Requirements and Specifications for an Airbnb-like Database.

1.) **Overview**

The database is supposed to serve three primary user roles: Hosts, Guests, Administration. Host lists properties for rent, while Guest searches for and books those properties. Administrators have the rights to edit/adjust bookings and solve tickets. The system also manages payments, reviews, guidelines, and user communication.

2.) **Roles and Actions**

Host: Create/update profile, list/manage properties, accept/reject bookings, receive payments, rate guests.
Guest: Create/update profile, browse/search properties, book properties, make payments, rate hosts and properties.
Admin: Monitor/manage user accounts and profiles, resolve support tickets, enforce guidelines and policies, and maintain overall system integrity.

3.) **Required Data and Functions**

User registration/authentication, property listing/management, booking creation/modification/cancellation, payment processing, review submission/retrieval, messaging, support ticket management, integration of social networks and reviews, guidelines/cancellation policy management.

4.) **Functional Requirements**

User Management: The system provides users with the ability to sign up, create profiles, and log in. It contains the user details such as name, email, phone number, password, and roles, which can be kept within the system. Users can edit their information and notification preferences. Admins can observe user activities by logs for auditing purposes.

Property Management: Allows hosts to create, edit, and delete their property listings. Basic details include title, description of the property, location, pricing, and images. Other things a host can manage in their listings include amenities, guidelines, services and pricing options.

Booking Management: Allows guests to search through the available properties, book their stay, and manage their bookings. As for hosts, they can either approve or reject booking requests. The system keeps a record of booking history, including all the status changes over time. Guests and hosts are also allowed to track the details of their bookings.

Payment Processing: The platform provides a facility for processing the booking payments by guests through various types of payment. It also maintains transaction details like the amount that was paid, type of payment, date, and other details in such a manner that it ensures all types of booking-related payments can be tracked, reviewed and saved.

Review System: Both the guest and host can leave reviews after a stay. Each review has ratings and comments concerning the stay or booked date and user. The system allows users to view property reviews for a decision to book.

Communication System: The platform has an inbuilt messaging system that provides direct communication between guests and hosts. Users are allowed to send and receive messages concerning bookings for the clarification of details or making inquiries.

Location Management: Arranges properties according to cities, regions, and countries, allowing the users to search and filter the properties by location. Location data helps with the categorization of properties while enhancing the search, and it is a basic and most important criterion for properties.

Support System: Users can raise support tickets for the issues they encounter with the platform. Admins can work on these tickets to resolve problems and report back to the user. Also, the status of a ticket will change while resolution is in process.

Ticket Guidelines Management: They can set rules for their property in advance, such as guidelines or booking conditions. These regulations are connected to each property and are active for a certain period of time during the reservation process, thus clarifying what each party should expect from the other. Admins should also be granted control over this.

Cancellation Policy Management: It allows the hosts to define and manage the cancellation policies for their properties. The policies determine under what circumstances a booking may be cancelled, along with any penalties or refunds applicable to the host to make sure both the host and the guest are satisfied.

Admin Functions: The admin controls the entire platform; from editing bookings, disputes, guidelines enforcement, changing the status of user profiles (such as removing them from the platform), handling support tickets, system activities - they should be able to resolve most of the issues.

Data Table

table_nm	ord	is_key	column_nm	data_typ	nullable	column_descr
address	1	PK	address_id	int(10)	NOT NULL	Unique identifier for each address.
address	2		address_line	varchar(255)	NULL	The street address.
address	3	FK	city_id	int(10)	NULL	Foreign key referencing the city table to associate the address with a city.
amenities	1	PK	amenity_id	int(10)	NOT NULL	Unique identifier for each amenity.
amenities	2		amenity_name	varchar(100)	NULL	The name of the amenity (e.g., "Game room or sauna").
amenities	3		amenity_description	text(65535)	NULL	A description of the amenity.
booking	1	PK	booking_id	int(10)	NOT NULL	Unique identifier for each booking.
booking	2	FK	user_id	int(10)	NOT NULL	Foreign key referencing the user_account table to indicate the user who made the booking.
booking	3	FK	property_id	int(10)	NOT NULL	Foreign key referencing the property table to indicate the booked property.
booking	4		booking_date	timestamp(4)	NULL	Timestamp indicating when the booking was made.
booking	5		number_of_guests	int(10)	NULL	The total number of guests included in the booking.
booking	6		total_price	decimal(10,2)	NULL	The total price of the booking, calculated based on property rates and duration.
booking	7		status_id	int(10)	NULL	Indicates the current status of the booking (e.g., "confirmed", "cancelled").
booking_guideline	1	PK	booking_guideline_id	int(10)	NOT NULL	Unique identifier for each guideline.
booking_guideline	2	FK	booking_id	int(10)	NULL	Foreign key referencing the booking table to associate the guideline with a specific booking.
booking_guideline	3	FK	property_id	int(10)	NULL	Foreign key referencing the property table to link the guideline to a property.
booking_guideline	4		guideline_description	text(65535)	NULL	Detailed description of the guideline or rule.

booking_status_history	1	PK	history_id	int(10)	NOT NULL	Unique identifier for each status change.
booking_status_history	2	FK	booking_id	int(10)	NULL	Foreign key referencing the booking table to associate the history with a booking.
booking_status_history	3		booking_status	varchar(50)	NULL	The status recorded during the change (e.g., “pending”, ”cancelled”, “confirmed”).
booking_status_history	4	FK	changed_by	int(10)	NULL	Foreign key referencing the user_account table for the user who updated the status.
booking_status_history	5	FK	property_id	int(10)	NULL	Foreign key referencing the property table to link the status change with a property.
cancellation_policies	1	PK, UK	policy_id	int(10)	NOT NULL	Unique identifier for each policy.
cancellation_policies	2	FK	property_id	int(10)	NULL	Foreign key referencing the property table to associate policies with properties.
cancellation_policies	3		cancellation_period	timestamp(4)	NULL	The cutoff time before cancellation fees apply.
cancellation_policies	4		penalty_amount	int(10)	NULL	The penalty amount charged for cancellation.
cancellation_policies	5		created_at	timestamp(4)	NULL	Timestamp indicating when the policy was created.
cancellation_policies	6		updated_at	timestamp(4)	NULL	Timestamp indicating the last update to the policy.
city	1	PK	city_id	int(10)	NOT NULL	Unique identifier for each city.
city	2		city_name	varchar(100)	NULL	Name of the city.
city	3	FK	country_id	int(10)	NULL	Foreign key referencing the country table to associate the city with a country.
country	1	PK	country_id	int(10)	NOT NULL	Unique identifier for each country.
country	2		country_name	varchar(100)	NULL	Name of the country.
country	3		country_code	varchar(10)	NULL	Abbreviated 2char code for the country (e.g., "US").
country	4	FK	region_id	int(10)	NULL	Foreign key referencing the region table to link the country to a region.
host	1	FK	user_account_id	int(10)	NULL	Foreign key linking the host to a user account.

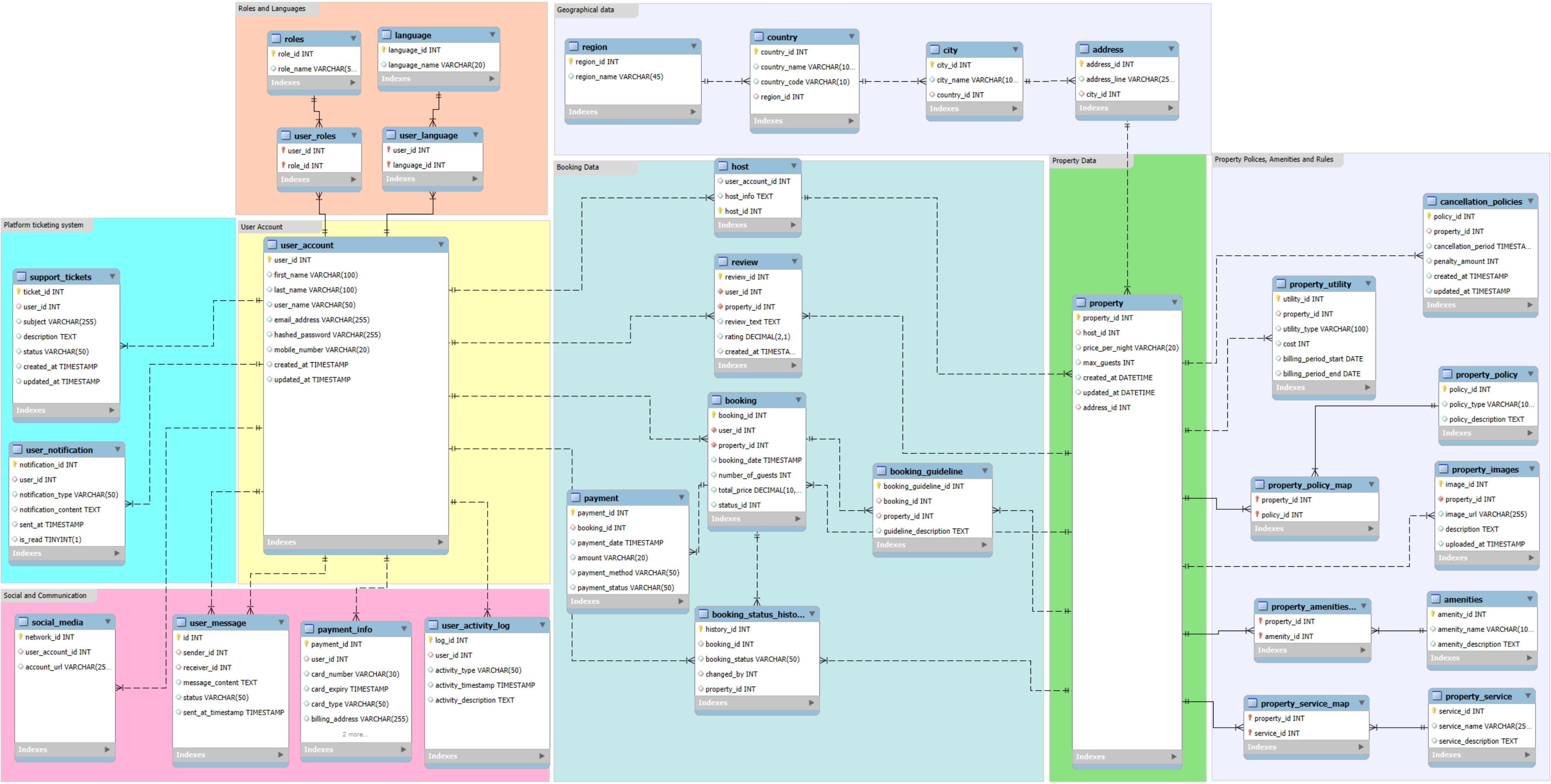
host	2		host_info	text(65535)	NULL	Descriptive information about the host.
host	3	PK	host_id	int(10)	NOT NULL	Unique identifier for each host.
language	1	PK, UK	language_id	int(10)	NOT NULL	Unique identifier for each language.
language	2		language_name	varchar(20)	NULL	Abbreviated name of the language (e.g., “Eng”)
payment	1	PK	payment_id	int(10)	NOT NULL	Unique identifier for each payment.
payment	2	FK	booking_id	int(10)	NULL	Foreign key referencing the booking table to link payment to a booking.
payment	3		payment_date	timestamp(4)	NULL	Timestamp of when the payment was made.
payment	4		amount	varchar(20)	NULL	The payment amount.
payment	5		payment_method	varchar(50)	NULL	The method used for payment (e.g., "Credit Card").
payment	6		payment_status	varchar(50)	NULL	Status of the payment (e.g., "Paid", "Pending").
payment_info	1	PK	payment_id	int(10)	NOT NULL	Foreign key linking payment details to the payment table.
payment_info	2	FK	user_id	int(10)	NULL	Foreign key linking payment information to a user.
payment_info	3		card_number	varchar(30)	NULL	The credit/debit card number.
payment_info	4		card_expiry	timestamp(4)	NULL	The expiration date of the card.
payment_info	5		card_type	varchar(50)	NULL	The type of card (e.g., "Visa", “Mastercard”).
payment_info	6		billing_address	varchar(255)	NULL	The billing address associated with the payment.
payment_info	7		created_at	timestamp(4)	NULL	Timestamp of when the payment information was added.
payment_info	8		method_type	varchar(255)	NULL	Additional method information (e.g., "PayPal").
property	1	PK	property_id	int(10)	NOT NULL	Unique identifier for the property.
property	2	FK	host_id	int(10)	NULL	Foreign key referencing the host table to associate the property with a host.
property	3		price_per_night	varchar(20)	NULL	The nightly rate for renting the property.
property	4		max_guests	int(10)	NULL	Maximum number of guests allowed.
property	5		created_at	datetime(8)	NULL	Timestamp of when the property was listed.
property	6		updated_at	datetime(8)	NULL	Timestamp of the last update to the property details.
property	9	FK	address_id	int(10)	NULL	Foreign key linking the property to an address.

property_amenities_map	1	FK, PK	property_id	int(10)	NOT NULL	Foreign key referencing the property table. Part of the composite primary key.
property_amenities_map	2	FK, PK	amenity_id	int(10)	NOT NULL	Foreign key referencing the amenities table. Part of the composite primary key.
property_images	1	PK, UK	image_id	int(10)	NOT NULL	Unique identifier for each property image.
property_images	2	FK	property_id	int(10)	NOT NULL	Foreign key referencing the property table.
property_images	3		image_url	varchar(255)	NULL	URL of the property image.
property_images	4		description	text(65535)	NULL	Description or caption for the image.
property_images	5		uploaded_at	timestamp(4)	NULL	Timestamp of when the image was uploaded.
property_policy	1	PK, UK	policy_id	int(10)	NOT NULL	Unique identifier for each policy.
property_policy	2		policy_type	varchar(100)	NULL	Type of the policy (e.g., "Cancellation").
property_policy	3		policy_description	text(65535)	NULL	Detailed description of the policy.
property_policy_map	1	FK, PK	property_id	int(10)	NOT NULL	Foreign key referencing the property table. Part of the composite primary key.
property_policy_map	2	FK, PK	policy_id	int(10)	NOT NULL	Foreign key referencing the property_policy table. Part of the composite primary key.
property_service	1	PK	service_id	int(10)	NOT NULL	Unique identifier for each property service.
property_service	2		service_name	varchar(255)	NULL	Name of the service provided.
property_service	3		service_description	text(65535)	NULL	Detailed description of the service.
property_service_map	1	FK, PK	property_id	int(10)	NOT NULL	Foreign key referencing the property table. Part of the composite primary key.
property_service_map	2	FK, PK	service_id	int(10)	NOT NULL	Foreign key referencing the property_service table. Part of the composite primary key.

property_utility	1	PK, UK	utility_id	int(10)	NOT NULL	Unique identifier for each utility.
property_utility	2	FK	property_id	int(10)	NULL	Foreign key referencing the property table.
property_utility	3		utility_type	varchar(100)	NULL	Type of utility (e.g., "Electricity").
property_utility	4		cost	int(10)	NULL	Cost associated with the utility.
property_utility	5		billing_period_start	date(3)	NULL	Start date of the billing period.
property_utility	6		billing_period_end	date(3)	NULL	End date of the billing period.
region	1	PK	region_id	int(10)	NOT NULL	Unique identifier for each region.
region	2		region_name	varchar(45)	NULL	Name of the region.
review	1	PK	review_id	int(10)	NOT NULL	Unique identifier for each review.
review	2	FK	user_id	int(10)	NOT NULL	Foreign key referencing the user_account table to indicate the reviewer.
review	3	FK	property_id	int(10)	NOT NULL	Foreign key referencing the property table for the reviewed property.
review	4		review_text	text(65535)	NULL	Detailed review content provided by the user.
review	5		rating	decimal(2,1)	NULL	Numerical rating given to the property (e.g., 4.5).
review	6		created_at	timestamp(4)	NULL	Timestamp of when the review was submitted.
roles	1	PK, UK	role_id	int(10)	NOT NULL	Unique identifier for each role.
roles	2		role_name	varchar(50)	NULL	Name of the role (e.g., "Admin").
social_media	1	PK	network_id	int(10)	NOT NULL	Unique identifier for each social media account.
social_media	2	FK	user_account_id	int(10)	NULL	Foreign key referencing the user_account table.
social_media	3		account_url	varchar(255)	NULL	URL to the social media account.
support_tickets	1	PK	ticket_id	int(10)	NOT NULL	Unique identifier for each support ticket.

support_tickets	2	FK	user_id	int(10)	NULL	Foreign key referencing the user_account table to associate the ticket with a user.
support_tickets	3		subject	varchar(255)	NULL	The subject or title of the support ticket.
support_tickets	4		description	text(65535)	NULL	Detailed description of the issue or query.
support_tickets	5		status	varchar(50)	NULL	Current status of the ticket (e.g., "Open", "Closed").
support_tickets	6		created_at	timestamp(4)	NULL	Timestamp of when the ticket was created.
support_tickets	7		updated_at	timestamp(4)	NULL	Timestamp of the last update to the ticket.
user_account	1	PK, UK	user_id	int(10)	NOT NULL	Unique identifier for each user.
user_account	2		first_name	varchar(100)	NULL	First name of the user.
user_account	3		last_name	varchar(100)	NULL	Last name of the user.
user_account	4		user_name	varchar(50)	NULL	Unique username chosen by the user.
user_account	5	UK	email_address	varchar(255)	NULL	Email address of the user. Must be unique.
user_account	6		hashed_password	varchar(255)	NULL	Securely stored hashed password for user authentication.
user_account	7		mobile_number	varchar(20)	NULL	User's contact number.
user_account	8		created_at	timestamp(4)	NULL	Timestamp of when the account was created.
user_account	9		updated_at	timestamp(4)	NULL	Timestamp of the last update to the account.
user_activity_log	1	PK	log_id	int(10)	NOT NULL	Unique identifier for each activity log.
user_activity_log	2	FK	user_id	int(10)	NULL	Foreign key referencing the user_account table for the user who performed the activity.
user_activity_log	3		activity_type	varchar(50)	NULL	Type of activity performed (e.g., "Login").
user_activity_log	4		activity_timestamp	timestamp(4)	NULL	Timestamp of when the activity occurred.
user_activity_log	5		activity_description	text(65535)	NULL	Detailed description of the activity.

user_language	1	FK, PK	user_id	int(10)	NOT NULL	Foreign key referencing the user_account table. Part of the composite primary key.
user_language	2	FK, PK	language_id	int(10)	NOT NULL	Foreign key referencing the language table. Part of the composite primary key.
user_message	1	PK	id	int(10)	NOT NULL	Unique identifier for each message.
user_message	2	FK	sender_id	int(10)	NULL	Foreign key referencing the user_account table for the sender.
user_message	3	FK	receiver_id	int(10)	NULL	Foreign key referencing the user_account table for the receiver.
user_message	4		message_content	text(65535)	NULL	Content of the message.
user_message	5		status	varchar(50)	NULL	Status of the message (e.g., "Read", "Unread").
user_message	6		sent_at_timestamp	timestamp(4)	NULL	Timestamp of when the message was sent.
user_notification	1	PK	notification_id	int(10)	NOT NULL	Unique identifier for each notification.
user_notification	2	FK	user_id	int(10)	NULL	Foreign key referencing the user_account table for the user receiving the notification.
user_notification	3		notification_type	varchar(50)	NULL	Type of notification (e.g., "Alert").
user_notification	4		notification_content	text(65535)	NULL	Content of the notification.
user_notification	5		sent_at	timestamp(4)	NULL	Timestamp of when the notification was sent.
user_notification	6		is_read	tinyint(3)	NULL	Boolean indicating whether the notification has been read.
user_roles	1	FK, PK	user_id	int(10)	NOT NULL	Foreign key referencing the user_account table. Part of the composite primary key.
user_roles	2	FK, PK	role_id	int(10)	NOT NULL	Foreign key referencing the roles table. Part of the composite primary key.


Roles and Languages
roles
role_id INT
role_name VARCHAR(5...
Indexes
language
language_id INT
language_name VARCHAR(20)
Indexes
user_roles
user_id INT
role_id INT
Indexes
user_language
user_id INT
language_id INT
Indexes
Geographical data
region
region_id INT
region_name VARCHAR(45)
Indexes
country
country_id INT
country_name VARCHAR(10...
country_code VARCHAR(10)
region_id INT
Indexes
city
city_id INT
city_name VARCHAR(10...
country_id INT
Indexes
address
address_id INT
address_line VARCHAR(25...
city_id INT
Indexes
Platform ticketing system
support_tickets
ticket_id INT
user_id INT
subject VARCHAR(255)
description TEXT
status VARCHAR(50)
created_at TIMESTAMP
updated_at TIMESTAMP
Indexes
user_notification
notification_id INT
user_id INT
notification_type VARCHAR(50)
notification_content TEXT
sent_at TIMESTAMP
is_read TINYINT(1)
Indexes
User Account
user_account
user_id INT
first_name VARCHAR(100)
last_name VARCHAR(100)
user_name VARCHAR(50)
email_address VARCHAR(255)
hashed_password VARCHAR(255)
mobile_number VARCHAR(20)
created_at TIMESTAMP
updated_at TIMESTAMP
Indexes
Social and Communication
social_media
network_id INT
user_account_id INT
account_url VARCHAR(25...
Indexes
user_message
id INT
sender_id INT
receiver_id INT
message_content TEXT
status VARCHAR(50)
sent_at_timestamp TIMESTAMP
Indexes
payment_info
payment_id INT
user_id INT
card_number VARCHAR(30)
card_expiry TIMESTAMP
card_type VARCHAR(50)
billing_address VARCHAR(255)
2 more...
Indexes
user_activity_log
log_id INT
user_id INT
activity_type VARCHAR(50)
activity_timestamp TIMESTAMP
activity_description TEXT
Indexes
Booking Data
host
user_account_id INT
host_info TEXT
host_id INT
Indexes
review
review_id INT
user_id INT
property_id INT
review_text TEXT
rating DECIMAL(2,1)
created_at TIMESTA...
Indexes
booking
booking_id INT
user_id INT
property_id INT
booking_date TIMESTAMP
number_of_guests INT
total_price DECIMAL(10,...
status_id INT
Indexes
payment
payment_id INT
booking_id INT
payment_date TIMESTAMP
amount VARCHAR(20)
payment_method VARCHAR(50)
payment_status VARCHAR(50)
Indexes
booking_guideline
booking_guideline_id INT
booking_id INT
property_id INT
guideline_description TEXT
Indexes
booking_status_histo...
history_id INT
booking_id INT
booking_status VARCHAR(50)
changed_by INT
property_id INT
Indexes
Property Data
property
property_id INT
host_id INT
price_per_night VARCHAR(20)
max_guests INT
created_at DATETIME
updated_at DATETIME
address_id INT
Indexes
Property Polices, Amenities and Rules
cancellation_policies
policy_id INT
property_id INT
cancellation_period TIMESTA...
penalty_amount INT
created_at TIMESTAMP
updated_at TIMESTAMP
Indexes
property_utility
utility_id INT
property_id INT
utility_type VARCHAR(100)
cost INT
billing_period_start DATE
billing_period_end DATE
Indexes
property_policy
policy_id INT
policy_type VARCHAR(10...
policy_description TEXT
Indexes
property_policy_map
property_id INT
policy_id INT
Indexes
property_images
image_id INT
property_id INT
image_url VARCHAR(255)
description TEXT
uploaded_at TIMESTAMP
Indexes
property_amenities...
property_id INT
amenity_id INT
Indexes
amenities
amenity_id INT
amenity_name VARCHAR(10...
amenity_description TEXT
Indexes
property_service_map
property_id INT
service_id INT
Indexes
property_service
service_id INT
service_name VARCHAR(25...
service_description TEXT
Indexes