Presentation by Fouad Moutaz

AIRBNB BARCELONA

Introduction & Problem

AIRBNB

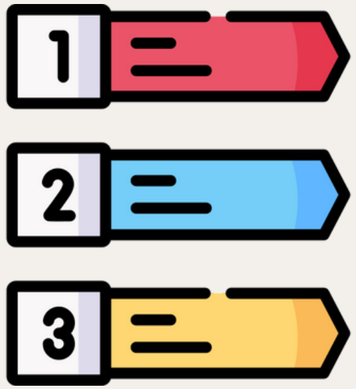
online marketplace and hospitality service that allows people to rent out their homes and apartments to travelers

OUTPUT

DWH

Business questions

SOURCE DATA



Listing
Contains detailed information about Airbnb listings

Calendar
Contains availability and pricing information for Airbnb listings

Reviews
Contains information about reviews for Airbnb listings

DATA MODELING

creating date dimention

GENERATE DATE FROM
MIN DATES
TO MAX DATES

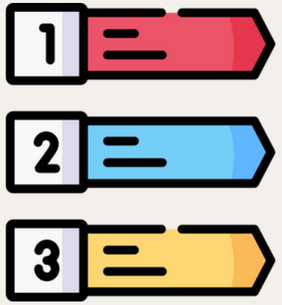
→

MAKE COLUMNS
YEAR MONTH
SEASON QUARTER

→

SURROGATE KEY
(DATE_KEY)

LISTING DIMENTION



REMOVE
ALL
UNNECESSARY
COLOUMNS

→

LINK WITH OTHER COLUMNS

Calendar Fact

DROP ADJUSTED_PRICE
unnecessary

→

DATE
__/__/__

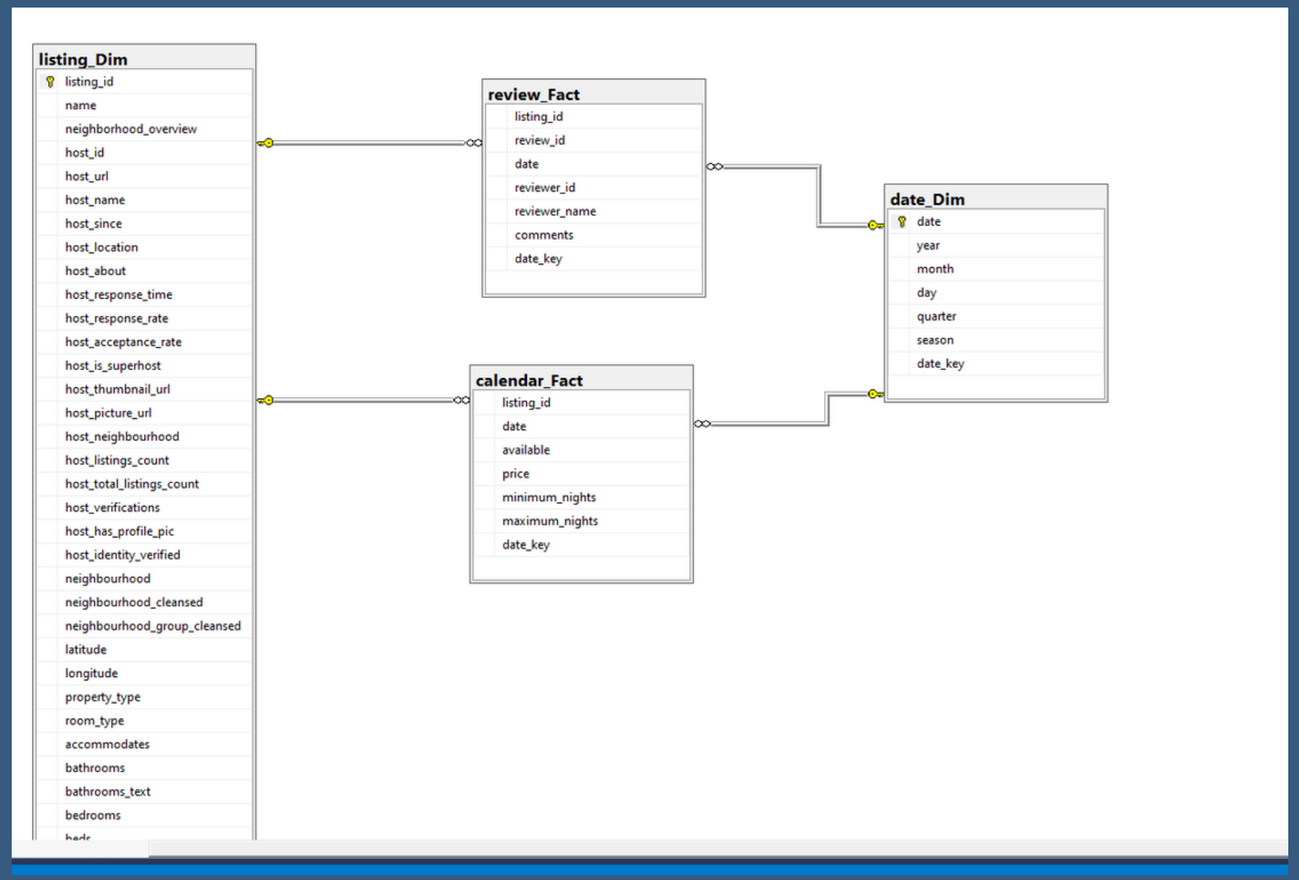
→

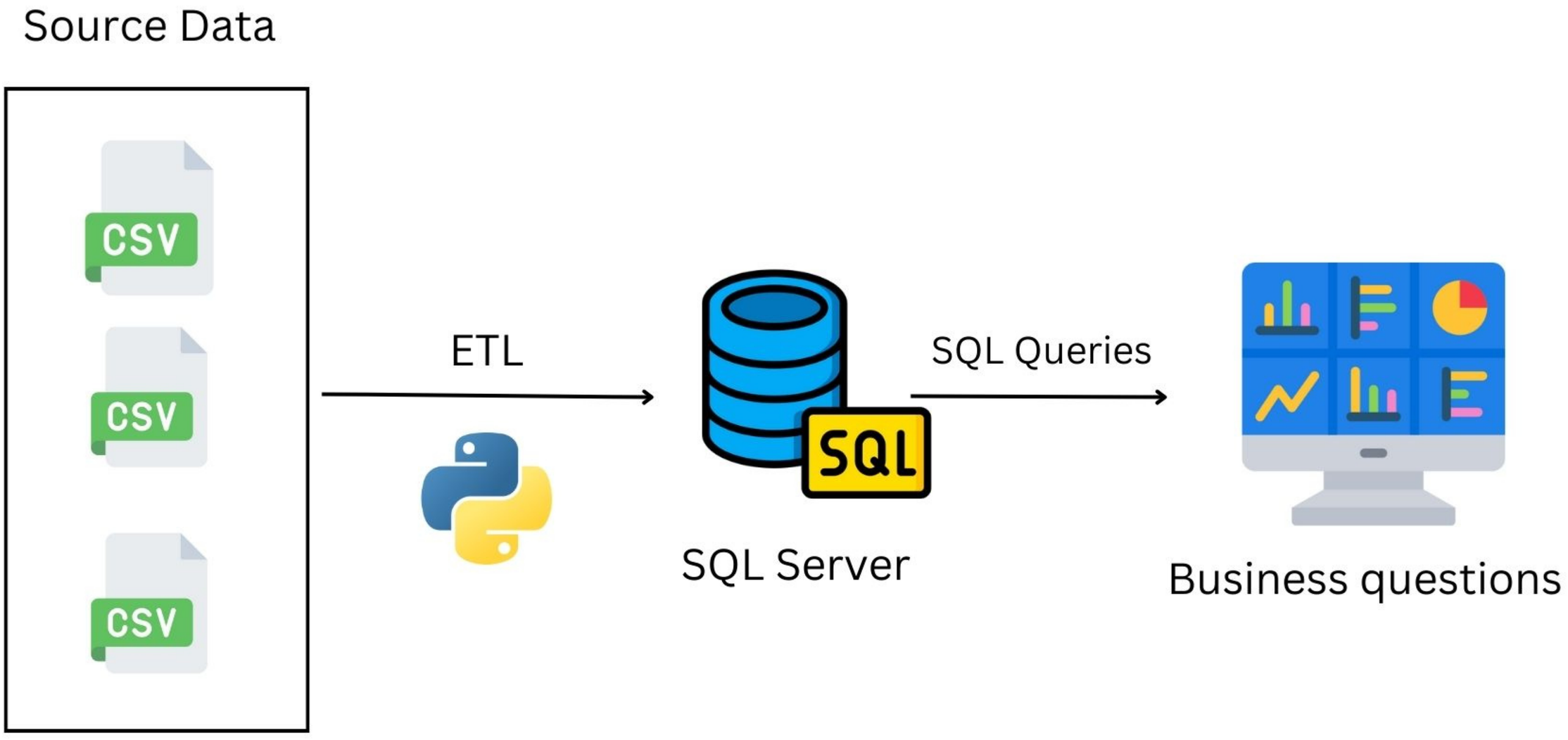
DATE_KEY AND
CONNECT IT

Reviews Fact

SURROGATE KEY → DATE KEY → CONNECT WITH TABLES

GALAXY SCHEMA




Source Data
CSV
CSV
CSV
ETL
SQL
SQL Queries
SQL Server
Business questions

BUSINESS QUESTION

```sql
-- Q.1: Cheapest and Most Available Listing in January 2024
select top 1 l.name , min(c.price) as cheapest_price , count(*) as availability
from listing_Dim l
join calendar_Fact c
on l.listing_id = c.listing_id
join date_Dim d
on d.date_key = c.date_key
where month = 1 and year = 2024
group by l.name , c.listing_id
order by cheapest_price asc


ALTER TABLE listing_Dim
ALTER COLUMN price FLOAT;

UPDATE listing_Dim
SET price = REPLACE(price, '$', '');
```

	name	cheapest_price	availability
1	Rental unit in Barcelona · 1 bedroom · 1 bed · ...	9	31

```sql
-- Q.2: Most Reviewed Listings in November 2023
select r.listing_id , l.name , count(*) as review_count
from review_Fact r
join listing_Dim l
on r.listing_id  = l.listing_id
join date_Dim d
on d.date_key = r.date_key
where month = 11 and year = 2023
group by r.listing_id , l.name
order by review_count desc;
```

	listing_id	name	review_count
1	52981104	Hostel in Barcelona · ?4.51 · 1 bedroom · 1 bed · ...	163
2	846093318788581404	Serviced apartment in Barcelona · ?4.75 · 3 bedr...	70
3	24424717	Boutique hotel in Barcelona · ?4.82 · 1 bedroom ·...	63
4	26940439	Serviced apartment in Eixample · ?4.85 · 2 bedro...	50
5	30759793	Serviced apartment in Barcelona · ?4.81 · 2 bedr...	46
6	39404484	Rental unit in Barcelona · ?4.78 · 1 bedroom · 2 b...	38
7	30760852	Serviced apartment in Barcelona · ?4.85 · 2 bedr...	37
8	43235590	Rental unit in Barcelona · ?4.66 · 1 bedroom · 2 b...	36
9	691218241291542242	Hotel in Barcelona · ?4.60 · 1 bedroom · 1 bed · 0...	35
10	51201977	Hotel in Barcelona · ?4.42 · Studio · 1 bed · 1 priv...	31
11	886838723814651944	Serviced apartment in Barcelona · ?4.71 · 1 bedr...	31
12	47043666	Hotel in Barcelona · ?4.76 · 1 bedroom · 1 bed · 1...	30
13	5561974	Hostel in Barcelona · ?4.70 · 1 bedroom · 16 beds...	30
14	72436	Serviced apartment in Barcelona · ?4.74 · 1 bedr...	29
15	43236801	Rental unit in Barcelona · ?4.61 · 2 bedrooms · 3 ...	29
16	53411031	Hotel in Barcelona · ?4.68 · 1 bedroom · 1 bed · 1...	29
17	54158916	Serviced apartment in Barcelona · ?4.93 · 3 bedr...	28
18	24193951	Serviced apartment in Barcelona · ?4.82 · 3 bedr...	28

```sql
-- Q.3: Most Expensive Neighborhood in Barcelona
select l.neighbourhood_group_cleansed , max(c.price) as max_price
from listing_Dim l
join calendar_Fact c
on l.listing_id = c.listing_id
group by l.neighbourhood_group_cleansed
order by max_price desc;
```

	neighbourhood_group_cleansed	max_price
1	Horta-Guinard?	231858
2	Eixample	90000
3	Gràcia	15000
4	Sarrià-Sant Gervasi	11000
5	Ciutat Vella	9999
6	Les Corts	9100
7	Sants-Montjuïc	9100
8	Sant Mart?	8999
9	Sant Andreu	5000
10	Nou Barris	2562

```sql
-- Q.4: Recommendations for Vacationers
-- For a Man with His Wife and 2 Children Looking for a Week Vacation around March 2024:

with AvailableDays as (

  select c.listing_id ,  d.date , ROW_NUMBER() over(partition by c.listing_id order by d.date ) as row_num
  from calendar_Fact c
  join date_Dim d
  on d.date_key = c.date_key
  where d.month = 3 and d.year = 2024 and c.available='t'
),
ConsecutiveDays as(
select
        listing_id ,
        min(date) as start_date,
        max(date) as end_date,
        count(*) as num_available_days
from AvailableDays
group by listing_id
)
select top 3 cd.listing_id , name , num_available_days , accommodates,  price
from ConsecutiveDays cd
join listing_Dim l
on l.listing_id = cd.listing_id
where num_available_days >= 7 and accommodates >= 4 AND name LIKE '%2 bedrooms%4 beds%'
order by price , start_date ,num_available_days desc;
```

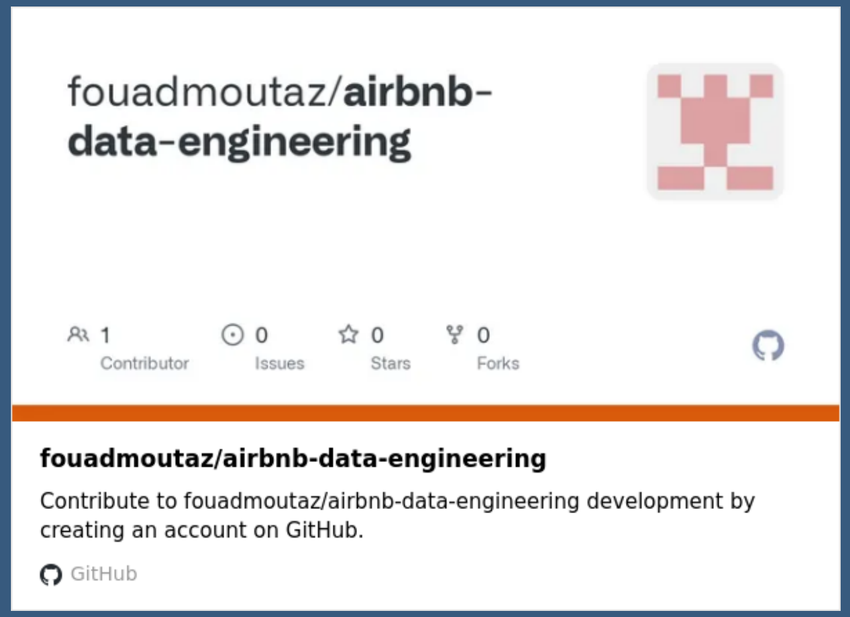
Results | Messages

	listing_id	name	num_available_days	accommodates	price
1	46524035	Rental unit in Barcelona · ?4.12 · 2 bedrooms · ...	31	5	24
2	26772799	Rental unit in Barcelona · 2 bedrooms · 4 beds ...	31	6	39
3	944248812021534532	Rental unit in Barcelona · 2 bedrooms · 4 beds ...	31	4	41

```sql
-- Q5: For a College Student with 4 Other Students Planning to Spend New Year's Eve in Barcelona:

select distinct top 5  l.listing_id , l.name , l.accommodates , c.price
from listing_Dim l
join calendar_Fact c
on l.listing_id = c.listing_id
join date_Dim d
on d.date_key = c.date_key
where c.available ='t' and d.date between '2023-12-30' AND '2024-01-01'
                and accommodates >= 5 and l.name like '%5 beds%'
order by c.price asc  ;
```

Results | Messages

	listing_id	name	accommodates	price
1	1009224004892468005	Rental unit in Barcelona · ?New · 3 bedrooms · …	5	25
2	6787210	Rental unit in Barcelona · ?4.17 · 2 bedrooms · …	5	30
3	50264247	Rental unit in Barcelona · 2 bedrooms · 5 beds ·…	5	30
4	846198588008748382	Rental unit in Barcelona · 2 bedrooms · 5 beds ·…	5	30
5	2205744	Rental unit in Barcelona · ?4.34 · 3 bedrooms · …	5	35

FOR MORE DETAILS