



SUMMARY REPORT

GROUP 8

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EXECUTIVE SUMMARY

Airbnb, a pioneering force in the travel industry, has revolutionized the way people experience lodging by providing a platform for unique accommodations worldwide. Our project focused on creating a comprehensive database solution for Airbnb, enhancing user experience and expanding services through a new venture initiative.

The report begins with a comprehensive overview of Airbnb, highlighting its exponential growth since its inception in 2007 and its mission to enable global connectivity through unique travel experiences.

The prioritized requirements for our database aimed to optimize the customer journey by facilitating seamless booking processes, introducing car rentals, and ensuring transparency and security throughout the platform.

The database development process involved the creation of conceptual, relational, and physical models, culminating in the implementation of SQL databases to facilitate efficient data management and operations.

In addition to enhancing existing services, our new venture proposed the integration of car rentals within the Airbnb platform. By enabling hosts to offer their vehicles for rent, we aimed to streamline the travel experience and generate additional income for hosts.

Ethical considerations were paramount throughout the project, with a focus on data integrity, privacy protection, and security measures to safeguard user information and transactions.

Looking ahead, our database lays the foundation for future innovations, with opportunities to explore additional services such as flight bookings and food services, aligning with Airbnb's vision of creating an end-to-end travel platform.

In conclusion, our database solution for Airbnb reflects our commitment to enhancing user experience, expanding services, and maintaining ethical standards. As we continue to innovate and evolve, we remain dedicated to delivering seamless and unforgettable travel experiences for Airbnb users worldwide.

GENERAL DESCRIPTION

Airbnb was founded in 2007. It started when two hosts welcomed three guests into their San Francisco-based home. Since its impromptu start in 2007, Airbnb has grown to over 5 million Hosts who've welcomed over 1.5 billion guests. The service is currently located in almost every country across the entire world.

Airbnb's mission statement reads as follows, "to create a world where anyone can live anywhere". This mission statement is supported by the brand value, which is creating an end-to-end platform that can take care of every part of travelers' trips. This company works to help both the traveler and the host. The traveler gets to engage in a local experience, while the host gets to open up their private space and share their passions with others. The way that Airbnb conducts the end-to-end aspect of their business is to provide users with a seamless experience, by finding accommodations, booking experiences, and managing travel logistics of the trip, homestays, castles, tree houses, and hotel rooms.

Airbnb works as a third party in which a host will open up a property for users to rent out for a specific amount of time. The properties that the user can lease or rent for a specific amount of time include vacation rentals, apartment rentals, homestays, castles, tree houses, and hotel rooms.

Airbnb has a microservices approach, which means the application is divided into smaller, independent services that communicate with each other by way of Application Programming Interfaces (APIs). By using this method the application is scaled more easily, each service can be scaled independently based on their specific needs. The Airbnb app is heavily composed of machine-learning tools that help power the application's search and recommendation engines. Machine learning is also used to better optimize pricing for hosts. The way that these works is by the ML technology to analyze market trends and demand, then the machine learning algorithms can recommend optimal pricing for listings, this in turn ensures that the hosts get the best possible return on their property investment.

To host and scale app infrastructure, Airbnb uses Amazon Web Services (AWS). The company uses three products under the AWS umbrella, with each having their own specific purpose.

GENERAL DESCRIPTION

The three products are the following:

- Amazon S3 is a cloud storage system (CSS) with the capability of storing large amounts of online assets while retrieving data from anywhere through the cloud.
- Amazon EC2 is the platform's cloud hosting of choice, it is an extremely reliable and scalable platform that contains numerous host servers and databases. Another specialty of this product is that EC2 can manage incoming app traffic while keeping the system stable even when unexpected traffic spikes occur.
- Lastly, Amazon RDS (Relational Database Service) is a managed database service (MDS) that is used at the administrative level to store and manage data.

Airbnb previously used MySQL databases to house all of their data. However, they moved to Amazon RDS to systemize their administration and other activities. Also, they now receive the added security measures and the scalability benefits provided by AWS.

PRIORITY REQUIREMENT SUMMARY

As of January 2023, Airbnb.com was the third most visited travel and tourism website worldwide. Due to this, the company is constantly seeking to enhance the user experience in terms of performance, reliability, and compatibility.

Scope of the Project

Considering the project scope, the following features are prioritized to achieve the best possible customer journey with Airbnb.

- Customers must be able to create bookings and leave reviews on the listing they stayed at
- Listings should contain amenities and information about the listing car rentals
- The car rental process should be connected through the host, since they offer the car, and to the booking for the car to be reserved
- The host must have a rental, and they should share the languages they speak, and the car rentals they have available
- The price of the booking should be available for users before payment
- If they choose to officially book with Airbnb, payment options must be available for them
- Once payment is completed, individuals will receive confirmation of a trip
- Cancellation options for the booking should also be available
- Once a trip is booked, individuals may receive notifications and reminders about their stay

After examining Airbnb and determining the requirements, we concluded that the following tables are required.

- Customer
- Review
- Listing
- Listing Car Rental
- Car Rental
- Listing Amenity
- Amenity

PRIORITY REQUIREMENT SUMMARY

- Host
- Host Language
- Booking
- Booking_Price_Detail
- Payment
- Notification
- Cancellation
- Booking Confirmation

The functionality of the tables above allows customers to set up an account with the required details such as their full name, email, phone number, date of birth, government ID for verification reasons, and a few more optional features. Moreover, we can maintain the database of Listing, Booking, Review, Amenity, Car Rental Payment, etc. This fulfills the requirements of the peer-to-peer accommodation marketplace app.

Our team has implemented the tables mentioned in the ‘Airbnb’ database, where we have successfully inserted the data using SQL. At the moment, we have 15 rows of information in each table of our database. Considering the large scope of this project, additional features can be expected looking forward. (See Detailed Requirements Table in Appendix)

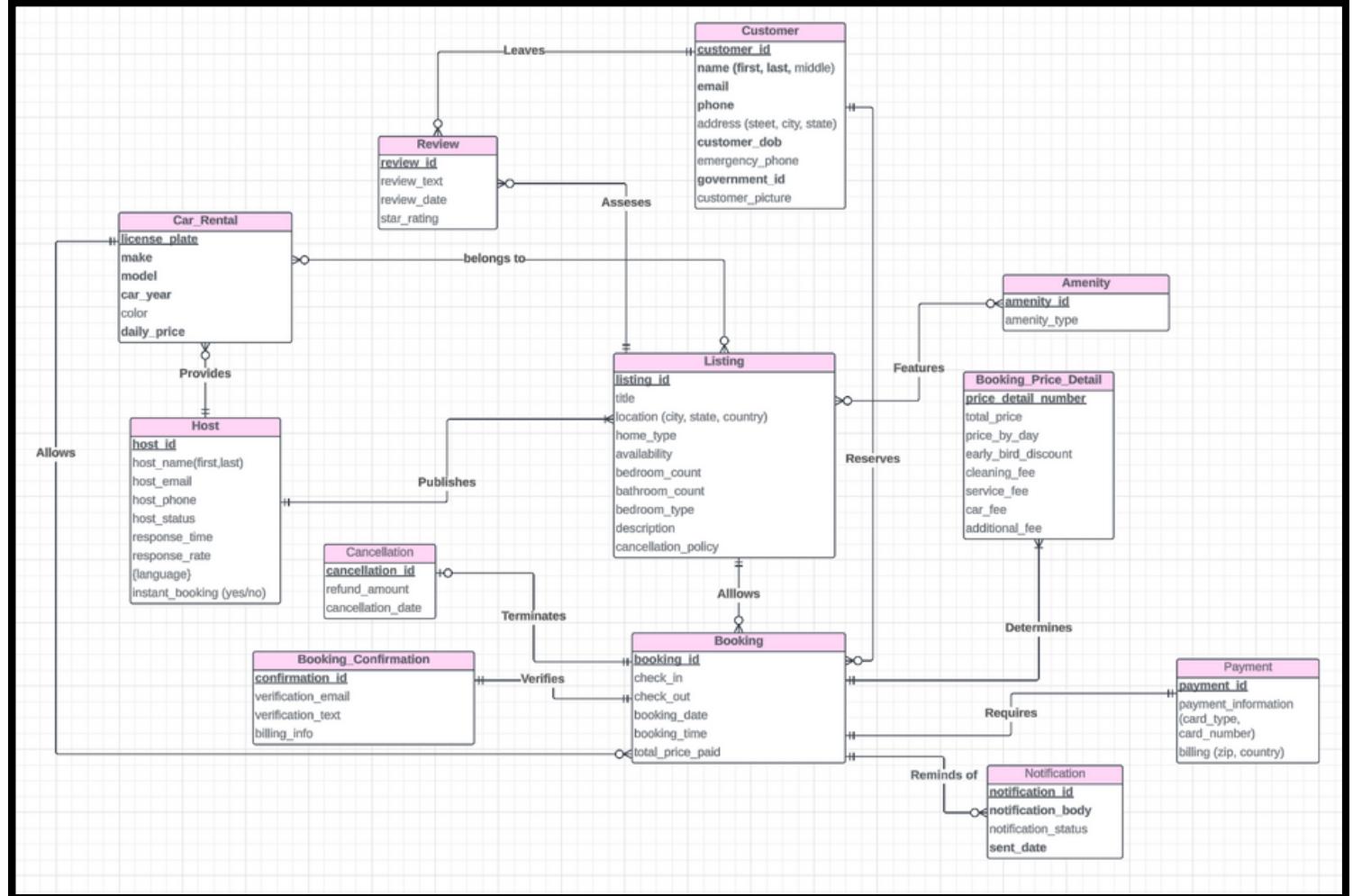
New Venture

As people travel, many different aspects require planning beyond lodging, such as transportation, dining, excursions, and activities. It can be quite laborious to navigate through various websites and processes to create a comprehensive itinerary for the entire trip. As mentioned earlier, one of AirBNB's goals is to create an end-to-end platform that will be able to take care of every part of travelers' trips. Our new venture proposal aims to bring Airbnb closer to achieving that goal.

Our new venture idea is adding car rentals into AirBNB. Rather than interacting with 3rd party vendors such as Budget, Enterprise, and Avis, we aim to make this venture as user-friendly as possible by enabling hosts to offer their own vehicles for rent along with their properties, thus allowing hosts to earn additional income. This would enable customers to see if a host is providing a vehicle (or multiple vehicles) with their listing, and if desired, they can include it in their booking. This will streamline the customer's travel experience as they no longer need to concern themselves with transportation at their destination.

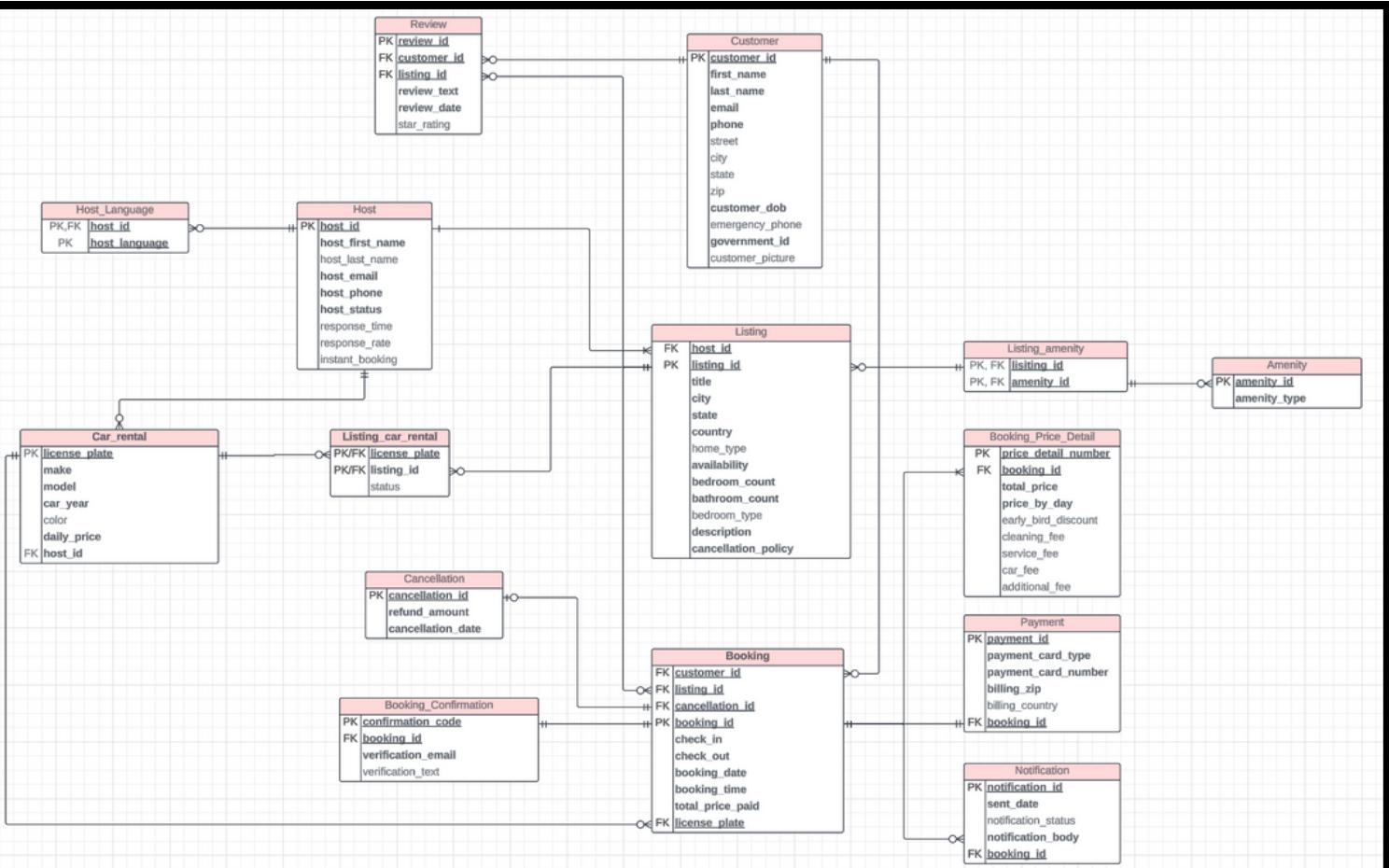
With this new venture, we have incorporated a car rental table into our database. As depicted in our diagram, we have determined that a host can offer multiple vehicles if they so choose. Additionally, we have established that a vehicle can be associated with multiple listings, allowing hosts to allocate vehicles across multiple properties. Finally, we have determined that a car rental can be linked to multiple bookings, similar to listings, thereby enabling the same car to be booked for various reservations.

CONCEPTUAL MODEL



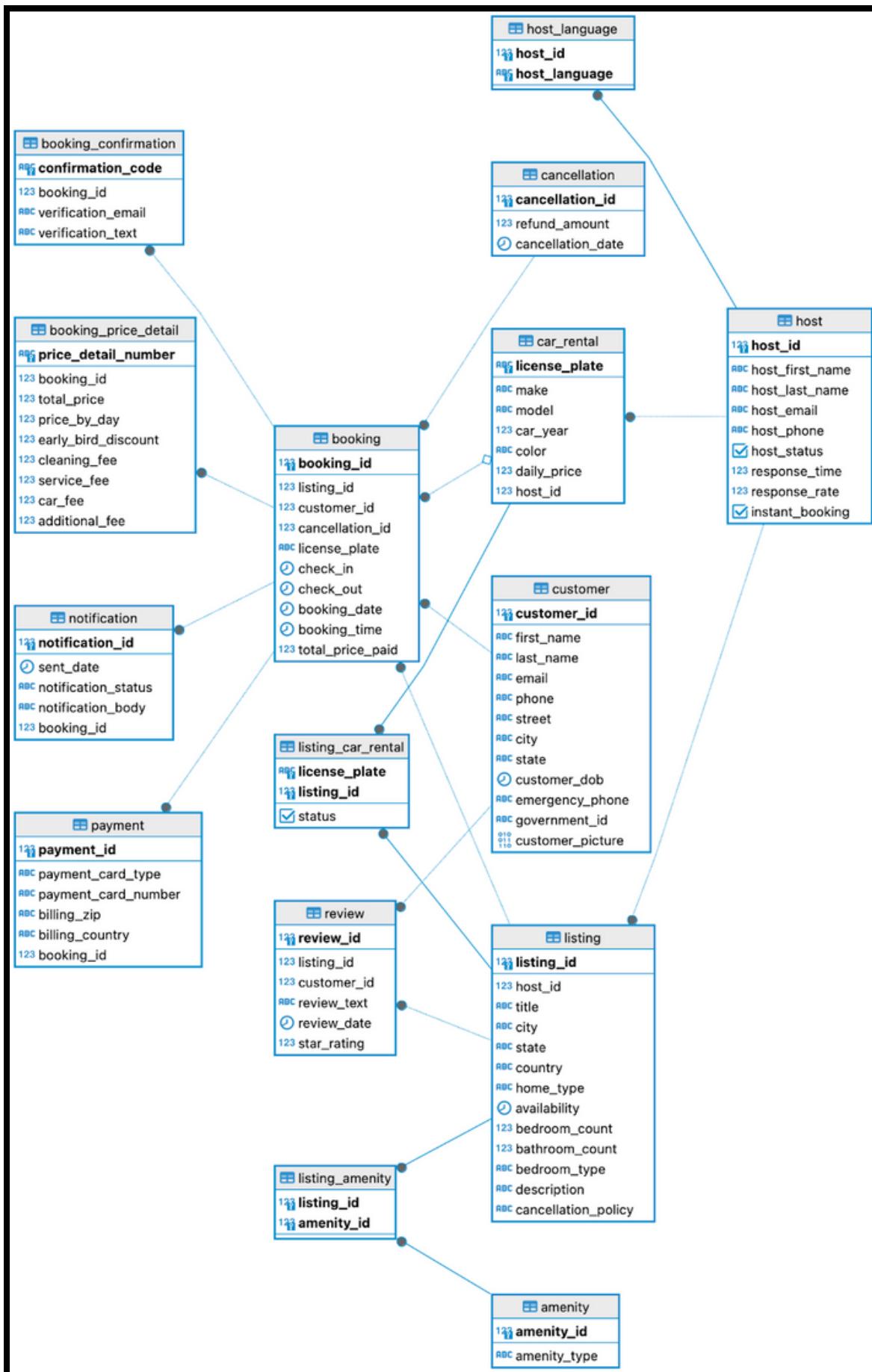
The conceptual diagram above shows our Airbnb booking journey. It reflects the relationship, entities, and attributes involved in an Airbnb like booking system, allowing for effective management of customer browsing journey, bookings, payment, confirmation and notifications.

LOGICAL MODEL



In this step, we transformed our conceptual diagram to a logical diagram in 3rd normal form. To achieve this we initially added all the primary keys and then proceeded to create a separate relation for all the multivalued attributes. Following this, we added the appropriate foreign keys and finally, we created a separate relation for many-to-many relationships.

PHYSICAL MODEL



PHYSICAL MODEL

Approach

The next step in the database development process involved translating the logical diagram into tangible tables with defined data types and constraints using SQL statements. The primary objective was to establish a functional database, enabling customers to browse property listings, make bookings for listings, cars, and ultimately complete payments using their preferred method.

Additionally, our goal was to send reminders to customers regarding their bookings and provide them with the opportunity to write reviews for listings after their stay. We aimed to provide an end-to-end Airbnb reservation journey, systematically storing all relevant information within the database.

REQUIREMENT REVIEW

We successfully implemented the following functionalities in the developed database:

Browse and Book Multiple Listings:

- Customers can browse and book multiple property listings.

Book Cars:

- Customers can book cars in addition to property listings.

Publish Listings with Price and Amenities:

- Hosts can publish property listings, specifying prices and amenities.

Make Payments Using Preferred Method:

- Customers can make payments for bookings using their preferred payment methods.

Add Additional Fees:

- Hosts can add additional fees for their listings.

Write Reviews for Bookings:

- Customers can share their feedback by writing reviews for their bookings after their stay.

Send Booking Reminders:

- Reminders are sent to customers to keep them informed about their upcoming bookings.

To achieve the functionalities above, we identified the tables and key relationships below:

- Booking_Confirmation: Holds confirmation details for bookings, including a confirmation code.
- Customer: Represents individuals looking to book accommodations.
- Host: Represents individuals offering accommodations.
- Listing: Describes properties available on our platform.
- Review: Captures reviews made by customers for specific listings.
- Amenity: Defines various amenities that a listing might offer.
- Car_Rental: Represents details about cars available for rental.

REQUIREMENT REVIEW

- Booking: Records information about bookings made by customers.
- Host_Language: Captures languages spoken by hosts.
- Listing_Amenity: Represents the many-to-many relationship between listings and amenities.
- Payment: Contains details about payment details like card_type etc made for bookings.
- Notification: Stores notifications sent to customers or hosts related to bookings.
- Booking_Price_Detail: Provides a detailed breakdown of pricing for each booking. A booking can have multiple price detail entries. In case of a change in price during the stay or any additional prices incurred after the stay.
- Listing_Car_Rental Entity: Represents the one-to-many relationships between listings and car rentals.

Key Relationships

- Customer-Booking Relationship: A customer can make multiple bookings.
- Host-Listing Relationship: A host can have multiple listings.
- Listing-Review Relationship: A listing can have multiple reviews.
- Listing-Amenity Relationship: A listing can have multiple amenities, and an amenity can be associated with multiple listings.
- Host-Language Relationship: A host can speak multiple languages.
- Booking-Cancellation Relationship: A booking is associated with a cancellation record.
- Booking-Payment Relationship: A booking is associated with a payment record.
- Booking-Notification Relationship: A booking is associated with a notification.
- Booking-Confirmation Relationship: A booking is associated with confirmation details.
- Booking-Price_Detail Relationship: A booking is associated with price details.
- Listing-Car_Rental Relationship: A listing can be associated with multiple car rentals.

ETHICAL CONSIDERATIONS

There are several ethical considerations with the collection, analysis, and distribution of the data for the Airbnb project. Data integrity and protection of our customers, hosts, payment methods, listing, and booking information is of utmost concern. To responsibly manage this dataset, we have listed the key tables below and how security concerns can be managed.

- Customer and Host: These tables have access to extremely personal information (e.g., names, contact information, and government ID). Therefore, it is our ethical duty to ensure that individuals' privacy is protected. To manage this, we collect only the necessary data of our customers/hosts and believe that they should have the right to delete their account and the information in it if they would like.
- Review: For those who leave a review, only their username out of the customer data will be shown. This is to prevent any harm that could come upon them for leaving an honest review. As for the hosts, our Airbnb team must ensure that reviews are written by individuals that stayed at the rental, to prevent misleading or biased reviews.
- Payment: Following Airbnb's Privacy Policy, the company can collect and store payment method information. Considering this, payment information must be encrypted and securely stored. To responsibly manage this and the users' privacy, it would be important to add measures to detect fraudulent activities.
- Booking_Price: Within each booking price, there must be transparency in pricing components and fees associated. The host should not be able to change booking prices once they are confirmed.
- Booking: Booking details contain sensitive patterns of movement, such as the dates of stay and how many people will be there. Due to this, bookings must be accurately recorded in the database.
- Listing and Listing Car Rental: Both of these tables contain sensitive patterns similar to the Booking table. Particularly, listings contain sensitive information about locations, cars, and this could be misused, creating risks for visitors and hosts. Moreover, hosts mustn't misrepresent the listings and cars offered, to avoid false expectations and possibly legal issues. It is our goal, for hosts and customers, to feel safe and confident that our company is protecting them.

CONCLUSION

Airbnb is a service that completely disrupted the travel industry when it first launched. It enables hosts to list their unique properties for rent, providing travelers with experiences that were previously unimaginable with traditional lodging options. Given that Airbnb is the preferred lodging choice for many travelers worldwide, the user experience must remain seamless and straightforward. Our database was designed with this in mind. In our database structure, we have ensured that every aspect of the reservation process is properly aligned with the next, from user creation to booking and payment.

Looking at our current database model, there are still unanswered questions, especially regarding our new venture with car rentals. Who will insure the car rentals, and how will that process work? What are the qualifications for a customer to be permitted to rent a vehicle from the host? Is age the determining factor, or is it based on possession of a driver's license (given different driving age requirements around the world)? Do all types of vehicles qualify to be rentals, and are there any mileage requirements? While our new venture idea appears relatively simple, numerous considerations must be taken into account to refine it and ensure its success. Addressing these questions thoroughly will be vital in creating a seamless and efficient car rental experience within the Airbnb platform.

Moving beyond the car rental phase, there are numerous opportunities that we could explore in the future. As discussed, one of Airbnb's core values is creating an end-to-end platform that caters to every aspect of travelers' trips. So, why stop at lodging and car rentals? Could we implement API integrations that enable customers to book flights through Airbnb's service, similar to Google Flights? Or perhaps introduce food services, or allow local restaurant businesses to list their menus for visitors to the area?

With Airbnb, the possibilities are limitless. As we continue to introduce these new features, we will consistently update the database accordingly, ensuring that the user experience remains as seamless as possible.

REFERENCES

Wallis, J. (2023, December 28). Airbnb Tech Stack explained: The Tech behind the Airbnb app. Intuji. <https://intuji.com/airbnb-tech-stack-explained-airbnb-app/>

About airbnb: What it is and how it works - airbnb help center. Airbnb. (n.d.). <https://www.airbnb.com/help/article/2503>

Privacy policy - airbnb help center. Airbnb. (n.d.-b). <https://www.airbnb.com/help/article/3175>

Vacation rentals, cabins, Beach Houses, & more. Airbnb. (n.d.-c). <https://www.airbnb.com/>

APPENDIX

Group Contribution Table

Team Member	Hours Spent	Description of Work	Additional Comments
Alexia Wells	21	<ul style="list-style-type: none"> • Group meetings: 15 hours • Conceptual & Logical Models: 12 hours • Create database, create and insert data: 2 hours • Presentation preparation: 2 hours • Summary report write up: 2 hours • Summary report layout design in Canva: 2 hours 	
Vinita Jain	21	<ul style="list-style-type: none"> • Group meetings: 15 hours • Conceptual & Logical Models: 12 hours • Create database, create and insert data: 2 hours • Presentation preparation: 2 hours • Summary report write up: 2 hours 	
Joonas Tahvanainen	21	<ul style="list-style-type: none"> • Group meetings: 15 hours • Conceptual & Logical Models: 12 hours • Create database, create and insert data: 2 hours • Presentation preparation: 2 hours • Summary report write up: 2 hours • Summary report layout design: 2 hours 	
Nick Acosta	21	<p>Group meetings: 15 hours</p> <ul style="list-style-type: none"> • Conceptual & Logical Models: 12 hours • Create database, create and insert data: 2 hours • Presentation preparation: 2 hours • Summary report write up: 2 hours 	

APPENDIX

Detailed Requirements

Requirement	Detail	Status
Customers must be able to create bookings and leave reviews on the listing they stayed at	The tables needed were - Customer, Booking, Review, Listing	Completed
Listings should contain amenities and information about the listing car rentals	The tables needed were - Listing, Listing Amenity, Listing Car Rental	Completed
The car rental process should be connected through the host, since they offer the car, and to the booking for the car to be reserved	The tables needed were - Car Rental, Host, Booking	Completed
The host must have a rental, and they should share the languages they speak, and the car rentals they have available	The tables needed were - Host, Listing, Host Language, Car Rental	Completed
The price of the booking should be available for users before payment	The tables needed were - Booking, Booking_Price_Detail	Completed
If they choose to officially book with Airbnb, payment options must be available for them	The tables needed were - Booking, Booking_Price_Detail	Completed
Once payment is completed, individuals will receive confirmation of a trip	The tables needed were - Booking Confirmation, Payment	Completed
Cancellation options for the booking should also be available	Booking Confirmation, Cancellation	Completed
Once a trip is booked, individuals may receive notifications and reminders about their stay	Booking Confirmation, Notification	Completed

APPENDIX

SQL Statements - Create Tables

```
DROP TABLE IF EXISTS Customer CASCADE;  
DROP TABLE IF EXISTS Host CASCADE ;  
DROP TABLE IF EXISTS Cancellation CASCADE;  
DROP TABLE IF EXISTS Listing CASCADE;  
DROP TABLE IF EXISTS Review CASCADE;  
DROP TABLE IF EXISTS Amenity CASCADE;  
DROP TABLE IF EXISTS Booking CASCADE;  
DROP TABLE IF EXISTS Host_Language cascade;  
DROP TABLE IF EXISTS Listing_Amenity cascade;  
DROP TABLE IF EXISTS Payment CASCADE;  
DROP TABLE IF EXISTS Notification CASCADE;  
DROP TABLE IF EXISTS Booking_Price_Detail CASCADE;  
DROP TABLE IF EXISTS Car_Rental CASCADE;  
DROP TABLE IF EXISTS Booking_Confirmation CASCADE;  
DROP TABLE IF EXISTS Listing_Car_Rental CASCADE;
```

```
CREATE TABLE Customer (  
    Customer_id integer PRIMARY KEY,  
    first_name VARCHAR(100) NOT NULL,  
    last_name VARCHAR(100) NOT NULL,  
    email VARCHAR(100) NOT NULL,  
    phone VARCHAR(20) NOT NULL,  
    street VARCHAR(100),  
    city VARCHAR(100),  
    state VARCHAR(50),  
    Customer_dob DATE NOT NULL,  
    emergency_phone VARCHAR(20),  
    government_id VARCHAR(50) NOT NULL,  
    Customer_picture BYTEA  
);
```

APPENDIX

SQL Statements - Create Tables

```
CREATE TABLE Host (
    host_id integer PRIMARY KEY,
    host_first_name VARCHAR(100) NOT NULL,
    host_last_name VARCHAR(100),
    host_email VARCHAR(100) NOT null,
    host_phone VARCHAR(20) NOT null,
    host_status BOOLEAN NOT null,
    response_time INTEGER,
    response_rate DECIMAL(5, 2),
    instant_booking BOOLEAN
);
```

```
CREATE TABLE Cancellation (
    cancellation_id SERIAL PRIMARY KEY,
    refund_amount NUMERIC(10, 2) NOT null,
    cancellation_date DATE NOT null
);
```

```
CREATE TABLE Listing (
    listing_id integer PRIMARY KEY,
    host_id integer NOT null,
    title VARCHAR(255) NOT null,
    city VARCHAR(100) NOT null,
    state VARCHAR(100) NOT null,
    country VARCHAR(100) NOT null,
    home_type VARCHAR(50),
    availability DATE NOT null,
    bedroom_count integer NOT null,
    bathroom_count integer NOT null,
    bedroom_type VARCHAR(50),
    description TEXT NOT null,
    cancellation_policy VARCHAR(100) NOT null,
    FOREIGN KEY (host_id) REFERENCES Host(host_id)
);
```

APPENDIX

SQL Statements - Create Tables

```
CREATE TABLE Review (
    review_id integer PRIMARY KEY,
    listing_id integer NOT null,
    customer_id integer NOT null,
    review_text TEXT NOT null,
    review_date date NOT null,
    star_rating decimal(10, 2),
    FOREIGN KEY (listing_id) REFERENCES Listing(listing_id),
    FOREIGN KEY (customer_id) REFERENCES Customer (customer_id)
);
```

```
CREATE TABLE Amenity (
    amenity_id integer PRIMARY KEY,
    amenity_type VARCHAR(255) NOT NULL
);
```

```
CREATE TABLE Car_Rental (
    license_plate VARCHAR(20) PRIMARY KEY,
    make VARCHAR(50) NOT null,
    model VARCHAR(50) NOT null,
    car_year integer NOT null,
    color VARCHAR(50),
    daily_price DECIMAL(10, 2) NOT null,
    host_id integer NOT null,
    listing_id integer NOT null,
    FOREIGN KEY (host_id) REFERENCES Host(host_id),
    FOREIGN KEY (listing_id) REFERENCES Listing(listing_id)
);
```

APPENDIX

SQL Statements - Create Tables

```
CREATE TABLE Booking (
    booking_id integer PRIMARY KEY,
    listing_id integer NOT null,
    customer_id integer NOT null,
    cancellation_id integer NOT null,
    license_plate VARCHAR(20),
    check_in DATE NOT null,
    check_out DATE NOT null,
    booking_date DATE NOT null,
    booking_time TIME NOT null,
    total_price_paid DECIMAL(10, 2) NOT null,
    FOREIGN KEY (listing_id) REFERENCES listing(listing_id),
    FOREIGN KEY (customer_id) REFERENCES customer(customer_id),
    FOREIGN KEY (cancellation_id) REFERENCES cancellation(cancellation_id),
    FOREIGN KEY (license_plate) REFERENCES Car_Rental(license_plate)
);
```

```
CREATE TABLE Host_Language (
    host_id INTEGER,
    host_language VARCHAR(255),
    PRIMARY KEY (host_id, host_language),
    FOREIGN KEY (host_id) REFERENCES host(host_id)
);
```

```
CREATE TABLE Listing_Amenity (
    listing_id integer,
    amenity_id integer,
    PRIMARY KEY (listing_id, amenity_id),
    FOREIGN KEY (listing_id) REFERENCES listing(listing_id),
    FOREIGN KEY (amenity_id) REFERENCES amenity(amenity_id)
);
```

APPENDIX

SQL Statements - Create Tables

```
CREATE TABLE Payment (
    payment_id integer PRIMARY KEY,
    payment_card_type VARCHAR(50) NOT null,
    payment_card_number VARCHAR (50) NOT null,
    billing_zip VARCHAR(20) NOT null,
    billing_country VARCHAR(100),
    booking_id integer NOT null,
    FOREIGN KEY (booking_id) REFERENCES Booking(booking_id)
);
```

```
CREATE TABLE Notification (
    notification_id INTEGER PRIMARY KEY,
    sent_date DATE NOT null,
    notification_status VARCHAR(50),
    notification_body TEXT NOT null,
    booking_id integer NOT null,
    FOREIGN KEY (booking_id) REFERENCES Booking(booking_id)
);
```

```
CREATE TABLE Booking_Price_Detail (
    price_detail_number VARCHAR(255) PRIMARY KEY,
    booking_id integer NOT null,
    total_price DECIMAL(10, 2) NOT null,
    price_by_day DECIMAL(10, 2) NOT null,
    early_bird_discount DECIMAL(10, 2),
    cleaning_fee DECIMAL(10, 2),
    service_fee DECIMAL(10, 2),
    car_fee DECIMAL(10, 2),
    additional_fee decimal (10, 2),
    FOREIGN KEY (booking_id) REFERENCES Booking(booking_id)
);
```

APPENDIX

SQL Statements - Create Tables

```
CREATE TABLE Booking_Confirmation (
confirmation_code VARCHAR(50) PRIMARY KEY,
booking_id integer NOT null,
verification_email VARCHAR(255) NOT null,
verification_text VARCHAR(255),
FOREIGN KEY (booking_id) REFERENCES Booking(booking_id)
);
```

```
CREATE TABLE Listing_Car_Rental (
license_plate VARCHAR(20),
listing_id integer,
status BOOLEAN,
PRIMARY KEY (license_plate, listing_id),
FOREIGN KEY (license_plate) REFERENCES Car_Rental(license_plate),
FOREIGN KEY (listing_id) REFERENCES Listing(listing_id)
);
```

```
ALTER TABLE Car_Rental DROP COLUMN listing_id;
```

APPENDIX

SQL Statements - Populate Tables

```
-- Populate Customer table
INSERT INTO Customer (Customer_id, first_name, last_name, email, phone, street, city, state,
Customer_dob, emergency_phone, government_id)
VALUES
(1, 'John', 'Doe', 'john@example.com', '123-456-7890', '123 Main St', 'New York', 'NY', '1990-01-01',
'987-654-3210', 'US123456789'),
(2, 'Alice', 'Smith', 'alice@example.com', '987-654-3210', '456 Elm St', 'Los Angeles', 'CA', '1985-05-15',
'555-555-5555', 'US987654321'),
(3, 'Michael', 'Johnson', 'michael@example.com', '111-222-3333', '789 Oak St', 'Chicago', 'IL', '1988-08-
20', '333-333-3333', 'US333333333'),
(4, 'Emily', 'Brown', 'emily@example.com', '444-555-6666', '567 Pine St', 'Houston', 'TX', '1975-03-10',
'999-999-9999', 'US999999999'),
(5, 'Sophia', 'Wilson', 'sophia@example.com', '777-888-9999', '890 Maple St', 'Miami', 'FL', '1982-11-
25', '777-777-7777', 'US777777777'),
(6, 'James', 'Anderson', 'james@example.com', '222-333-4444', '678 Cedar St', 'Seattle', 'WA', '1995-06-
30', '222-222-2222', 'US222222222'),
(7, 'Olivia', 'Martinez', 'olivia@example.com', '666-777-8888', '456 Elm St', 'San Francisco', 'CA', '1998-
09-15', '666-666-6666', 'US666666666'),
(8, 'William', 'Garcia', 'william@example.com', '333-444-5555', '345 Birch St', 'Boston', 'MA', '1991-04-
05', '888-888-8888', 'US888888888'),
(9, 'Emma', 'Lopez', 'emma@example.com', '888-999-0000', '234 Walnut St', 'Austin', 'TX', '1987-02-14',
'111-111-1111', 'US111111111'),
(10, 'Alexander', 'Hernandez', 'alexander@example.com', '555-666-7777', '789 Oak St', 'Philadelphia',
'PA', '1980-10-12', '444-444-4444', 'US444444444'),
(11, 'Isabella', 'Perez', 'isabella@example.com', '999-000-1111', '890 Maple St', 'Denver', 'CO', '1979-07-
08', '000-000-0000', 'US0000000000'),
(12, 'Michael', 'Flores', 'michael2@example.com', '222-333-4444', '678 Cedar St', 'Portland', 'OR', '1993-
12-20', '222-222-2222', 'US222222222'),
(13, 'Charlotte', 'Gonzalez', 'charlotte@example.com', '444-555-6666', '567 Pine St', 'Phoenix', 'AZ',
'1996-05-18', '999-999-9999', 'US999999999'),
(14, 'Mason', 'Ramirez', 'mason@example.com', '777-888-9999', '890 Maple St', 'Detroit', 'MI', '1976-
08-22', '777-777-7777', 'US777777777'),
(15, 'Ava', 'Torres', 'ava@example.com', '111-222-3333', '123 Main St', 'San Antonio', 'TX', '1983-01-
28', '111-111-1111', 'US111111111);
```

APPENDIX

SQL Statements - Populate Tables

-- Populate Host table

```
INSERT INTO Host (host_id, host_first_name, host_last_name, host_email, host_phone, host_status, response_time, response_rate, instant_booking)
```

VALUES

```
(1, 'Emily', 'Johnson', 'emily@example.com', '111-222-3333', TRUE, 30, 95.5, TRUE),  
(2, 'Michael', 'Brown', 'michael@example.com', '444-555-6666', TRUE, 45, 90.0, FALSE),  
(3, 'Sophia', 'Wilson', 'sophia@example.com', '777-888-9999', TRUE, 60, 98.3, TRUE),  
(4, 'Olivia', 'Martinez', 'olivia@example.com', '666-777-8888', FALSE, 55, 87.9, TRUE),  
(5, 'William', 'Garcia', 'william@example.com', '333-444-5555', TRUE, 40, 92.6, FALSE),  
(6, 'Emma', 'Lopez', 'emma@example.com', '888-999-0000', TRUE, 35, 96.2, TRUE),  
(7, 'Alexander', 'Hernandez', 'alexander@example.com', '555-666-7777', TRUE, 50, 88.9, FALSE),  
(8, 'Isabella', 'Perez', 'isabella@example.com', '999-000-1111', FALSE, 65, 93.7, TRUE),  
(9, 'Charlotte', 'Gonzalez', 'charlotte@example.com', '444-555-6666', TRUE, 25, 97.4, FALSE),  
(10, 'Mason', 'Ramirez', 'mason@example.com', '777-888-9999', TRUE, 70, 85.2, TRUE),  
(11, 'Ava', 'Torres', 'ava@example.com', '111-222-3333', TRUE, 20, 94.8, TRUE),  
(12, 'Liam', 'Hernandez', 'liam@example.com', '222-333-4444', FALSE, 15, 91.1, FALSE),  
(13, 'Emma', 'Garcia', 'emma2@example.com', '333-444-5555', TRUE, 75, 89.5, TRUE),  
(14, 'Michael', 'Martinez', 'michael2@example.com', '444-555-6666', FALSE, 55, 86.7, FALSE),  
(15, 'Sophia', 'Ramirez', 'sophia2@example.com', '555-666-7777', TRUE, 45, 97.8, TRUE);
```

-- Populate Cancellation table

```
INSERT INTO Cancellation (refund_amount, cancellation_date)
```

VALUES

```
(50.00, '2024-02-01'),  
(25.00, '2024-02-10'),  
(35.00, '2024-02-15'),  
(20.00, '2024-02-20'),  
(40.00, '2024-02-25'),  
(30.00, '2024-02-28'),  
(45.00, '2024-03-05'),  
(60.00, '2024-03-10'),  
(55.00, '2024-03-15'),  
(70.00, '2024-03-20'),  
(65.00, '2024-03-25'),  
(75.00, '2024-03-30'),  
(80.00, '2024-04-05'),  
(85.00, '2024-04-10'),  
(90.00, '2024-04-15');
```

APPENDIX

SQL Statements - Populate Tables

-- Populate Listing table

```
INSERT INTO Listing (listing_id, host_id, title, city, state, country, home_type, availability, bedroom_count, bathroom_count, bedroom_type, description, cancellation_policy)
VALUES
(1, 1, 'Cozy Apartment in Downtown', 'New York', 'NY', 'USA', 'Apartment', '2024-03-01', 1, 1, 'Private', 'A cozy apartment located in the heart of downtown.', 'Flexible'),
(2, 2, 'Luxury Villa with Pool', 'Los Angeles', 'CA', 'USA', 'Villa', '2024-03-15', 3, 2, 'Shared', 'Luxurious villa with a private pool and stunning views.', 'Moderate'),
(3, 3, 'Charming Cottage in the Countryside', 'Seattle', 'WA', 'USA', 'Cottage', '2024-04-01', 2, 1, 'Entire', 'A charming cottage nestled in the picturesque countryside.', 'Strict'),
(4, 4, 'Modern Loft in Downtown', 'Chicago', 'IL', 'USA', 'Loft', '2024-04-15', 1, 1, 'Entire', 'A modern loft with stunning city views.', 'Moderate'),
(5, 5, 'Beachfront Bungalow', 'Miami', 'FL', 'USA', 'Bungalow', '2024-05-01', 2, 2, 'Private', 'A cozy bungalow right on the beach.', 'Flexible'),
(6, 6, 'Spacious Mountain Retreat', 'Denver', 'CO', 'USA', 'House', '2024-05-15', 4, 3, 'Entire', 'A spacious retreat nestled in the mountains.', 'Strict'),
(7, 7, 'Rustic Cabin by the Lake', 'Portland', 'OR', 'USA', 'Cabin', '2024-06-01', 1, 1, 'Private', 'A rustic cabin with serene lake views.', 'Flexible'),
(8, 8, 'Historic Townhouse in Boston', 'Boston', 'MA', 'USA', 'Townhouse', '2024-06-15', 3, 2, 'Entire', 'A historic townhouse in the heart of the city.', 'Moderate'),
(9, 9, 'Sunny Condo with City Views', 'San Francisco', 'CA', 'USA', 'Condo', '2024-07-01', 2, 1, 'Private', 'A sunny condo with panoramic city views.', 'Flexible'),
(10, 10, 'Secluded Retreat in the Woods', 'Austin', 'TX', 'USA', 'House', '2024-07-15', 3, 2, 'Entire', 'A secluded retreat surrounded by nature.', 'Strict'),
(11, 11, 'Lakefront Cabin with Hot Tub', 'Philadelphia', 'PA', 'USA', 'Cabin', '2024-08-01', 2, 1, 'Private', 'A cozy cabin with a relaxing hot tub overlooking the lake.', 'Flexible'),
(12, 12, 'Downtown Loft with Skyline Views', 'Phoenix', 'AZ', 'USA', 'Loft', '2024-08-15', 1, 1, 'Entire', 'A stylish loft with breathtaking skyline views.', 'Moderate'),
(13, 13, 'Cozy Cottage near National Park', 'Detroit', 'MI', 'USA', 'Cottage', '2024-09-01', 2, 1, 'Private', 'A cozy cottage perfect for exploring the nearby national park.', 'Flexible'),
(14, 14, 'Beach House with Private Pool', 'San Antonio', 'TX', 'USA', 'House', '2024-09-15', 4, 3, 'Entire', 'A luxurious beach house with a private pool.', 'Strict'),
(15, 15, 'Mountain Chalet with Scenic Views', 'Seattle', 'WA', 'USA', 'Chalet', '2024-10-01', 3, 2, 'Entire', 'A charming chalet with stunning mountain views.', 'Moderate');
```

APPENDIX

SQL Statements - Populate Tables

-- Populate Review table

```
INSERT INTO Review (review_id, listing_id, customer_id, review_text, review_date, star_rating)
VALUES
(1, 1, 2, 'Great location and comfortable stay.', '2024-02-20', 4.50),
(2, 2, 1, 'Amazing villa with excellent amenities.', '2024-02-25', 5.00),
(3, 3, 3, 'Charming cottage with beautiful surroundings.', '2024-03-05', 4.00),
(4, 4, 4, 'Modern loft with great views of the city.', '2024-03-10', 4.20),
(5, 5, 5, 'Perfect beachfront getaway.', '2024-03-15', 4.80),
(6, 6, 6, 'Spacious retreat with breathtaking views.', '2024-03-20', 4.70),
(7, 7, 7, 'Rustic cabin with a cozy atmosphere.', '2024-03-25', 4.30),
(8, 8, 8, 'Historic townhouse with character.', '2024-03-30', 4.60),
(9, 9, 9, 'Sunny condo with stunning city views.', '2024-04-05', 4.90),
(10, 10, 10, 'Secluded retreat surrounded by nature.', '2024-04-10', 4.40),
(11, 11, 11, 'Relaxing lakefront cabin with hot tub.', '2024-04-15', 4.50),
(12, 12, 12, 'Stylish loft with breathtaking skyline views.', '2024-04-20', 4.30),
(13, 13, 13, 'Cozy cottage perfect for a getaway.', '2024-04-25', 4.80),
(14, 14, 14, 'Luxurious beach house with private pool.', '2024-04-30', 4.60),
(15, 15, 15, 'Charming chalet with stunning mountain views.', '2024-05-05', 4.70);
```

-- Populate Amenity table

```
INSERT INTO Amenity (amenity_id, amenity_type)
```

VALUES

```
(1, 'WiFi'),
(2, 'Swimming Pool'),
(3, 'Hot Tub'),
(4, 'Gym'),
(5, 'Parking'),
(6, 'Kitchen'),
(7, 'Air Conditioning'),
(8, 'Pet Friendly'),
(9, 'Fireplace'),
(10, 'Beach Access'),
(11, 'Hiking Trails'),
(12, 'BBQ Grill'),
(13, 'Balcony'),
(14, 'Game Room'),
(15, 'Laundry Facilities');
```

APPENDIX

SQL Statements - Populate Tables

-- Populate Car_Rental table

```
INSERT INTO Car_Rental (license_plate, make, model, car_year, color, daily_price, host_id)
VALUES
('ABC123', 'Toyota', 'Camry', 2019, 'Silver', 50.00, 1),
('XYZ456', 'Honda', 'Civic', 2020, 'Blue', 60.00, 2),
('DEF789', 'Ford', 'Escape', 2018, 'Black', 70.00, 3),
('GHI012', 'Chevrolet', 'Malibu', 2017, 'White', 55.00, 4),
('JKL345', 'Nissan', 'Altima', 2019, 'Red', 65.00, 5),
('MNO678', 'Hyundai', 'Elantra', 2021, 'Gray', 75.00, 6),
('PQR901', 'Kia', 'Forte', 2018, 'Green', 45.00, 7),
('STU234', 'Subaru', 'Outback', 2020, 'Brown', 80.00, 8),
('VWX567', 'Mazda', 'CX-5', 2017, 'Yellow', 70.00, 9),
('YZA890', 'Jeep', 'Cherokee', 2016, 'Orange', 90.00, 10),
('BCD123', 'Volkswagen', 'Jetta', 2021, 'Purple', 55.00, 11),
('EFG456', 'Audi', 'A4', 2022, 'Silver', 100.00, 12),
('HIJ789', 'BMW', '3 Series', 2021, 'Black', 120.00, 13),
('KLM012', 'Mercedes-Benz', 'C-Class', 2020, 'Blue', 110.00, 14),
('NOP345', 'Tesla', 'Model 3', 2022, 'White', 150.00, 15);
```

-- Populate Listing_Car_Rental table

```
INSERT INTO Listing_Car_Rental (license_plate, listing_id, status)
VALUES
('ABC123', 1, true),
('XYZ456', 2, true),
('DEF789', 3, true),
('GHI012', 4, true),
('JKL345', 5, true),
('MNO678', 6, true),
('PQR901', 7, true),
('STU234', 8, true),
('VWX567', 9, true),
('YZA890', 10, true),
('BCD123', 11, true),
('EFG456', 12, true),
('HIJ789', 13, true),
('KLM012', 14, true),
('NOP345', 15, true);
```

APPENDIX

SQL Statements - Populate Tables

-- Populate Booking table

```
INSERT INTO Booking (booking_id, listing_id, customer_id, cancellation_id, license_plate, check_in, check_out, booking_date, booking_time, total_price_paid)
VALUES
(1, 1, 2, 1, 'ABC123', '2024-02-20', '2024-02-25', '2024-01-15', '12:00:00', 250.00),
(2, 2, 1, 2, NULL, '2024-02-25', '2024-03-05', '2024-01-20', '13:00:00', 350.00),
(3, 3, 3, 3, 'XYZ456', '2024-03-05', '2024-03-10', '2024-01-25', '14:00:00', 300.00),
(4, 4, 4, 4, NULL, '2024-03-10', '2024-03-15', '2024-01-30', '15:00:00', 400.00),
(5, 5, 5, 5, 'DEF789', '2024-03-15', '2024-03-20', '2024-02-05', '16:00:00', 450.00),
(6, 6, 6, 6, NULL, '2024-03-20', '2024-03-25', '2024-02-10', '17:00:00', 500.00),
(7, 7, 7, 7, 'GHI012', '2024-03-25', '2024-03-30', '2024-02-15', '18:00:00', 550.00),
(8, 8, 8, 8, NULL, '2024-03-30', '2024-04-05', '2024-02-20', '19:00:00', 600.00),
(9, 9, 9, 9, 'JKL345', '2024-04-05', '2024-04-10', '2024-02-25', '20:00:00', 650.00),
(10, 10, 10, 10, NULL, '2024-04-10', '2024-04-15', '2024-03-01', '21:00:00', 700.00),
(11, 11, 11, 11, 'MNO678', '2024-04-15', '2024-04-20', '2024-03-05', '22:00:00', 750.00),
(12, 12, 12, 12, NULL, '2024-04-20', '2024-04-25', '2024-03-10', '23:00:00', 800.00),
(13, 13, 13, 13, 'PQR901', '2024-04-25', '2024-04-30', '2024-03-15', '00:00:00', 850.00),
(14, 14, 14, 14, NULL, '2024-04-30', '2024-05-05', '2024-03-20', '01:00:00', 900.00),
(15, 15, 15, 15, 'STU234', '2024-05-05', '2024-05-10', '2024-03-25', '02:00:00', 950.00);
```

-- Populate Host_Language table

```
INSERT INTO Host_Language (host_id, host_language)
```

VALUES

```
(1, 'English'),
(2, 'Spanish'),
(3, 'French'),
(4, 'German'),
(5, 'Italian'),
(6, 'Mandarin'),
(7, 'Japanese'),
(8, 'Korean'),
(9, 'Russian'),
(10, 'Arabic'),
(11, 'Portuguese'),
(12, 'Dutch'),
(13, 'Swedish'),
(14, 'Norwegian'),
(15, 'Danish');
```

APPENDIX

SQL Statements - Populate Tables

```
-- Populate Listing_Amenity table
```

```
INSERT INTO Listing_Amenity (listing_id, amenity_id)
```

```
VALUES
```

```
(1, 1),  
(2, 2),  
(3, 3),  
(4, 4),  
(5, 5),  
(6, 6),  
(7, 7),  
(8, 8),  
(9, 9),  
(10, 10),  
(11, 11),  
(12, 12),  
(13, 13),  
(14, 14),  
(15, 15);
```

```
-- Populate Payment table
```

```
INSERT INTO Payment (payment_id, payment_card_type, payment_card_number, billing_zip,
```

```
billing_country, booking_id)
```

```
VALUES
```

```
(1, 'Visa', '4111111111111111', '10001', 'USA', 1),  
(2, 'MasterCard', '5500000000000004', '90001', 'USA', 2),  
(3, 'American Express', '3400000000000009', '20001', 'USA', 3),  
(4, 'Discover', '6011000000000004', '30001', 'USA', 4),  
(5, 'Visa', '4007000000027', '40001', 'USA', 5),  
(6, 'MasterCard', '555555555554444', '50001', 'USA', 6),  
(7, 'American Express', '3700000000000002', '60001', 'USA', 7),  
(8, 'Discover', '6011111111111117', '70001', 'USA', 8),  
(9, 'Visa', '4000111111111115', '80001', 'USA', 9),  
(10, 'MasterCard', '2221000000000009', '90001', 'USA', 10),  
(11, 'American Express', '371449635398431', '10001', 'USA', 11),  
(12, 'Discover', '6011000990139424', '20001', 'USA', 12),  
(13, 'Visa', '4000056655665556', '30001', 'USA', 13),  
(14, 'MasterCard', '555555555554444', '40001', 'USA', 14),  
(15, 'American Express', '378282246310005', '50001', 'USA', 15);
```

APPENDIX

SQL Statements - Populate Tables

-- Populate Notification table

```
INSERT INTO Notification (notification_id, sent_date, notification_status, notification_body, booking_id)
VALUES
(1, '2024-02-25', 'Sent', 'Your booking has been confirmed.', 1),
(2, '2024-03-05', 'Sent', 'Reminder: Your check-in is approaching.', 2),
(3, '2024-03-10', 'Sent', 'Cancellation: Booking ID 3 has been cancelled.', 3),
(4, '2024-03-15', 'Sent', 'Your booking has been confirmed.', 4),
(5, '2024-03-20', 'Sent', 'Reminder: Your check-in is approaching.', 5),
(6, '2024-03-25', 'Sent', 'Cancellation: Booking ID 6 has been cancelled.', 6),
(7, '2024-03-30', 'Sent', 'Your booking has been confirmed.', 7),
(8, '2024-04-05', 'Sent', 'Reminder: Your check-in is approaching.', 8),
(9, '2024-04-10', 'Sent', 'Cancellation: Booking ID 9 has been cancelled.', 9),
(10, '2024-04-15', 'Sent', 'Your booking has been confirmed.', 10),
(11, '2024-04-20', 'Sent', 'Reminder: Your check-in is approaching.', 11),
(12, '2024-04-25', 'Sent', 'Cancellation: Booking ID 12 has been cancelled.', 12),
(13, '2024-04-30', 'Sent', 'Your booking has been confirmed.', 13),
(14, '2024-05-05', 'Sent', 'Reminder: Your check-in is approaching.', 14),
(15, '2024-05-10', 'Sent', 'Cancellation: Booking ID 15 has been cancelled.', 15);
```

-- Populate Booking_Price_Detail table

```
INSERT INTO Booking_Price_Detail (price_detail_number, booking_id, total_price, price_by_day,
early_bird_discount, cleaning_fee, service_fee, car_fee, additional_fee)
VALUES
('PD001', 1, 400.00, 100.00, NULL, 50.00, 20.00, NULL, NULL),
('PD002', 2, 800.00, 160.00, NULL, 75.00, 30.00, NULL, NULL),
('PD003', 3, 600.00, 120.00, NULL, 60.00, 25.00, NULL, NULL),
('PD004', 4, 450.00, 90.00, NULL, 45.00, 15.00, NULL, NULL),
('PD005', 5, 700.00, 140.00, NULL, 70.00, 30.00, NULL, NULL),
('PD006', 6, 1000.00, 200.00, NULL, 100.00, 40.00, NULL, NULL),
('PD007', 7, 300.00, 60.00, NULL, 30.00, 10.00, NULL, NULL),
('PD008', 8, 650.00, 130.00, NULL, 65.00, 25.00, NULL, NULL),
('PD009', 9, 550.00, 110.00, NULL, 55.00, 20.00, NULL, NULL),
('PD010', 10, 750.00, 150.00, NULL, 75.00, 30.00, NULL, NULL),
('PD011', 11, 400.00, 80.00, NULL, 40.00, 15.00, NULL, NULL),
('PD012', 12, 850.00, 170.00, NULL, 85.00, 35.00, NULL, NULL),
('PD013', 13, 600.00, 120.00, NULL, 60.00, 25.00, NULL, NULL),
('PD014', 14, 950.00, 190.00, NULL, 95.00, 40.00, NULL, NULL),
('PD015', 15, 800.00, 160.00, NULL, 80.00, 35.00, NULL, NULL);
```

APPENDIX

SQL Statements - Populate Tables

--- Populate Booking_Confirmation table

```
INSERT INTO Booking_Confirmation (confirmation_code, booking_id, verification_email, verification_text)
VALUES
('CONF001', 1, 'customer1@example.com', 'Your booking has been confirmed. Thank you!'),
('CONF002', 2, 'customer2@example.com', 'Your reservation is confirmed. Enjoy your stay!'),
('CONF003', 3, 'customer3@example.com', 'Booking confirmed. Have a great trip!'),
('CONF004', 4, 'customer4@example.com', 'Reservation confirmed. Have a wonderful stay!'),
('CONF005', 5, 'customer5@example.com', 'Your booking is confirmed. Enjoy your vacation!'),
('CONF006', 6, 'customer6@example.com', 'Reservation confirmed. Have a pleasant stay!'),
('CONF007', 7, 'customer7@example.com', 'Your booking has been confirmed. Thank you for choosing us!'),
('CONF008', 8, 'customer8@example.com', 'Reservation confirmed. Enjoy your time with us!'),
('CONF009', 9, 'customer9@example.com', 'Your booking is confirmed. We look forward to hosting you!'),
('CONF010', 10, 'customer10@example.com', 'Reservation confirmed. Have a fantastic stay!'),
('CONF011', 11, 'customer11@example.com', 'Your booking has been confirmed. Enjoy your trip!'),
('CONF012', 12, 'customer12@example.com', 'Reservation confirmed. Have a memorable stay!'),
('CONF013', 13, 'customer13@example.com', 'Your booking is confirmed. Have a wonderful experience!'),
('CONF014', 14, 'customer14@example.com', 'Reservation confirmed. Enjoy your staycation!'),
('CONF015', 15, 'customer15@example.com', 'Your booking has been confirmed. Have a great time!');
```

APPENDIX

SQL Statements - Select

```
SELECT *  
FROM amenity;
```

```
SELECT *  
FROM booking;
```

```
SELECT *  
FROM booking_confirmation;
```

```
SELECT *  
FROM booking_price_detail;
```

```
SELECT *  
FROM cancellation;
```

```
SELECT *  
FROM car_rental;
```

```
SELECT *  
FROM customer;
```

```
SELECT *  
FROM host;
```

```
SELECT *  
FROM host_language;
```

```
SELECT *  
FROM listing;
```

```
SELECT *  
FROM listing_amenity;
```

```
SELECT *  
FROM listing_car_rental;
```

```
SELECT *  
FROM notification;
```

```
SELECT *  
FROM payment;
```

```
SELECT *  
FROM review;
```

APPENDIX

SQL Tables

	123 c	RBC first_name	RBC last_name	RBC email	RBC phone	RBC street	RBC city	RBC s	customer_i	RBC emergency_ph	RBC government_id	# customer_picture
1	1	John	Doe	john@example.c	123-456-7890	123 Main St	New York	NY	1990-01-01	987-654-3210	US123456789	[NULL]
2	2	Alice	Smith	alice@example.c	987-654-3210	456 Elm St	Los Angeles	CA	1985-05-15	555-555-5555	US987654321	[NULL]
3	3	Michael	Johnson	michael@example.c	111-222-3333	789 Oak St	Chicago	IL	1988-08-20	333-333-3333	US3333333333	[NULL]
4	4	Larry	Brown	larry@example.c	444-555-6666	567 Pine St	Houston	TX	1975-03-10	999-999-9999	US9999999999	[NULL]
5	5	Sophia	Wilson	sophia@example.c	777-888-9999	890 Maple St	Miami	FL	1982-11-25	777-777-7777	US7777777777	[NULL]
6	6	James	Anderson	james@example.c	222-333-4444	678 Cedar St	Seattle	WA	1995-06-30	222-222-2222	US2222222222	[NULL]
7	7	Olivia	Martinez	olivia@example.c	666-777-8888	456 Elm St	San Francisco	CA	1998-09-15	666-666-6666	US6666666666	[NULL]
8	8	William	Garcia	william@example.c	333-444-5555	345 Birch St	Boston	MA	1991-04-05	888-888-8888	US8888888888	[NULL]
9	9	Emma	Lopez	emma@example.c	888-999-0000	234 Walnut St	Austin	TX	1987-02-14	111-111-1111	US1111111111	[NULL]
10	10	Alexander	Hernandez	alexander@example.c	555-666-7777	789 Oak St	Philadelphia	PA	1980-10-12	444-444-4444	US4444444444	[NULL]
11	11	Isabella	Perez	isabella@example.c	999-000-1111	890 Maple St	Denver	CO	1979-07-08	000-000-0000	US0000000000	[NULL]
12	12	Michael	Flores	michael2@example.c	222-333-4444	678 Cedar St	Portland	OR	1993-12-20	222-222-2222	US2222222222	[NULL]
13	13	Charlotte	Gonzalez	charlotte@example.c	444-555-6666	567 Pine St	Phoenix	AZ	1996-05-18	999-999-9999	US9999999999	[NULL]
14	14	Mason	Ramirez	mason@example.c	777-888-9999	890 Maple St	Detroit	MI	1976-08-22	777-777-7777	US7777777777	[NULL]
15	15	Ava	Torres	ava@example.c	111-222-3333	123 Main St	San Antonio	TX	1983-01-28	111-111-1111	US1111111111	[NULL]

	RBC license_plate	RBC make	RBC model	123 car_year	RBC color	123 daily_price	123 host_id
1	ABC123	Toyota	Camry	2,019	Silver	50	1
2	Show query results as spreadsheet	Honda	Civic	2,020	Blue	60	2
3	DEF789	Ford	Escape	2,018	Black	70	3
4	GHI012	Chevrolet	Malibu	2,017	White	55	4
5	JKL345	Nissan	Altima	2,019	Red	65	5
6	MNO678	Hyundai	Elantra	2,021	Gray	75	6
7	PQR901	Kia	Forte	2,018	Green	45	7
8	STU234	Subaru	Outback	2,020	Brown	80	8
9	VWX567	Mazda	CX-5	2,017	Yellow	70	9
10	YZA890	Jeep	Cherokee	2,016	Orange	90	10
11	BCD123	Volkswagen	Jetta	2,021	Purple	55	11
12	EFG456	Audi	A4	2,022	Silver	100	12
13	HIJ789	BMW	3 Series	2,021	Black	120	13
14	KLM012	Mercedes-Benz	C-Class	2,020	Blue	110	14
15	NOP345	Tesla	Model 3	2,022	White	150	15

APPENDIX

SQL Tables

	payment_id	payment_card_type	payment_card_number	billing_zip	billing_country	booking_id
1	1	Visa	4111111111111111	10001	USA	1
2	2	MasterCard	5500000000000004	90001	USA	2
3	3	American Express	3400000000000009	20001	USA	3
4	4	Discover	6011000000000004	30001	USA	4
5	5	Visa	4007000000027	40001	USA	5
6	6	MasterCard	555555555554444	50001	USA	6
7	7	American Express	37000000000002	60001	USA	7
8	8	Discover	60111111111117	70001	USA	8
9	9	Visa	40001111111115	80001	USA	9
10	10	MasterCard	222100000000009	90001	USA	10
11	11	American Express	371449635398431	10001	USA	11
12	12	Discover	6011000990139424	20001	USA	12
13	13	Visa	4000056655665556	30001	USA	13
14	14	MasterCard	555555555554444	40001	USA	14
15	15	American Express	378282246310005	50001	USA	15

	listing_id	customer_id	review_text	review_date	star_rating
1	1	1	Great location and comfortable stay.	2024-02-20	4.5
2	2	2	Amazing villa with excellent amenities.	2024-02-25	5
3	3	3	Charming cottage with beautiful surroundings.	2024-03-05	4
4	4	4	Modern loft with great views of the city.	2024-03-10	4.2
5	5	5	Perfect beachfront getaway.	2024-03-15	4.8
6	6	6	Spacious retreat with breathtaking views.	2024-03-20	4.7
7	7	7	Rustic cabin with a cozy atmosphere.	2024-03-25	4.3
8	8	8	Historic townhouse with character.	2024-03-30	4.6
9	9	9	Sunny condo with stunning city views.	2024-04-05	4.9
10	10	10	Secluded retreat surrounded by nature.	2024-04-10	4.4
11	11	11	Relaxing lakefront cabin with hot tub.	2024-04-15	4.5
12	12	12	Stylish loft with breathtaking skyline views.	2024-04-20	4.3
13	13	13	Cozy cottage perfect for a getaway.	2024-04-25	4.8
14	14	14	Luxurious beach house with private pool.	2024-04-30	4.6
15	15	15	Charming chalet with stunning mountain views.	2024-05-05	4.7

APPENDIX

SQL Tables

	booking_id	listing_id	customer_id	cancellation_id	license_plate	check_in	check_out	booking_date	booking_time	total_price_paid
1	1	1	2	1	ABC123	2024-02-20	2024-02-25	2024-01-15	12:00:00	
2	2	2	1	2	[NULL]	2024-02-25	2024-03-05	2024-01-20	13:00:00	
3	3	3	3	3	XYZ456	2024-03-05	2024-03-10	2024-01-25	14:00:00	
4	4	4	4	4	[NULL]	2024-03-10	2024-03-15	2024-01-30	15:00:00	
5	5	5	5	5	DEF789	2024-03-15	2024-03-20	2024-02-05	16:00:00	
6	6	6	6	6	[NULL]	2024-03-20	2024-03-25	2024-02-10	17:00:00	
7	7	7	7	7	GHI012	2024-03-25	2024-03-30	2024-02-15	18:00:00	
8	8	8	8	8	[NULL]	2024-03-30	2024-04-05	2024-02-20	19:00:00	
9	9	9	9	9	JKL345	2024-04-05	2024-04-10	2024-02-25	20:00:00	
10	10	10	10	10	[NULL]	2024-04-10	2024-04-15	2024-03-01	21:00:00	
11	11	11	11	11	MNO678	2024-04-15	2024-04-20	2024-03-05	22:00:00	
12	12	12	12	12	[NULL]	2024-04-20	2024-04-25	2024-03-10	23:00:00	
13	13	13	13	13	PQR901	2024-04-25	2024-04-30	2024-03-15	00:00:00	
14	14	14	14	14	[NULL]	2024-04-30	2024-05-05	2024-03-20	01:00:00	
15	15	15	15	15	STU234	2024-05-05	2024-05-10	2024-03-25	02:00:00	

	amenity_id	amenity_type
1	1	WiFi
2	2	Swimming Pool
3	3	Hot Tub
4	4	Gym
5	5	Parking
6	6	Kitchen
7	7	Air Conditioning
8	8	Pet Friendly
9	9	Fireplace
10	10	Beach Access
11	11	Hiking Trails
12	12	BBQ Grill
13	13	Balcony
14	14	Game Room
15	15	Laundry Facilities

APPENDIX

SQL Tables

	RBC confirmation_code	123 booking_id	RBC verification_email	RBC verification_text
1	CONF001	1	customer1@example.com	Your booking has been confirmed. Thank you!
2	CONF002	2	customer2@example.com	Your reservation is confirmed. Enjoy your stay!
3	CONF003	3	customer3@example.com	Booking confirmed. Have a great trip!
4	CONF004	4	customer4@example.com	Reservation confirmed. Have a wonderful stay!
5	CONF005	5	customer5@example.com	Your booking is confirmed. Enjoy your vacation!
6	CONF006	6	customer6@example.com	Reservation confirmed. Have a pleasant stay!
7	CONF007	7	customer7@example.com	Your booking has been confirmed. Thank you for choosing us!
8	CONF008	8	customer8@example.com	Reservation confirmed. Enjoy your time with us!
9	CONF009	9	customer9@example.com	Your booking is confirmed. We look forward to hosting you!
10	CONF010	10	customer10@example.com	Reservation confirmed. Have a fantastic stay!
11	CONF011	11	customer11@example.com	Your booking has been confirmed. Enjoy your trip!
12	CONF012	12	customer12@example.com	Reservation confirmed. Have a memorable stay!
13	CONF013	13	customer13@example.com	Your booking is confirmed. Have a wonderful experience!
14	CONF014	14	customer14@example.com	Reservation confirmed. Enjoy your staycation!
15	CONF015	15	customer15@example.com	Your booking has been confirmed. Have a great time!

	app price_detail_number	123 booking_id	123 total_price	123 price_by_day	123 early_bird_discount	123 cleaning_fee	123 service_fee	123 car_fee	123 additional_fee
1	PD001	1	400	100	[NULL]	50	20	[NULL]	[NULL]
2	PD002	2	800	160	[NULL]	75	30	[NULL]	[NULL]
3	PD003	3	600	120	[NULL]	60	25	[NULL]	[NULL]
4	PD004	4	450	90	[NULL]	45	15	[NULL]	[NULL]
/ query results as formatted plain text									
5	PD005	5	700	140	[NULL]	70	30	[NULL]	[NULL]
6	PD006	6	1,000	200	[NULL]	100	40	[NULL]	[NULL]
7	PD007	7	300	60	[NULL]	30	10	[NULL]	[NULL]
8	PD008	8	650	130	[NULL]	65	25	[NULL]	[NULL]
9	PD009	9	550	110	[NULL]	55	20	[NULL]	[NULL]
10	PD010	10	750	150	[NULL]	75	30	[NULL]	[NULL]
11	PD011	11	400	80	[NULL]	40	15	[NULL]	[NULL]
12	PD012	12	850	170	[NULL]	85	35	[NULL]	[NULL]
13	PD013	13	600	120	[NULL]	60	25	[NULL]	[NULL]
14	PD014	14	950	190	[NULL]	95	40	[NULL]	[NULL]
15	PD015	15	800	160	[NULL]	80	35	[NULL]	[NULL]

	123 booking_id	123 listing_id	123 customer_id	123 cancellation_id	RBC license_plate	⌚ check_in	⌚ check_out	⌚ booking_date
1	1	1	2	1	ABC123	2024-02-20	2024-02-25	2024-01-15
2	2	2	1	2	[NULL]	2024-02-25	2024-03-05	2024-01-20
3	3	3	3	3	XYZ456	2024-03-05	2024-03-10	2024-01-25
4	4	4	4	4	[NULL]	2024-03-10	2024-03-15	2024-01-30
5	5	5	5	5	DEF789	2024-03-15	2024-03-20	2024-02-05
6	6	6	6	6	[NULL]	2024-03-20	2024-03-25	2024-02-10
7	7	7	7	7	GHI012	2024-03-25	2024-03-30	2024-02-15
8	8	8	8	8	[NULL]	2024-03-30	2024-04-05	2024-02-20
9	9	9	9	9	JKL345	2024-04-05	2024-04-10	2024-02-25
10	10	10	10	10	[NULL]	2024-04-10	2024-04-15	2024-03-01
11	11	11	11	11	MNO678	2024-04-15	2024-04-20	2024-03-05
12	12	12	12	12	[NULL]	2024-04-20	2024-04-25	2024-03-10
13	13	13	13	13	PQR901	2024-04-25	2024-04-30	2024-03-15
14	14	14	14	14	[NULL]	2024-04-30	2024-05-05	2024-03-20
15	15	15	15	15	STU234	2024-05-05	2024-05-10	2024-03-25

APPENDIX

SQL Tables

	host_id	host_language
1	1	English
2	2	Spanish
3	3	French
4	4	German
5	5	Italian
6	6	Mandarin
7	7	Japanese
8	8	Korean
9	9	Russian
10	10	Arabic
11	11	Portuguese
12	12	Dutch
13	13	Swedish
14	14	Norwegian
15	15	Danish

	listing_id	host_id	title	city	state	country	home_type	availability	bedroom_count	bathroom_count	bedrooms
1	1	1	Cozy Apartment in Downtown	New York	NY	USA	Apartment	2024-03-01	1	1	Private
2	2	2	Luxury Villa with Pool	Los Angeles	CA	USA	Villa	2024-03-15	3	2	Shared
3	3	3	Charming Cottage in the Countryside	Seattle	WA	USA	Cottage	2024-04-01	2	1	Entire
4	4	4	Modern Loft in Downtown	Chicago	IL	USA	Loft	2024-04-15	1	1	Entire
5	5	5	Beachfront Bungalow	Miami	FL	USA	Bungalow	2024-05-01	2	2	Private
6	6	6	Spacious Mountain Retreat	Denver	CO	USA	House	2024-05-15	4	3	Entire
7	7	7	Rustic Cabin by the Lake	Portland	OR	USA	Cabin	2024-06-01	1	1	Private
8	8	8	Historic Townhouse in Boston	Boston	MA	USA	Townhouse	2024-06-15	3	2	Entire
9	9	9	Sunny Condo with City Views	San Francisco	CA	USA	Condo	2024-07-01	2	1	Private
10	10	10	Secluded Retreat in the Woods	Austin	TX	USA	House	2024-07-15	3	2	Entire
11	11	11	Lakefront Cabin with Hot Tub	Philadelphia	PA	USA	Cabin	2024-08-01	2	1	Private
12	12	12	Downtown Loft with Skyline View	Phoenix	AZ	USA	Loft	2024-08-15	1	1	Entire
13	13	13	Cozy Cottage near National Park	Detroit	MI	USA	Cottage	2024-09-01	2	1	Private
14	14	14	Beach House with Private Pool	San Antonio	TX	USA	House	2024-09-15	4	3	Entire
15	15	15	Mountain Chalet with Scenic Views	Seattle	WA	USA	Chalet	2024-10-01	3	2	Entire

APPENDIX

SQL Tables

	host_id	host_first_name	host_last_name	host_email	host_phone	host_status	response_time	response_rate	instant_booking
1	1	Emily	Johnson	emily@example.com	111-222-3333	[v]	30	95.5	[v]
2	2	Michael	Brown	michael@example.cor	444-555-6666	[v]	45	90	[]
3	3	Sophia	Wilson	sophia@example.cor	777-888-9999	[v]	60	98.3	[v]
4	4	Olivia	Martinez	olivia@example.com	666-777-8888	[]	55	87.9	[v]
5	5	William	Garcia	william@example.cor	333-444-5555	[v]	40	92.6	[]
6	6	Emma	Lopez	emma@example.com	888-999-0000	[v]	35	96.2	[v]
7	7	Alexander	Hernandez	alexander@example.c	555-666-7777	[v]	50	88.9	[]
8	8	Isabella	Perez	isabella@example.cor	999-000-1111	[]	65	93.7	[v]
9	9	Charlotte	Gonzalez	charlotte@example.ci	444-555-6666	[v]	25	97.4	[]
10	10	Mason	Ramirez	mason@example.com	777-888-9999	[v]	70	85.2	[v]
11	11	Ava	Torres	ava@example.com	111-222-3333	[v]	20	94.8	[v]
12	12	Liam	Hernandez	liam@example.com	222-333-4444	[]	15	91.1	[]
13	13	Emma	Garcia	emma2@example.cor	333-444-5555	[v]	75	89.5	[v]
14	14	Michael	Martinez	michael2@example.ci	444-555-6666	[]	55	86.7	[]
15	15	Sophia	Ramirez	sophia2@example.co	555-666-7777	[v]	45	97.8	[v]

	listing_id	amenity_id
1	1 ↗	1 ↗
2	2 ↗	2 ↗
3	3 ↗	3 ↗
4	4 ↗	4 ↗
5	5 ↗	5 ↗
6	6 ↗	6 ↗
7	7 ↗	7 ↗
8	8 ↗	8 ↗
9	9 ↗	9 ↗
10	10 ↗	10 ↗
11	11 ↗	11 ↗
12	12 ↗	12 ↗
13	13 ↗	13 ↗
14	14 ↗	14 ↗
15	15 ↗	15 ↗

APPENDIX

SQL Tables

	⌚ cancellation_id	⌚ refund_amount	⌚ cancellation_date
1	1	50	2024-02-01
2	2	25	2024-02-10
3	3	35	2024-02-15
4	4	20	2024-02-20
5	5	40	2024-02-25
6	6	30	2024-02-28
7	7	45	2024-03-05
8	8	60	2024-03-10
9	9	55	2024-03-15
10	10	70	2024-03-20
11	11	65	2024-03-25
12	12	75	2024-03-30
13	13	80	2024-04-05
14	14	85	2024-04-10
15	15	90	2024-04-15

	⌚ notification_id	⌚ sent_date	RBC notification_status	RBC notification_body	⌚ booking_id
1	1	2024-02-25	Sent	Your booking has been confirmed.	1 ↗
now query results as spreadsheet					2 ↗
3	3	2024-03-05	Sent	Reminder: Your check-in is approaching.	3 ↗
4	4	2024-03-10	Sent	Cancellation: Booking ID 3 has been cancelled.	4 ↗
5	5	2024-03-15	Sent	Your booking has been confirmed.	5 ↗
6	6	2024-03-20	Sent	Reminder: Your check-in is approaching.	6 ↗
7	7	2024-03-25	Sent	Cancellation: Booking ID 6 has been cancelled.	7 ↗
8	8	2024-03-30	Sent	Your booking has been confirmed.	8 ↗
9	9	2024-04-05	Sent	Reminder: Your check-in is approaching.	9 ↗
10	10	2024-04-10	Sent	Cancellation: Booking ID 9 has been cancelled.	10 ↗
11	11	2024-04-15	Sent	Your booking has been confirmed.	11 ↗
12	12	2024-04-20	Sent	Reminder: Your check-in is approaching.	12 ↗
13	13	2024-04-25	Sent	Cancellation: Booking ID 12 has been cancelled.	13 ↗
14	14	2024-04-30	Sent	Your booking has been confirmed.	14 ↗
15	15	2024-05-05	Sent	Reminder: Your check-in is approaching.	15 ↗
				Cancellation: Booking ID 15 has been cancelled.	

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SQL Tables

	license_plate	listing_id	status
1	ABC123	1	[v]
2	XYZ456	2	[v]
3	DEF789	3	[v]
4	GHI012	4	[v]
5	JKL345	5	[v]
6	MNO678	6	[v]
7	PQR901	7	[v]
8	STU234	8	[v]
9	VWX567	9	[v]
10	YZA890	10	[v]
11	BCD123	11	[v]
12	EFG456	12	[v]
13	HIJ789	13	[v]
14	KLM012	14	[v]
15	NOP345	15	[v]