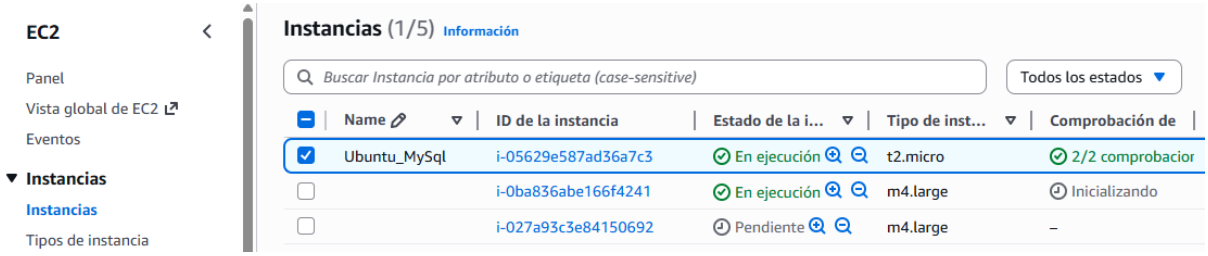
```
hive> SELECT hour(InvoiceDate) AS hora, COUNT(*) AS total FROM ventas_particionada GROUP BY hour(InvoiceDate) ORDER BY t
otal DESC LIMIT 1;
Query ID = hadoop_20251217111555_2f4f6cd3-267c-47e7-944c-1a889f2bb768
Total jobs = 1
Launching Job 1 out of 1
Status: Running (Executing on YARN cluster with App id application_1765966144432_0004)

--------------------------------------------------------------------------------
        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
Reducer 3 ...... container     SUCCEEDED      1          1        0        0       0       0
--------------------------------------------------------------------------------
VERTICES: 03/03  [==========================>>] 100%  ELAPSED TIME: 8.58 s
--------------------------------------------------------------------------------
```

```
10      251
```

Apartado F

1.) En tu servidor MySql en la máquina EC2 crea una base de datos y una tabla para almacenar los datos del fichero ventas.csv.

Ahora para almacenar los datos en una tabla de mi base de datos que tengo en "EC2", voy a usar la siguiente



Primero de todo, me conecto a la instancia que tengo creada

```
C:\Users\Mañana>ssh -i "C:\Users\Mañana\Downloads\ubuntu.pem" ubuntu@54.86.196.253
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 6.8.0-1043-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

 System information as of Thu Dec 18 07:45:55 UTC 2025

  System load:  0.0               Processes:             103
  Usage of /:   43.7% of 7.57GB   Users logged in:       0
  Memory usage: 57%               IPv4 address for eth0: 172.31.21.121
  Swap usage:   0%


Expanded Security Maintenance for Applications is not enabled.

6 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status


The list of available updates is more than a week old.
To check for new updates run: sudo apt update

Last login: Tue Dec  2 07:44:52 2025 from 158.99.18.30
ubuntu@ip-172-31-21-121:~$
```

Una vez conectado, voy a crear la base de datos, para ello entramos en "mysql"

```
ubuntu@ip-172-31-21-121:~$ sudo mysql -u root
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 12
Server version: 8.0.44-0ubuntu0.22.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

Una vez dentro, creamos la base de datos y las tablas

```
mysql> CREATE DATABASE retaildb;
Query OK, 1 row affected (0.01 sec)

mysql> USE retaildb;
Database changed
```

```
mysql> CREATE TABLE ventas ( InvoiceNo VARCHAR(20), StockCode VARCHAR(20), Description VARCHAR(255), Quantity INT, Invoi
ceDate DATETIME, UnitPrice DOUBLE, CustomerID INT, Country VARCHAR(50) );
Query OK, 0 rows affected (0.06 sec)
```

Finalmente, permitimos accesos remotos

```
mysql> GRANT ALL PRIVILEGES ON retaildb.* TO 'admin'@'%';
Query OK, 0 rows affected (0.01 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.01 sec)
```

2.) Exporta con SQOOP los datos de ventas.csv a la tabla que creaste en el punto anterior.

```
[hadoop@ip-172-31-58-155 ~]$ sqoop export --connect jdbc:mysql://54.86.196.253:3306/retaildb --username admin --password
 admin --table ventas --export-dir /user/dani-gayol/ventas/ventas_limpias.csv --fields-terminated-by ';' --lines-termina
ted-by '\n'
```