Team HomeSick

RoomLagbe

CSE- 4508

RDBMS PROJECT

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OUR TEAM

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BRIEF OVERVIEW

RoomLagbe is a student focused housing platform designed to help university students find affordable rentals and trustworthy roommates near campus. The system supports:

- **Apartment listings by owners**
- **Smart search with filters and commute time estimation**
- **Student-to-student room sharing**
- **Secure visit request and approval workflow**
- **Role-based access for students and owners**

FEATURES

- User authentication and role-based access
- Apartment and room-share listing creation
- Advanced search with multiple filters
- Commute time calculation
- Visit request, approval, and rejection system
- Student and owner dashboards
- Wishlist and saved search functionality
- Full detailed listing view

DATABASE DESIGN (INITIAL)

DATABASE DESIGN (CURRENT)

IMPLEMENTED TRIGGERS

Trigger Name	Timing	Table	Purpose
trg_user_update_at	Before Update	User	Automatically updates timestamp whenever a record is modified
trg_location_set_geog	Before Insert or Update	Location	Automatically converts latitude/longitude coordinates into PostGIS geography points.
trg_university_set_geog	Before Insert or Update	University	Converts university coordinates into PostGIS geography points for spatial calculations.
trg_apartment_updated_at	Before Update	Apartment	Tracks when apartment details are modified (price, description, amenities, etc.)

IMPLEMENTED TRIGGERS

Trigger Name	Timing	Table	Purpose
trg_room_updated_at	Before Update	Room	Tracks when room details are modified (price, capacity, etc.)
trg_listing_updated_at	Before Update	Listing	Tracks when listings are modified (status, price, availability)
trg_booking_updated_at	Before Update	Booking	Tracks when booking status changes (pending → approved/rejected)

IMPLEMENTED FUNCTIONS

Type : Trigger

update_modified_column	• Purpose: Auto-updates updated_at • Used in: user, apartment, room, listing, booking
location_set_geog	• Purpose: Convert latitude/longitude → PostGIS geography • Used in: location
university_set_geog	• Purpose: Convert university coordinates → geography • Used in: university

IMPLEMENTED FUNCTIONS

Type : Query

get_listings_near_location

- Type: Set-Returning Function
- Returns: TABLE(listing_id, distance_meters)
- Purpose: Radius-based listing search
- Uses PostGIS spatial queries

calculate_listing_university_distance

- Type: Scalar Function
- Returns: Distance in kilometers
- Purpose: Show distance between listing & university

POSTGIS SPATIAL FEATURES

PostGIS is an extension for PostgreSQL that adds spatial (geographic) capabilities to the database.

- **Geography columns on location and university tables**
- **Automatic coordinate conversion**
- **Spatial indexes (GIST) for performance**
- **Distance calculations in meters/kilometers**
- **Radius-based search support**

INDEXES & CONSTRAINTS

B-Tree Indexes

- idx_user_username | idx_user_email | idx_user_role
- idx_listing_type | idx_listing_status | idx_listing_price | idx_listing_women_only
- idx_booking_listing_id | idx_booking_user_id
- idx_apartment_owner_id | idx_room_apartment_id
- idx_listing_apartment_id | idx_listing_room_id
- idx_apartment_location_id | idx_commute_listing_id | idx_commute_university_id

Unique Indexes / Constraints

- uq_user_username | uq_user_email | uq_user_phone
- uq_amenity_name | uq_listing_thumbnail | uq_commute_listing_university

Spatial (GIST) Indexes

- idx_location_geog
- idx_university_geog

CURRENT STATUS

COMPLETED

- User authentication and profile management
- Student and owner dashboards
- Apartment and room-share listing creation
- Advanced search and filtering
- Full listing detail view
- Visit booking system with approval/rejection
- 2-hour visit time blocking system
- Wishlist and saved searches

PENDING

- User and owner verification
- Admin workflow and dashboard
- Fair rent analytics
- Map-based apartment/room discovery
- Notifications for students and owners
- Image upload for listings

TOOLS & TECHNOLOGY

- **Frontend:** React.js
- **Backend:** Node.js + Express.js
- **Database:** PostgreSQL +PostGIS (Using Supabase)
- **Authentication:** JWT
- **Styling:** Tailwind CSS
- **Mapping / Commute:** OpenStreetMap API
- **Testing:** Postman
- **Version Control:** Git + GitHub

GITHUB LINK & COMMITS

Prince02031/RoomLagbe: RoomLagbe is a student-focused apartment rental platform that enables…

RoomLagbe is a student-focused apartment rental platform that enables landlord listings and student-to-student room…

GitHub

github.com/Prince02031/RoomLagbe

INDIVIDUAL CONTRIBUTIONS

Member	Database	Backend	Frontend
Rahatut Tahrim Mounota	Initial Schema design, ER diagram, normalization, indexing	Authentication, Initial Models, Controllers & Routes for core features	Listing creation and display pages (Homepage, apartment/room cards etc)
Nayeemul Hasan Prince	Final Schema design, Triggers, Functions, data integrity & validation rules	Updated Models, Core Business Logic (services) and Backend DB Integration	Owner Dashboard, Listing Details page, Amenities Selection & Location Dropdown
Alfi Shahrin	Functions, Audit Log Design, Views, analytics queries	Bookings & Wishlists, Protected Routes & Postman Collections	Student Dashboard, Booking Interfaces, saved searches, Profile page

DEMONSTRATION

THANK YOU