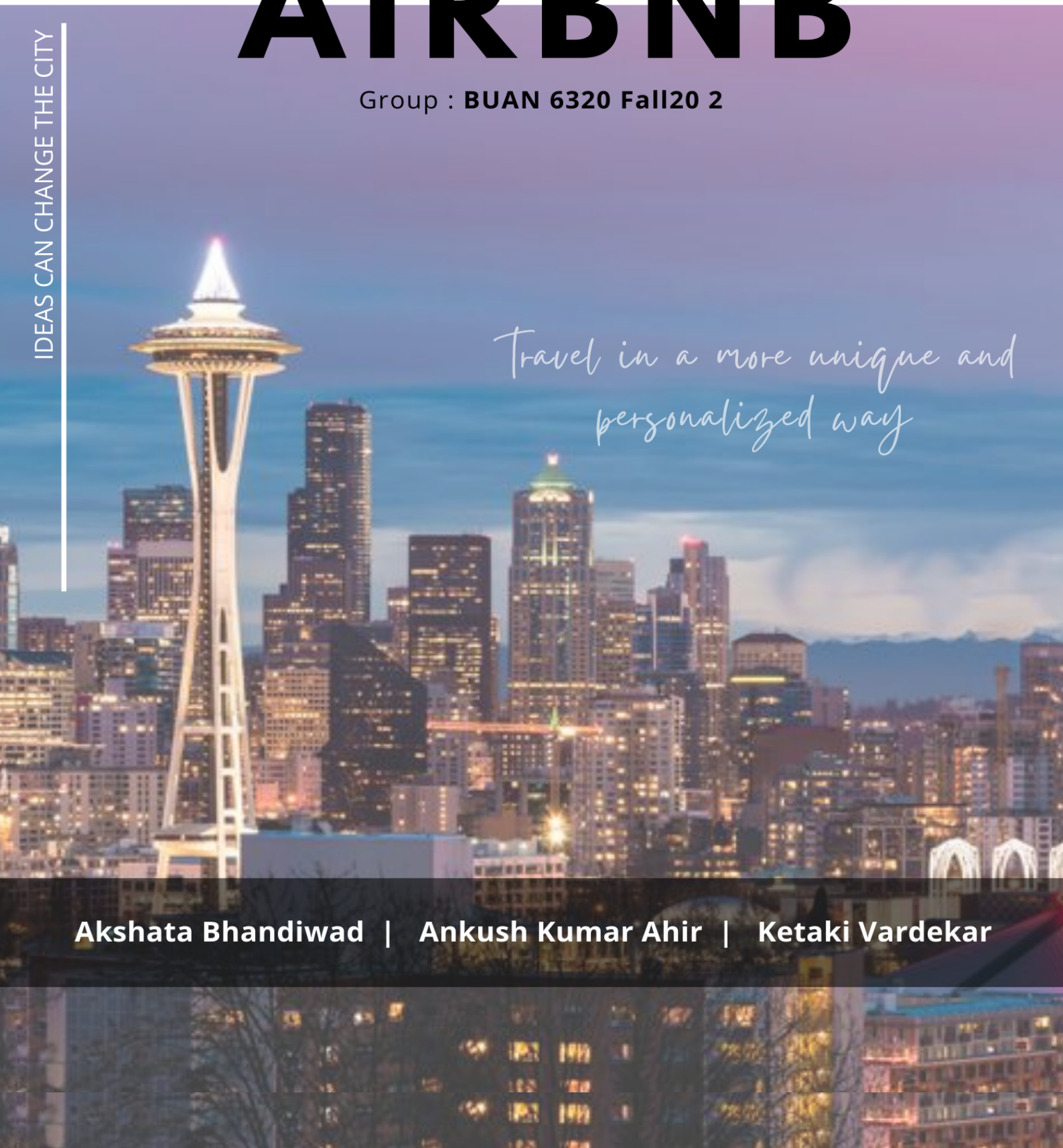
BUAN 6320 - SQL MONGO. PROJECT

AIRBNB

Group : **BUAN 6320 Fall20 2**

IDEAS CAN CHANGE THE CITY



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1. Business Scenario Analysis

1.1. Overview

Airbnb is an internationally known vacation rental company, that connects the guests (customers) to the hosts(property owners) offering short term lodging options.

- Interested hosts provide their listing property description, prices and other details such as the allowed number of guests, home type, rules, and amenities foe each property.
- The guests can search for lodging options in desired locations on the Airbnb platform using filters such as property type, booking dates, location, number of guests, number of beds and bedrooms, and price. Suitable properties that are posted by the hosts, meeting the guest criteria are displayed for the guest to choose from.
- Some hosts also require a scan of license before accepting a reservation from a guest. Such information is also listed with the property.
- In a scenario of cancellation, hosts select one of the three cancellation policies: Flexible, Moderate, and Strict. The guests find the information of the type of cancellation policy with the listing description.
- After the stay, the guests can leave reviews about the property and the whole experience. The guests who chose to write a review are considered as reviewers by the Airbnb.
- The review ratings collected for various aspect of the listing are then summarized for a particular property to show as the average rating for each.

1.2. Data set

Since 2008, guests and hosts have used Airbnb to travel in a more unique, personalized way. As part of the Airbnb Inside initiative, the dataset[1] used for this project describes the listing activity of homestays in Seattle, WA. The dataset is part of Airbnb Inside.[2]

The data set consists of three separate but dependent data files:

1. **Listings:** This includes total of 92 columns, including full descriptions of the property, location, neighborhood, host details, URL details of property and host, different prices, required verifications, amenities of the property, and review scores
2. **Reviews:** The 6 columns in this dataset contains the listing id, reviewer details, detailed comments. Each record is uniquely identified by reviews id.
3. **Calendar:** The 4 columns captures the information regarding the availability and price of a particular property on a given calendar date.

[1] *https://www.kaggle.com/airbnb/seattle*
[2] *http://insideairbnb.com/get-the-data.html*

2. Dataset Normalization

The information in the dataset seem to be insufficiently organized to enter into the Entity relationship diagram. For the purpose of this project, the dataset will be segregated into the third normal form (3NF) by establishing functional dependency for each table. It is made sure that each attribute of the table contains same type of values i.e; either numerical or character, with an unambiguous and unique column name. All the partial dependencies are also eliminated in each table. The tables have unique entries with no transitive dependency.

2.1. Listings

- Host id and other respective unique host details have been separated out as Host Details table. The Host id has been identified as the unique primary key
- The host verification details and the host URL has been separated out with unique Host id as their primary keys.
- Multivalued attribute of 'host verifications' column in the original dataset has been seprated into diffrent column such as "email", "phone" etc. And binary values of "1" and "0" has been updated to represent if a host conntact and other verification has been carried out or not.
- Multivalued attribute of 'Amenities' are seprated into different columns to facilitate future modifications of amenities for a particular listing.
- Each amenity is separated in vdifferent coulmn with binary values "0" or "1". "0" representing amenity not available in the particular listing and "1" reperesenting the presence of a particular amenity.
- Amenities table is separated out with listing id as the primary key.
- Bed type, Room type and Property type columns of the original listing dataset has been separated out to facilitate any modifications (addition or deletion) of a particular type.
- The cancelation policy type introduced by Airbnb has been separated out to make sure easy introduction or change of a cancellation policy type in the future by Airbnb.
- All the listing prices have been separated out with respective listing id as Listing Price Details table.
- Listing Review table is separated from the main table to identify the review section of each listing directly from the review table.
- The street column in the listing dataset had values overlapping with the city and zip code column. Thus, the street address was retained from the origin column.

2.2. Reviews

- The unique reviewer id and respective reviewer name has been separated out as Reviewer Details table.
- The other columns of the original dataset is part of Reviews table

2.3. Calendar

- Unique calendar id has been introduced as a primary key for the Listing Availability (Calendar) table.

3. Relational Data Model

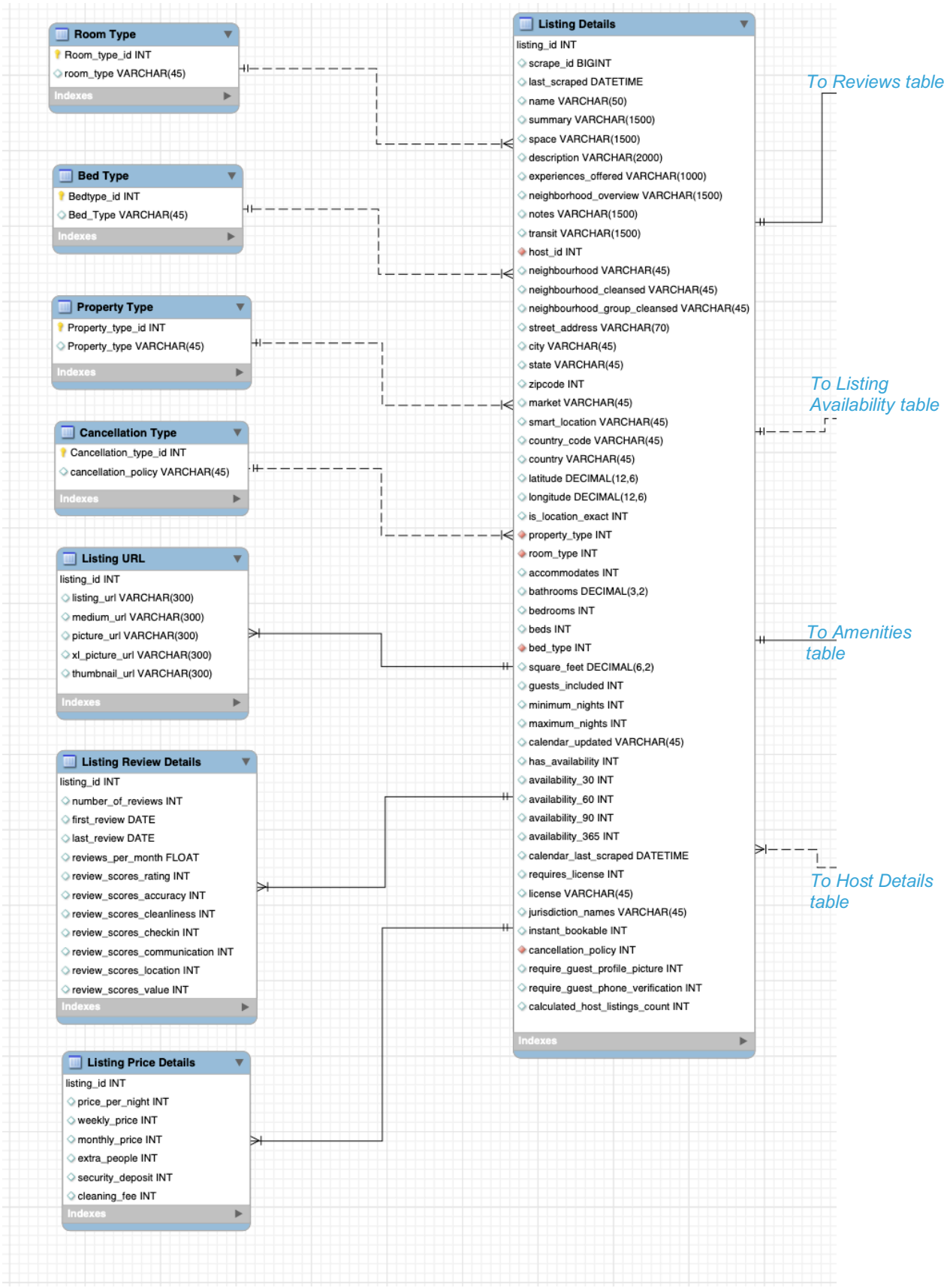
3.1. Key Assumptions

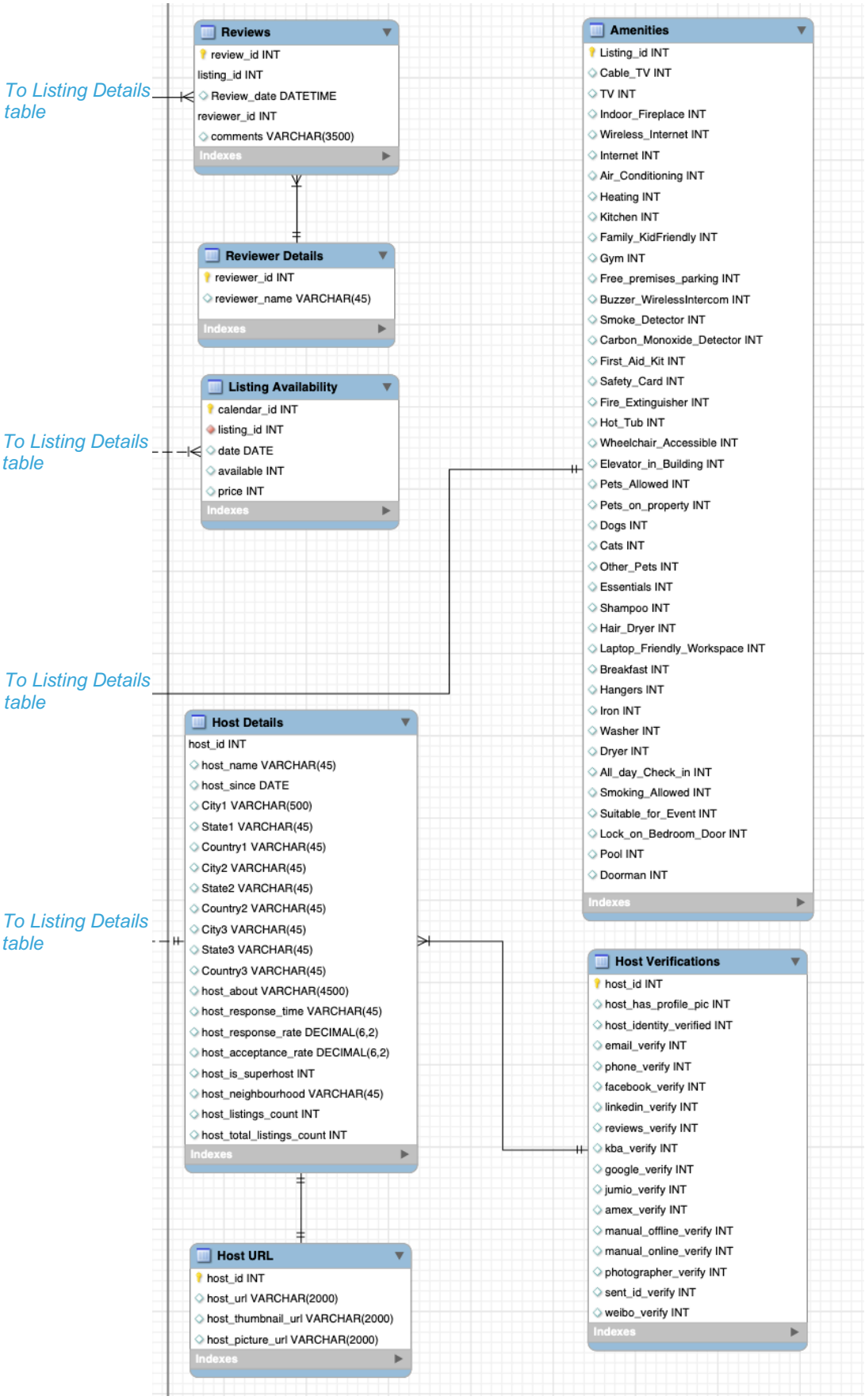
- All the prices of the listings in the Listing Price details table are considered to be up to date.
- The daily prices of the listings are captured by the price per night column in the Listings Price Details table.
- Any changes to the daily price, weekly price, monthly price of the listing will be updated by the host and accordingly updated in the database.
- Not every listing is available on weekly or monthly basis
- Listing that are available on monthly basis, has one and only one monthly price
- Not every listing has cleaning fee to be paid along with booking charges
- Listing that comes with cleaning fee has one and only one value of cleaning fee
- Every listing will have one and only one value of allowed number of extra people
- Not every listing has a security deposit to be paid along with booking charges
- Listing that comes with security deposit has one and only one value of security deposit
- The listing review scores are going to be updated for the properties after analyzing all the review scores provided by different reviewers.
- For this study, the review scores have not been considered as a calculated field in the listing review table.
- The access to be URL tables will be given to specific people of Airbnb IT team maintain the data accuracy and integrity.
- The reviewer personal details will not be published with the reviews.
- A host details can capture one to three host locations.
- The host verifications will be carried out separately. Thus, the access to verification details will be provided to limited number of people in the Airbnb verification team.

3.2. Detail Assumptions

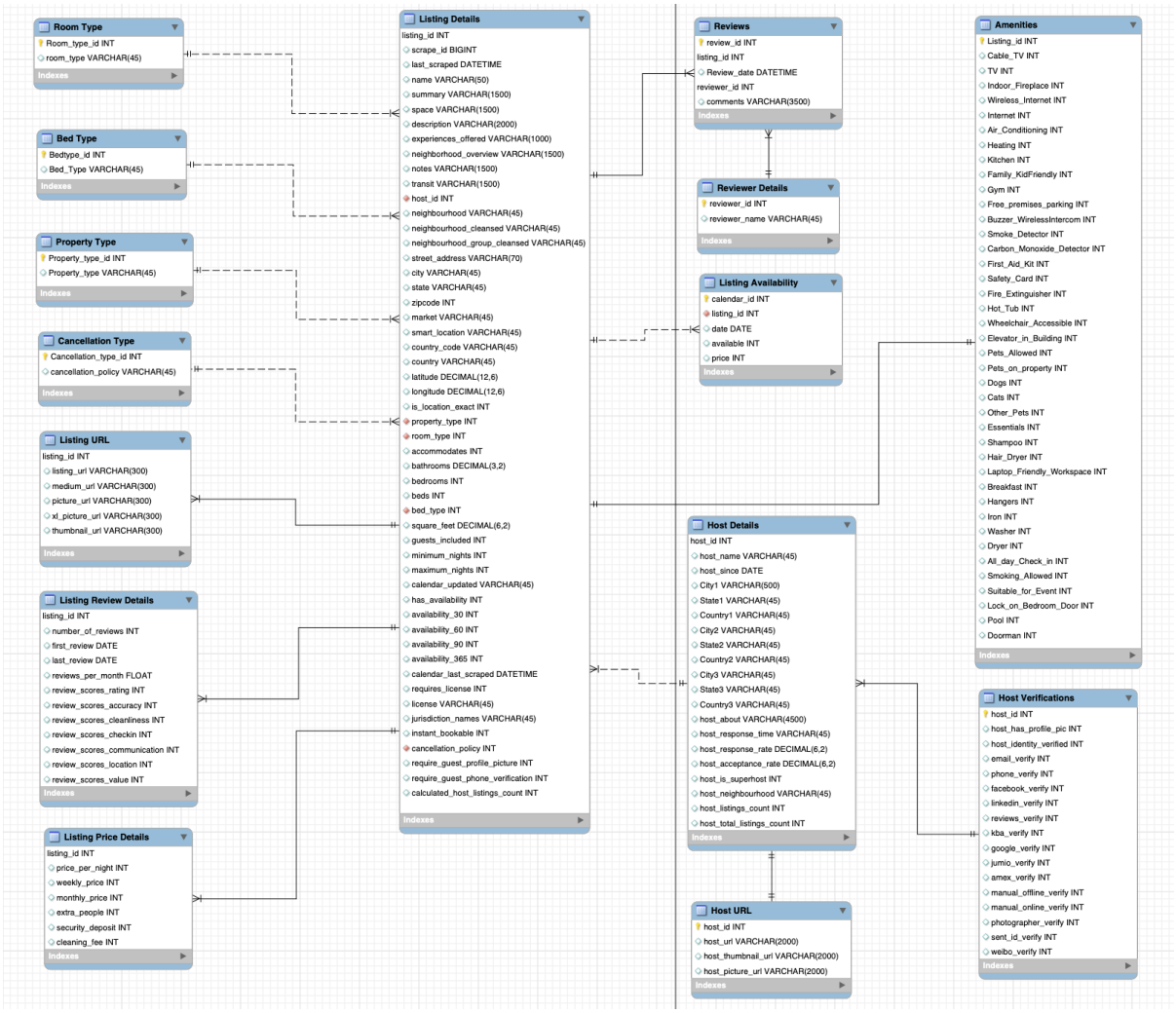
- One room type can be seen in one to many rooms in a listing
- One room in a listing will have one and only one room type
- One bed type can have one to many listings.
- One listing can have one and only one bed type
- One property will have one and only one property type id associated with it
- There can be multiple properties of one property type
- One property type can be applied to one to many listings
- One listing can have one and only one property type
- One listing can have one and only one type of cancellation policy
- One cancellation policy type can be applied to one to many listings
- Every listing has one and only one listing id
- One listing URL detail can be associated with one and only one listing id.
- Every listing can have one and only one price detail in the Listing Price details table that is associated to one and only one listing id.
- One listing id in the amenities table can be associated to one and only one listing id of the listing details table.
- One listing id will have to one to many calendar ids in the Listing Availability table
- One calendar id will be associated to one and only one listing id.
- Every review will have one and only one review id
- One listing id can have one to many reviews
- One review id will be associated to one and only one listing id.
- One review can be given by one and only one reviewer with a unique review id.
- One reviewer id can be associated to one to many reviews id
- One listing will have one and only one host
- One host can have one to many listings
- One host id of host URL table can be associated to one and only one host id of the host details table.
- One host id of host verification table can be associated to one and only one host id of the host details table.

3.3. Entity Relationship Diagram




To Listing Details table
To Listing Details table
To Listing Details table
To Listing Details table
Reviews
review_id INT
listing_id INT
Review_date DATETIME
reviewer_id INT
comments VARCHAR(3500)
Indexes
Reviewer Details
reviewer_id INT
reviewer_name VARCHAR(45)
Indexes
Listing Availability
calendar_id INT
listing_id INT
date DATE
available INT
price INT
Indexes
Host Details
host_id INT
host_name VARCHAR(45)
host_since DATE
City1 VARCHAR(500)
State1 VARCHAR(45)
Country1 VARCHAR(45)
City2 VARCHAR(45)
State2 VARCHAR(45)
Country2 VARCHAR(45)
City3 VARCHAR(45)
State3 VARCHAR(45)
Country3 VARCHAR(45)
host_about VARCHAR(4500)
host_response_time VARCHAR(45)
host_response_rate DECIMAL(6,2)
host_acceptance_rate DECIMAL(6,2)
host_is_superhost INT
host_neighbourhood VARCHAR(45)
host_listings_count INT
host_total_listings_count INT
Indexes
Host URL
host_id INT
host_url VARCHAR(2000)
host_thumbnail_url VARCHAR(2000)
host_picture_url VARCHAR(2000)
Indexes
Amenities
Listing_id INT
Cable_TV INT
TV INT
Indoor_Fireplace INT
Wireless_Internet INT
Internet INT
Air_Conditioning INT
Heating INT
Kitchen INT
Family_KidFriendly INT
Gym INT
Free_premises_parking INT
Buzzer_WirelessIntercom INT
Smoke_Detector INT
Carbon_Monoxide_Detector INT
First_Aid_Kit INT
Safety_Card INT
Fire_Extinguisher INT
Hot_Tub INT
Wheelchair_Accessible INT
Elevator_in_Building INT
Pets_Allowed INT
Pets_on_property INT
Dogs INT
Cats INT
Other_Pets INT
Essentials INT
Shampoo INT
Hair_Dryer INT
Laptop_Friendly_Workspace INT
Breakfast INT
Hangers INT
Iron INT
Washer INT
Dryer INT
All_day_Check_in INT
Smoking_Allowed INT
Suitable_for_Event INT
Lock_on_Bedroom_Door INT
Pool INT
Doorman INT
Indexes
Host Verifications
host_id INT
host_has_profile_pic INT
host_identity_verified INT
email_verify INT
phone_verify INT
facebook_verify INT
linkedin_verify INT
reviews_verify INT
kba_verify INT
google_verify INT
jumio_verify INT
amex_verify INT
manual_offline_verify INT
manual_online_verify INT
photographer_verify INT
sent_id_verify INT
weibo_verify INT
Indexes

The complete Entity Relationship Diagram is as follows



The data type index value (Varchar number and decimal places) have been assigned based on the respective maximum character length of each attribute within the dataset.

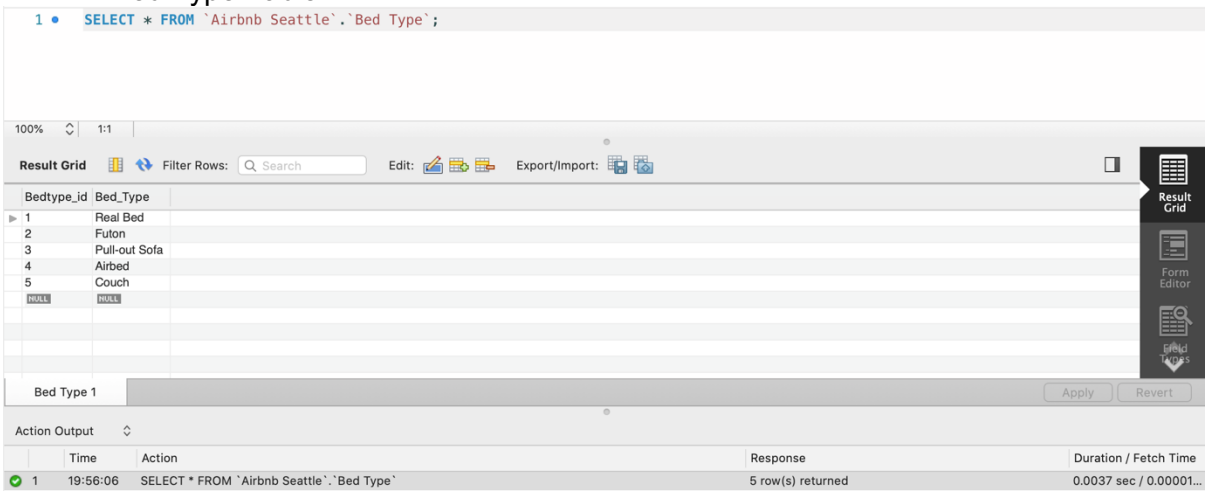
4. Physical MySQL Database

4.1. Data Cleaning and Manipulation

- Reviews table - id column name renamed as “Review_id”
- Reviews table - date column name renamed as “Review_date”
- All the Boolean type entries “t” is renamed as 1 and “f” is renamed as 0
- $ sign in price columns removed and converted as numeric value
- Host table – ‘US’ replaced to United States
- Host table – The ‘%’ in response and acceptance rate columns have been removed and the columns have been converted as decimals.
- The missing country values has been updated with appropriate Country values based on the Cities and States
- Listing table – zip code value 99\n98122 is replaced to 98122
- All the date columns have been formatted in date format.
- The city names have been corrected appropriately to maintain consistency in the data.

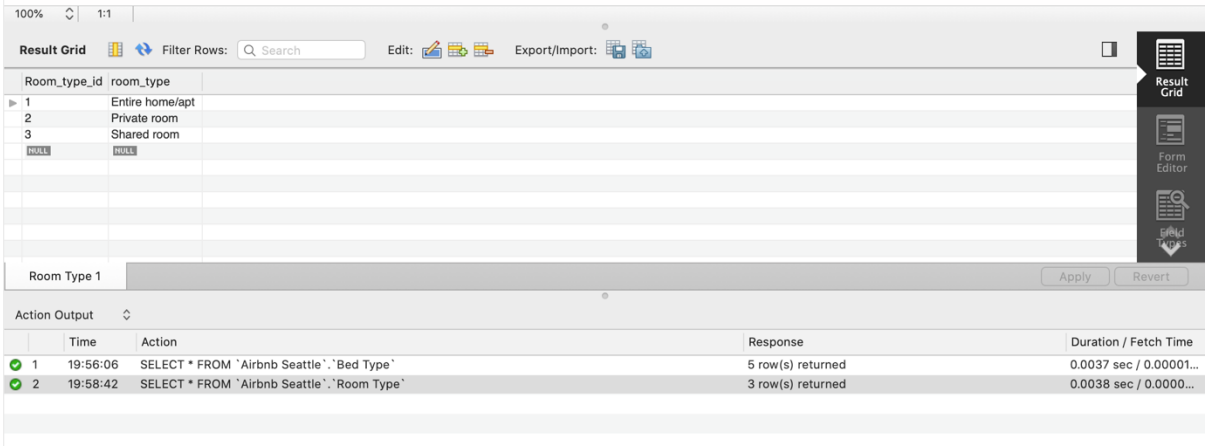
4.2. Physical Database objects

- Bed Type Table



- Room Type Table

```
1 • SELECT * FROM `Airbnb Seattle`.`Room Type`;
```



Room_type_id	room_type
1	Entire home/apt
2	Private room
3	Shared room
NULL	NULL

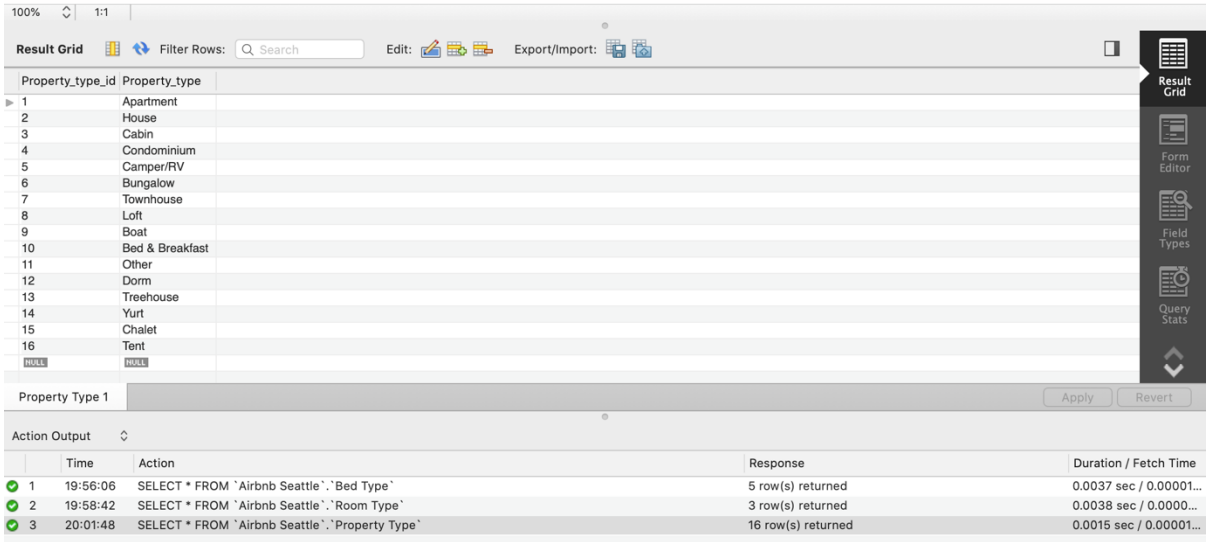
Room Type 1

Action Output

	Time	Action	Response	Duration / Fetch Time
1	19:56:06	SELECT * FROM `Airbnb Seattle`.`Bed Type`	5 row(s) returned	0.0037 sec / 0.00001...
2	19:58:42	SELECT * FROM `Airbnb Seattle`.`Room Type`	3 row(s) returned	0.0038 sec / 0.0000...

- Property Type Table

```
1 • SELECT * FROM `Airbnb Seattle`.`Property Type`;
```



Property_type_id	Property_type
1	Apartment
2	House
3	Cabin
4	Condominium
5	Camper/RV
6	Bungalow
7	Townhouse
8	Loft
9	Boat
10	Bed & Breakfast
11	Other
12	Dorm
13	Treehouse
14	Yurt
15	Chalet
16	Tent
NULL	NULL

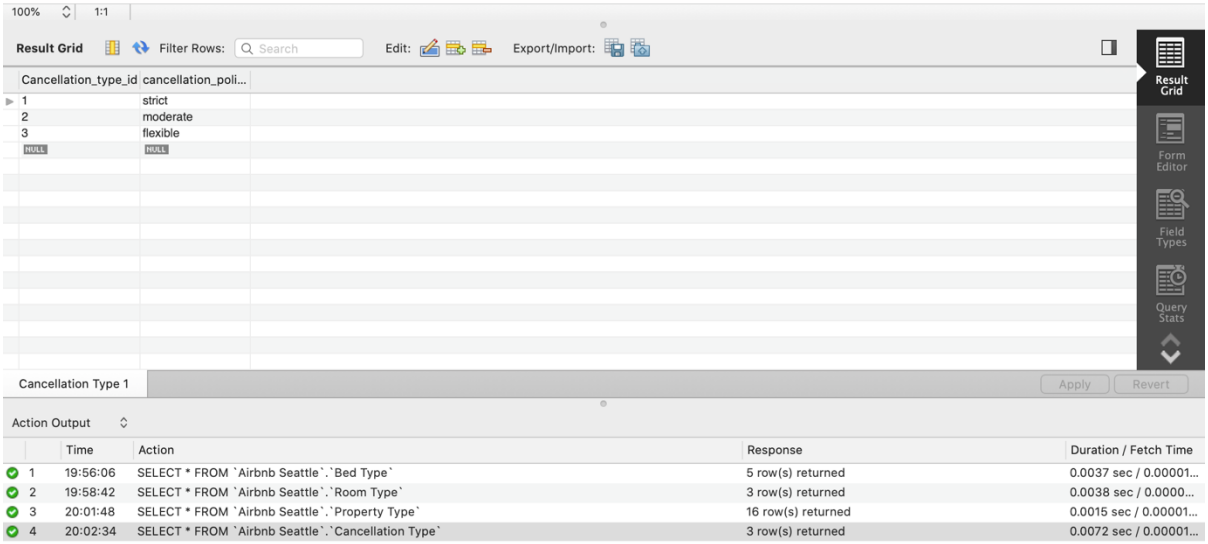
Property Type 1

Action Output

	Time	Action	Response	Duration / Fetch Time
1	19:56:06	SELECT * FROM `Airbnb Seattle`.`Bed Type`	5 row(s) returned	0.0037 sec / 0.00001...
2	19:58:42	SELECT * FROM `Airbnb Seattle`.`Room Type`	3 row(s) returned	0.0038 sec / 0.0000...
3	20:01:48	SELECT * FROM `Airbnb Seattle`.`Property Type`	16 row(s) returned	0.0015 sec / 0.00001...

- Cancellation Type Table

```
1 • SELECT * FROM `Airbnb Seattle`.`Cancellation Type`;
```



Result Grid | Filter Rows: | Edit: | Export/Import:

Cancellation_type_id	cancellation_poli...
1	strict
2	moderate
3	flexible
NULL	NULL

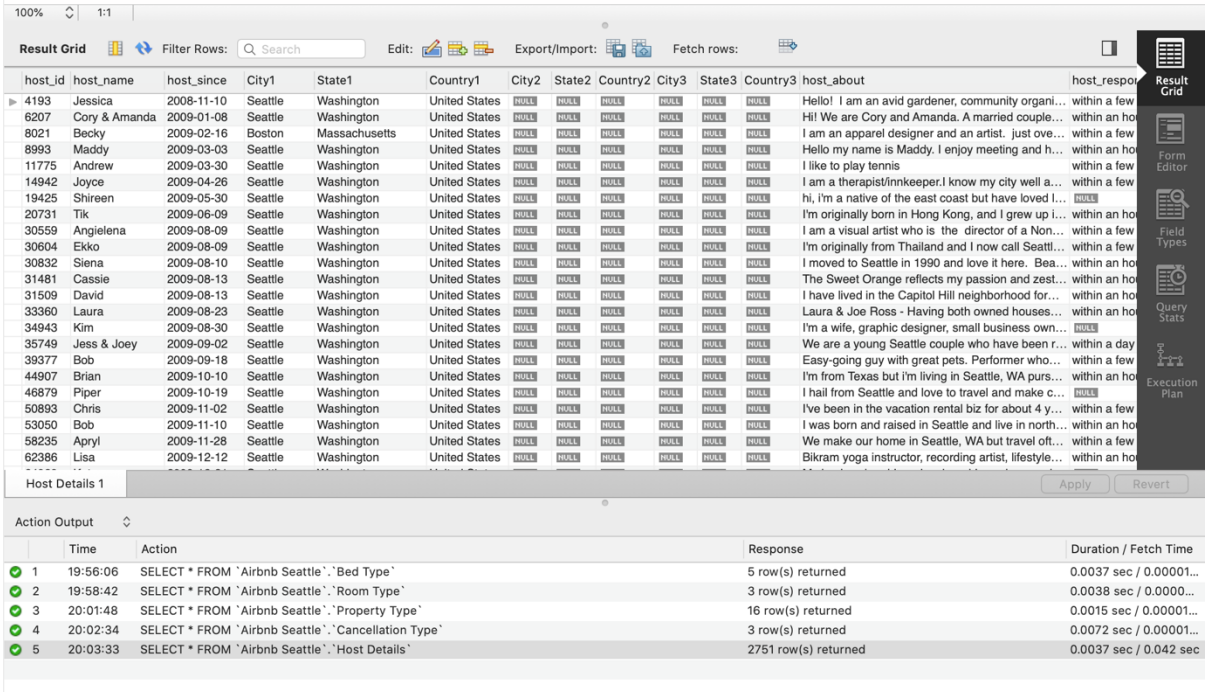
Cancellation Type 1 | Apply | Revert

Action Output

	Time	Action	Response	Duration / Fetch Time
1	19:56:06	SELECT * FROM `Airbnb Seattle`.`Bed Type`	5 row(s) returned	0.0037 sec / 0.00001...
2	19:58:42	SELECT * FROM `Airbnb Seattle`.`Room Type`	3 row(s) returned	0.0038 sec / 0.0000...
3	20:01:48	SELECT * FROM `Airbnb Seattle`.`Property Type`	16 row(s) returned	0.0015 sec / 0.00001...
4	20:02:34	SELECT * FROM `Airbnb Seattle`.`Cancellation Type`	3 row(s) returned	0.0072 sec / 0.00001...

- Host Details Table

```
1 • SELECT * FROM `Airbnb Seattle`.`Host Details`;
```



Result Grid | Filter Rows: | Edit: | Export/Import: | Fetch rows:

host_id	host_name	host_since	City1	State1	Country1	City2	State2	Country2	City3	State3	Country3	host_about	host_respo
4193	Jessica	2008-11-10	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	Hello! I am an avid gardener, community organi...	within a few
6207	Cory & Amanda	2009-01-08	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	Hi! We are Cory and Amanda. A married couple...	within an ho
8021	Becky	2009-02-16	Boston	Massachusetts	United States	NULL	NULL	NULL	NULL	NULL	NULL	I am an apparel designer and an artist. just ove...	within a few
8993	Maddy	2009-03-03	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	Hello my name is Maddy. I enjoy meeting and h...	within an ho
11775	Andrew	2009-03-30	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	I like to play tennis	within a few
14942	Joyce	2009-04-26	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	I am a therapist/innkeeper.I know my city well a...	within a few
19425	Shireen	2009-05-30	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	hi, i'm a native of the east coast but have loved l...	NULL
20731	Tik	2009-06-09	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	I'm originally born in Hong Kong, and I grew up i...	within an ho
30559	Angielena	2009-08-09	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	I am a visual artist who is the director of a Non...	within a few
30604	Ekko	2009-08-09	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	I'm originally from Thailand and I now call Seattl...	within a few
30832	Siena	2009-08-10	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	I moved to Seattle in 1990 and love it here. Bea...	within an ho
31481	Cassie	2009-08-13	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	The Sweet Orange reflects my passion and zest...	within an ho
31509	David	2009-08-13	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	I have lived in the Capitol Hill neighborhood for...	within an ho
33360	Laura	2009-08-23	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	Laura & Joe Ross - Having both owned houses...	within an ho
34943	Kim	2009-08-30	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	I'm a wife, graphic designer, small business own...	NULL
35749	Jess & Joey	2009-09-02	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	We are a young Seattle couple who have been r...	within a day
39377	Bob	2009-09-18	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	Easy-going guy with great pets. Performer who...	within a few
44907	Brian	2009-10-10	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	I'm from Texas but i'm living in Seattle, WA purs...	within an ho
46879	Piper	2009-10-19	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	I hail from Seattle and love to travel and make c...	NULL
50893	Chris	2009-11-02	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	I've been in the vacation rental biz for about 4 y...	within a few
53050	Bob	2009-11-10	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	I was born and raised in Seattle and live in north...	within an ho
58235	Apryl	2009-11-28	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	We make our home in Seattle, WA but travel oft...	within a few
62386	Lisa	2009-12-12	Seattle	Washington	United States	NULL	NULL	NULL	NULL	NULL	NULL	Bikram yoga instructor, recording artist, lifestyle...	within an ho

Host Details 1 | Apply | Revert

Action Output

	Time	Action	Response	Duration / Fetch Time
1	19:56:06	SELECT * FROM `Airbnb Seattle`.`Bed Type`	5 row(s) returned	0.0037 sec / 0.00001...
2	19:58:42	SELECT * FROM `Airbnb Seattle`.`Room Type`	3 row(s) returned	0.0038 sec / 0.0000...
3	20:01:48	SELECT * FROM `Airbnb Seattle`.`Property Type`	16 row(s) returned	0.0015 sec / 0.00001...
4	20:02:34	SELECT * FROM `Airbnb Seattle`.`Cancellation Type`	3 row(s) returned	0.0072 sec / 0.00001...
5	20:03:33	SELECT * FROM `Airbnb Seattle`.`Host Details`	2751 row(s) returned	0.0037 sec / 0.042 sec

- Host URL Table

```
1 • SELECT * FROM `Airbnb Seattle`.`Host URL`;
```

Result Grid

host_id	host_url	host_thumbnail_url	host_picture_url
4193	https://www.airbnb.com/users/show/4193	https://a2.muscache.com/ac/users/4193/profile_pic/1259096088/...	https://a2.muscache.com/ac/users/4193/profile_pic/125909...
6207	https://www.airbnb.com/users/show/6207	https://a1.muscache.com/ac/users/6207/profile_pic/1379996197/...	https://a1.muscache.com/ac/users/6207/profile_pic/137999...
8021	https://www.airbnb.com/users/show/8021	https://a1.muscache.com/ac/users/8021/profile_pic/1358781826/...	https://a1.muscache.com/ac/users/8021/profile_pic/135878...
8993	https://www.airbnb.com/users/show/8993	https://a2.muscache.com/ac/users/8993/profile_pic/1259099918/...	https://a2.muscache.com/ac/users/8993/profile_pic/125909...
11775	https://www.airbnb.com/users/show/11775	https://a0.muscache.com/ac/users/11775/profile_pic/1372806787/...	https://a0.muscache.com/ac/users/11775/profile_pic/13728...
14942	https://www.airbnb.com/users/show/14942	https://a1.muscache.com/ac/users/14942/profile_pic/1308204367...	https://a1.muscache.com/ac/users/14942/profile_pic/13082...
19425	https://www.airbnb.com/users/show/19425	https://a1.muscache.com/ac/users/19425/profile_pic/1259107211/...	https://a1.muscache.com/ac/users/19425/profile_pic/12591...
20731	https://www.airbnb.com/users/show/20731	https://a0.muscache.com/ac/users/20731/profile_pic/1303798814...	https://a0.muscache.com/ac/users/20731/profile_pic/13037...
30559	https://www.airbnb.com/users/show/30559	https://a2.muscache.com/ac/users/30559/profile_pic/1407822899...	https://a2.muscache.com/ac/users/30559/profile_pic/14078...
30604	https://www.airbnb.com/users/show/30604	https://a2.muscache.com/ac/users/30604/profile_pic/1259115228/...	https://a2.muscache.com/ac/users/30604/profile_pic/12591...
30832	https://www.airbnb.com/users/show/30832	https://a2.muscache.com/ac/users/30832/profile_pic/1431153143/...	https://a2.muscache.com/ac/users/30832/profile_pic/14311...
31481	https://www.airbnb.com/users/show/31481	https://a1.muscache.com/ac/users/31481/profile_pic/1341793794...	https://a1.muscache.com/ac/users/31481/profile_pic/13417...
31509	https://www.airbnb.com/users/show/31509	https://a1.muscache.com/ac/users/31509/profile_pic/1322064085...	https://a1.muscache.com/ac/users/31509/profile_pic/13220...
33360	https://www.airbnb.com/users/show/33360	https://a1.muscache.com/ac/users/33360/profile_pic/1432599938...	https://a1.muscache.com/ac/users/33360/profile_pic/14325...
34943	https://www.airbnb.com/users/show/34943	https://a0.muscache.com/ac/users/34943/profile_pic/1364446798...	https://a0.muscache.com/ac/users/34943/profile_pic/13644...
35749	https://www.airbnb.com/users/show/35749	https://a2.muscache.com/ac/pictures/769c80c5-ff2b-4954-8d93-df...	https://a2.muscache.com/ac/pictures/769c80c5-ff2b-4954-...
39377	https://www.airbnb.com/users/show/39377	https://a0.muscache.com/ac/users/39377/profile_pic/1259120863...	https://a0.muscache.com/ac/users/39377/profile_pic/12591...
44907	https://www.airbnb.com/users/show/44907	https://a1.muscache.com/ac/users/44907/profile_pic/1348775675...	https://a1.muscache.com/ac/users/44907/profile_pic/13487...
46879	https://www.airbnb.com/users/show/46879	https://a1.muscache.com/ac/users/46879/profile_pic/1348843817...	https://a1.muscache.com/ac/users/46879/profile_pic/13488...
50893	https://www.airbnb.com/users/show/50893	https://a2.muscache.com/ac/pictures/c76da247-0807-4d73-bc45-...	https://a2.muscache.com/ac/pictures/c76da247-0807-4d73...
53050	https://www.airbnb.com/users/show/53050	https://a1.muscache.com/ac/users/53050/profile_pic/1372934989...	https://a1.muscache.com/ac/users/53050/profile_pic/13729...
58235	https://www.airbnb.com/users/show/58235	https://a0.muscache.com/ac/users/58235/profile_pic/1441057343...	https://a0.muscache.com/ac/users/58235/profile_pic/14410...
62386	https://www.airbnb.com/users/show/62386	https://a2.muscache.com/ac/users/62386/profile_pic/1306313020...	https://a2.muscache.com/ac/users/62386/profile_pic/13063...

Host URL 1

Action Output

	Time	Action	Response	Duration / Fetch Time
1	19:56:06	SELECT * FROM `Airbnb Seattle`.`Bed Type`	5 row(s) returned	0.0037 sec / 0.00001...
2	19:58:42	SELECT * FROM `Airbnb Seattle`.`Room Type`	3 row(s) returned	0.0038 sec / 0.0000...
3	20:01:48	SELECT * FROM `Airbnb Seattle`.`Property Type`	16 row(s) returned	0.0015 sec / 0.00001...
4	20:02:34	SELECT * FROM `Airbnb Seattle`.`Cancellation Type`	3 row(s) returned	0.0072 sec / 0.00001...
5	20:03:33	SELECT * FROM `Airbnb Seattle`.`Host Details`	2751 row(s) returned	0.0037 sec / 0.042 sec
6	20:04:15	SELECT * FROM `Airbnb Seattle`.`Host URL`	2751 row(s) returned	0.0041 sec / 0.027 sec

- Host Verifications Table

```
1 • SELECT * FROM `Airbnb Seattle`.`Host Verifications`;
```

Result Grid

host_id	host_has_profile_...	host_identity_verifi...	email_verify	phone_verify	facebook_verify	linkedin_verify	reviews_verify	kba_verify	google_verify	jumio_verify	amex_verify	manual_off
8021	1	1	1	1	1	0	1	1	1	0	0	0
8993	1	1	1	1	0	0	1	1	0	0	0	0
11775	1	1	1	1	1	0	1	1	0	0	0	0
14942	1	1	1	1	1	0	1	1	0	0	0	0
19425	1	0	1	1	0	0	1	0	0	0	0	0
20731	1	1	1	1	1	0	1	0	0	1	0	0
30559	1	1	1	1	1	0	1	0	0	1	0	0
30604	1	1	1	1	0	0	1	1	0	0	0	0
30832	1	1	1	1	0	0	1	1	0	0	0	0
31481	1	1	1	1	0	0	1	1	0	0	0	0
31509	1	1	1	1	1	1	1	0	0	1	0	0
33360	1	0	1	1	0	0	1	0	0	0	0	0
34943	1	0	0	1	0	0	1	0	0	0	0	0
35749	1	1	1	1	1	0	1	1	0	0	0	0
39377	1	0	1	1	1	0	1	0	0	0	0	0
44907	1	1	1	1	1	0	1	1	0	0	0	0
46879	1	1	1	1	1	1	1	1	0	0	0	0
50893	1	1	1	1	1	1	1	1	0	0	0	0
53050	1	1	1	1	1	0	1	0	0	1	0	0
58235	1	1	1	1	0	0	1	1	0	0	0	0
62386	1	1	1	1	1	0	1	1	0	0	0	0
64929	1	1	1	1	0	0	1	1	0	0	0	0
64955	1	1	1	1	0	0	1	1	0	0	0	0

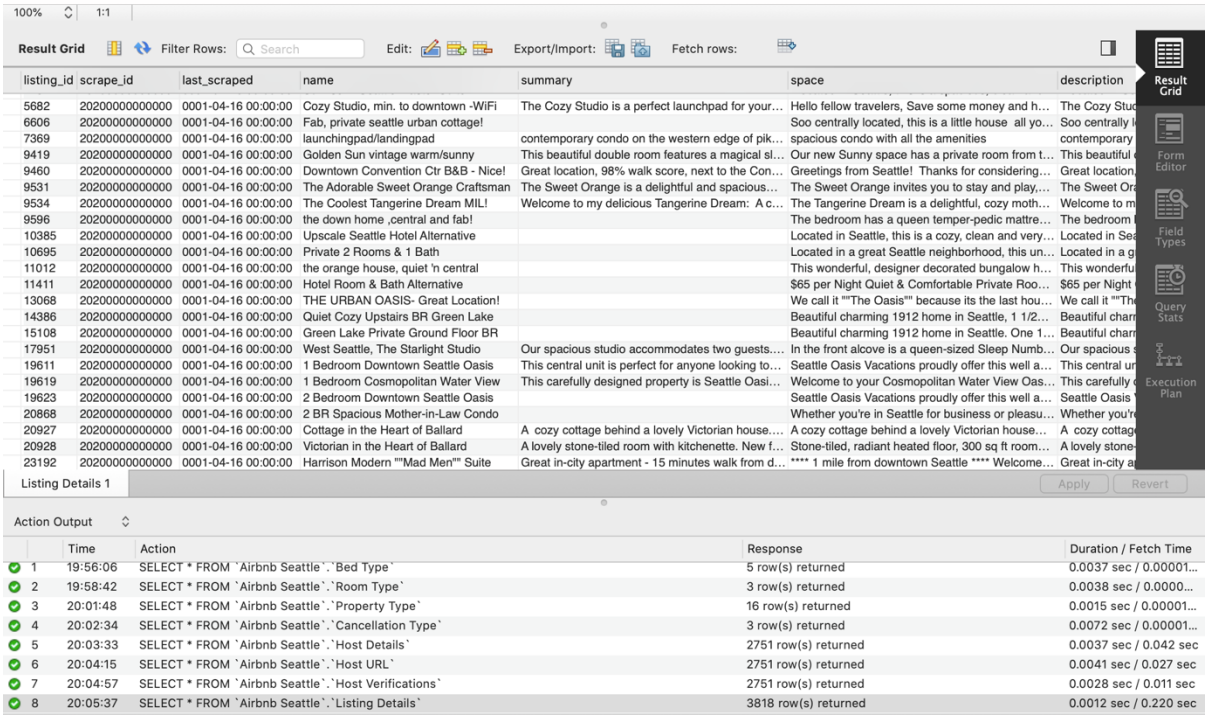
Host Verifications 1

Action Output

	Time	Action	Response	Duration / Fetch Time
1	19:56:06	SELECT * FROM `Airbnb Seattle`.`Bed Type`	5 row(s) returned	0.0037 sec / 0.00001...
2	19:58:42	SELECT * FROM `Airbnb Seattle`.`Room Type`	3 row(s) returned	0.0038 sec / 0.0000...
3	20:01:48	SELECT * FROM `Airbnb Seattle`.`Property Type`	16 row(s) returned	0.0015 sec / 0.00001...
4	20:02:34	SELECT * FROM `Airbnb Seattle`.`Cancellation Type`	3 row(s) returned	0.0072 sec / 0.00001...
5	20:03:33	SELECT * FROM `Airbnb Seattle`.`Host Details`	2751 row(s) returned	0.0037 sec / 0.042 sec
6	20:04:15	SELECT * FROM `Airbnb Seattle`.`Host URL`	2751 row(s) returned	0.0041 sec / 0.027 sec
7	20:04:57	SELECT * FROM `Airbnb Seattle`.`Host Verifications`	2751 row(s) returned	0.0028 sec / 0.011 sec

- Listing Details Table

```
1 • SELECT * FROM `Airbnb Seattle`.`Listing Details`;
```



Result Grid | Filter Rows: Search | Edit: | Export/Import: | Fetch rows:

listing_id	scrape_id	last_scraped	name	summary	space	description
5682	20200000000000	0001-04-16 00:00:00	Cozy Studio, min. to downtown -WiFi	The Cozy Studio is a perfect launchpad for your…	Hello fellow travelers, Save some money and h…	The Cozy Stu
6606	20200000000000	0001-04-16 00:00:00	Fab, private seattle urban cottage!		Soo centrally located, this is a little house all yo…	Soo centrally l
7369	20200000000000	0001-04-16 00:00:00	launchingpad/landingpad	contemporary condo on the western edge of pik…	spacious condo with all the amenities	contemporary
9419	20200000000000	0001-04-16 00:00:00	Golden Sun vintage warm/sunny	This beautiful double room features a magical sl…	Our new Sunny space has a private room from t…	This beautiful
9460	20200000000000	0001-04-16 00:00:00	Downtown Convention Ctr B&B - Nice!	Great location, 98% walk score, next to the Con…	Greetings from Seattle! Thanks for considering…	Great location,
9531	20200000000000	0001-04-16 00:00:00	The Adorable Sweet Orange Craftsman	The Sweet Orange is a delightful and spacious…	The Sweet Orange invites you to stay and play,…	The Sweet Ora
9534	20200000000000	0001-04-16 00:00:00	The Coolest Tangerine Dream MIL!	Welcome to my delicious Tangerine Dream: A c…	The Tangerine Dream is a delightful, cozy moth…	Welcome to m
9596	20200000000000	0001-04-16 00:00:00	the down home ,central and fab!		The bedroom has a queen temper-pedic mattre…	The bedroom
10385	20200000000000	0001-04-16 00:00:00	Upscale Seattle Hotel Alternative		Located in Seattle, this is a cozy, clean and very…	Located in Sea
10695	20200000000000	0001-04-16 00:00:00	Private 2 Rooms & 1 Bath		Located in a great Seattle neighborhood, this un…	Located in a g
11012	20200000000000	0001-04-16 00:00:00	the orange house, quiet 'n central		This wonderful, designer decorated bungalow h…	This wonderfu
11411	20200000000000	0001-04-16 00:00:00	Hotel Room & Bath Alternative		$65 per Night Quiet & Comfortable Private Roo…	$65 per Night
13068	20200000000000	0001-04-16 00:00:00	THE URBAN OASIS- Great Location!		We call it ""The Oasis"" because its the last hou…	We call it ""The
14386	20200000000000	0001-04-16 00:00:00	Quiet Cozy Upstairs BR Green Lake		Beautiful charming 1912 home in Seattle, 1 1/2…	Beautiful charm
15108	20200000000000	0001-04-16 00:00:00	Green Lake Private Ground Floor BR		Beautiful charming 1912 home in Seattle. One 1…	Beautiful charm
17951	20200000000000	0001-04-16 00:00:00	West Seattle, The Starlight Studio	Our spacious studio accommodates two guests.…	In the front alcove is a queen-sized Sleep Numb…	Our spacious s
19611	20200000000000	0001-04-16 00:00:00	1 Bedroom Downtown Seattle Oasis	This central unit is perfect for anyone looking to…	Seattle Oasis Vacations proudly offer this well a…	This central un
19619	20200000000000	0001-04-16 00:00:00	1 Bedroom Cosmopolitan Water View	This carefully designed property is Seattle Oasi…	Welcome to your Cosmopolitan Water View Oas…	This carefully
19623	20200000000000	0001-04-16 00:00:00	2 Bedroom Downtown Seattle Oasis		Seattle Oasis Vacations proudly offer this well a…	Seattle Oasis
20868	20200000000000	0001-04-16 00:00:00	2 BR Spacious Mother-in-Law Condo		Whether you're in Seattle for business or pleasu…	Whether you're
20927	20200000000000	0001-04-16 00:00:00	Cottage in the Heart of Ballard	A cozy cottage behind a lovely Victorian house.…	A cozy cottage behind a lovely Victorian house…	A cozy cottage
20928	20200000000000	0001-04-16 00:00:00	Victorian in the Heart of Ballard	A lovely stone-tiled room with kitchenette. New f…	Stone-tiled, radiant heated floor, 300 sq ft room…	A lovely stone-
23192	20200000000000	0001-04-16 00:00:00	Harrison Modern ""Mad Men"" Suite	Great in-city apartment - 15 minutes walk from d…	**** 1 mile from downtown Seattle **** Welcome…	Great in-city a

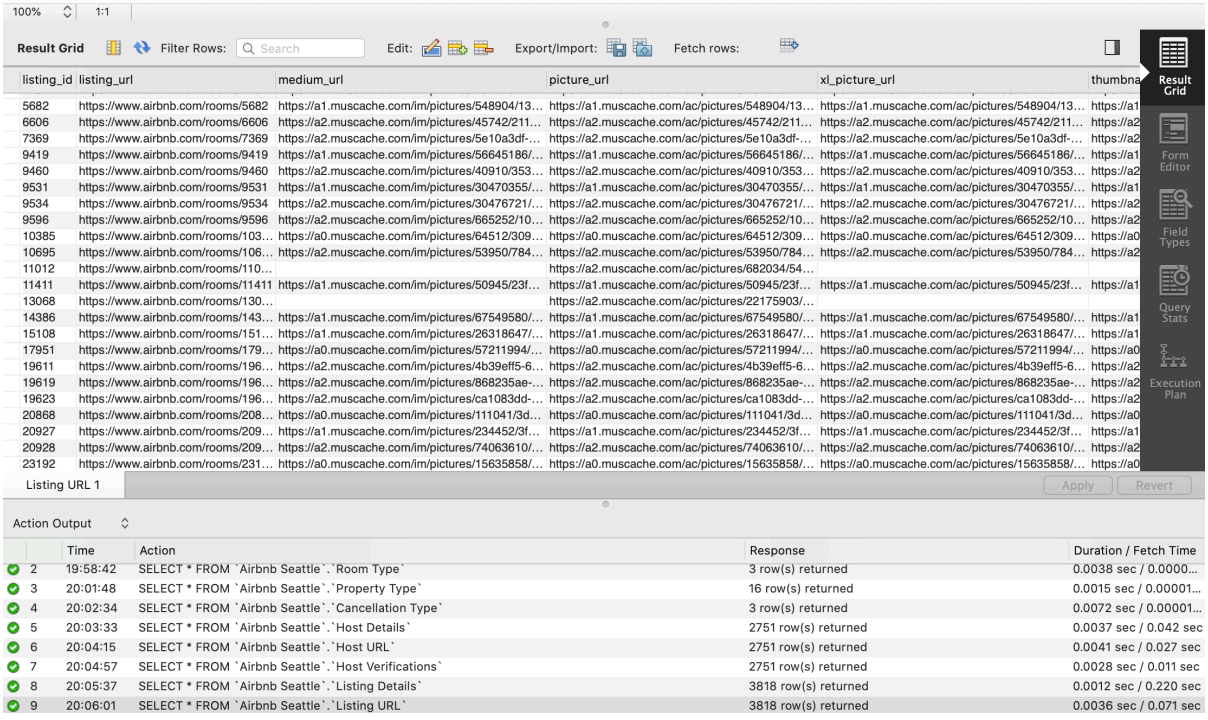
Listing Details 1 | Apply | Revert

Action Output

	Time	Action	Response	Duration / Fetch Time
1	19:56:06	SELECT * FROM `Airbnb Seattle`.`Bed Type`	5 row(s) returned	0.0037 sec / 0.00001…
2	19:58:42	SELECT * FROM `Airbnb Seattle`.`Room Type`	3 row(s) returned	0.0038 sec / 0.0000…
3	20:01:48	SELECT * FROM `Airbnb Seattle`.`Property Type`	16 row(s) returned	0.0015 sec / 0.00001…
4	20:02:34	SELECT * FROM `Airbnb Seattle`.`Cancellation Type`	3 row(s) returned	0.0072 sec / 0.00001…
5	20:03:33	SELECT * FROM `Airbnb Seattle`.`Host Details`	2751 row(s) returned	0.0037 sec / 0.042 sec
6	20:04:15	SELECT * FROM `Airbnb Seattle`.`Host URL`	2751 row(s) returned	0.0041 sec / 0.027 sec
7	20:04:57	SELECT * FROM `Airbnb Seattle`.`Host Verifications`	2751 row(s) returned	0.0028 sec / 0.011 sec
8	20:05:37	SELECT * FROM `Airbnb Seattle`.`Listing Details`	3818 row(s) returned	0.0012 sec / 0.220 sec

- Listing URL Table

```
1 • SELECT * FROM `Airbnb Seattle`.`Listing URL`;
```



Result Grid | Filter Rows: Search | Edit: | Export/Import: | Fetch rows:

listing_id	listing_url	medium_url	picture_url	xl_picture_url	thumbna
5682	https://www.airbnb.com/rooms/5682	https://a1.muscache.com/im/pictures/548904/13…	https://a1.muscache.com/ac/pictures/548904/13…	https://a1.muscache.com/ac/pictures/548904/13…	https://a1
6606	https://www.airbnb.com/rooms/6606	https://a2.muscache.com/im/pictures/45742/211…	https://a2.muscache.com/ac/pictures/45742/211…	https://a2.muscache.com/ac/pictures/45742/211…	https://a2
7369	https://www.airbnb.com/rooms/7369	https://a2.muscache.com/im/pictures/5e10a3df-…	https://a2.muscache.com/ac/pictures/5e10a3df-…	https://a2.muscache.com/ac/pictures/5e10a3df-…	https://a2
9419	https://www.airbnb.com/rooms/9419	https://a1.muscache.com/im/pictures/56645186/…	https://a1.muscache.com/ac/pictures/56645186/…	https://a1.muscache.com/ac/pictures/56645186/…	https://a1
9460	https://www.airbnb.com/rooms/9460	https://a2.muscache.com/im/pictures/40910/353…	https://a2.muscache.com/ac/pictures/40910/353…	https://a2.muscache.com/ac/pictures/40910/353…	https://a2
9531	https://www.airbnb.com/rooms/9531	https://a1.muscache.com/im/pictures/30470355/…	https://a1.muscache.com/ac/pictures/30470355/…	https://a1.muscache.com/ac/pictures/30470355/…	https://a1
9534	https://www.airbnb.com/rooms/9534	https://a2.muscache.com/im/pictures/30476721/…	https://a2.muscache.com/ac/pictures/30476721/…	https://a2.muscache.com/ac/pictures/30476721/…	https://a2
9596	https://www.airbnb.com/rooms/9596	https://a2.muscache.com/im/pictures/665252/10…	https://a2.muscache.com/ac/pictures/665252/10…	https://a2.muscache.com/ac/pictures/665252/10…	https://a2
10385	https://www.airbnb.com/rooms/103…	https://a0.muscache.com/im/pictures/64512/309…	https://a0.muscache.com/ac/pictures/64512/309…	https://a0.muscache.com/ac/pictures/64512/309…	https://a0
10695	https://www.airbnb.com/rooms/106…	https://a2.muscache.com/im/pictures/53950/784…	https://a2.muscache.com/ac/pictures/53950/784…	https://a2.muscache.com/ac/pictures/53950/784…	https://a2
11012	https://www.airbnb.com/rooms/110…		https://a2.muscache.com/ac/pictures/682034/54…		
11411	https://www.airbnb.com/rooms/11411	https://a1.muscache.com/im/pictures/50945/23f…	https://a1.muscache.com/ac/pictures/50945/23f…	https://a1.muscache.com/ac/pictures/50945/23f…	https://a1
13068	https://www.airbnb.com/rooms/130…		https://a2.muscache.com/ac/pictures/22175903/…		
14386	https://www.airbnb.com/rooms/143…	https://a1.muscache.com/im/pictures/67549580/…	https://a1.muscache.com/ac/pictures/67549580/…	https://a1.muscache.com/ac/pictures/67549580/…	https://a1
15108	https://www.airbnb.com/rooms/151…	https://a1.muscache.com/im/pictures/26318647/…	https://a1.muscache.com/ac/pictures/26318647/…	https://a1.muscache.com/ac/pictures/26318647/…	https://a1
17951	https://www.airbnb.com/rooms/179…	https://a0.muscache.com/im/pictures/57211994/…	https://a0.muscache.com/ac/pictures/57211994/…	https://a0.muscache.com/ac/pictures/57211994/…	https://a0
19611	https://www.airbnb.com/rooms/196…	https://a2.muscache.com/im/pictures/4b39eff5-6…	https://a2.muscache.com/ac/pictures/4b39eff5-6…	https://a2.muscache.com/ac/pictures/4b39eff5-6…	https://a2
19619	https://www.airbnb.com/rooms/196…	https://a2.muscache.com/im/pictures/868235ae-…	https://a2.muscache.com/ac/pictures/868235ae-…	https://a2.muscache.com/ac/pictures/868235ae-…	https://a2
19623	https://www.airbnb.com/rooms/196…	https://a2.muscache.com/im/pictures/ca1083dd-…	https://a2.muscache.com/ac/pictures/ca1083dd-…	https://a2.muscache.com/ac/pictures/ca1083dd-…	https://a2
20868	https://www.airbnb.com/rooms/208…	https://a0.muscache.com/im/pictures/111041/3d…	https://a0.muscache.com/ac/pictures/111041/3d…	https://a0.muscache.com/ac/pictures/111041/3d…	https://a0
20927	https://www.airbnb.com/rooms/209…	https://a1.muscache.com/im/pictures/234452/3f…	https://a1.muscache.com/ac/pictures/234452/3f…	https://a1.muscache.com/ac/pictures/234452/3f…	https://a1
20928	https://www.airbnb.com/rooms/209…	https://a2.muscache.com/im/pictures/74063610/…	https://a2.muscache.com/ac/pictures/74063610/…	https://a2.muscache.com/ac/pictures/74063610/…	https://a2
23192	https://www.airbnb.com/rooms/231…	https://a0.muscache.com/im/pictures/15635858/…	https://a0.muscache.com/ac/pictures/15635858/…	https://a0.muscache.com/ac/pictures/15635858/…	https://a0

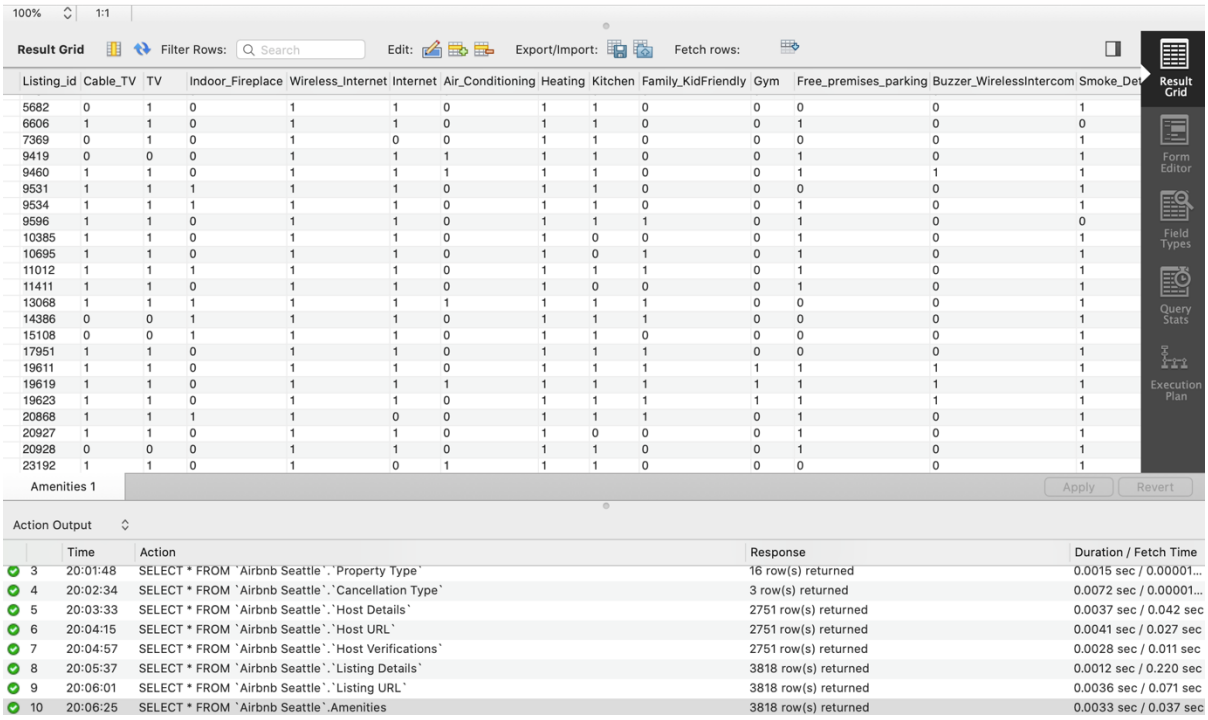
Listing URL 1 | Apply | Revert

Action Output

	Time	Action	Response	Duration / Fetch Time
2	19:58:42	SELECT * FROM `Airbnb Seattle`.`Room Type`	3 row(s) returned	0.0038 sec / 0.0000…
3	20:01:48	SELECT * FROM `Airbnb Seattle`.`Property Type`	16 row(s) returned	0.0015 sec / 0.00001…
4	20:02:34	SELECT * FROM `Airbnb Seattle`.`Cancellation Type`	3 row(s) returned	0.0072 sec / 0.00001…
5	20:03:33	SELECT * FROM `Airbnb Seattle`.`Host Details`	2751 row(s) returned	0.0037 sec / 0.042 sec
6	20:04:15	SELECT * FROM `Airbnb Seattle`.`Host URL`	2751 row(s) returned	0.0041 sec / 0.027 sec
7	20:04:57	SELECT * FROM `Airbnb Seattle`.`Host Verifications`	2751 row(s) returned	0.0028 sec / 0.011 sec
8	20:05:37	SELECT * FROM `Airbnb Seattle`.`Listing Details`	3818 row(s) returned	0.0012 sec / 0.220 sec
9	20:06:01	SELECT * FROM `Airbnb Seattle`.`Listing URL`	3818 row(s) returned	0.0036 sec / 0.071 sec

- Amenities Table

```
1 • SELECT * FROM `Airbnb Seattle`.Amenities;
```



Listing_id	Cable_TV	TV	Indoor_Fireplace	Wireless_Internet	Internet	Air_Conditioning	Heating	Kitchen	Family_KidFriendly	Gym	Free_premises_parking	Buzzer_WirelessIntercom	Smoke_Det
5682	0	1	0	1	1	0	1	1	0	0	0	0	1
6606	1	1	0	1	1	0	1	1	0	0	1	0	0
7369	0	1	0	1	0	0	1	1	0	0	0	0	1
9419	0	0	0	1	1	1	1	1	0	0	1	0	1
9460	1	1	0	1	1	1	1	1	0	0	1	1	1
9531	1	1	1	1	1	0	1	1	0	0	0	0	1
9534	1	1	1	1	1	0	1	1	0	0	1	0	1
9596	1	1	0	1	1	0	1	1	1	0	1	0	0
10385	1	1	0	1	1	0	1	0	0	0	1	0	1
10695	1	1	0	1	1	0	1	0	1	0	1	0	1
11012	1	1	1	1	1	0	1	1	1	0	1	0	1
11411	1	1	0	1	1	0	1	0	0	0	1	0	1
13068	1	1	1	1	1	1	1	1	1	0	0	0	1
14386	0	0	1	1	1	0	1	1	1	0	0	0	1
15108	0	0	1	1	1	0	1	1	0	0	0	0	1
17951	1	1	0	1	1	0	1	1	1	0	0	0	1
19611	1	1	0	1	1	0	1	1	1	1	1	1	1
19619	1	1	0	1	1	1	1	1	1	1	1	1	1
19623	1	1	0	1	1	0	1	1	1	1	1	1	1
20868	1	1	1	1	0	0	1	1	1	0	1	0	1
20927	1	1	0	1	1	0	1	0	0	0	1	0	1
20928	0	0	0	1	1	0	1	1	0	0	1	0	1
23192	1	1	0	1	0	1	1	1	0	0	0	0	1

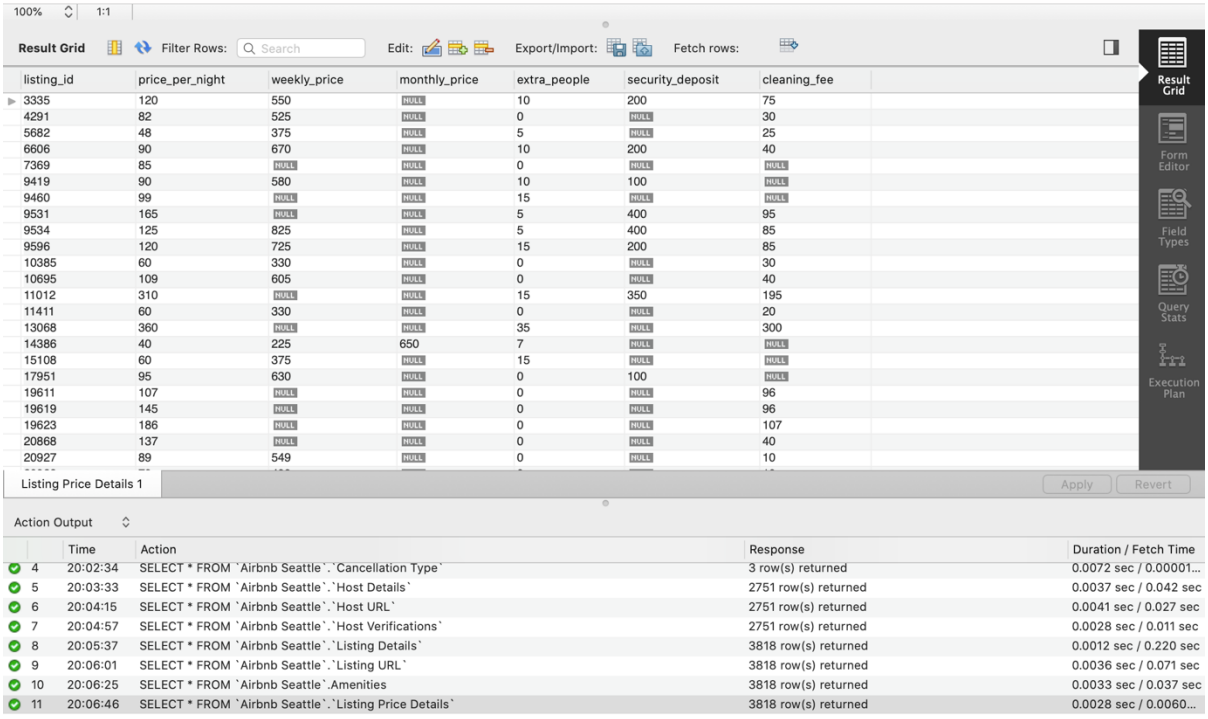
Amenities 1

Action Output

	Time	Action	Response	Duration / Fetch Time
3	20:01:48	SELECT * FROM `Airbnb Seattle`.`Property Type`	16 row(s) returned	0.0015 sec / 0.00001...
4	20:02:34	SELECT * FROM `Airbnb Seattle`.`Cancellation Type`	3 row(s) returned	0.0072 sec / 0.00001...
5	20:03:33	SELECT * FROM `Airbnb Seattle`.`Host Details`	2751 row(s) returned	0.0037 sec / 0.042 sec
6	20:04:15	SELECT * FROM `Airbnb Seattle`.`Host URL`	2751 row(s) returned	0.0041 sec / 0.027 sec
7	20:04:57	SELECT * FROM `Airbnb Seattle`.`Host Verifications`	2751 row(s) returned	0.0028 sec / 0.011 sec
8	20:05:37	SELECT * FROM `Airbnb Seattle`.`Listing Details`	3818 row(s) returned	0.0012 sec / 0.220 sec
9	20:06:01	SELECT * FROM `Airbnb Seattle`.`Listing URL`	3818 row(s) returned	0.0036 sec / 0.071 sec
10	20:06:25	SELECT * FROM `Airbnb Seattle`.Amenities	3818 row(s) returned	0.0033 sec / 0.037 sec

- Listing Price Details Table

```
1 • SELECT * FROM `Airbnb Seattle`.`Listing Price Details`;
```



listing_id	price_per_night	weekly_price	monthly_price	extra_people	security_deposit	cleaning_fee
3335	120	550	NULL	10	200	75
4291	82	525	NULL	0	NULL	30
5682	48	375	NULL	5	NULL	25
6606	90	670	NULL	10	200	40
7369	85	NULL	NULL	0	NULL	NULL
9419	90	580	NULL	10	100	NULL
9460	99	NULL	NULL	15	NULL	NULL
9531	165	NULL	NULL	5	400	95
9534	125	825	NULL	5	400	85
9596	120	725	NULL	15	200	85
10385	60	330	NULL	0	NULL	30
10695	109	605	NULL	0	NULL	40
11012	310	NULL	NULL	15	350	195
11411	60	330	NULL	0	NULL	20
13068	360	NULL	NULL	35	NULL	300
14386	40	225	650	7	NULL	NULL
15108	60	375	NULL	15	NULL	NULL
17951	95	630	NULL	0	100	NULL
19611	107	NULL	NULL	0	NULL	96
19619	145	NULL	NULL	0	NULL	96
19623	186	NULL	NULL	0	NULL	107
20868	137	NULL	NULL	0	NULL	40
20927	89	549	NULL	0	NULL	10

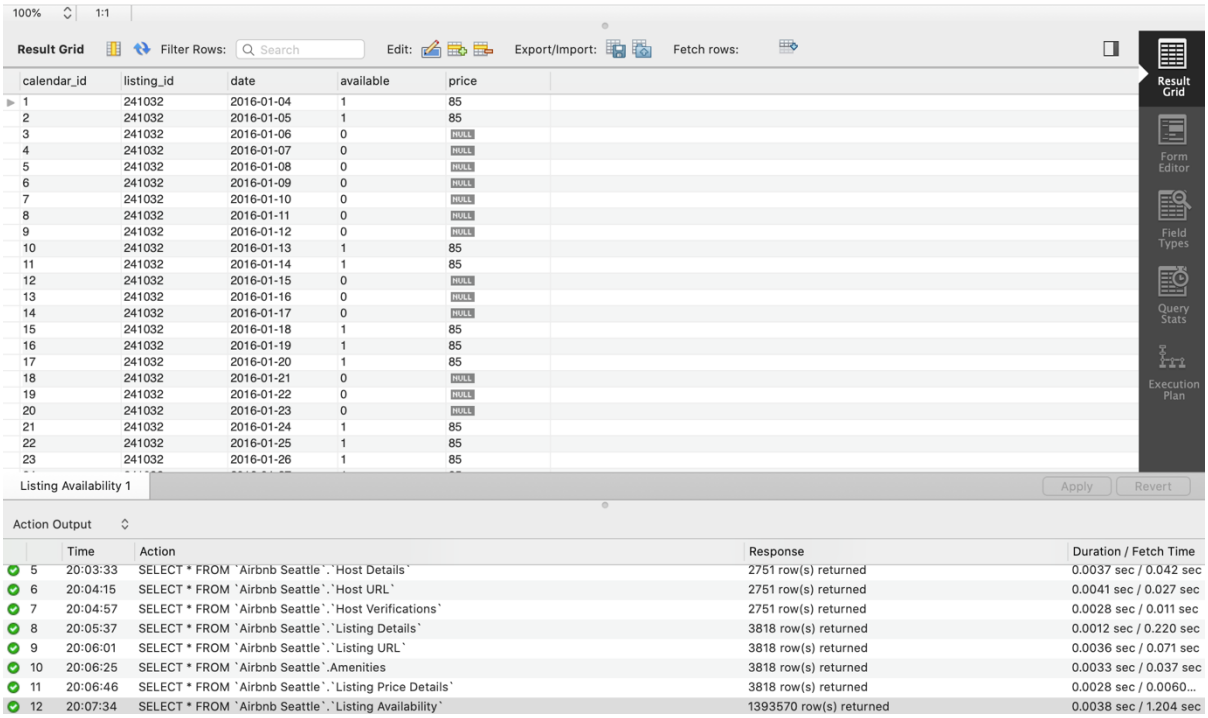
Listing Price Details 1

Action Output

	Time	Action	Response	Duration / Fetch Time
4	20:02:34	SELECT * FROM `Airbnb Seattle`.`Cancellation Type`	3 row(s) returned	0.0072 sec / 0.00001...
5	20:03:33	SELECT * FROM `Airbnb Seattle`.`Host Details`	2751 row(s) returned	0.0037 sec / 0.042 sec
6	20:04:15	SELECT * FROM `Airbnb Seattle`.`Host URL`	2751 row(s) returned	0.0041 sec / 0.027 sec
7	20:04:57	SELECT * FROM `Airbnb Seattle`.`Host Verifications`	2751 row(s) returned	0.0028 sec / 0.011 sec
8	20:05:37	SELECT * FROM `Airbnb Seattle`.`Listing Details`	3818 row(s) returned	0.0012 sec / 0.220 sec
9	20:06:01	SELECT * FROM `Airbnb Seattle`.`Listing URL`	3818 row(s) returned	0.0036 sec / 0.071 sec
10	20:06:25	SELECT * FROM `Airbnb Seattle`.Amenities	3818 row(s) returned	0.0033 sec / 0.037 sec
11	20:06:46	SELECT * FROM `Airbnb Seattle`.`Listing Price Details`	3818 row(s) returned	0.0028 sec / 0.0060...

- Listing Availability Table

```
1 • SELECT * FROM `Airbnb Seattle`.`Listing Availability`;
```



calendar_id	listing_id	date	available	price
1	241032	2016-01-04	1	85
2	241032	2016-01-05	1	85
3	241032	2016-01-06	0	NULL
4	241032	2016-01-07	0	NULL
5	241032	2016-01-08	0	NULL
6	241032	2016-01-09	0	NULL
7	241032	2016-01-10	0	NULL
8	241032	2016-01-11	0	NULL
9	241032	2016-01-12	0	NULL
10	241032	2016-01-13	1	85
11	241032	2016-01-14	1	85
12	241032	2016-01-15	0	NULL
13	241032	2016-01-16	0	NULL
14	241032	2016-01-17	0	NULL
15	241032	2016-01-18	1	85
16	241032	2016-01-19	1	85
17	241032	2016-01-20	1	85
18	241032	2016-01-21	0	NULL
19	241032	2016-01-22	0	NULL
20	241032	2016-01-23	0	NULL
21	241032	2016-01-24	1	85
22	241032	2016-01-25	1	85
23	241032	2016-01-26	1	85

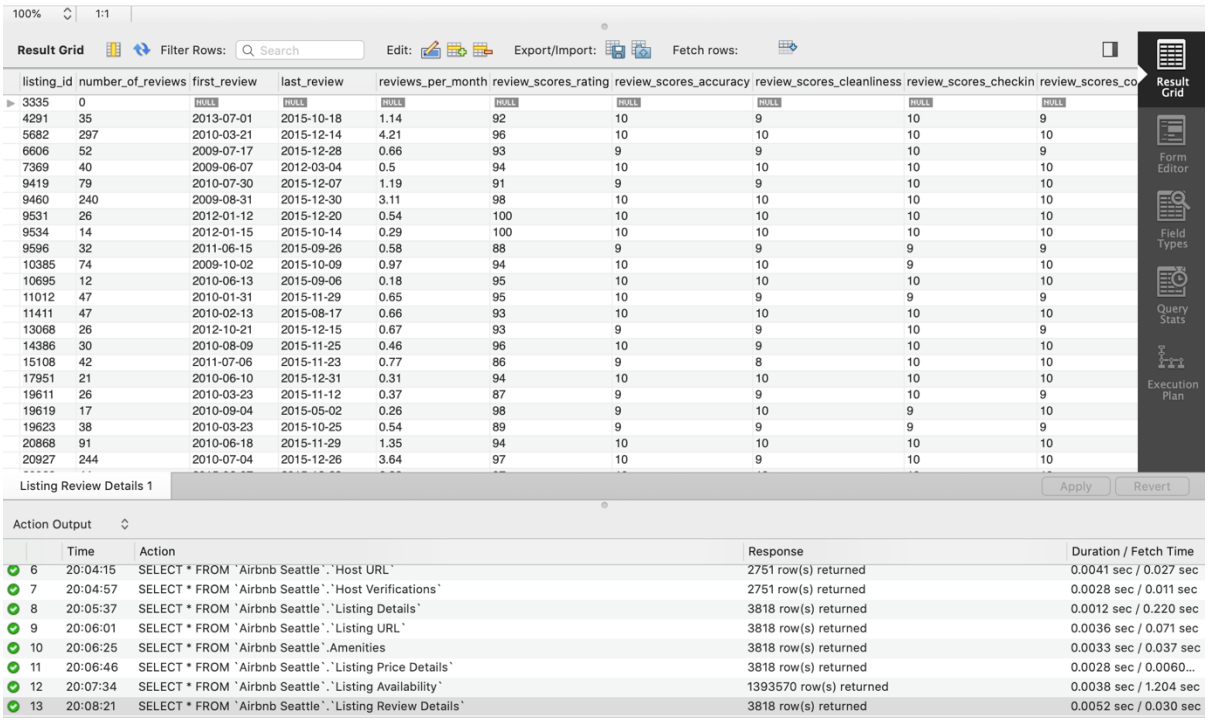
Listing Availability 1

Action Output

	Time	Action	Response	Duration / Fetch Time
5	20:03:33	SELECT * FROM `Airbnb Seattle`.`Host Details`	2751 row(s) returned	0.0037 sec / 0.042 sec
6	20:04:15	SELECT * FROM `Airbnb Seattle`.`Host URL`	2751 row(s) returned	0.0041 sec / 0.027 sec
7	20:04:57	SELECT * FROM `Airbnb Seattle`.`Host Verifications`	2751 row(s) returned	0.0028 sec / 0.011 sec
8	20:05:37	SELECT * FROM `Airbnb Seattle`.`Listing Details`	3818 row(s) returned	0.0012 sec / 0.220 sec
9	20:06:01	SELECT * FROM `Airbnb Seattle`.`Listing URL`	3818 row(s) returned	0.0036 sec / 0.071 sec
10	20:06:25	SELECT * FROM `Airbnb Seattle`.Amenities	3818 row(s) returned	0.0033 sec / 0.037 sec
11	20:06:46	SELECT * FROM `Airbnb Seattle`.`Listing Price Details`	3818 row(s) returned	0.0028 sec / 0.0060...
12	20:07:34	SELECT * FROM `Airbnb Seattle`.`Listing Availability`	1393570 row(s) returned	0.0038 sec / 1.204 sec

- Listing Review Details Table

```
1 • SELECT * FROM `Airbnb Seattle`.`Listing Review Details`;
```



listing_id	number_of_reviews	first_review	last_review	reviews_per_month	review_scores_rating	review_scores_accuracy	review_scores_cleanliness	review_scores_checkin	review_scores_co
3335	0	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
4291	35	2013-07-01	2015-10-18	1.14	92	10	9	10	9
5682	297	2010-03-21	2015-12-14	4.21	96	10	10	10	10
6606	52	2009-07-17	2015-12-28	0.66	93	9	9	10	9
7369	40	2009-06-07	2012-03-04	0.5	94	10	10	10	10
9419	79	2010-07-30	2015-12-07	1.19	91	9	9	10	10
9460	240	2009-08-31	2015-12-30	3.11	98	10	10	10	10
9531	26	2012-01-12	2015-12-20	0.54	100	10	10	10	10
9534	14	2012-01-15	2015-10-14	0.29	100	10	10	10	10
9596	32	2011-06-15	2015-09-26	0.58	88	9	9	9	9
10385	74	2009-10-02	2015-10-09	0.97	94	10	10	9	10
10695	12	2010-06-13	2015-09-06	0.18	95	10	10	10	10
11012	47	2010-01-31	2015-11-29	0.65	95	10	9	9	9
11411	47	2010-02-13	2015-08-17	0.66	93	10	10	10	10
13068	26	2012-10-21	2015-12-15	0.67	93	9	9	10	9
14386	30	2010-08-09	2015-11-25	0.46	96	10	9	10	10
15108	42	2011-07-06	2015-11-23	0.77	86	9	8	10	10
17951	21	2010-06-10	2015-12-31	0.31	94	10	10	10	10
19611	26	2010-03-23	2015-11-12	0.37	87	9	9	10	9
19619	17	2010-09-04	2015-05-02	0.26	98	9	10	9	10
19623	38	2010-03-23	2015-10-25	0.54	89	9	9	9	9
20868	91	2010-06-18	2015-11-29	1.35	94	10	10	10	10
20927	244	2010-07-04	2015-12-26	3.64	97	10	9	10	10

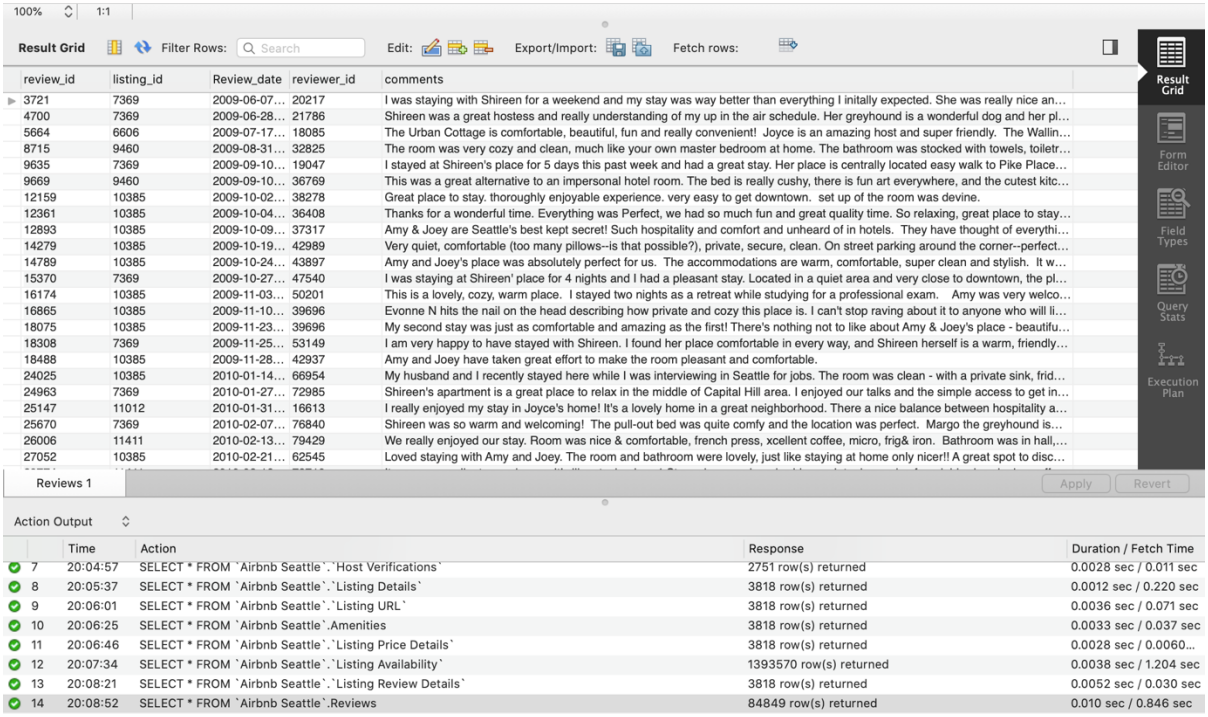
Listing Review Details 1

Action Output

	Time	Action	Response	Duration / Fetch Time
6	20:04:15	SELECT * FROM `Airbnb Seattle`.`Host URL`	2751 row(s) returned	0.0041 sec / 0.027 sec
7	20:04:57	SELECT * FROM `Airbnb Seattle`.`Host Verifications`	2751 row(s) returned	0.0028 sec / 0.011 sec
8	20:05:37	SELECT * FROM `Airbnb Seattle`.`Listing Details`	3818 row(s) returned	0.0012 sec / 0.220 sec
9	20:06:01	SELECT * FROM `Airbnb Seattle`.`Listing URL`	3818 row(s) returned	0.0036 sec / 0.071 sec
10	20:06:25	SELECT * FROM `Airbnb Seattle`.Amenities	3818 row(s) returned	0.0033 sec / 0.037 sec
11	20:06:46	SELECT * FROM `Airbnb Seattle`.`Listing Price Details`	3818 row(s) returned	0.0028 sec / 0.0060...
12	20:07:34	SELECT * FROM `Airbnb Seattle`.`Listing Availability`	1393570 row(s) returned	0.0038 sec / 1.204 sec
13	20:08:21	SELECT * FROM `Airbnb Seattle`.`Listing Review Details`	3818 row(s) returned	0.0052 sec / 0.030 sec

- Reviews Table

```
1 • SELECT * FROM `Airbnb Seattle`.Reviews;
```



Result Grid | Filter Rows: | Edit: | Export/Import: | Fetch rows:

review_id	listing_id	Review_date	reviewer_id	comments
3721	7369	2009-06-07…	20217	I was staying with Shireen for a weekend and my stay was way better than everything I initally expected. She was really nice an…
4700	7369	2009-06-28…	21786	Shireen was a great hostess and really understanding of my up in the air schedule. Her greyhound is a wonderful dog and her pl…
5664	6606	2009-07-17…	18085	The Urban Cottage is comfortable, beautiful, fun and really convenient! Joyce is an amazing host and super friendly. The Wallin…
8715	9460	2009-08-31…	32825	The room was very cozy and clean, much like your own master bedroom at home. The bathroom was stocked with towels, toiletr…
9635	7369	2009-09-10…	19047	I stayed at Shireen's place for 5 days this past week and had a great stay. Her place is centrally located easy walk to Pike Place…
9669	9460	2009-09-10…	36769	This was a great alternative to an impersonal hotel room. The bed is really cushy, there is fun art everywhere, and the cutest kitc…
12159	10385	2009-10-02…	38278	Great place to stay. thoroughly enjoyable experience. very easy to get downtown. set up of the room was devine.
12361	10385	2009-10-04…	36408	Thanks for a wonderful time. Everything was Perfect, we had so much fun and great quality time. So relaxing, great place to stay…
12893	10385	2009-10-09…	37317	Amy & Joey are Seattle's best kept secret! Such hospitality and comfort and unheard of in hotels. They have thought of everythi…
14279	10385	2009-10-19…	42989	Very quiet, comfortable (too many pillows--is that possible?), private, secure, clean. On street parking around the corner--perfect…
14789	10385	2009-10-24…	43897	Amy and Joey's place was absolutely perfect for us. The accommodations are warm, comfortable, super clean and stylish. It w…
15370	7369	2009-10-27…	47540	I was staying at Shireen' place for 4 nights and I had a pleasant stay. Located in a quiet area and very close to downtown, the pl…
16174	10385	2009-11-03…	50201	This is a lovely, cozy, warm place. I stayed two nights as a retreat while studying for a professional exam. Amy was very welco…
16865	10385	2009-11-10…	39696	Evonne N hits the nail on the head describing how private and cozy this place is. I can't stop raving about it to anyone who will li…
18075	10385	2009-11-23…	39696	My second stay was just as comfortable and amazing as the first! There's nothing not to like about Amy & Joey's place - beautifu…
18308	7369	2009-11-25…	53149	I am very happy to have stayed with Shireen. I found her place comfortable in every way, and Shireen herself is a warm, friendly…
18488	10385	2009-11-28…	42937	Amy and Joey have taken great effort to make the room pleasant and comfortable.
24025	10385	2010-01-14…	66954	My husband and I recently stayed here while I was interviewing in Seattle for jobs. The room was clean - with a private sink, frid…
24963	7369	2010-01-27…	72985	Shireen's apartment is a great place to relax in the middle of Capital Hill area. I enjoyed our talks and the simple access to get in…
25147	11012	2010-01-31…	16613	I really enjoyed my stay in Joyce's home! It's a lovely home in a great neighborhood. There a nice balance between hospitality a…
25670	7369	2010-02-07…	76840	Shireen was so warm and welcoming! The pull-out bed was quite comfy and the location was perfect. Margo the greyhound is…
26006	11411	2010-02-13…	79429	We really enjoyed our stay. Room was nice & comfortable, french press, xcellent coffee, micro, frig& iron. Bathroom was in hall,…
27052	10385	2010-02-21…	62545	Loved staying with Amy and Joey. The room and bathroom were lovely, just like staying at home only nicer!! A great spot to disc…

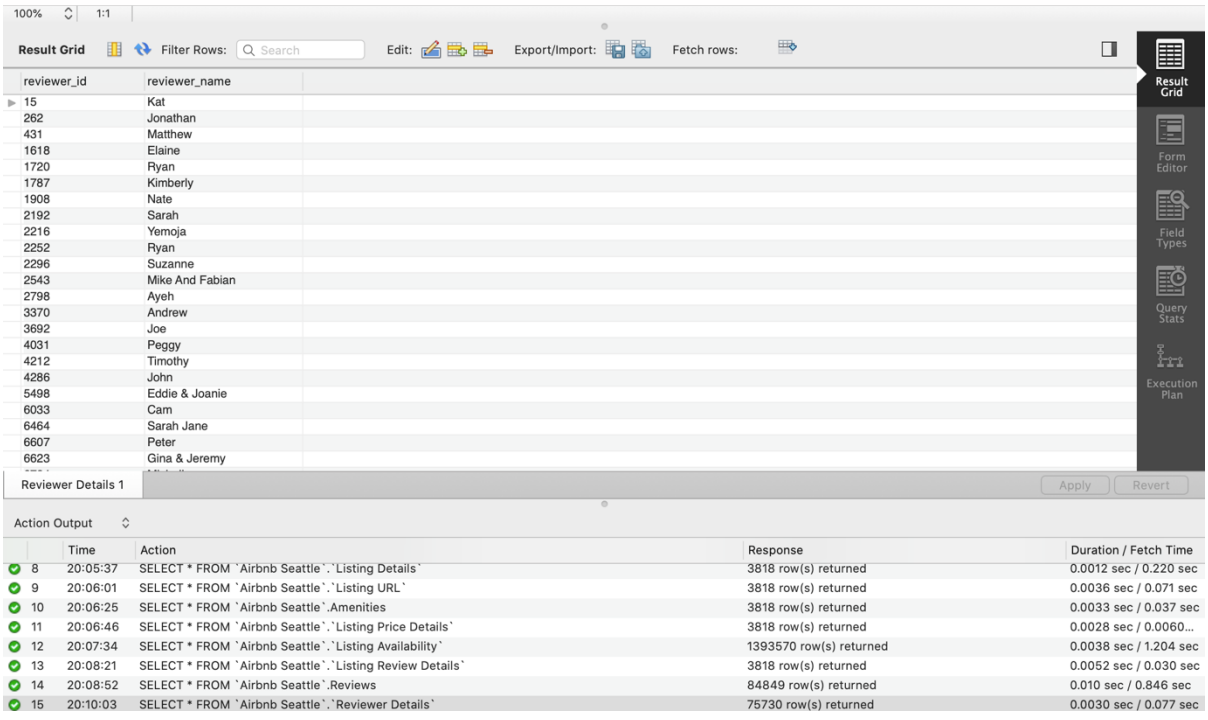
Reviews 1 | Apply | Revert

Action Output

	Time	Action	Response	Duration / Fetch Time
7	20:04:57	SELECT * FROM `Airbnb Seattle`.`Host Verifications`	2751 row(s) returned	0.0028 sec / 0.011 sec
8	20:05:37	SELECT * FROM `Airbnb Seattle`.`Listing Details`	3818 row(s) returned	0.0012 sec / 0.220 sec
9	20:06:01	SELECT * FROM `Airbnb Seattle`.`Listing URL`	3818 row(s) returned	0.0036 sec / 0.071 sec
10	20:06:25	SELECT * FROM `Airbnb Seattle`.Amenities	3818 row(s) returned	0.0033 sec / 0.037 sec
11	20:06:46	SELECT * FROM `Airbnb Seattle`.`Listing Price Details`	3818 row(s) returned	0.0028 sec / 0.0060…
12	20:07:34	SELECT * FROM `Airbnb Seattle`.`Listing Availability`	1393570 row(s) returned	0.0038 sec / 1.204 sec
13	20:08:21	SELECT * FROM `Airbnb Seattle`.`Listing Review Details`	3818 row(s) returned	0.0052 sec / 0.030 sec
14	20:08:52	SELECT * FROM `Airbnb Seattle`.Reviews	84849 row(s) returned	0.010 sec / 0.846 sec

- Reviewer Details Table

```
1 • SELECT * FROM `Airbnb Seattle`.`Reviewer Details`;
```



Result Grid | Filter Rows: | Edit: | Export/Import: | Fetch rows:

reviewer_id	reviewer_name
15	Kat
262	Jonathan
431	Matthew
1618	Elaine
1720	Ryan
1787	Kimberly
1908	Nate
2192	Sarah
2216	Yemoja
2252	Ryan
2296	Suzanne
2543	Mike And Fabian
2798	Ayeh
3370	Andrew
3692	Joe
4031	Peggy
4212	Timothy
4286	John
5498	Eddie & Joanie
6033	Cam
6464	Sarah Jane
6607	Peter
6623	Gina & Jeremy

Reviewer Details 1 | Apply | Revert

Action Output

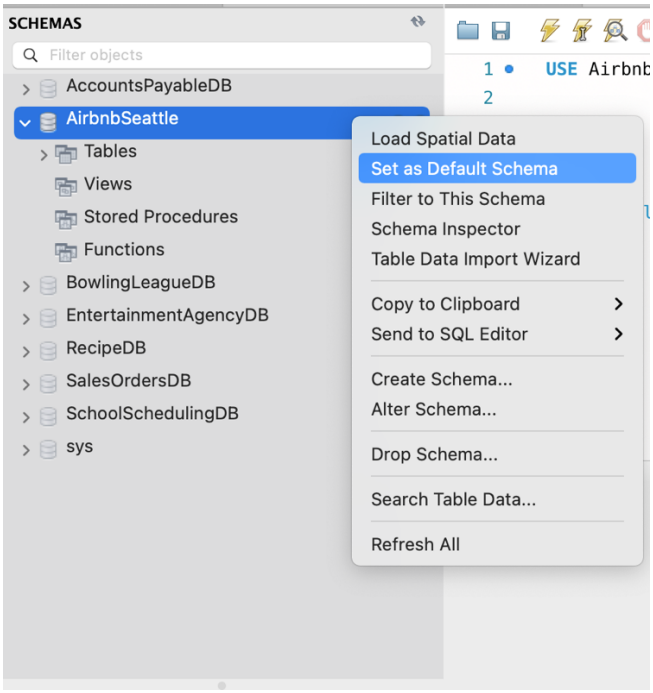
	Time	Action	Response	Duration / Fetch Time
8	20:05:37	SELECT * FROM `Airbnb Seattle`.`Listing Details`	3818 row(s) returned	0.0012 sec / 0.220 sec
9	20:06:01	SELECT * FROM `Airbnb Seattle`.`Listing URL`	3818 row(s) returned	0.0036 sec / 0.071 sec
10	20:06:25	SELECT * FROM `Airbnb Seattle`.Amenities	3818 row(s) returned	0.0033 sec / 0.037 sec
11	20:06:46	SELECT * FROM `Airbnb Seattle`.`Listing Price Details`	3818 row(s) returned	0.0028 sec / 0.0060…
12	20:07:34	SELECT * FROM `Airbnb Seattle`.`Listing Availability`	1393570 row(s) returned	0.0038 sec / 1.204 sec
13	20:08:21	SELECT * FROM `Airbnb Seattle`.`Listing Review Details`	3818 row(s) returned	0.0052 sec / 0.030 sec
14	20:08:52	SELECT * FROM `Airbnb Seattle`.Reviews	84849 row(s) returned	0.010 sec / 0.846 sec
15	20:10:03	SELECT * FROM `Airbnb Seattle`.`Reviewer Details`	75730 row(s) returned	0.0030 sec / 0.077 sec

4.3. Data in the Database

Table Name	Primary Key	Foreign Key	Number of records
Bed Type	Bedtype_id	-	5
Room Type	Room_type_id	-	3
Property Type	Property_type_id	-	16
Cancellation Type	Cancellation_type_id	-	3
Host Details	host_id	-	2,751
Host URL	host_id	-	2,751
Host Verifications	host_id	-	2,751
Listing Details	listing_id	host_id property_type room_type bed_type cancellation_policy	3,818
Listing URL	listing_id	-	3,818
Amenities	Listing_id	-	3,818
Listing Price details	listing_id	-	3,818
Listing Availability	Calendar_id	listing_id	1,393,570
Listing Review details	listing_id	-	3,818
Reviews	Review_id	-	84,849
Reviewer Details	Reviewer_id	-	75,730

5. SQL Queries

Setting the AirbnbSeattle database that is created as default schema.



5.1. SQL Query 1

“Daily prices can be higher for properties with more bathrooms.”

Rationale:

The daily price of the property depends on various factors, like area of the listing (square footage), number of bedrooms, number of bathrooms, the finish of the interiors, amenities and most importantly the location of the property.

To analyze the effect of bathrooms on the daily prices, it is assumed that the number of bathrooms are provided proportionally to the number of bedrooms and hence, the area(square feet) of the listing. For example, as per industry norm, 2 bathrooms are provided for either a property with 2 bedrooms or 3 bedrooms. It is not possible to have 2 bathrooms for a studio or a one bedroom apartment. Further, as the number of bathrooms increases, size of the property also increases. Therefore, effect of increase in number of bathrooms is assumed to capture the true trend of the daily prices. Also, since all the properties are in Seattle city, it is assumed that the location effect on price is constant and this analysis will be looked at macro level.

For broader analysis, average daily price and the number of properties having a particular number of bathrooms is considered.

Translation:

SELECT the number of bathrooms, average of price per night as Average daily price and count of listing id as number of properties FROM the listing details table joined with the Listing Price Details table on listing id of listing details table matching on listing id of the Listing Price Details table, WHERE number of bathrooms is not null, then GROUP BY the bathrooms and finally ORDER BY bathrooms of listing details table

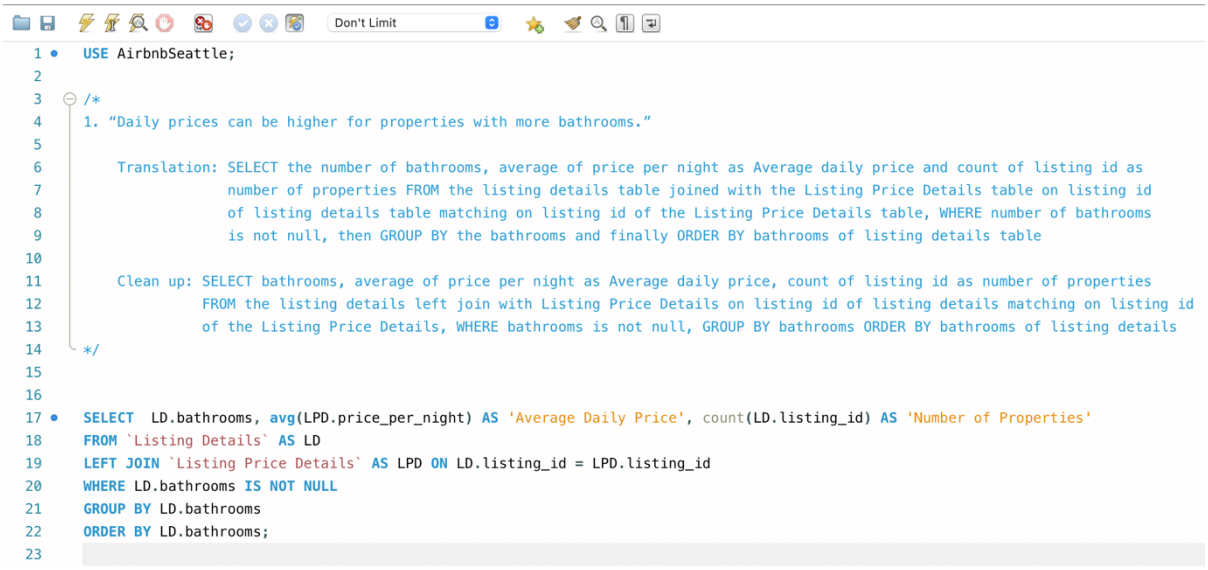
Clean up:

SELECT ~~the number of~~ bathrooms, average ~~of~~ price per night as Average daily price ~~and~~ count ~~of~~ listing id as number of properties FROM ~~the~~ listing details ~~table~~ left joined with ~~the~~ Listing Price Details ~~table~~ on listing id of listing details ~~table~~ matching ~~on~~ listing id of ~~the~~ Listing Price Details ~~table~~, WHERE ~~number of~~ bathrooms is not null, ~~then~~ GROUP BY ~~the~~ bathrooms ~~and finally~~ ORDER BY bathrooms of listing details ~~table~~

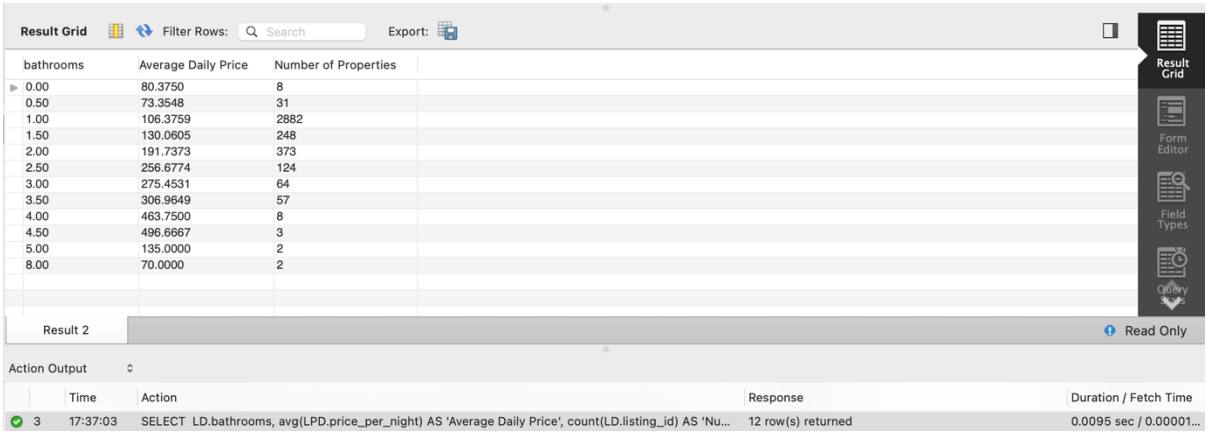
SQL Query:

```
USE AirbnbSeattle;


SELECT  LD.bathrooms, avg(LPD.price_per_night) AS 'Average Daily Price', count(LD.listing_id) AS 'Number of Properties'
FROM `Listing Details` AS LD
LEFT JOIN `Listing Price Details` AS LPD ON LD.listing_id = LPD.listing_id
WHERE LD.bathrooms IS NOT NULL
GROUP BY LD.bathrooms
ORDER BY LD.bathrooms;
```



Result set: 12 rows



Result Grid | Filter Rows: Search | Export:

bathrooms	Average Daily Price	Number of Properties
0.00	80.3750	8
0.50	73.3548	31
1.00	106.3759	2882
1.50	130.0605	248
2.00	191.7373	373
2.50	256.6774	124
3.00	275.4531	64
3.50	306.9649	57
4.00	463.7500	8
4.50	496.6667	3
5.00	135.0000	2
8.00	70.0000	2

Result 2 | Read Only

Action Output

	Time	Action	Response	Duration / Fetch Time
3	17:37:03	SELECT LD.bathrooms, avg(LPD.price_per_night) AS 'Average Daily Price', count(LD.listing_id) AS 'Nu...	12 row(s) returned	0.0095 sec / 0.00001...

Inferences:

The average daily price of the property/listing increases as the number of bathrooms increases from 0 (no bathroom like in the case of yurt or a room in a property that is listed in Airbnb with no attached bathroom) to 4.5 bathrooms. As the number of bathrooms goes more than 4.5, the trend doesn't hold true and the price starts decreasing. As per the data presently available, there are just 15 properties of 3,818 listings that have 4 or more bathrooms. If more properties with 4 or more bathrooms gets listed with Airbnb, a better price analysis can be conducted for these properties.

Thus, the daily prices can be higher for properties with 4 bathrooms as it also indicates that it would be for a property with higher area and a greater number of bedrooms.

5.2. SQL Query 2

"Weekly prices can be lower for properties with lesser bedrooms"

Rationale:

As the number of bedrooms increases, the size of the property increases. To analyze the effect of bedrooms on the weekly prices, it is assumed that the effect of increase in number of bedrooms captures the true trend of the weekly prices. Since all the properties are in Seattle city, it is assumed that the location effect on price is constant and this analysis will be looked at city level and not at area level. Average weekly price and the average size(in square feet) of properties having a particular number of bedrooms is looked at. Only the properties whose weekly prices are provided by the hosts is considered for this analysis. The number of properties having a particular number of bedrooms is also considered.

Translation:

SELECT the number of bedrooms, average of weekly price as Average weekly price, average of square feet as average property size and count of listing id as number of properties FROM the listing details table joined with the Listing Price Details table on listing id of listing details table matching on listing id of the Listing Price Details table, WHERE number of bedrooms is not null, then GROUP BY the bedrooms and finally ORDER BY bedrooms of listing details table decreasing

Clean up:

SELECT ~~the number of~~ bedrooms, average ~~of~~ weekly price as Average weekly price, average ~~of~~ square feet as average property size ~~and~~ count ~~of~~ listing id as number of properties FROM ~~the~~ listing details ~~table~~ left joined with ~~the~~ Listing Price Details ~~table~~ on listing id of listing details ~~table~~ matching ~~on~~ listing id of ~~the~~ Listing Price Details ~~table~~, WHERE ~~number of~~ bedrooms is not null, ~~then~~ GROUP BY ~~the~~ bedrooms ~~and finally~~ ORDER BY bedrooms of listing details ~~table~~ decrease

SQL Query:

```
SELECT LD.bedrooms, avg(LPD.weekly_price) AS 'Average Weekly Price',
avg(LD.square_feet) AS 'Avg Property Size', count(LD.listing_id) AS 'Number of
Properties'

FROM `Listing Details` AS LD

LEFT JOIN `Listing Price Details` AS LPD ON LD.listing_id = LPD.listing_id

WHERE LD.bedrooms IS NOT NULL

GROUP BY LD.bedrooms  ORDER BY LD.bedrooms DESC;
```

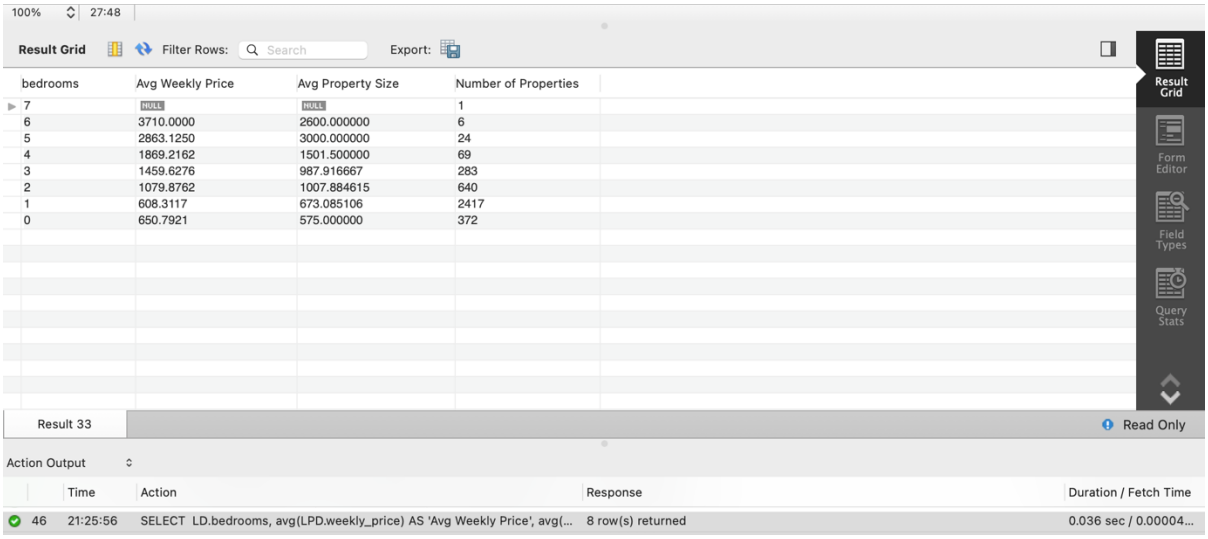
```
/*
2. "Weekly prices can be lower for properties with lesser bedrooms."

    Translation: SELECT the number of bedrooms, average of weekly price as Average weekly price, average of square feet as
                 average property size and count of listing id as number of properties FROM the listing details table joined
                 with the Listing Price Details table on listing id of listing details table matching on listing id of the
                 Listing Price Details table, WHERE number of bedrooms is not null, then GROUP BY the bedrooms and finally
                 ORDER BY bedrooms of listing details table decreasing

    Clean up: SELECT bedrooms, average of weekly price as Average weekly price, average of square feet as average property size,
              and count of listing id as number of properties FROM listing details left joined with Listing Price Details on
              listing id of listing details matching on listing id of Listing Price Details, WHERE bedrooms is not null,
              GROUP BY bedrooms ORDER BY bedrooms of listing details decrease
*/


SELECT  LD.bedrooms, avg(LPD.weekly_price) AS 'Avg Weekly Price', avg(LD.square_feet) AS 'Avg Property Size',
                     count(LD.listing_id) AS 'Number of Properties'
FROM `Listing Details` AS LD
LEFT JOIN `Listing Price Details` AS LPD ON LD.listing_id = LPD.listing_id
WHERE LD.bedrooms IS NOT NULL
GROUP BY LD.bedrooms
ORDER BY LD.bedrooms DESC;
```

Result set: 8 rows



bedrooms	Avg Weekly Price	Avg Property Size	Number of Properties
7	NULL	NULL	1
6	3710.0000	2600.000000	6
5	2863.1250	3000.000000	24
4	1869.2162	1501.500000	69
3	1459.6276	987.916667	283
2	1079.8762	1007.884615	640
1	608.3117	673.085106	2417
0	650.7921	575.000000	372

Inferences:

The average weekly price of the property/listing decreases as the number of bedrooms decreases from 6 to 0 (no bedroom like in the case of yurt or studio apartment). The weekly price is also increasing as the area of the property increases. It is seen that average weekly price of properties with 0 bedrooms are priced slightly higher than 1 bedroom. This is because, the of the property type like Yurt and treehouse with 0 bedrooms is considered as 'Luxury' or 'One of a kind' experience and are priced at a higher, in turn resulting in higher average weekly price of 0 bedroom properties. There is only 1 property with 7 bedroom and the host has not mentioned its weekly price. If more properties with more than 6 bedrooms gets listed with Airbnb, it is possible to check if weekly price trend continues to hold true.

Thus, in general, the weekly prices are lesser with lesser bedrooms.

5.3. SQL Query 3

"Strict cancellation policies are best for properties with high review scores"

Rationale:

The review score rating is considered as the review scores. The score rating greater than or equal to 95 is considered as "high review scores". To compare the type of policies, the total number of properties with high review scores will be considered.

Through secondary research[3] it was understood that the review score accuracy, review score cleanliness and review score value(for price) have more impact on review scores. These review scores will also be closely considered.

Translation:

SELECT cancellation policy as cancellation type, count of cancellation policy as 'Number of properties high ratings', average of review score cleanliness as 'Avg Cleanliness Score', average of review score accuracy as 'Avg Accuracy Score' and also average of review score value as 'Avg score of value for price' FROM the listing details table joined with the Listing Review Details table on listing id of listing details table matching on listing id of the Listing Review Details table and then joined with the Cancellation type table on cancellation policy of listing details table matching on cancellation policy of the Cancellation type table WHERE review score rating is greater or equal to 95, then GROUP BY cancellation policy and finally ORDER BY cancellation policy

Clean up:

SELECT cancellation policy as cancellation type, count of cancellation policy as 'Number of properties high ratings', average of review score cleanliness as 'Avg Cleanliness Score', average of review score accuracy as 'Avg Accuracy Score' ~~and also~~ average of review score value as 'Avg score of value for price' FROM ~~the~~ listing details ~~table~~ left joined ~~with the~~ Listing Review Details ~~table~~ on listing id of listing details table matching ~~on~~ listing id of ~~the~~ Listing Review Details ~~table and then~~ left joined ~~with the~~ Cancellation type ~~table~~ on cancellation policy of listing details ~~table~~ matching on cancellation policy of ~~the~~ Cancellation type table WHERE review score rating is greater or equal to 95, ~~then~~ GROUP BY cancellation policy ~~and finally~~ ORDER BY cancellation policy.

[3] *https://bnbfacts.com/how-airbnb-category-ratings-affect-overall-rating/*

SQL Query:

```
SELECT LD.cancellation_policy AS 'Cancellation type',  CT.cancellation_policy,
count(LD.cancellation_policy) AS 'Number of properties high ratings',
avg(LRD.review_scores_cleanliness) AS 'Avg Cleanliness Score',
avg(LRD.review_scores_accuracy) AS 'Avg Accuracy Score',
avg(LRD.review_scores_value) AS 'Avg score of value for price'

FROM `Listing Details` AS LD

LEFT JOIN `Listing Review Details` AS LRD ON LD.listing_id = LRD.listing_id

LEFT JOIN `Cancellation Type` AS CT ON LD.cancellation_policy = CT.Cancellation_type_id

WHERE LRD.review_scores_rating >= 95

GROUP BY LD.cancellation_policy

ORDER BY LD.cancellation_policy;
```

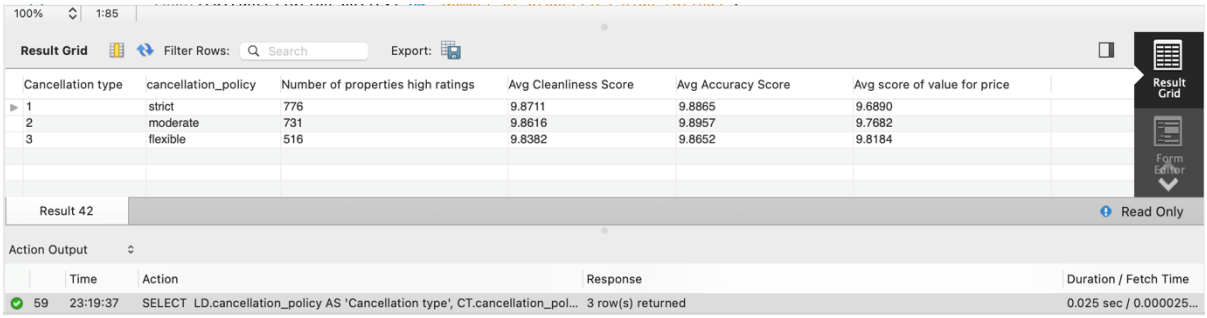
```
3. “Strict cancellation policies are best for properities with high review scores.”


    Translation: SELECT cancellation policy, count of cancellation policy as 'Number of properties high ratings', average
                 of review score cleanliness as 'Avg Cleanliness Score', average of review score accuracy as 'Avg Accuracy Score'
                 and also average of review score value as 'Avg score of value for price' FROM the listing details table
                 joined with the Listing Review Details table on listing id of listing details table matching on listing id
                 of the Listing Review Details table and then joined with the Cancellation type table on cancellation policy
                 of listing details table matching on cancellation policy of the Cancellation type table  WHERE review score rating
                 is greater or equal to 95, then GROUP BY cancellation policy and finally ORDER BY cancellation policy

    Clean up: SELECT cancellation policy, count of cancellation policy as 'Number of properties high ratings', average
              of review score cleanliness as 'Avg Cleanliness Score', average of review score accuracy as 'Avg Accuracy Score',
              average of review score value as 'Avg score of value for price' FROM listing details left joined with
              Listing Review Details on listing id of listing details matching on listing id of Listing Review Details
              left joined with Cancellation type table on cancellation policy of listing details matching on cancellation policy
              of the Cancellation type WHERE review score rating greater or equal to 95 GROUP BY cancellation policy
              ORDER BY cancellation policy
*/


SELECT  LD.cancellation_policy AS 'Cancellation type', CT.cancellation_policy,
        count(LD.cancellation_policy) AS 'Number of properties high ratings',
        avg(LRD.review_scores_cleanliness) AS 'Avg Cleanliness Score',
        avg(LRD.review_scores_accuracy) AS 'Avg Accuracy Score', avg(LRD.review_scores_value) AS 'Avg score of value for price'
FROM `Listing Details` AS LD
LEFT JOIN `Listing Review Details` AS LRD ON LD.listing_id = LRD.listing_id
LEFT JOIN `Cancellation Type` AS CT ON LD.cancellation_policy = CT.Cancellation_type_id
WHERE LRD.review_scores_rating >= 95
GROUP BY LD.cancellation_policy
ORDER BY LD.cancellation_policy;
```

Result set: 3 rows



Cancellation type	cancellation_policy	Number of properties high ratings	Avg Cleanliness Score	Avg Accuracy Score	Avg score of value for price
1	strict	776	9.8711	9.8865	9.6890
2	moderate	731	9.8616	9.8957	9.7682
3	flexible	516	9.8382	9.8652	9.8184

Result 42 — Read Only

Action Output

	Time	Action	Response	Duration / Fetch Time
59	23:19:37	SELECT LD.cancellation_policy AS 'Cancellation type', CT.cancellation_pol...	3 row(s) returned	0.025 sec / 0.000025...

Inferences:

The strict cancellation policy seems to be better for high review scores as total number of properties with high review scores are greater for strict cancellation policy criteria when compared to moderate or flexible.

The properties with strict cancellation policy also have highest average cleanliness score and high accuracy score. But the average score of value for price is lowest when there is strict cancellation policy. Since two components are higher, it is resulting in higher review scores. Thus, strict cancellation policies are best for properties with high review scores

5.4. SQL Query 4

"Properties with high review scores for cleanliness have higher daily prices than properties with high review scores for location"

Rationale:

Cleanliness and location of the property are both prime factors which decides the daily price of the listing. To understand which factor has higher effect on the price, the average daily prices of the properties are considered.

For this analysis, a review score of cleanliness and location greater than or equal to 9 is assumed to be 'high'. The comparison between the average prices between two groups (cleanliness and location) is assumed to depict a general scenario.

Translation:

SELECT average daily price and review_score_cleanliness FROM the 'Listing review details' table and 'Listing price details' table WHERE listing listing_id of Listing Review Details table is equal to the listing_id of Listing Price Details table and cleanliness review score is greater than and equal to 9 , then UNION with SELECT average daily price and location review score FROM the 'Listing review details' table and 'Listing price details' table WHERE listing listing_id of Listing Review Details table is equal to the listing_id of Listing Price Details table and review_score_location is greater than and equal to 9.

Clean up:

SELECT average ~~daily price~~ price_per_night as price and review_score_cleanliness FROM the 'Listing review details' table and 'Listing price details' table WHERE ~~listing_id of~~ Listing Review Details.listing_id is equal to the ~~listing_id of~~ Listing Price Details table.listing_id and cleanliness review score ~~is greater than and equal to~~ >=9, ~~then~~ UNION ~~with~~ SELECT average ~~daily price~~ price_per_night as price and "review_score_location" FROM the 'Listing review details' table and 'Listing price details' table WHERE ~~listing_id of~~ Listing Review Details.listing_id is equal to the ~~listing_id of~~ Listing Price Details table.listing_id and ~~location~~ review_score_location ~~is greater than and equal to~~ >=9.

SQL Query:

```
SELECT avg(LPD.price_per_night) AS 'Average Daily Price',
'review_scores_cleanliness' AS Rating_metric

FROM `Listing Review Details` AS LRD, `Listing Price Details` AS LPD

WHERE LPD.listing_id = LRD.listing_id AND LRD.review_scores_location >= 9

UNION

SELECT avg(LPD.price_per_night) AS 'Average Daily Price',
'review_scores_location' AS Rating_metric

FROM `Listing Review Details` AS LRD, `Listing Price Details` AS LPD

WHERE LPD.listing_id = LRD.listing_id AND LRD.review_scores_location >= 9;
```

```
/*
4. "Strict cancellation policies are best for properities with high review scores."


    Translation: SELECT average daily price and review_score_cleanliness FROM the 'Listing review details' table and
                'Listing price details' table WHERE listing listing_id of Listing Review Details table is equal to the
                 listing_id of Listing Price Details table and cleanliness review score is greater than and equal to 9 ,
                 then UNION with SELECT average daily price and location review score FROM the 'Listing review details' table
                 and 'Listing price details' table WHERE listing listing_id of Listing Review Details table is equal to the
                 listing_id of Listing Price Details table and review_score_location is greater than and equal to 9.

    Clean up: SELECT average daily price price_per_night as price review_score_cleanliness FROM the 'Listing review details'
             and 'Listing price details' WHERE listing_id of Listing Review Details.listing_id is equal to the listing_id of
             Listing Price Details table.listing_id and cleanliness review score is greater than and equal to >=9,
             UNION with SELECT average daily price price_per_night as price and "review_score_location" FROM
             'Listing review details' table and 'Listing price details' table WHERE listing_id of Listing Review Details.listing_id
             is equal to the listing_id of Listing Price Details table.listing_id and location review_score_location is
             greater than and equal to >=9.
*/


SELECT avg(LPD.price_per_night) AS 'Average Daily Price', 'review_scores_cleanliness' AS Rating_metric
FROM `Listing Review Details` AS LRD, `Listing Price Details` AS LPD
WHERE LPD.listing_id = LRD.listing_id AND LRD.review_scores_cleanliness >= 9
UNION
SELECT avg(LPD.price_per_night) AS 'Average Daily Price', 'review_scores_location' AS Rating_metric
FROM `Listing Review Details` AS LRD, `Listing Price Details` AS LPD
WHERE LPD.listing_id = LRD.listing_id AND LRD.review_scores_location >= 9;
```

Result set: 2 rows

Inferences:

The average daily prices for the listings with higher review score cleanliness is almost equal to the average daily prices for the listings with higher review score location. Therefore, there is no sufficient evidence to prove the question statement that properties with high review scores for cleanliness have higher daily prices than properties with high review scores for location.

5.5. SQL Query 5

"Properties with higher daily prices also charge higher security deposits and cleaning fees"

Rationale:

To analyze the effect of security deposits and cleaning fees on daily prices, it is assumed that the security deposit and cleaning fees are proportionate to the per night price. For example, increase in daily price of the property can be because of various reasons like added amenities, number of bathrooms, bedrooms or many other factors. This increase in amenities would lead to higher security deposit and higher cleaning fees. Therefore, increase in daily prices is assumed to capture the trend of the security deposits and cleaning fees.

The daily prices more than or equal to $500 is considered as 'higher daily price'. Also, the security deposit and cleaning fees more than $300 and $150 respectively are considered to be 'properties having higher security deposits.' And 'properties having higher cleaning fees'.

Translation:

SELECT listing id, daily price, security deposit and cleaning fee FROM the 'Listing price details' table WHERE daily price is not null and it is greater than equal to 500 and ORDER BY result set by daily price in descending order.

Clean up:

SELECT ~~listing id~~ listing id, ~~daily price~~ price_per_night, ~~security deposit~~ security_deposit and ~~cleaning fee~~ cleaning_fee FROM the 'Listing price details' ~~table~~ WHERE ~~daily price~~ price_per_night is not null and price_per_night greater than equal to 500 and ORDER BY ~~result set~~ by ~~daily price~~ price_per_night decrease.

SQL Query:

```
SELECT listing_id, price_per_night, security_deposit, cleaning_fee
FROM `Listing Price Details`
WHERE price_per_night IS NOT NULL AND  price_per_night >= 500
ORDER BY price_per_night DESC;
```

```
119
120  /*
121  7. "Strict cancellation policies are best for properities with high review scores."
122
123
124      Translation: SELECT listing id, daily price, security deposit and cleaning fee FROM the 'Listing price details' table
125                   WHERE daily price is not null and it is greater than equal to 500 and ORDER BY result set by daily price in
126                   descending order.
127
128      Clean up: SELECT listing id, daily price, security deposit and cleaning fee FROM 'Listing price details' WHERE daily price
129               is not null and it is greater than equal to 500 ORDER BY daily price decrease.
130  */
131
132
133
134 •  SELECT listing_id, price_per_night, security_deposit, cleaning_fee
135    FROM `Listing Price Details`
136    WHERE price_per_night IS NOT NULL AND price_per_night >= 500
137    ORDER BY price_per_night DESC;
138
139
```

Result set: 32 rows

Result Grid Filter Rows: Search Edit: Export/Import:

listing_id	price_per_night	security_deposit	cleaning_fee
4825073	1000	NULL	NULL
3345341	999	95	85
3308979	975	1000	300
2720963	950	250	NULL
4464824	899	NULL	159
5534463	775	500	100
2350464	750	NULL	75
2459519	750	1000	300
7733192	749	1000	199
9497431	700	600	150
8891577	700	600	150
6291829	700	500	250
3066740	680	1000	275
384797	673	2500	300
8273031	600	200	50
4250367	600	1500	175
7697340	600	2000	145
6362362	600	500	150
5128160	575	500	175
3385421	557	780	180
368403	550	500	300
7439802	550	500	55
6032726	550	NULL	175
3413183	550	NULL	NULL
9133711	550	300	175
6066570	545	2000	150
8036620	525	1000	100
7388225	500	300	NULL
3728802	500	500	250
8327765	500	1500	300
1029680	500	NULL	85
9511777	500	1900	50
NULL	NULL	NULL	NULL

Result Grid | Form Editor | Field Types | Query Stats | Execution Plan

Listing Price Details 40 Apply Revert

Action Output

	Time	Action	Response	Duration / Fetch Time
57	22:42:37	SELECT listing_id, price_per_night, security_deposit, cleaning_fee FROM `...	32 row(s) returned	0.013 sec / 0.000022...

Inferences:

The daily price does not seem to have any relation with security deposit and cleaning prices. For example, property having daily price as 500, has security deposit of 500 and cleaning fee of 250 whereas properties having daily price as 600, has security deposit of 500 (unchanged) and cleaning fee of 150. Therefore, there is no trend seen and the statement that the Properties with higher daily prices also charge higher security deposits and cleaning fees doesn't hold true.

6. Data preparation for MongoDB

Unlike SQL, data is stored as documents in MongoDB. The data is cleaned and transformed before feeding into MongoDB.

6.1. Data Cleaning

- The street column in the listing dataset had values overlapping with the city and zip code column. Thus, just the street address was retained from the origin column.
- Unique calendar id has been introduced as a primary key for the Listing Availability (Calendar) table.

6.2. Data Manipulation

- id column name of the reviews table renamed as “Review_id”
- Date column name of the reviews table renamed as “Review_date”
- All the Boolean type entries “t” is renamed as 1 and “f” is renamed as 0
- $ sign in price columns removed and converted as numeric value
- ‘US’ is replaced to United States
- The ‘%’ in response and acceptance rate columns have been removed and the columns have been converted as decimals.
- Zip code value 99\n98122 is replaced to 98122 in the listings table.
- All the date columns have been formatted in date format.
- The city names have been corrected appropriately to maintain consistency in the data.

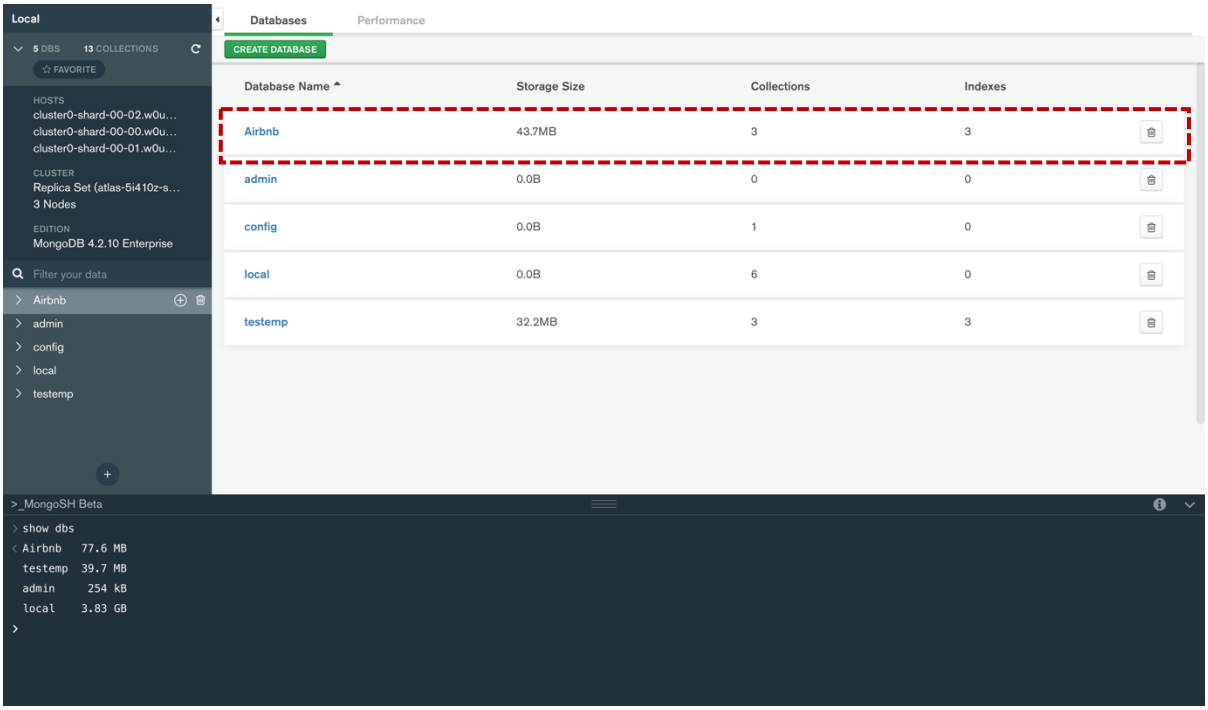
7. Physical Mongo Database

7.1. Broad Assumptions

- All the prices of the listings are considered up to date.
- The “price” column in the original data is considered as the general Price per night for that particular listing.
- Any changes to the daily price, weekly price, monthly price of the listing will be updated by the host and accordingly updated in the database.
- Not every listing is available on weekly or monthly basis. Listing that are available on monthly basis, has one and only one monthly price
- Not every listing has cleaning fee and security deposit to be paid along with booking charges.
- Every listing will have one and only one value of allowed number of extra people
- The listing review scores are going to be updated for the properties after analyzing all the review scores provided by different reviewers.
- For this study, the review scores have not been considered as a calculated field in the listing review table.

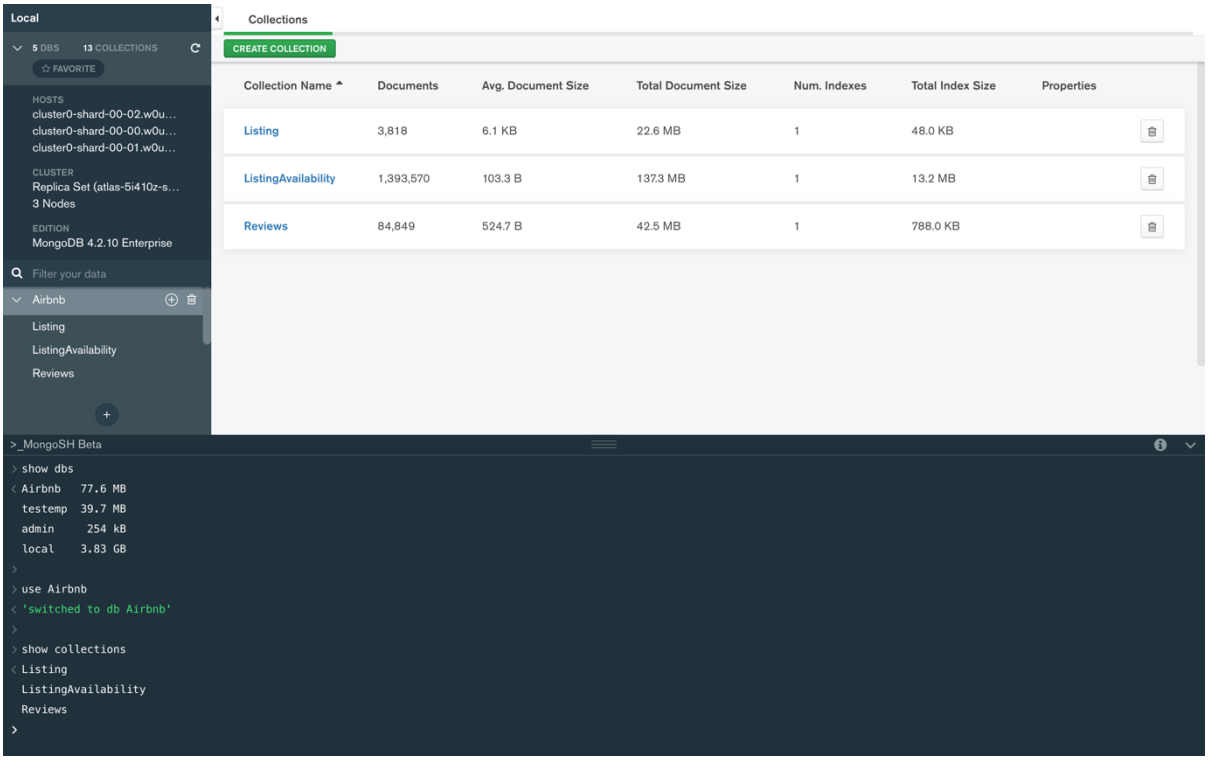
7.2. Physical Database objects

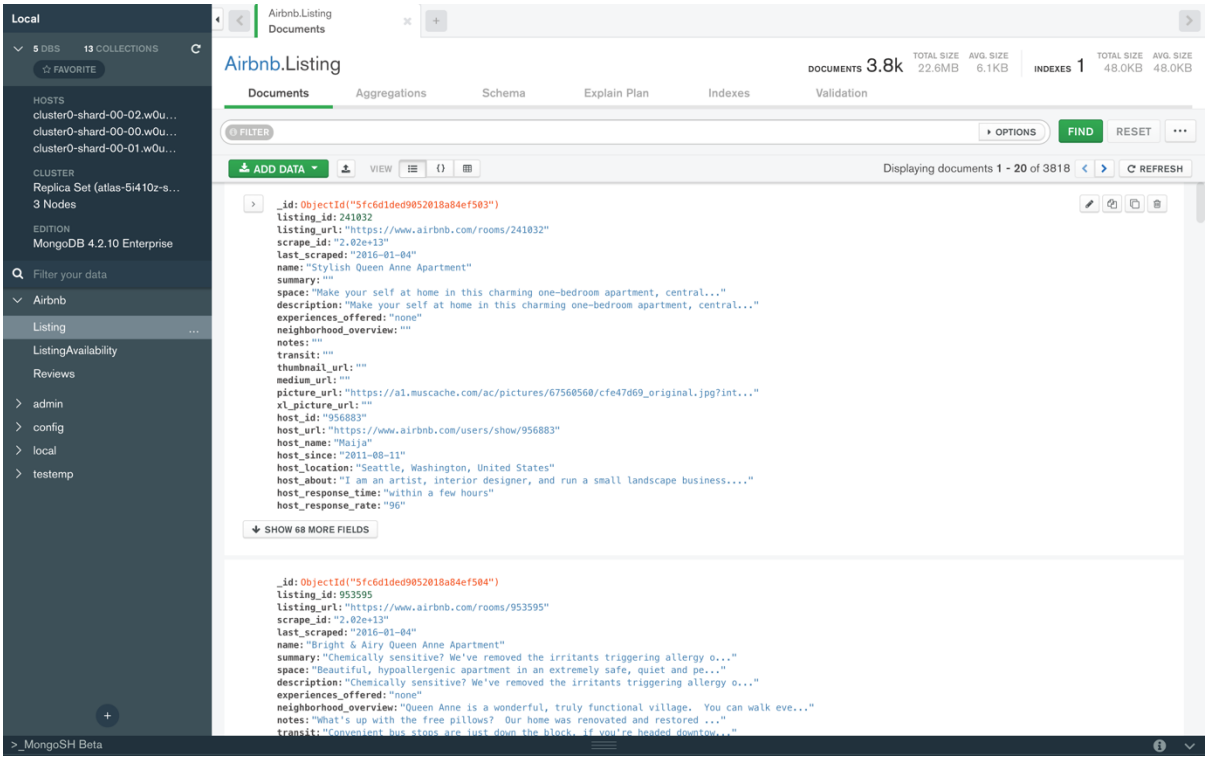
Airbnb database is created in MongoDB with three collections as in the data set.

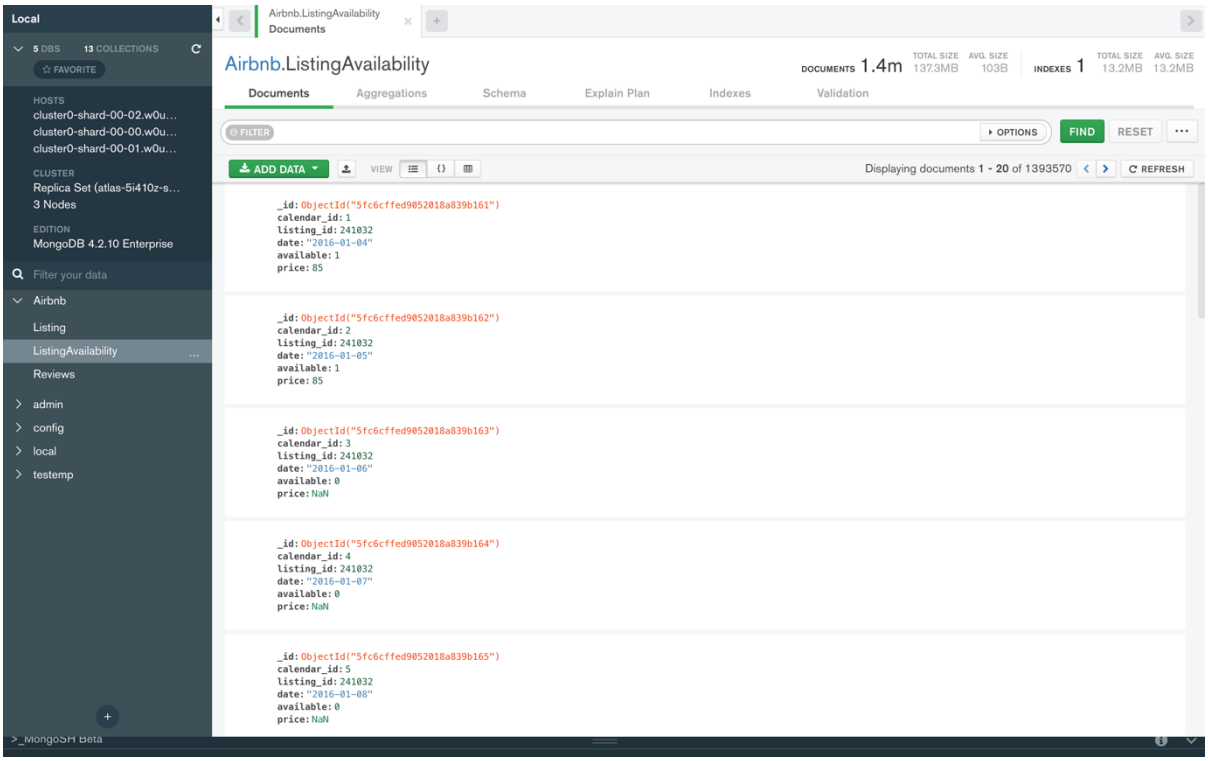


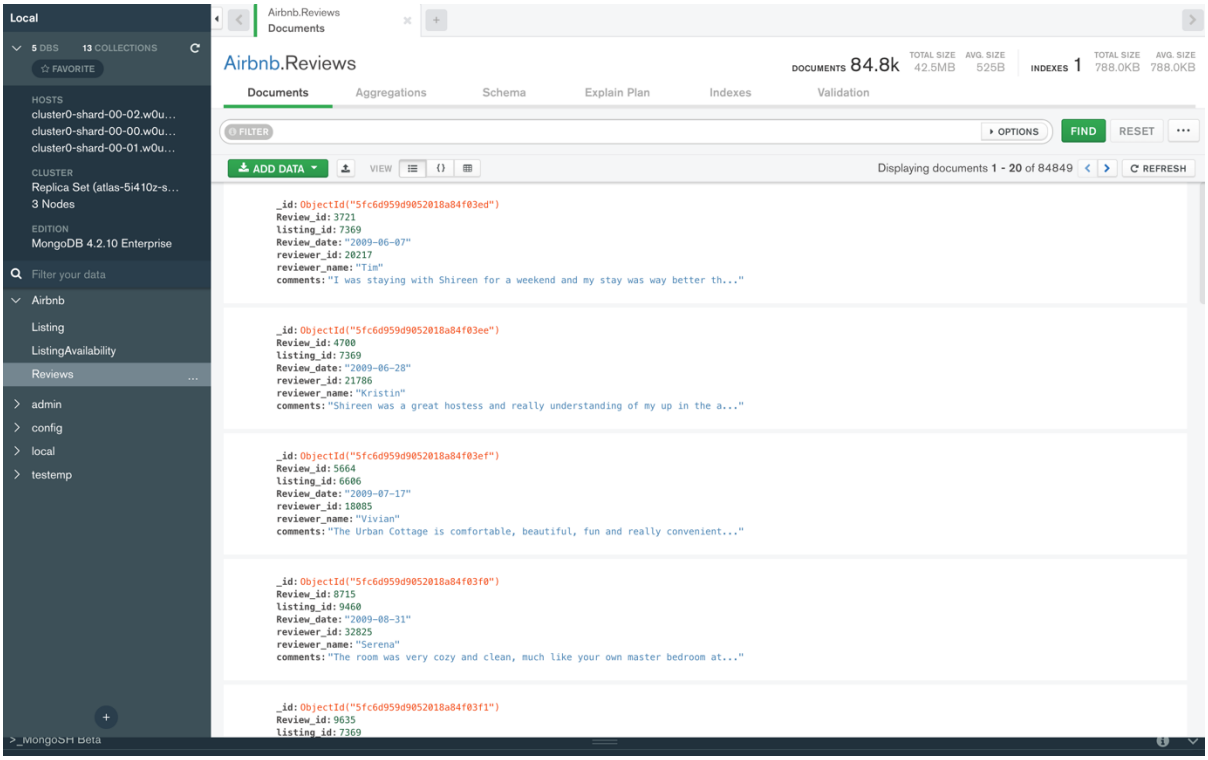
The collections are as follows:

1. Listing
2. Listing Availability
3. Reviews



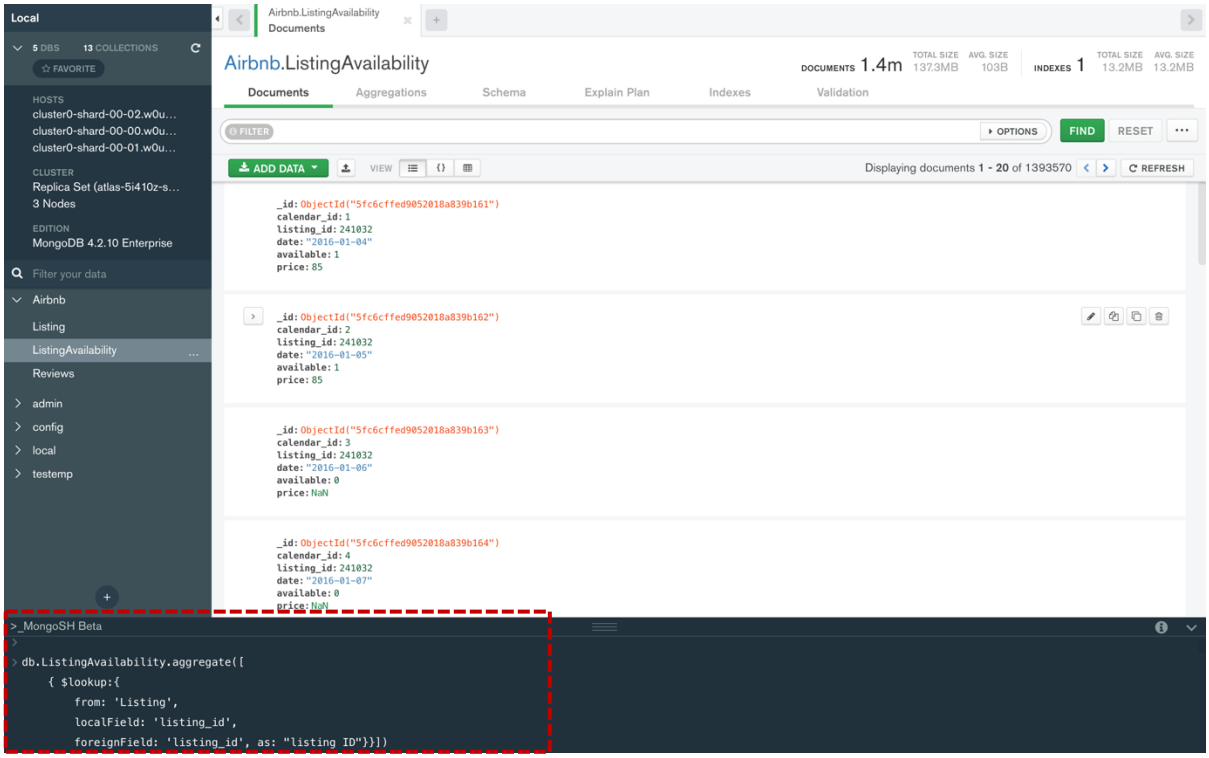


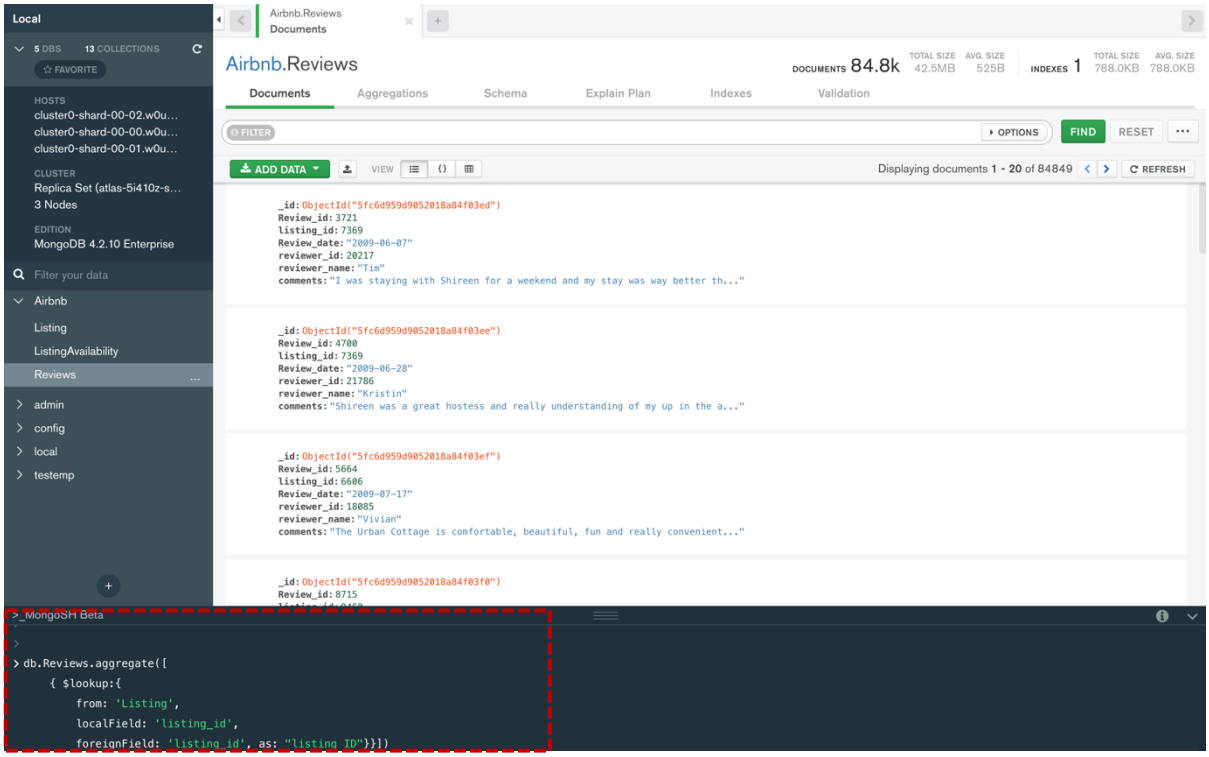

Local
5 DBS 13 COLLECTIONS
FAVORITE
HOSTS
cluster0-shard-00-02.w0u...
cluster0-shard-00-00.w0u...
cluster0-shard-00-01.w0u...
CLUSTER
Replica Set (atlas-5i410z-s...
3 Nodes
EDITION
MongoDB 4.2.10 Enterprise
Filter your data
Airbnb
Listing
ListingAvailability
Reviews
admin
config
local
testemp
Airbnb.ListingAvailability
Documents
Airbnb.ListingAvailability
DOCUMENTS 1.4m
TOTAL SIZE 137.3MB
AVG. SIZE 103B
INDEXES 1
TOTAL SIZE 13.2MB
AVG. SIZE 13.2MB
Documents
Aggregations
Schema
Explain Plan
Indexes
Validation
FILTER
OPTIONS
FIND
RESET
ADD DATA
VIEW
Displaying documents 1 - 20 of 1393570
REFRESH
_id: ObjectId("5fc6cffed9052018a839b161")
calendar_id: 1
listing_id: 241032
date: "2016-01-04"
available: 1
price: 85
_id: ObjectId("5fc6cffed9052018a839b162")
calendar_id: 2
listing_id: 241032
date: "2016-01-05"
available: 1
price: 85
_id: ObjectId("5fc6cffed9052018a839b163")
calendar_id: 3
listing_id: 241032
date: "2016-01-06"
available: 0
price: NaN
_id: ObjectId("5fc6cffed9052018a839b164")
calendar_id: 4
listing_id: 241032
date: "2016-01-07"
available: 0
price: NaN
_id: ObjectId("5fc6cffed9052018a839b165")
calendar_id: 5
listing_id: 241032
date: "2016-01-08"
available: 0
price: NaN
>_MongoSH Beta


Local
5 DBS 13 COLLECTIONS
FAVORITE
HOSTS
cluster0-shard-00-02.w0u...
cluster0-shard-00-00.w0u...
cluster0-shard-00-01.w0u...
CLUSTER
Replica Set (atlas-5i410z-s...
3 Nodes
EDITION
MongoDB 4.2.10 Enterprise
Filter your data
Airbnb
Listing
ListingAvailability
Reviews
admin
config
local
testemp
Airbnb.Reviews
Documents
Airbnb.Reviews
DOCUMENTS 84.8k
TOTAL SIZE 42.5MB
AVG. SIZE 525B
INDEXES 1
TOTAL SIZE 788.0KB
AVG. SIZE 788.0KB
Documents
Aggregations
Schema
Explain Plan
Indexes
Validation
FILTER
OPTIONS
FIND
RESET
ADD DATA
VIEW
Displaying documents 1 - 20 of 84849
REFRESH
_id: ObjectId("5fc6d959d9052018a84f03ed")
Review_id: 3721
listing_id: 7369
Review_date: "2009-06-07"
reviewer_id: 20217
reviewer_name: "Tim"
comments: "I was staying with Shireen for a weekend and my stay was way better th..."
_id: ObjectId("5fc6d959d9052018a84f03ee")
Review_id: 4700
listing_id: 7369
Review_date: "2009-06-28"
reviewer_id: 21786
reviewer_name: "Kristin"
comments: "Shireen was a great hostess and really understanding of my up in the a..."
_id: ObjectId("5fc6d959d9052018a84f03ef")
Review_id: 5664
listing_id: 6606
Review_date: "2009-07-17"
reviewer_id: 18085
reviewer_name: "Vivian"
comments: "The Urban Cottage is comfortable, beautiful, fun and really convenient..."
_id: ObjectId("5fc6d959d9052018a84f03f0")
Review_id: 8715
listing_id: 9460
Review_date: "2009-08-31"
reviewer_id: 32825
reviewer_name: "Serena"
comments: "The room was very cozy and clean, much like your own master bedroom at..."
_id: ObjectId("5fc6d959d9052018a84f03f1")
Review_id: 9635
listing_id: 7369
>_MongoSH Beta

The collections are linked to each other using references. References store the relationships between data by including links or references from one document to another.

The ‘listing_id’ from the Listing collection id referenced to ‘listing_id’ in both Listing Avalilability and Reviews collections.





7.3. Data in the Database

Collection Name	Relationships with Other Collections (if any)	Number of documents in collection
Listings		3,818
Listing Availability	"listing_id" id referenced to the listings table	1,393,570
Reviews	"listing_id" id referenced to the listings table	84,849

8. MongoDB Queries

8.1. Mongo Query 1

"Daily prices can be higher for properties with more bathrooms."

Rationale:

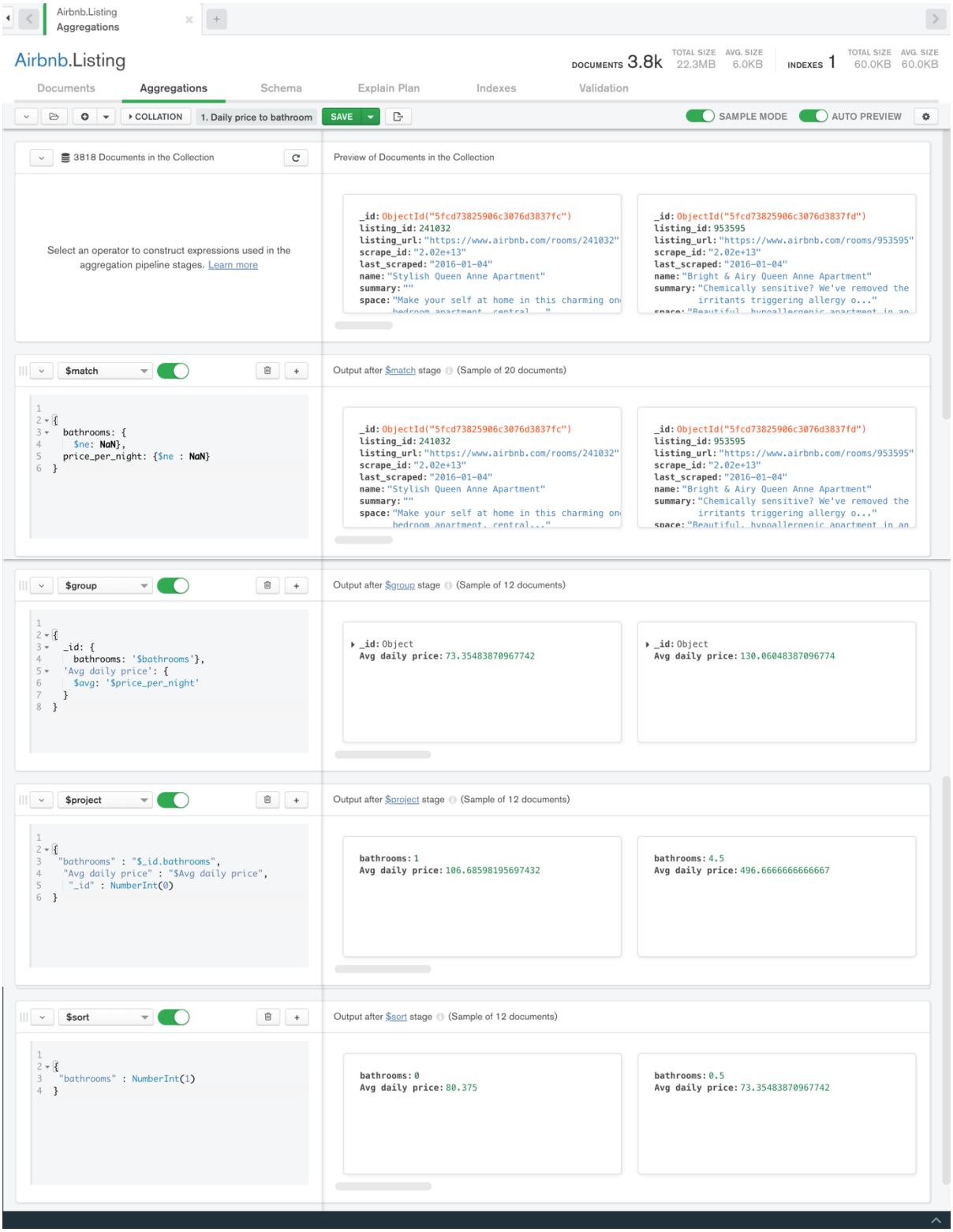
The daily price of the property depends on various factors, like area of the listing (square footage), number of bedrooms, number of bathrooms, the finish of the interiors, amenities and most importantly the location of the property.

To analyze the effect of bathrooms on the daily prices, it is assumed that the number of bathrooms are provided proportionally to the number of bedrooms and hence, the area(square feet) of the listing. For example, as per industry norm, 2 bathrooms are provided for either a property with 2 bedrooms or 3 bedrooms. It is not possible to have 2 bathrooms for a studio or a one bedroom apartment. Further, as the number of bathrooms increases, size of the property also increases. Therefore, effect of increase in number of bathrooms is assumed to capture the true trend of the daily prices. Also, since all the properties are in Seattle city, it is assumed that the location effect on price is constant and this analysis will be looked at macro level.

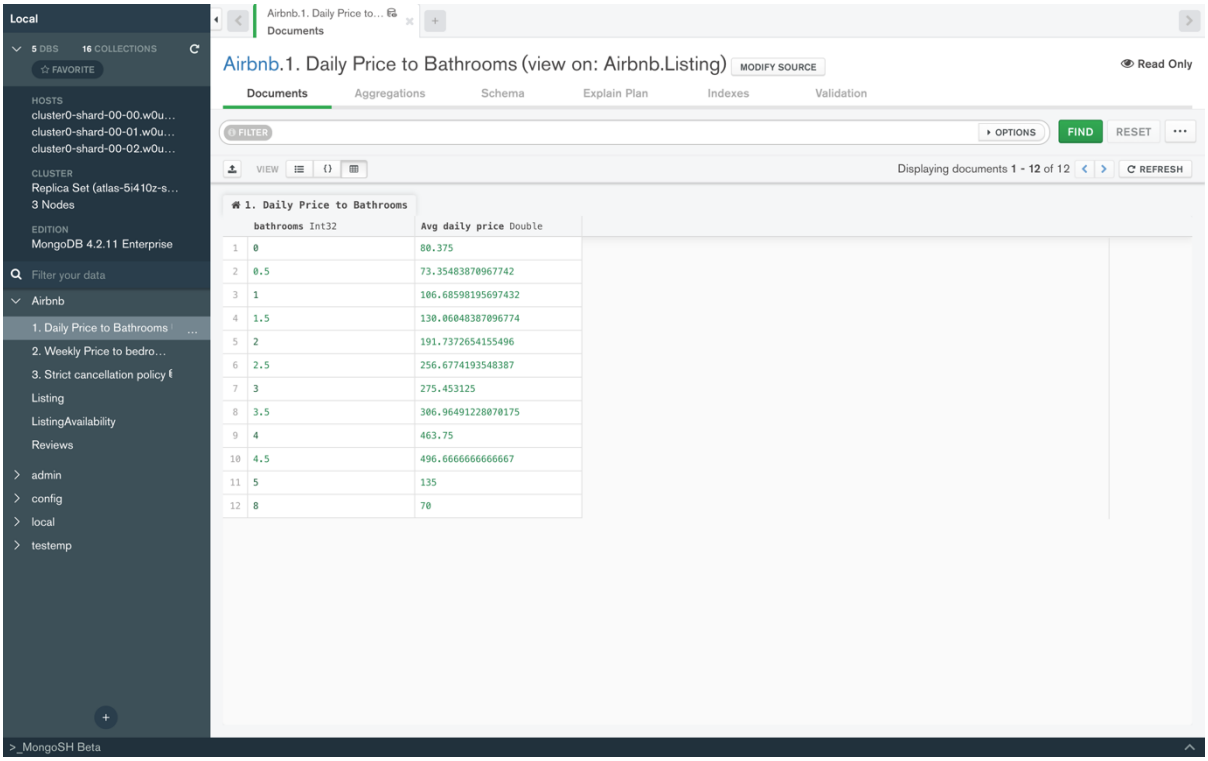
For broader analysis, average daily price is considered.

Translation/Clean up:

Using listing collection, utilize aggregate function to group by bathrooms after removing missing values and get average price per night, then sort by bathrooms.



Documents in Result set: 12 rows



Inferences:

The average daily price of the property/listing increases as the number of bathrooms increases from 0 (no bathroom like in the case of yurt or a room in a property that is listed in Airbnb with no attached bathroom) to 4.5 bathrooms. As the number of bathrooms goes more than 4.5, the trend doesn't hold true and the price starts decreasing.

Thus, the daily prices can be higher for properties with 4 bathrooms as it also indicates that it would be for a property with higher area and a greater number of bedrooms.

8.2. Mongo Query 2

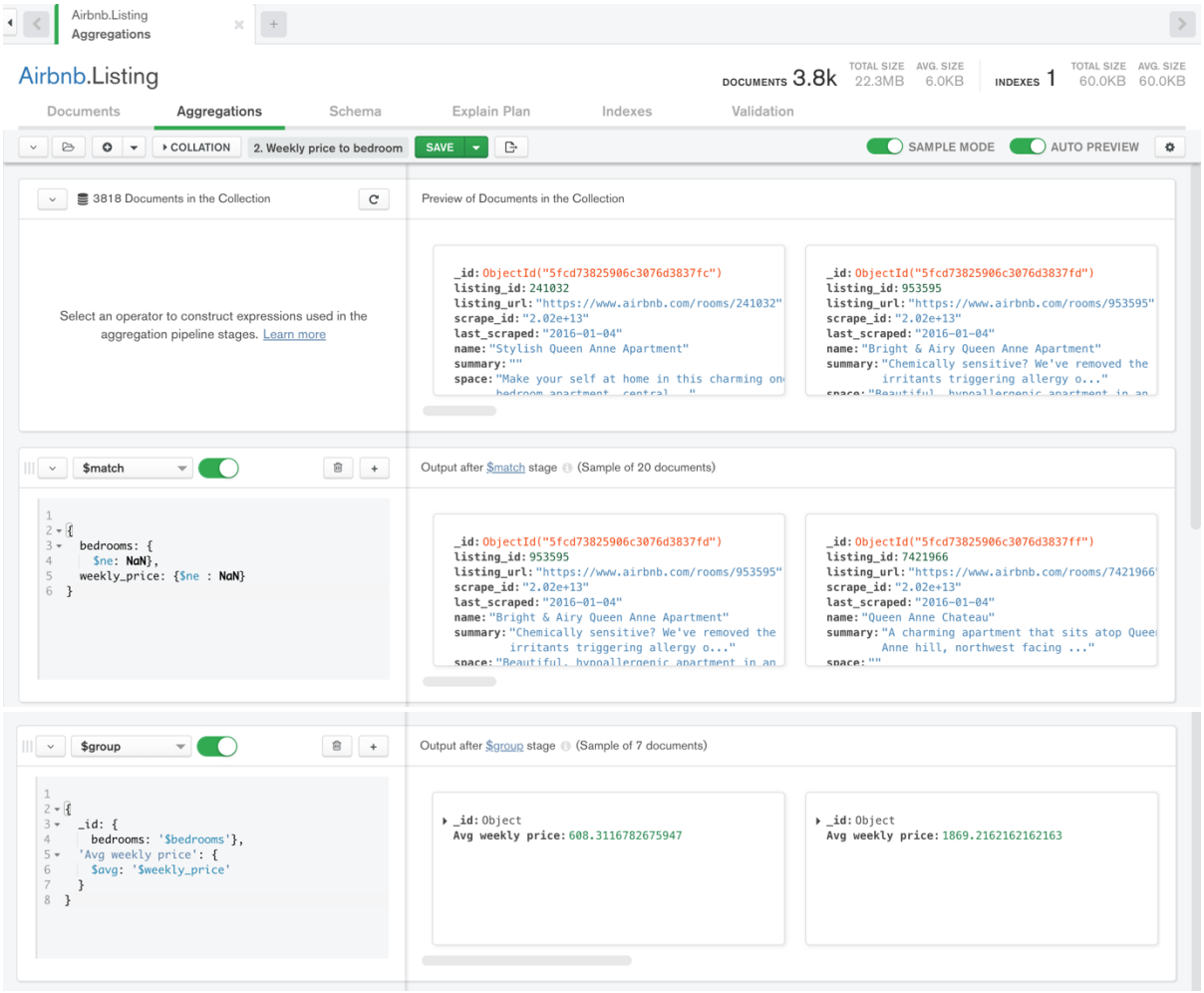
“Weekly prices can be lower for properties with lesser bedrooms”

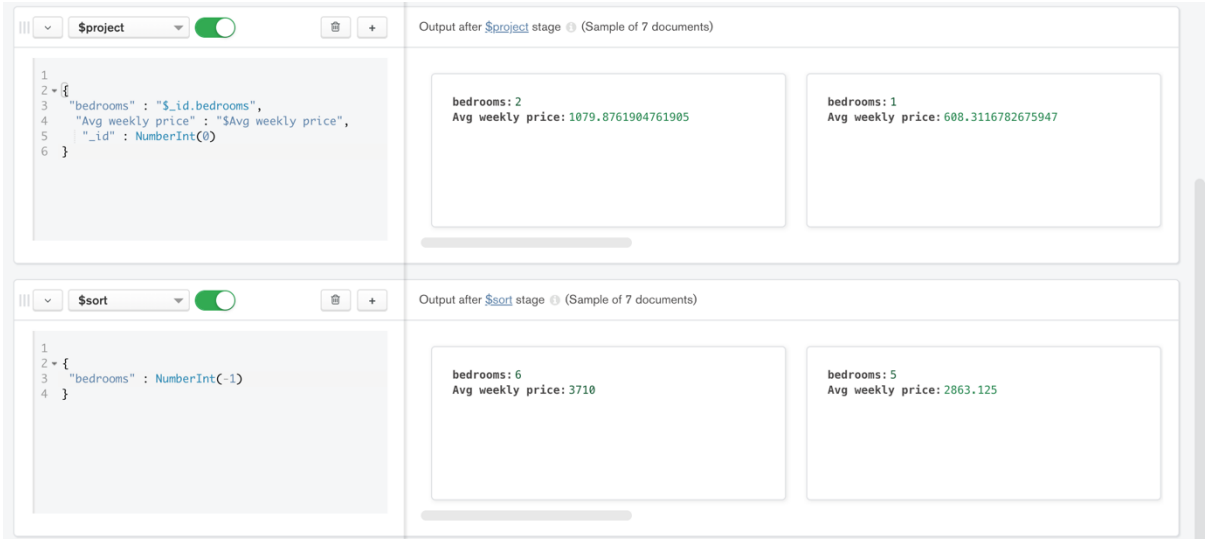
Rationale:

As the number of bedrooms increases, the size of the property also increases. To analyze the effect of bedrooms on the weekly prices, it is assumed that the effect of increase in number of bedrooms captures the true trend of the weekly prices. Since all the properties are in Seattle city, it is assumed that the location effect on price is constant and this analysis will be looked at city level and not at area level. Average weekly price of properties having a particular number of bedrooms is looked at. Only the properties whose weekly prices are provided by the hosts is considered for this analysis.

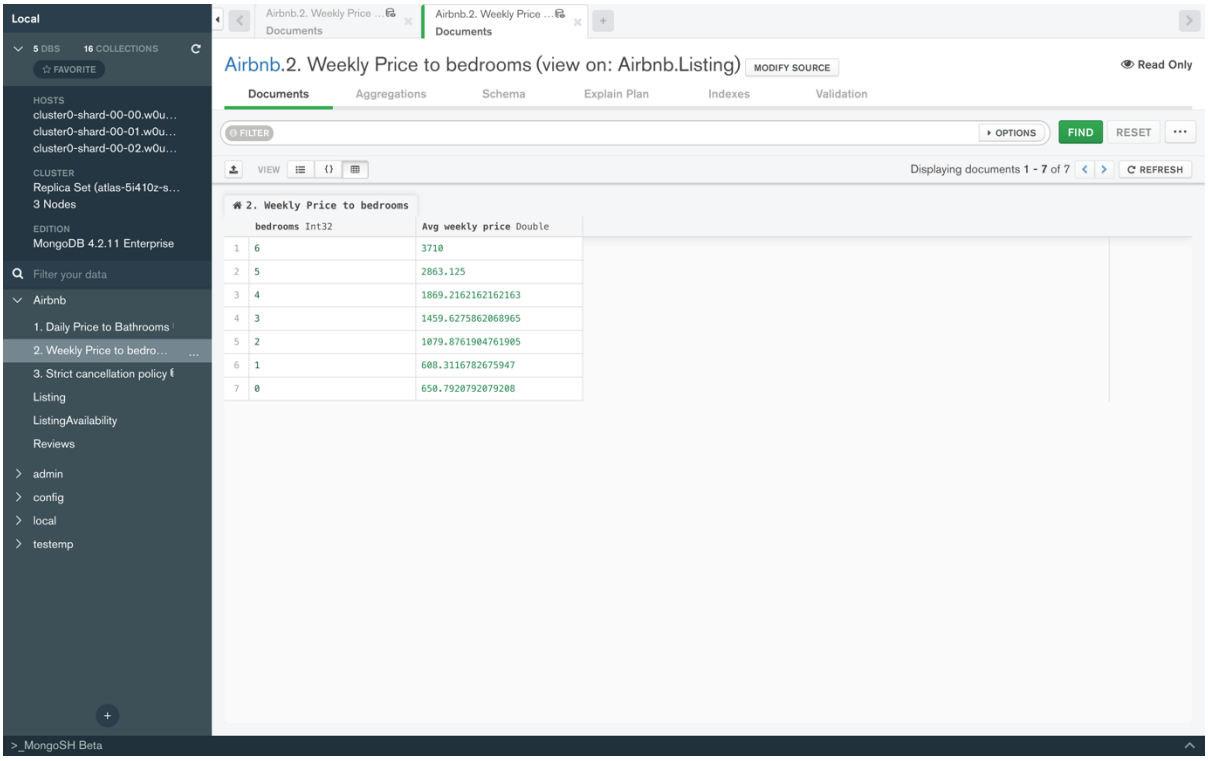
Translation/Clean up:

Using listing collection, utilize aggregate function to group by bedrooms after removing missing values and get average weekly price, then sort by bedrooms.





Documents in Result set: 7 rows



Inferences:

The average weekly price of the property decreases as the number of bedrooms decreases from 6 to 0 (no bedroom like in the case of yurt or studio apartment). It is seen that average weekly price of properties with 0 bedrooms are priced slightly higher than 1 bedroom. This is because, the of the property type like Yurt and treehouse with 0 bedrooms is considered as ‘Luxury’ or ‘One of a kind’ experience and are priced at a higher, in turn resulting in higher average weekly price of 0 bedroom properties. Thus, in general, the weekly prices are lesser with lesser bedrooms.

8.3. Mongo Query 3

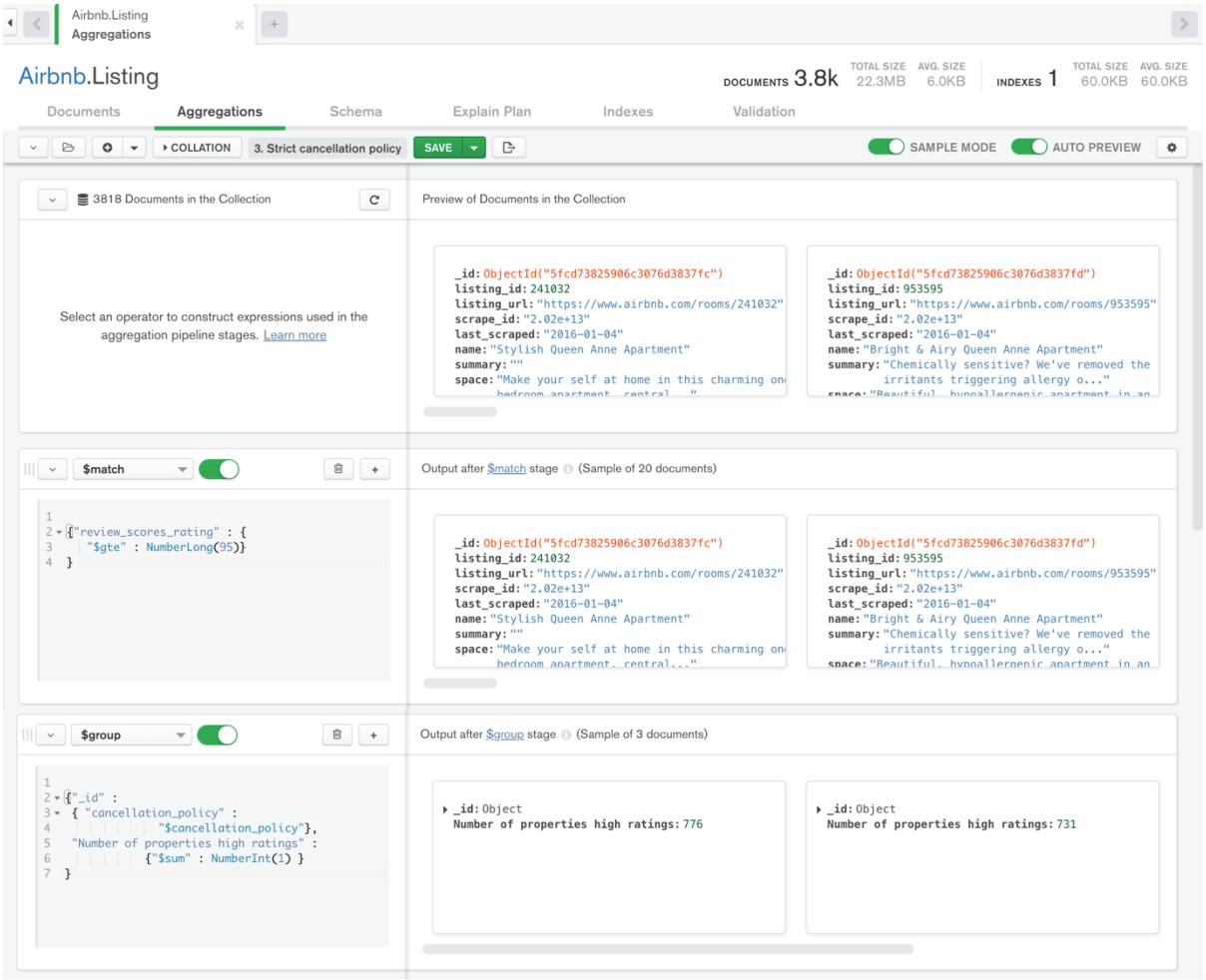
“Strict cancellation policies are best for properties with high review scores”

Rationale:

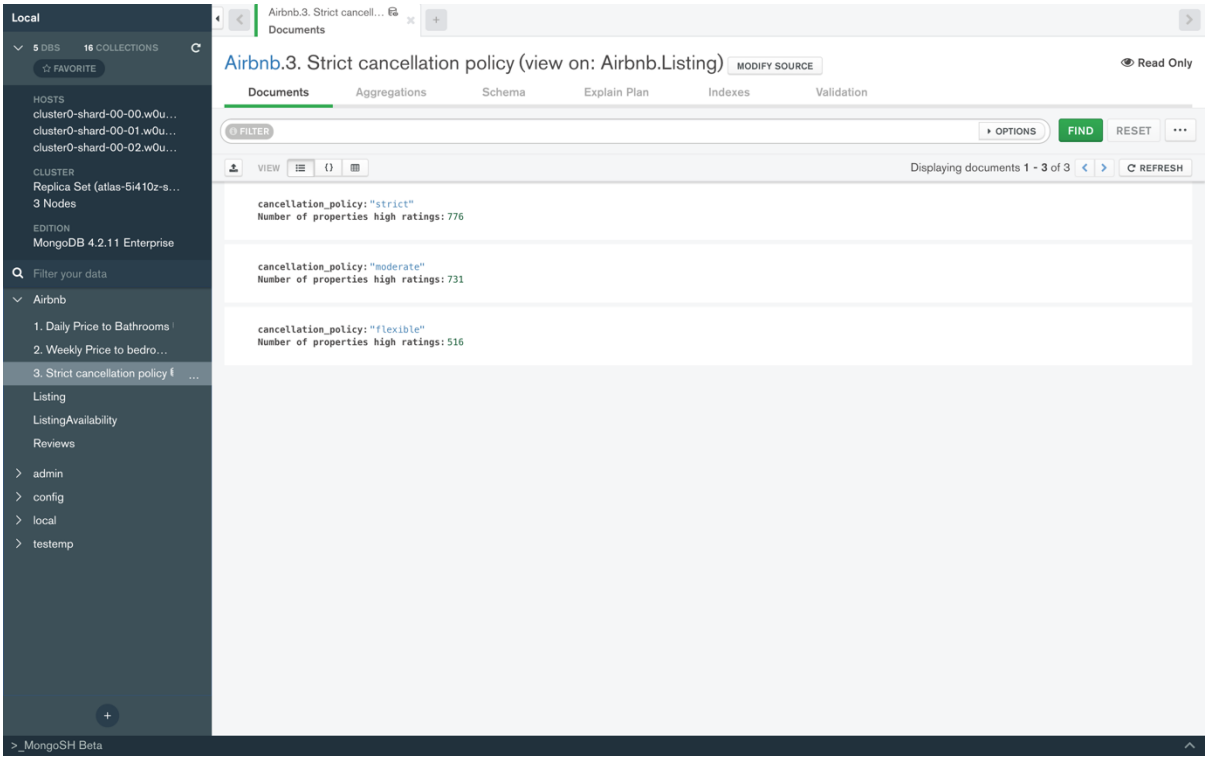
The review score rating is considered as the review scores. The score rating greater than or equal to 95 is considered as “high review scores”. To compare the type of policies, the total number of properties with high review scores will be considered.

Translation/Clean up:

Using listing collection, utilize aggregate function to group by cancellation policy and get the count of all the listings documents whose review scores rating greater than or equal to 95.



Documents in Result set: 3 rows



Inferences:

The average weekly price of the property decreases as the number of bedrooms decreases from 6 to 0 (no bedroom like in the case of yurt or studio apartment). It is seen that average weekly price of properties with 0 bedrooms are priced slightly higher than 1 bedroom. This is because, the of the property type like Yurt and treehouse with 0 bedrooms is considered as ‘Luxury’ or ‘One of a kind’ experience and are priced at a higher, in turn resulting in higher average weekly price of 0 bedroom properties. Thus, in general, the weekly prices are lesser with lesser bedrooms.

9. Conclusion

We observed certain trends and made some conclusion based on given data:

1. The daily prices can be higher for properties with 4 bathrooms as it also indicates that it would be for a property with higher area and a greater number of bedrooms. Hence the statement 'Daily prices can be higher for properties with more bathrooms' is approved.
2. The average weekly price of the property/listing decreases as the number of bedrooms decreases from 6 to 0 The weekly price is also increasing as the area of the property increases. Thus, in general, the weekly prices are lesser with lesser bedrooms. Hence the statement 'Weekly prices can be lower for properties with lesser bedrooms' is approved.
3. The strict cancellation policy seems to be better for high review scores as total number of properties with high review scores are greater for strict cancellation policy criteria when compared to moderate or flexible. Thus, strict cancellation policies are best for properties with high review scores. Hence, Strict cancellation policies are best for properties with high review scores
4. The average daily prices for the listings with higher review score cleanliness is almost equal to the average daily prices for the listings with higher review score location. Therefore, there is no sufficient evidence to prove the question statement that 'Properties with high review scores for cleanliness have higher daily prices than properties with high review scores for location.
5. The daily price does not seem to have any relation with security deposit and cleaning prices. Therefore, there is no trend seen and the statement 'Properties with higher daily prices also charge higher security deposits and cleaning fees' is disapproved.

Activity	**Akshata Bhandiwad**	**Ankush Kumar Ahir**	**Ketaki Vardekar**
Prepared Data Model and Physical DB	x		x
Loaded Data into Database	x	x	
Wrote SQL Queries	x	x	x
Prepared Mongo Database	x		
Loaded data into Mongo DB	x		x
Wrote Mongo Queries	x	x	
Prepared Report	x	x	x
Reviewed Report		x	x