Proyecto Python Fundamentals - Roel Sedano

CitiBike Demo

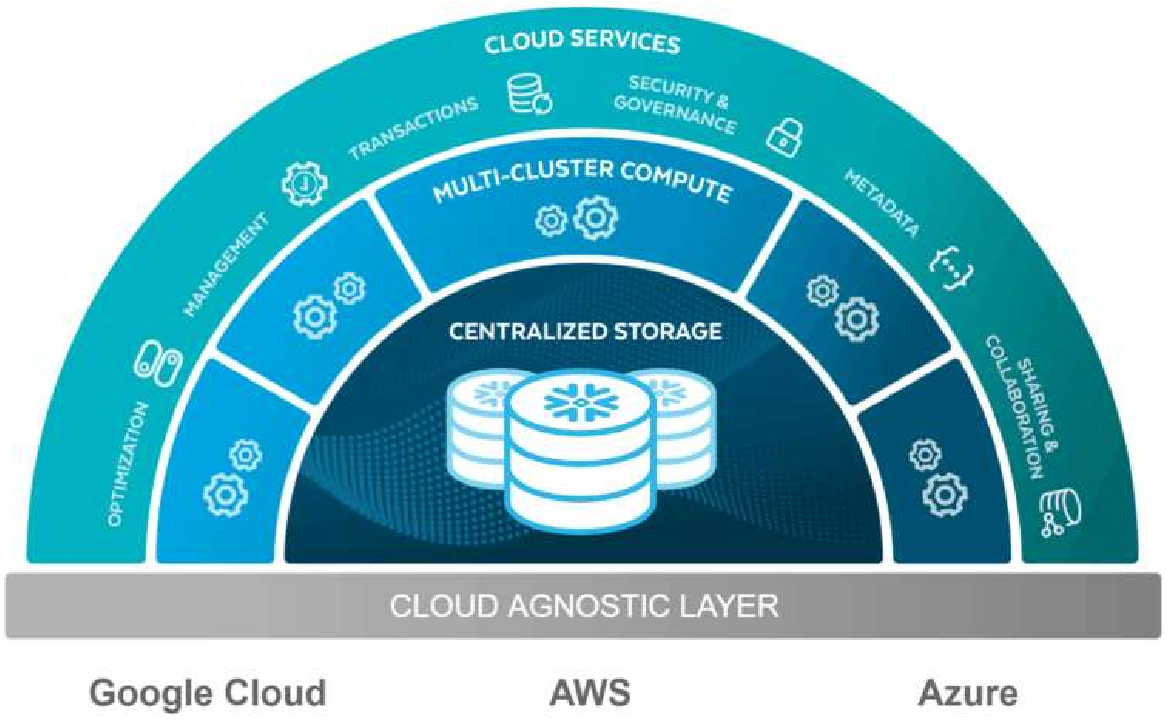
Se creo un ambiente de Snowflake para el proyecto

El objetivo es conectarnos desde un jupyter Notebook a la bd de Citibike utilizando el framework de snowpark para python y dar visibiliadad al Negocio.

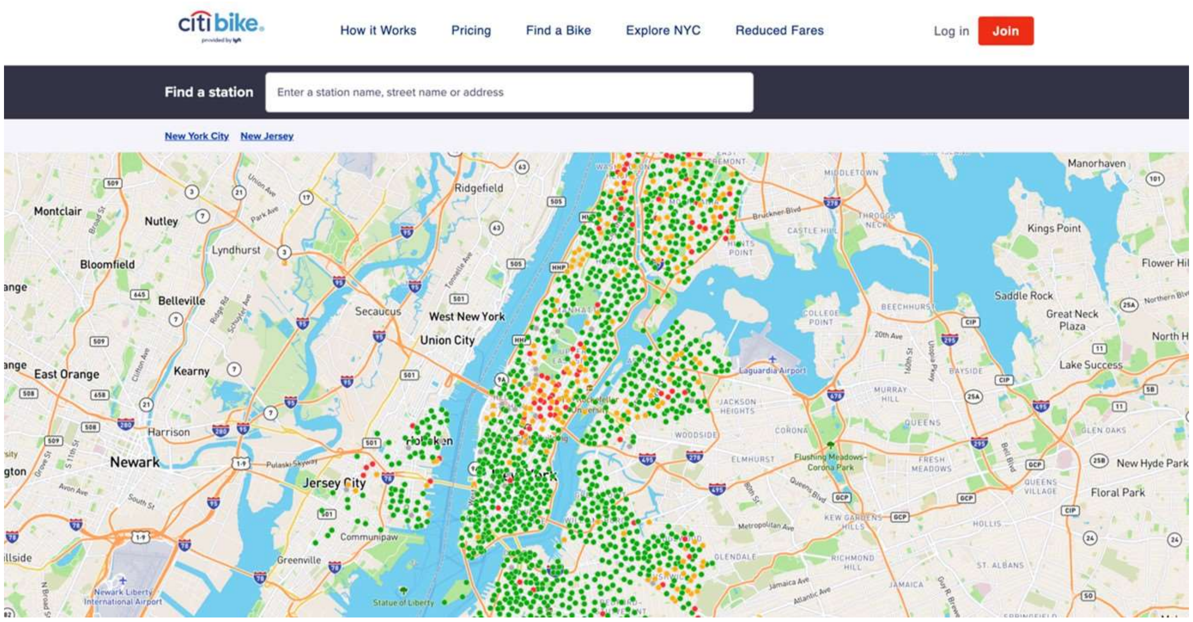
Ref: Curso Python Fundamentals, Zero to snowflake quickstart y Snowpark Developer Guide for Python

Snowflake

[Liga (https://docs.snowflake.com/)](https://docs.snowflake.com/)



Citibike Demo



Snowpak Imports

In [1]:
```python
# Snowpark Imports
import json
from decimal import Decimal
from snowflake.snowpark.session import Session
import snowflake.snowpark.functions as F
import snowflake.snowpark.types as T

import pandas as pd
import numpy as np

# import networkx as nx
import itertools
from typing import Iterable, Tuple

import matplotlib.pyplot as plt
```

Reading Snowflake Connection Details from JSON file

In [2]:
```
# Reading Snowflake Connection Details from JSON file
# usr, pwd, account, warehouse, db, schema

snowflake_connection_cfg = open('creds.json')
snowflake_connection_cfg = snowflake_connection_cfg.read()
snowflake_connection_cfg = json.loads(snowflake_connection_cfg)
```

Creating Snowpark Session

In [3]:
```
# Creating Snowpark Session
session = Session.builder.configs(snowflake_connection_cfg).create()
print('Current Database:', session.get_current_database())
print('Current Schema:', session.get_current_schema())
print('Current Warehouse:', session.get_current_warehouse())
```

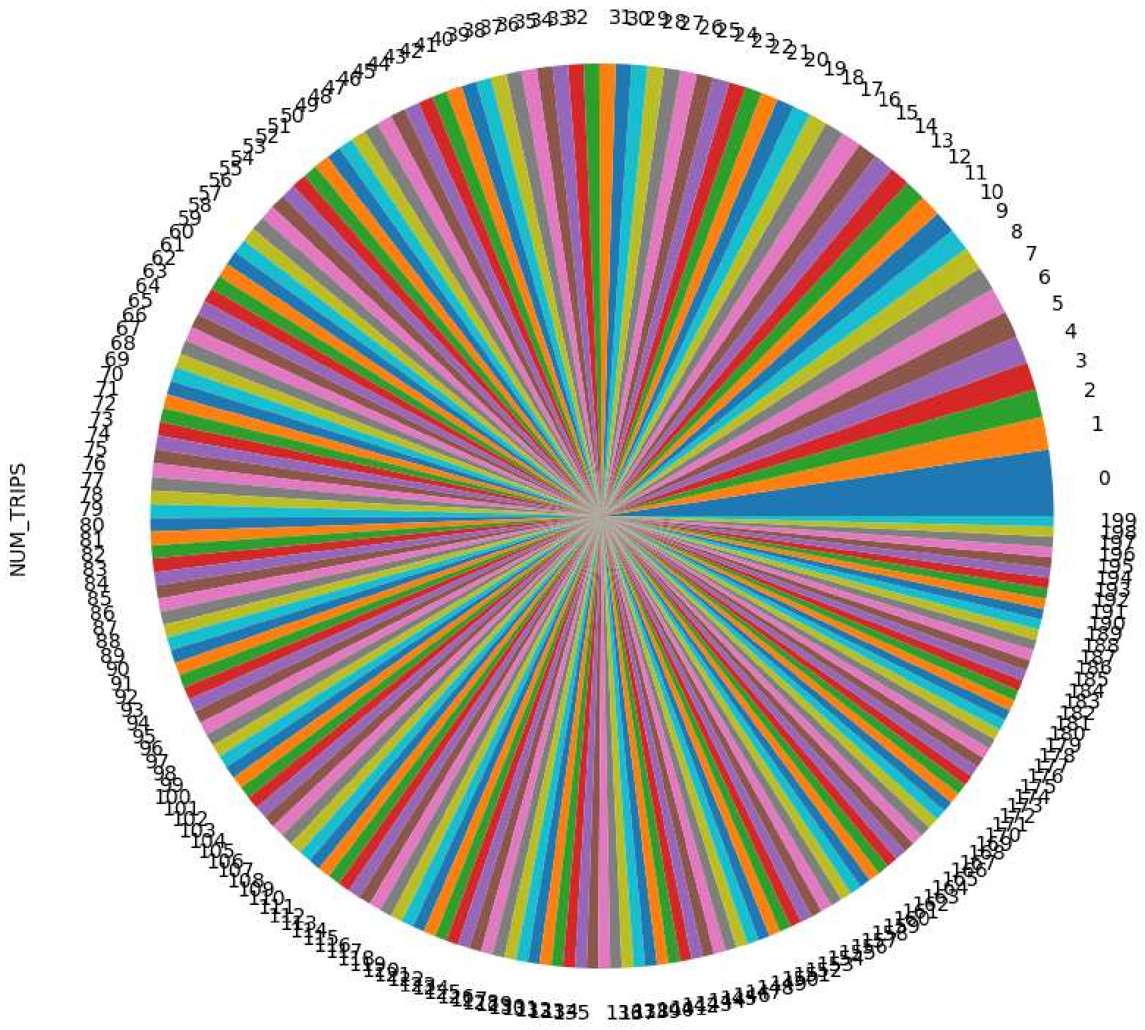
```
Current Database: "CITIBIKE"
Current Schema: "DEMO"
Current Warehouse: "BI_MEDIUM_WH"
```

Consultar datos de Snowflake

In [4]:
```
df_sql =  session.sql("Select START_STATION_ID, END_STATION_ID, NUM_TRIPS,AVG_
# df_sql.show()
```

In [5]:
```
df_PopularRoutes = df_sql.toPandas().sort_values("NUM_TRIPS", ascending=False)
```

In [6]:
```
df_PopularRoutes_plot=df_PopularRoutes["NUM_TRIPS"].plot.pie(figsize=(10,10))
```



Total de viajes Citibike

In [7]:
```
x=df_PopularRoutes["NUM_TRIPS"].sum()
```

In [8]:
```
x
```

Out[8]:
```
49065079
```

Timeline

In [9]:
```
df_sql_timeline =  session.sql("Select DIA, NUM_TRIPS from CITIBIKE.DEMO.VIEW_
```

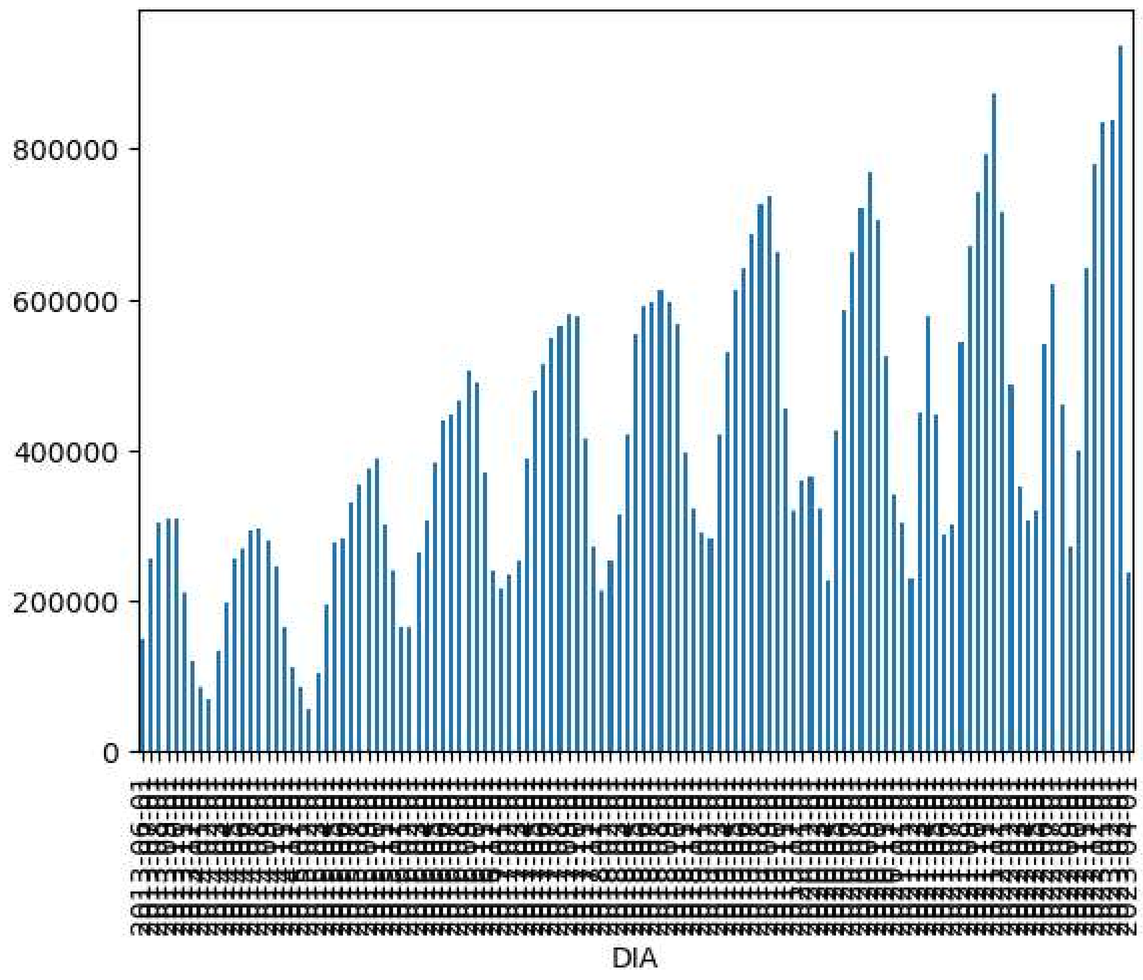
In [10]:
```
df_timeline = df_sql_timeline.toPandas()
```

In [11]:
```
df_timeline["DIA"].min()
```

Out[11]:
```
datetime.date(2013, 6, 1)
```

In [12]:
```
df_timeline.set_index("DIA", inplace=True)
df_timeline["NUM_TRIPS"].plot(kind="bar")
```

Out[12]:
```
<Axes: xlabel='DIA'>
```



Viajes por dia de la Semana

In [13]:
```
df_sql_week_day =  session.sql("Select WEEK_DAY, NUM_TRIPS from CITIBIKE.DEMO.
```

In [14]:
```
df_week_day = df_sql_week_day.toPandas()
```

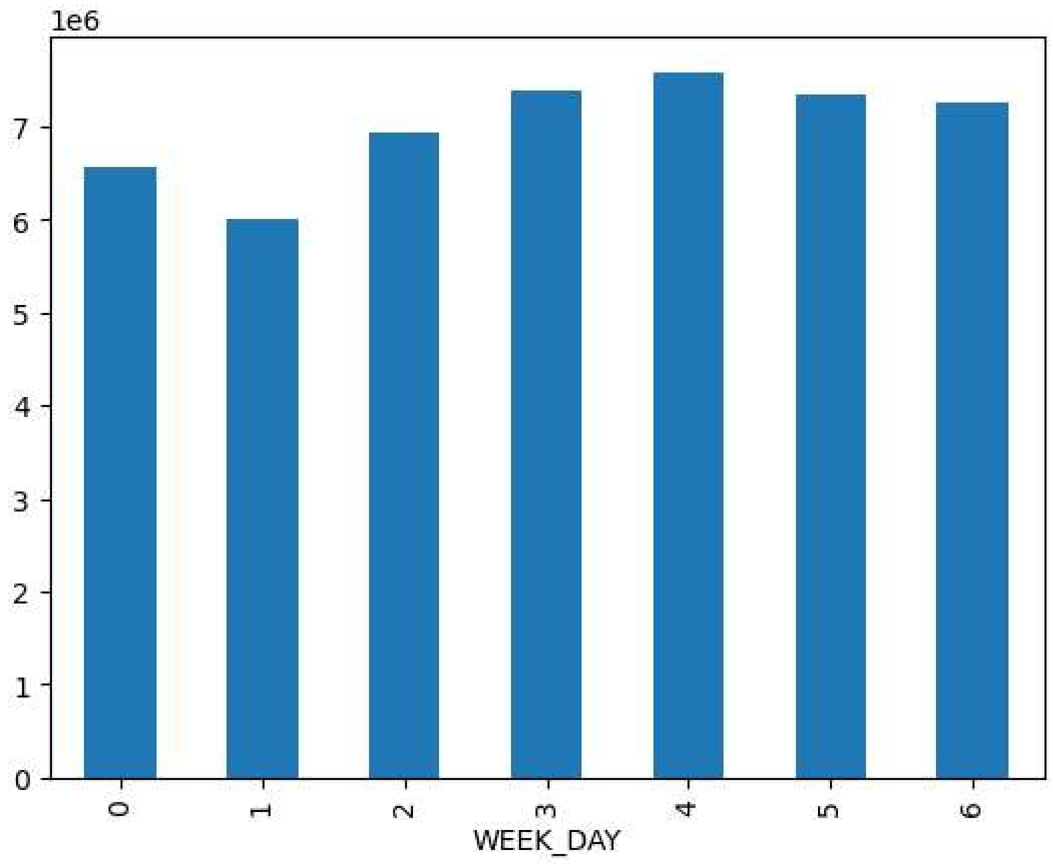
In [15]:
```
df_week_day
```

Out[15]:

	WEEK_DAY	NUM_TRIPS
0	0	6574658
1	1	6013864
2	2	6928155
3	3	7376263
4	4	7579206
5	5	7342757
6	6	7250176

In [16]:
```
df_week_day.set_index("WEEK_DAY", inplace=True)
df_week_day["NUM_TRIPS"].plot(kind="bar")
```

Out[16]:
```
<Axes: xlabel='WEEK_DAY'>
```



Viajes por hora del dia

In [17]:
```
df_sql_hour_of_day =  session.sql("Select HOUR_OF_DAY, NUM_TRIPS from CITIBIKE
```

In [18]:
```
df_hour_of_day = df_sql_hour_of_day.toPandas()
```

In [19]:
```
df_hour_of_day[:24]
```

Out[19]:

	HOUR_OF_DAY	NUM_TRIPS
0	0	504923
1	1	289886
2	2	177698
3	3	116620
4	4	106401
5	5	292774
6	6	997696
7	7	2065596
8	8	3390731
9	9	2874466
10	10	2149461
11	11	2318481
12	12	2721123
13	13	2868428
14	14	2971190
15	15	3145405
16	16	3592999
17	17	4753704
18	18	4541009
19	19	3256424
20	20	2233932
21	21	1603504
22	22	1242349
23	23	850279

In [20]:
```
df_hour_of_day["NUM_TRIPS"].max()
```

Out[20]:
```
4753704
```

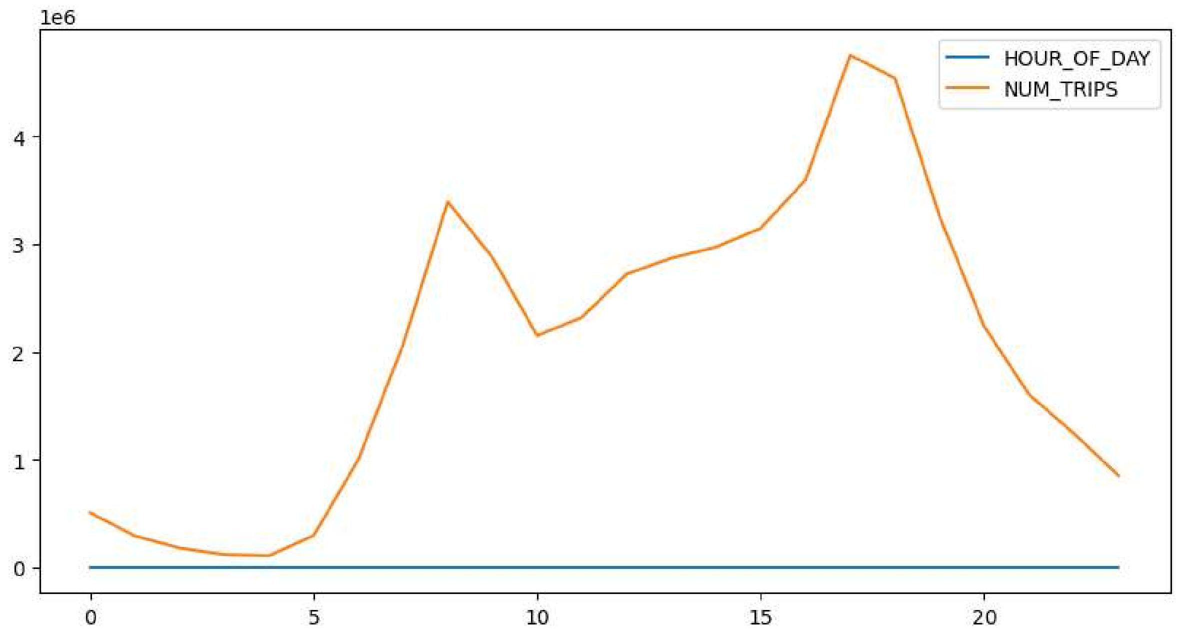
In [21]:
```
df_hour_of_day[df_hour_of_day["NUM_TRIPS"]==4753704]
```

Out[21]:

	HOUR_OF_DAY	NUM_TRIPS
17	17	4753704

In [22]:
```
df_hour_of_day.plot(figsize=(10,5))
```

Out[22]:
```
<Axes: >
```



In [23]:
```
# dir(df_sql)
```

Rutas - Origen - Destino

In [24]:
```
df_PopularRoutes.head()
```

Out[24]:

	START_STATION_ID	END_STATION_ID	NUM_TRIPS	AVG_DURATION_MINS
0	2006	2006	1157967	44.49
1	281	281	568577	51.50
2	3203	3186	489242	7.49
3	514	426	489045	23.49
4	435	509	481434	6.74

In [25]:
```
df_PopularRoutes["NUM_TRIPS"].max()

# datos[datos["Age"]==10]
```

Out[25]:
```
1157967
```

Definicion de la tabla viajes

In [26]:
```

df_definicionT = session.sql("SELECT GET_DDL('table', 'TRIPS')")
pdf_definicionT = df_definicionT.to_pandas()
print(pdf_definicionT.values[:1][0][0])

```

```
create or replace TABLE TRIPS (
        TRIPID NUMBER(38,0) autoincrement,
        V VARIANT
);
```

In [27]:
```
df_definicionV = session.sql("SELECT GET_DDL('view', 'TRIPS_VW')")
pdf_definicionV = df_definicionV.to_pandas()
print(pdf_definicionV.values[:1][0][0])
```

```
create or replace view TRIPS_VW(
        TRIPID,
        STARTTIME,
        ENDTIME,
        DURATION,
        START_STATION_ID,
        END_STATION_ID,
        BIKEID,
        BIKE_TYPE,
        RIDERID,
        RIDER_NAME,
        DOB,
        GENDER,
        MEMBER_TYPE,
        PAYMENT,
        PAYMENT_TYPE,
        PAYMENT_NUM
) as select
    tripid,
    v:STARTTIME::timestamp_ntz starttime,
    v:ENDTIME::timestamp_ntz endtime,
    datediff('minute', starttime, endtime) duration,
    v:START_STATION_ID::integer start_station_id,
    v:END_STATION_ID::integer end_station_id,
    v:BIKE.BIKEID::string bikeid,
    v:BIKE.BIKE_TYPE::string bike_type,
    v:RIDER.RIDERID::integer riderid,
    v:RIDER.FIRST_NAME::string || ' ' || v:RIDER.LAST_NAME::string rider_nam
e,
    to_date(v:RIDER.DOB::string, 'YYYY/MM/DD') dob,
    v:RIDER.GENDER::string gender,
    v:RIDER.MEMBER_TYPE::string member_type,
    v:RIDER.PAYMENT.TYPE::string payment,
    ifnull(v:RIDER.PAYMENT.CC_TYPE::string,
      v:RIDER.PAYMENT.PHONE_TYPE::string) payment_type,
    ifnull(v:RIDER.PAYMENT.PHONE_NUM::string,
      v:RIDER.PAYMENT.CC_NUM::string) payment_num
  from trips;
```

In [28]:
```
### Exportar Viajes por Hora
```

In [29]:
```
df_hour_of_day
```

Out[29]:

	HOUR_OF_DAY	NUM_TRIPS
0	0	504923
1	1	289886
2	2	177698
3	3	116620
4	4	106401
5	5	292774
6	6	997696
7	7	2065596
8	8	3390731
9	9	2874466
10	10	2149461
11	11	2318481
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13	13	2868428
14	14	2971190
15	15	3145405
16	16	3592999
17	17	4753704
18	18	4541009
19	19	3256424
20	20	2233932
21	21	1603504
22	22	1242349
23	23	850279

In [30]:
```
df_hour_of_day.to_csv("C:\\Users\\user\\\Documents\\GitHub\\TareasRoel\\df_hou
```

In [31]:
```
### Generó el archivo con éxito
```

Creating a Snowflake User-Defined-Table-Function (UDTF)

In [32]:
```
## from snowflake.snowpark.types import IntegerType, StructField, StructType
## from snowflake.snowpark.functions import udtf, lit
## class GeneratorUDTF:
##     def process(self, n):
##         for i in range(n):
##             yield (i, )
## generator_udtf = udtf(GeneratorUDTF, output_schema=StructType([StructField(
```

In [33]:
```
## Call the function.
## session.table_function(generator_udtf(lit(3))).collect()  # Query it by cal
##[Row(NUMBER=0), Row(NUMBER=1), Row(NUMBER=2)]
## session.table_function(generator_udtf.name, lit(3)).collect()  # Query it b
##[Row(NUMBER=0), Row(NUMBER=1), Row(NUMBER=2)]
```

Fin del Proyecto - Continuara

In [ ]: